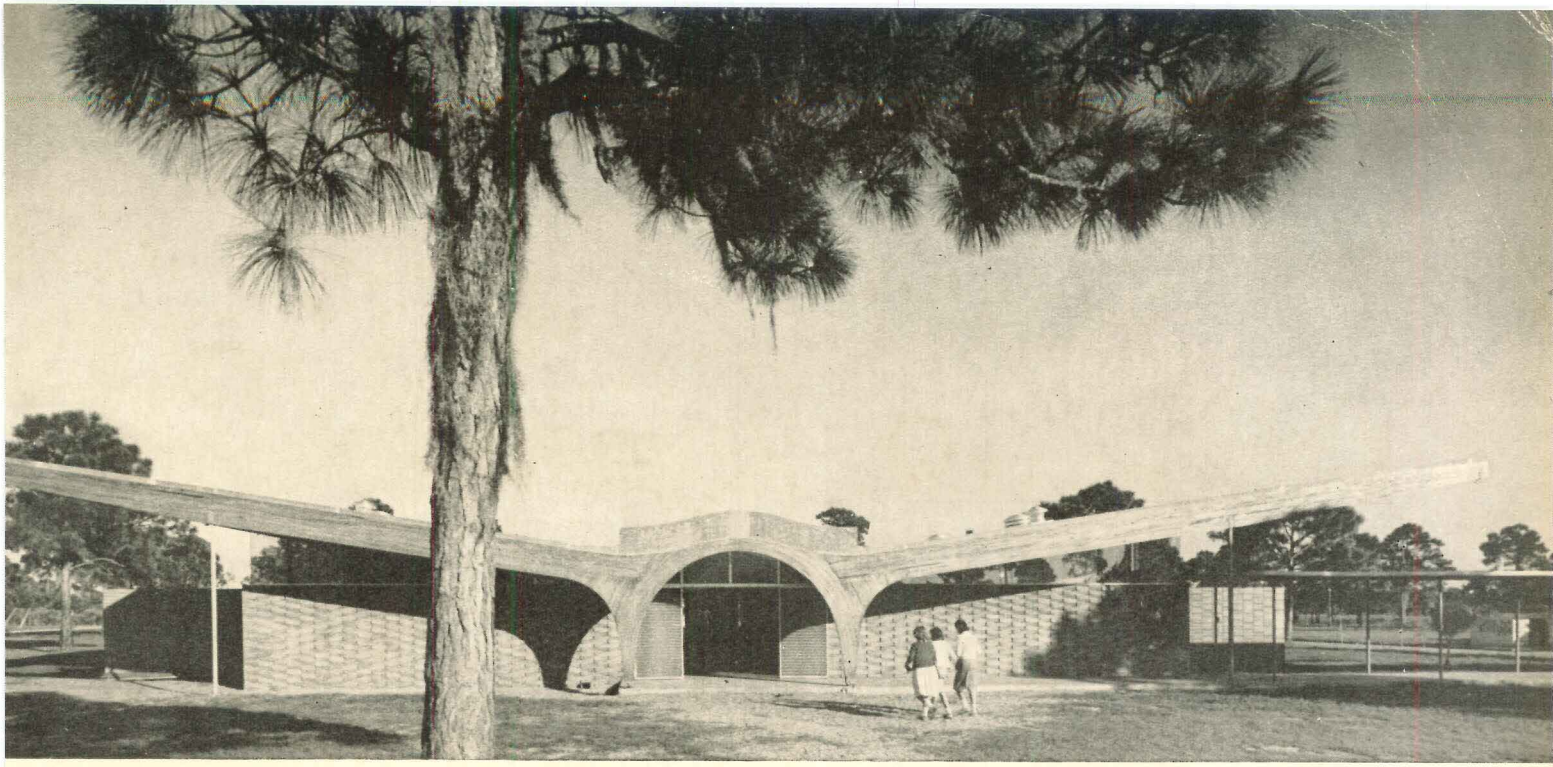
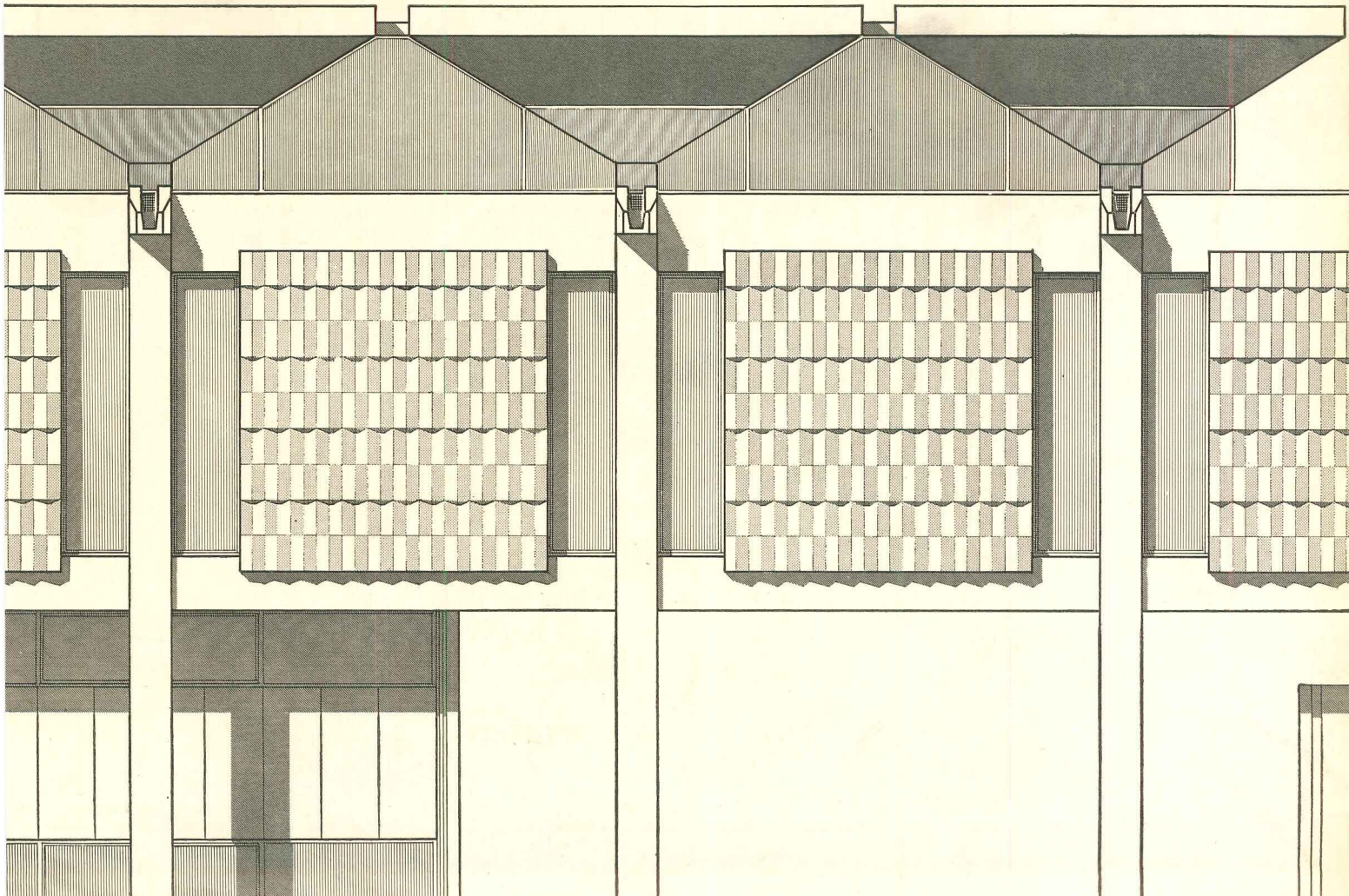
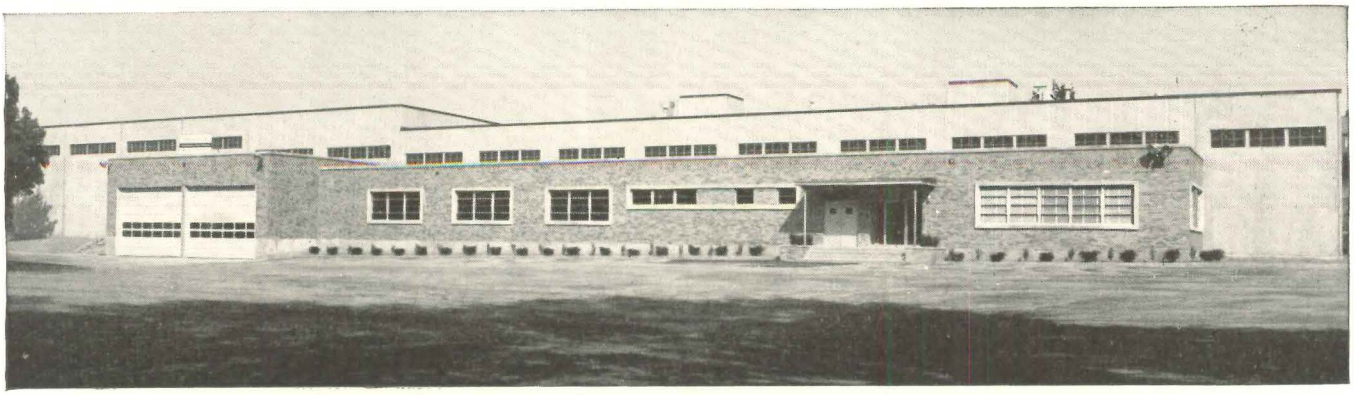


ARCHITECTURAL RECORD

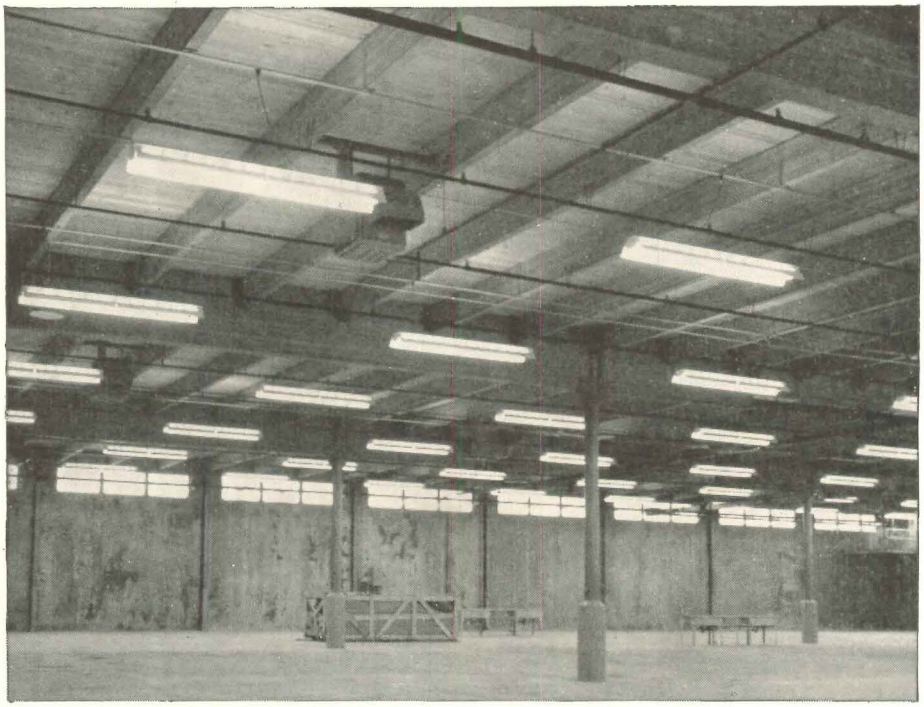
2 *February 1959*





Kieckhefer-Eddy builds a new plant

...entrusts fire safety in its modern, undivided production area to Grinnell Automatic Sprinklers



When Kieckhefer-Eddy, a division of Weyerhaeuser Timber Company, built its efficient milk carton plant at Harmony, Pa., it was designed to provide maximum uncluttered work space. Aware of the fire hazard which open planning like this sometimes creates, a Grinnell Automatic System was installed to give dependable protection should fire strike.

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FIRE PROTECTION SYSTEMS SINCE 1870 **GRINNELL**

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ARCHITECTURAL RECORD

February 1959

Cover:

Top: Alta Vista Elementary School. Victor Lundy, Architect. Philip H. Hiss photo. Bottom: Preliminary drawing of Leverett House Library façade. Shepley, Bulfinch, Richardson and Abbott, Architects

ARCHITECTURAL RECORD
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2877 Shasta Road,
Berkeley 8, California.

Coming in the Record

CREATING A CAMPUS

Brandeis University had a site, and a grand one, but it didn't have a campus, so there was a great opportunity to do a whole university not just a new piece of an old hodgepodge. After some uncertain beginnings the work settled down to a working kind of creativeness, with Harrison & Abramovitz doing the site plan and some of the buildings, and other architects getting into it also.

HOSPITALS AREN'T SO BAD

For many years functional excellence has been one of the first criteria in selection of hospitals for Building Types Studies. And it still is. But we can't help noting that in preparing this one we didn't sigh quite as much as usual over the lack of brighter architectural designing. They seem to be getting a little better.

PLANNING THE PLUMBING

In schools, the plumbing costs enough to warrant some thought about making the installation fit the need without waste. A study of this need has been made, with responsible sponsorship, and a fairly sizeable report digested for use by architects.

OTHER F. W. DODGE SERVICES: Dodge Reports—Dodge Construction Statistics—Sweet's Catalog Services—Dodge Books—Dodge Mailing Service—The Modern Hospital—The Nation's Schools—College and University Business—Hospital Purchasing File—Chicago Construction News—Daily Pacific Builder—The Daily Journal (Denver)—Real Estate Record & Builders Guide.

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The 49th Star

From now until the end of the year, it seems likely that all editors will be deluged with releases about Alaska. We have already learned that it is the farthest north, the farthest west, has the highest mountain, is the *biggest,* and that Seward was no fool. And despite its population (the smallest), its construction activities "rank with some of the largest and most prosperous States," a report from the Departments of Labor and Commerce tells us. Much of this building is military, of course; $62 million in contracts were awarded for military construction during the first half of 1958. A good-sized highway and airport program is underway ("Access to some of Alaska's chief cities is by sea and air only—for example, Ketchikan and Juneau"). as for private construction, the only available statistics come from Anchorage (pop., 30,000), which does file its building-permit reports with the Department of Labor; there, the big trend during the last year has been in small industrial buildings, with commercial and residential building also showing signs of healthy growth. All this and oil too, discovered last year. One might feel almost *sorry* for Texas.

Reads Like Fiction

Memo from our book department: "Torroja had a letter from an American engineer who bought his book (*The Structures of Eduardo Torroja,* F. W. Dodge Corporation). This man found it better than the most exciting novel, for he couldn't eat his supper and continued reading it into the night until he was finished."

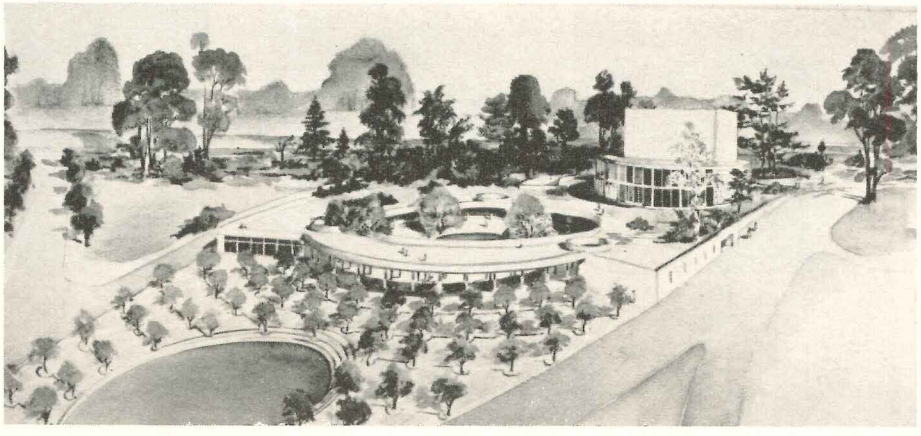
Architectural Plenipotentiary

With all the vigor, speed and variety of transportation of a Phileas Fogg, architect Ed Stone has for some months now been making one circumnavigation after another. Unlike his peripatetic predecessor, though, he has been leaving signs of his passing all along the paths of his journeys. In India, the new American Embassy opened in New Delhi, accompanied by an astonishing flurry of architectural comment in the general press, and deemed "enchanting" by Prime Minister Nehru, who found the building "a very beautiful structure and a very attractive combination of typically Indian motifs with the latest modern techniques." In Belgium, where Brussels must by this time seem to its citizens as empty as a house after holidays when the children have left and the tree has been dismantled, it was announced that the United States has donated its Fair pavilion to the Belgian government, to stand as a "permanent memorial." The plastic walls and roof will be removed, and the building which housed the Circarama production will be razed; but the landscaping, the sturdier parts of the exhibition building and the little theater will remain. And in Russia, the Stones and other (local) architectural guests engaged for a few weeks in a mutual question-and-answer period, at the invitation of the Presidium of the Soviet Friendship and Cultural Relation Societies. Among the more vivid impressions brought back by the Stones: Leningrad and the old wooden churches in the north of Russia, both "beautiful"; the "Sputnik" towns near Moscow and other cities, where the architecture was "not very interesting," but the plans were; Le Corbusier's single building in Moscow, in a sad state of disrepair as the Russians "wait for it to fall down" (not, apparently, a political decision—the expanse of glass simply proved inadequate to the Muscovite winters). The Russians were *au courant* to a surprising degree with American practice and buildings; they displayed enormous curiosity about Frank Lloyd Wright; and they greeted slides of the Manufacturers Trust Building and the Stuart plant "with sighs."

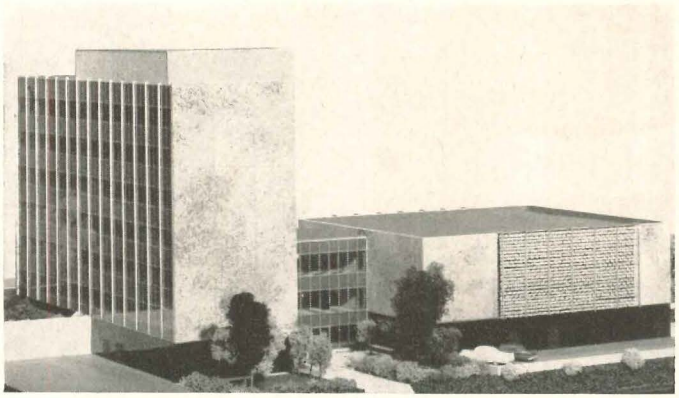
Our Times

The University of California announces that it has opened its "Sensitivity Training Program" to architects, as well as to physicians, clergymen, dentists and lawyers; the program, heretofore limited to businessmen, industrialists and public servants, gives participants "a chance to see themselves more objectively and realize their impact on other people." Inquiries should go to the Management Program, Institute of Industrial Relations, University of California, Los Angeles 24. . . . All things are subject to change, even familiar abbreviations. For substitution in architectural and engineering lexicons: for r.c. (vs. R.C.), reinforced concrete, and for h.p., hyperbolic paraboloid. . . . Obsolescence as a phenomenon is familiar, too, be it planned, accidental or inevitable. Nonetheless, it is startling to see in *Skyline,* house organ of North American Aviation, over a group of photographs of a plane which appears to untutored eyes a very snazzy jet, this headline: "Salute to an Old Warrior: North American B-45 Tornados Supplied NATO's Atomic Potential for Six Years." The "old warrior" is being retired.

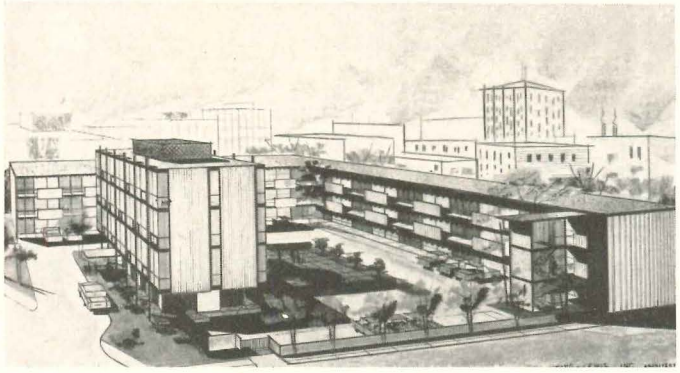
Top, left to right: Leningrad's Chief Architect with Edward D. Stone, Mrs. Stone and their interpreter. *Above,* left to right: Mr. Kolli, head of the Soviet Society of Architects, Mr. and Mrs. Stone and the President of Moscow's Architects Club. *Below:* a rendering of the U.S. Pavilion at Brussels with exhibition building dismantled



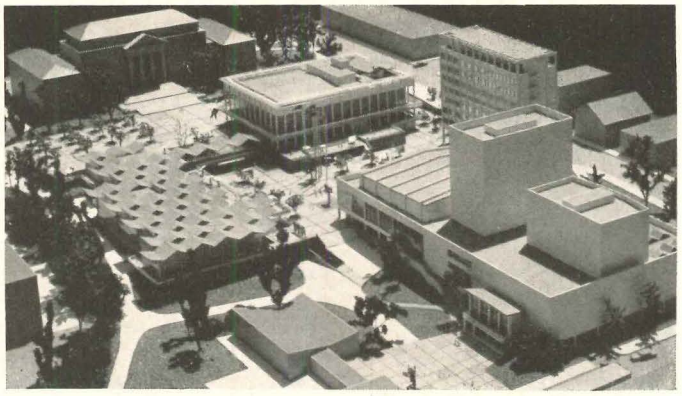
Buildings in the News



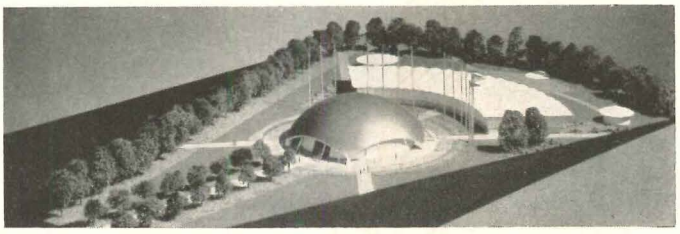
Right, above: A park in Moscow is the site of an American technological-cultural fair due to open on July 4. These permanent buildings were designed by Welton Becket & Associates and will be erected by the Reynolds Feal Corp. of New York and Milan. The stressed-skin gold anodized aluminum dome covers the science building; 200 ft in diameter, the dome is being built by the Kaiser Aluminum and Chemical Corp. after designs of R. Buckminster Fuller; the Lydick Roofing Co. will assemble and erect its 1110 panels. The largest building is the fan-shaped one (50,000 sq ft) with an accordion-pleated, 500-ft-wide roof; it will house product displays. A round cinema and an amphitheater are also in the plan. George Nelson & Co., industrial designers, will direct the design and coordinate all interior displays and outdoor exhibits. *Right, below:* Construction is expected to start in mid-1959 on the Atlanta International Coliseum (left) and 11-story Merchandise Mart, being built by Southeastern Merchandise Mart, Inc. (Robert M. Holder, president), on a 150-acre tract near Atlanta. The 350,000-sq-ft Coliseum uses cantilevered trusses with a center suspended truss to give a 350-ft modified space frame. The Mart has about 1 million sq ft for offices and showrooms. Total cost: about $15 million. Heery & Heery, architects; T. Z. Chastain, structural engineer; J. W. Austin & Assocs., mechanical engineers.



Harlan House, a 126-unit motel-hotel in Detroit, the first such combination-type structure in that area, is to be completed soon. The four-story hotel has about 5000 sq ft per floor, the three-story motel, about 8000 per floor. Estimated cost: $1.5 million. Precast concrete wall panels are used for parts of exteriors. King & Lewis, Inc., architects; Taubman Co., general contractor



Above, left: Construction recently started on the second and third buildings (87,000 sq ft) of the University of Southern California Medical Center, the six-story Seeley Wintersmith Mudd Memorial Laboratory of the Medical Sciences (left), and a basic sciences teaching building (with control center wing connecting them). Cost: more than $3 million. Flewelling & Moody, architects; Myers Bros., general contractor. *Above, right:* The first two units in the University of California's new Student Center in Berkeley will be a cafeteria (folded plate roof) and connecting union building (top center), to cost about $4.7 million. Vernon DeMars and Donald Hardison, Architects Associated; Vandement & Darmsted, mechanical engineers; Pregnoff & Mathew, structural engineers; Fred Schmid & Assocs., special consultants; M & K Corp., general contractor. *Left:* For New York University's Bronx campus, a seven-story, $3.1-million dormitory, internally divided to house 400 men and 200 women, connected with a $1-million dining-lounge building. At right are the Gould Hall of Technology and an attached cantilevered lecture wing. Marcel Breuer & Associates, architects



Ground will be broken in the spring for the Mount Sinai Hospital Psychiatric Clinic in New York, an 11-story building for 443 medical, surgical, and psychiatric patients. Cost: $10 million. The 226,970-sq-ft structure is faced in white brick to blend with existing hospital buildings. It includes the blood bank, central power plant, an auditorium. Eggers & Higgins, architects

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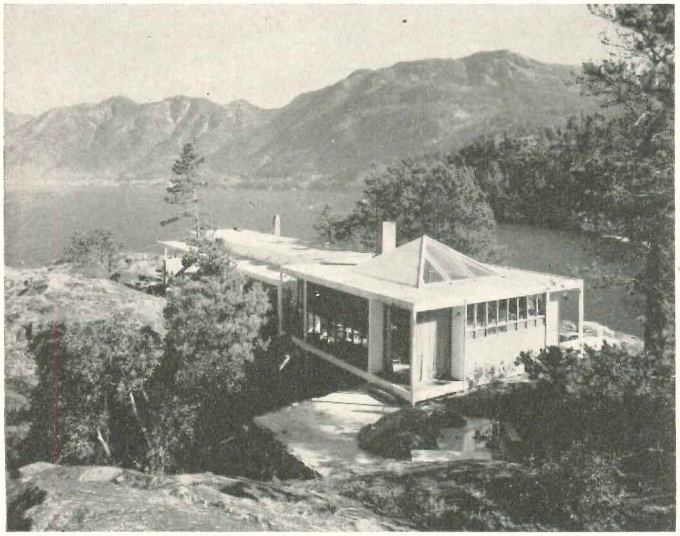
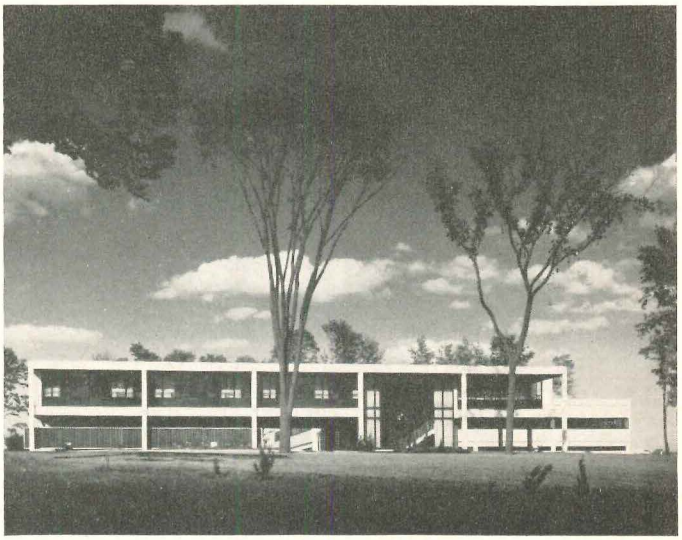
Gold Medal (best of all entries): Stratford Festival Theater, Stratford, Ont. The jurors noted in their report that they chose this building unanimously, adding that it "is clearly one that, in its exterior and its interior, combines those great architectural attributes of imagination, proportion and scale and a masterly choice of materials." Architects: Rounthwaite & Fairfield, Toronto



Silver medal (category: houses over 1200 sq ft): house in West Vancouver, B. C. Architects: Arthur Erickson and Geoffrey Massey, Vancouver



Silver Medal (category: industrial buildings): factory and office building for Ortho-Pharmaceutical Corp. (Canada), Ltd., Don Mills, Ont. Architects: John B. Parkin Associates, Toronto

Silver Medal (category: municipal and governmental buildings): Ottawa City Hall. Architects: Rother, Bland & Trudeau, Montreal

Silver Medal (category: commercial): Radio Station CKWX, Vancouver. Architects: Thompson, Berwick & Pratt, Vancouver

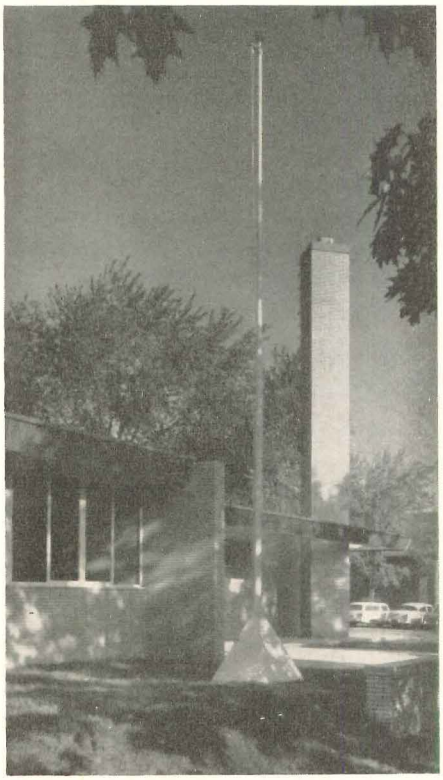
NINE MASSEY MEDALS FOR ARCHITECTURE AWARDED IN FOURTH CANADIAN COMPETITION

The fourth Massey Medals competition recognizing Canadian achievement in architecture resulted in one Gold Medal Award and eight Silver Medal Awards. Also, 34 entries received special mention. There was a total of 158 entries from 76 firms.

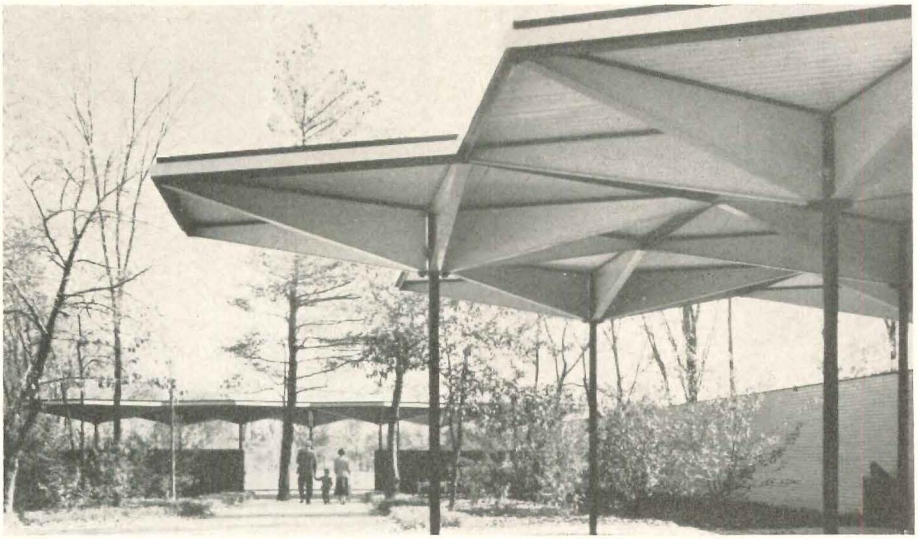
The Royal Architectural Institute of Canada administers the competition on behalf of the Massey Foundation. Previous competitions were held in 1950, 1952, and 1955.

The three-man jury for the 1958 competition consisted of: Eric R. Arthur, professor of architectural design, University of Toronto, and editor, *R.A.I.C. Journal*, chairman; William W. Wurster, dean, College of Architecture, University of California, Berkeley; and H. H. G. Moody, Moody & Moore, architects, Winnipeg. Acting on behalf of the Governor-General, the Hon. Howard Green, Minister of Public Works, presented the Massey Medals on December 5 at the National Gallery of Canada.

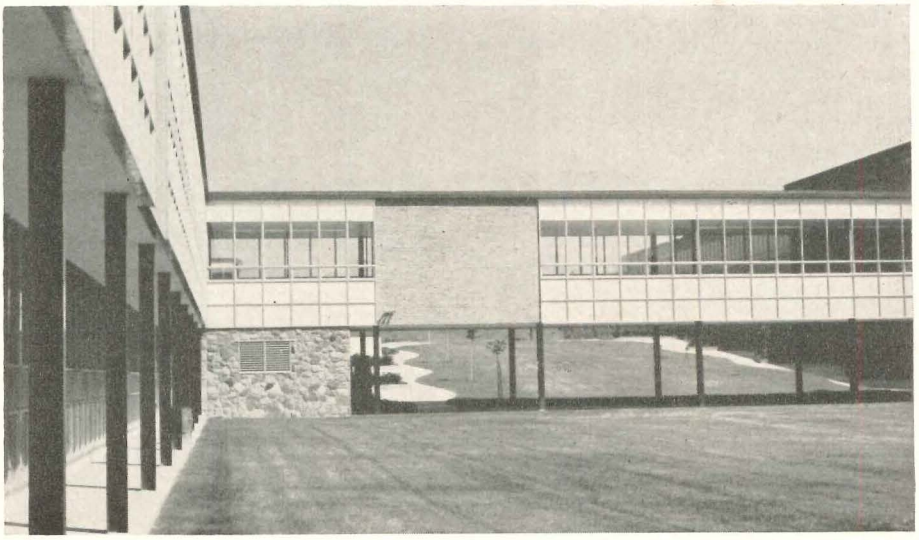
Architects submitted buildings designed and erected since 1945; entries were placed in 15 building-type categories. As was the case after the earlier competitions, entries were first shown at the National Gallery and then sent out as a traveling exhibit.



Silver Medal (category: educational): Central Elementary School, Beamsville, Ont. Architects: Huget, Secord & Pagani, St. Catherines, Ont.



Silver Medal (category: miscellaneous): Structures for Hog's Back Park, Ottawa. Architect: Hart Massey, Ottawa



Silver Medal (category: hospitals): Workmen's Compensation Board Hospital and Rehabilitation Center, Toronto. Associated architects: Page & Steele and Thomas R. Wiley, Toronto

Silver Medal (category: group housing): South Hill Village, Don Mills, Ont. Architects: James A. Murray and Henry Fliess, Toronto

News of Architecture Abroad

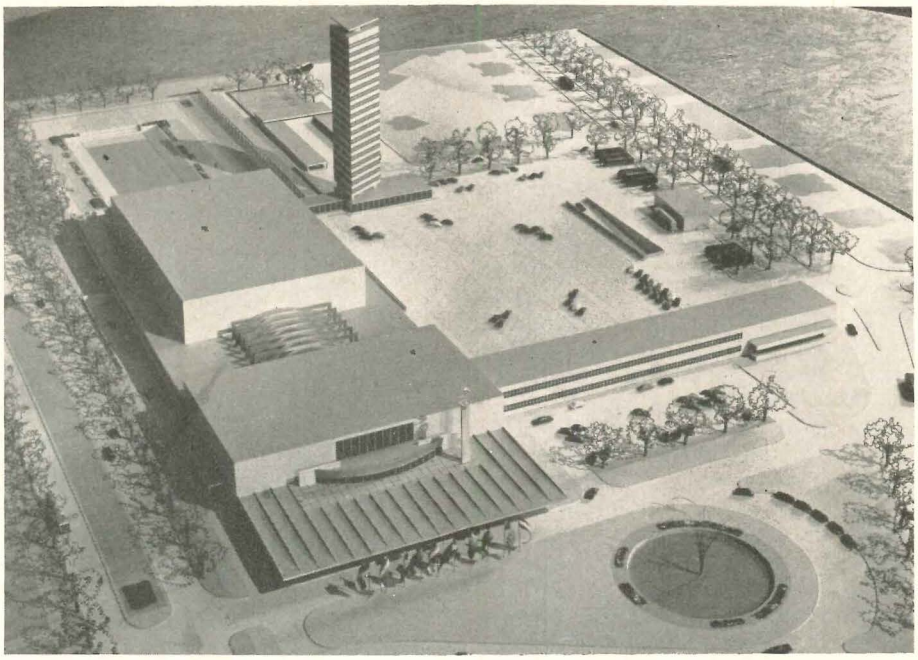
CULTURAL CENTER FOR THE HAGUE

J. J. P. Oud is the architect of the proposed new Congress Building and Cultural Center in The Hague. The architect W. M. Dudok originally drafted a reconstruction plan for this area of the city and included the Center to further the city's tradition as the site of international meetings. Mr. Oud was commissioned in 1956, and the designs were recently made public.

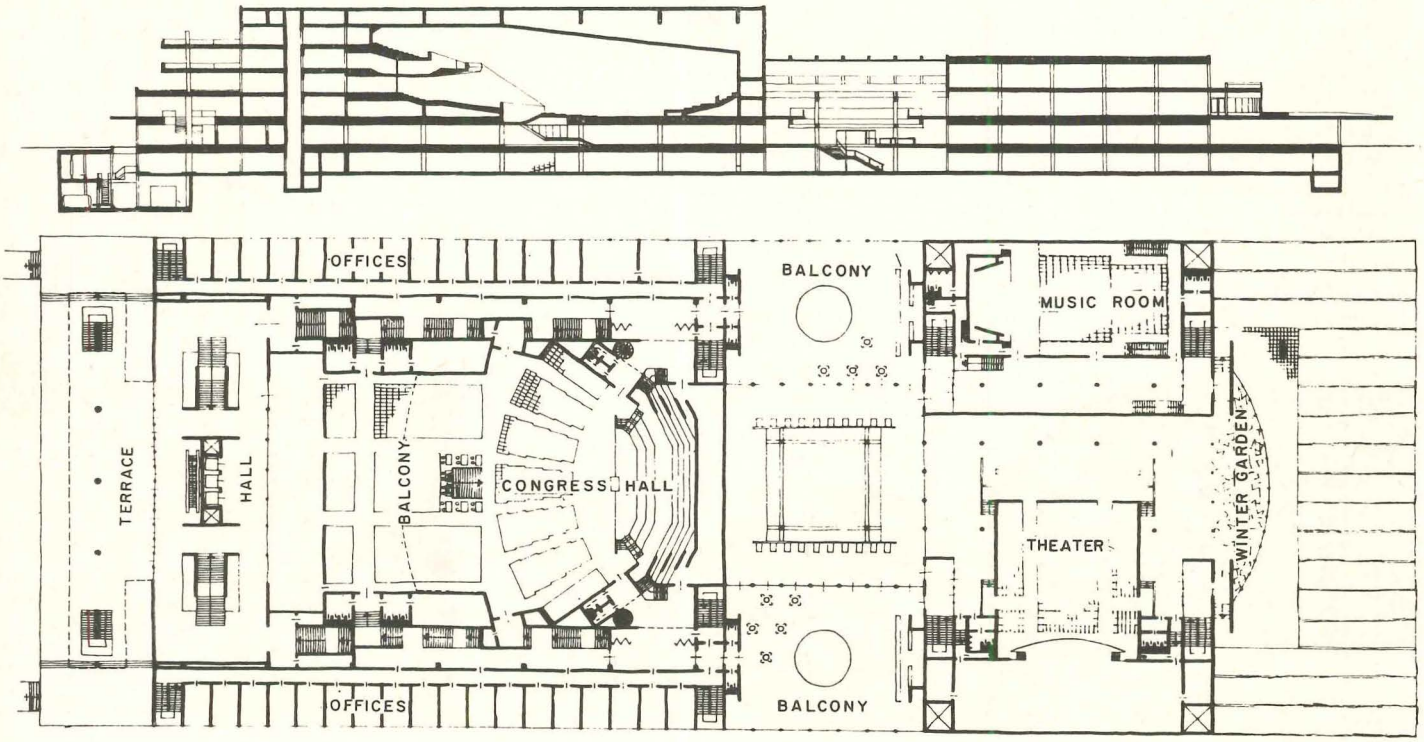
The main structure of the Cultural Center is the Congress Building, 585 ft by 228 ft, designed around the Congress Hall, which seats 3000 (or 1200 when the balcony is separated or 650 when a movable wall is also used). The theater and music room each seat 500; there are also conference rooms and offices. The basement contains sports facilities (bowling, fencing, etc.), dressing rooms, a sandwich shop. On the ground floor are a café, kitchens, reception hall, information center, cloak rooms, the main entrance. The third level is shown in the plan below. The separate wing (see model) contains a cinema and offices.

The triangular 17-story hotel has three bedroom units on each floor, around the elevator-stairway core. Terraces, pools, gardens, and an extension to the existing Municipal Museum (not shown here) are also in the design.

Mr. Oud plans to use slabs of natural stone, glass, aluminum, and enamel sheets or colored glass for the exteriors. The hotel tower, with glass walls, can be illuminated.



The model shows the site looking south, the rendering, looking north. The main entrance to the Congress Building is at its north end; cars circle the lake and draw up under the canopy; they then are driven down the east side of the building, under it, and to either the underground or ground-level parking lot on the west side. A service station is at the west edge of the area. The late architect J. W. Janzen was acoustical consultant on the Congress Hall, which has auxiliary facilities including tuning and dressing rooms



NEW OFFICE BUILDING IN SWEDEN

Paul Hedqvist of Stockholm is the architect of this new 15-story office building in Malmö, a seaport in southwestern Sweden. It was built by the Kockum Shipyard, one of the country's leading builders of merchant and naval vessels.

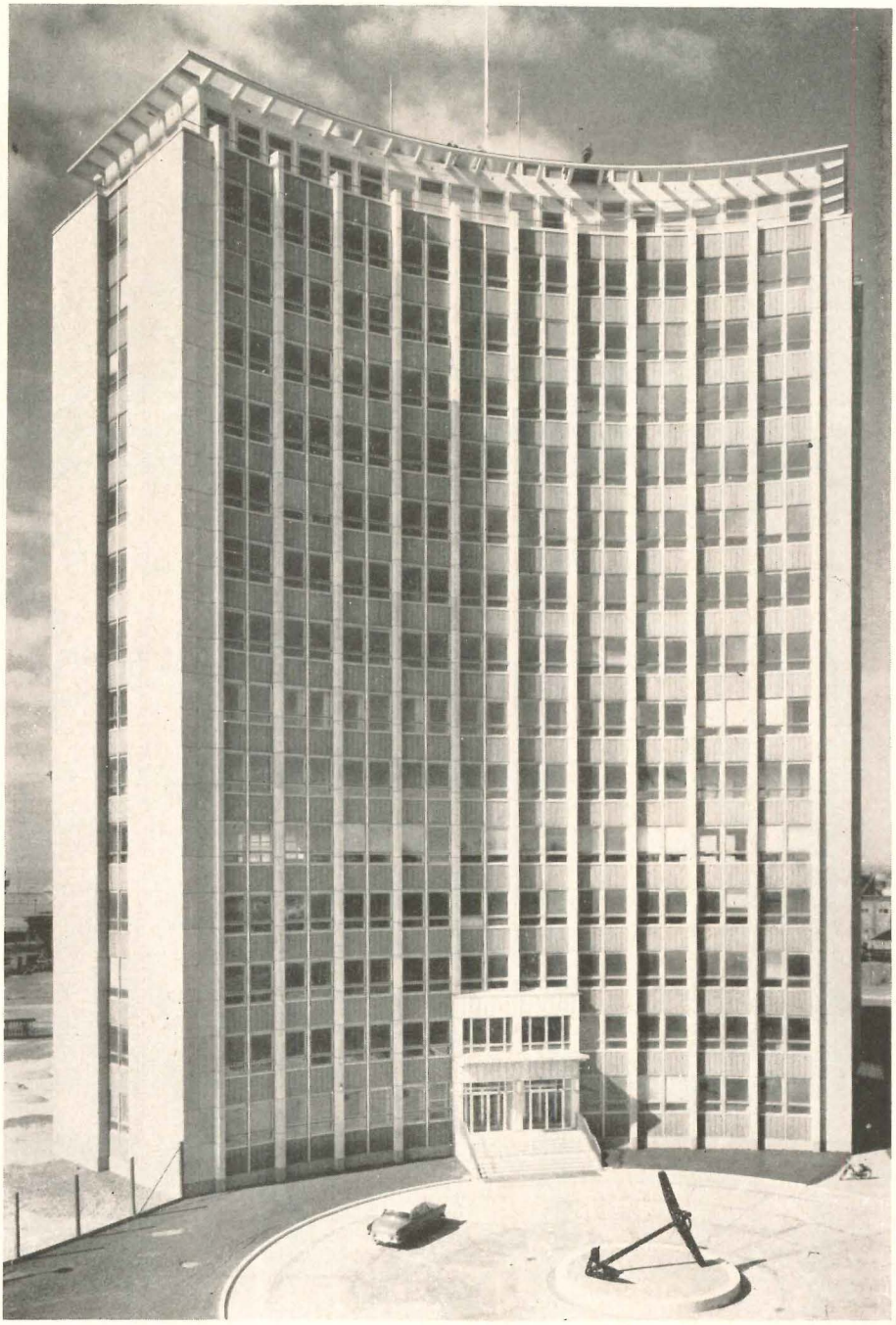
The building, on yard property near the water, is 200 ft high. In plan, it is a triangle with square points and concave façades. Offices are along the outer walls, with corridors paralleling them. The center core contains seven elevators and mechanical and electrical installations. The entire building is air conditioned.

The concrete structure has vertical concrete pillars on the façades, with thin aluminum strips between them. Gray-blue enamel slabs divide the floors horizontally.

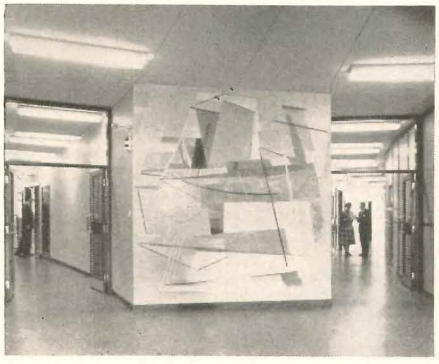
The building accommodates 900 of Kockum's 1300 office workers, designers, draftsmen, etc. About 400 employes can eat at the same time on the fourth floor, which contains a kitchen and dining rooms. Executive dining rooms and a conference room that seats 200 are on the 14th floor.

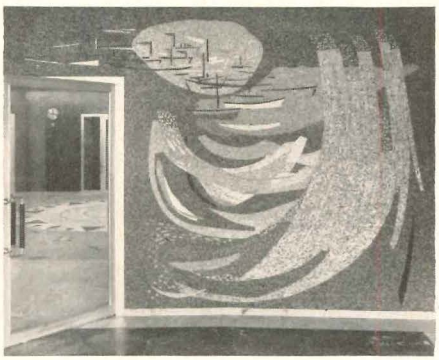
A note of tradition is given to the building by the 3.5-ton anchor from a 1780 Swedish ship of the line placed in front; it was loaned by a museum.

Tor Hörlin, Swedish artist, was commissioned to do a 150,000-piece glass mosaic in the entrance hall and three stucco paintings on the board of management floor (see photographs below).

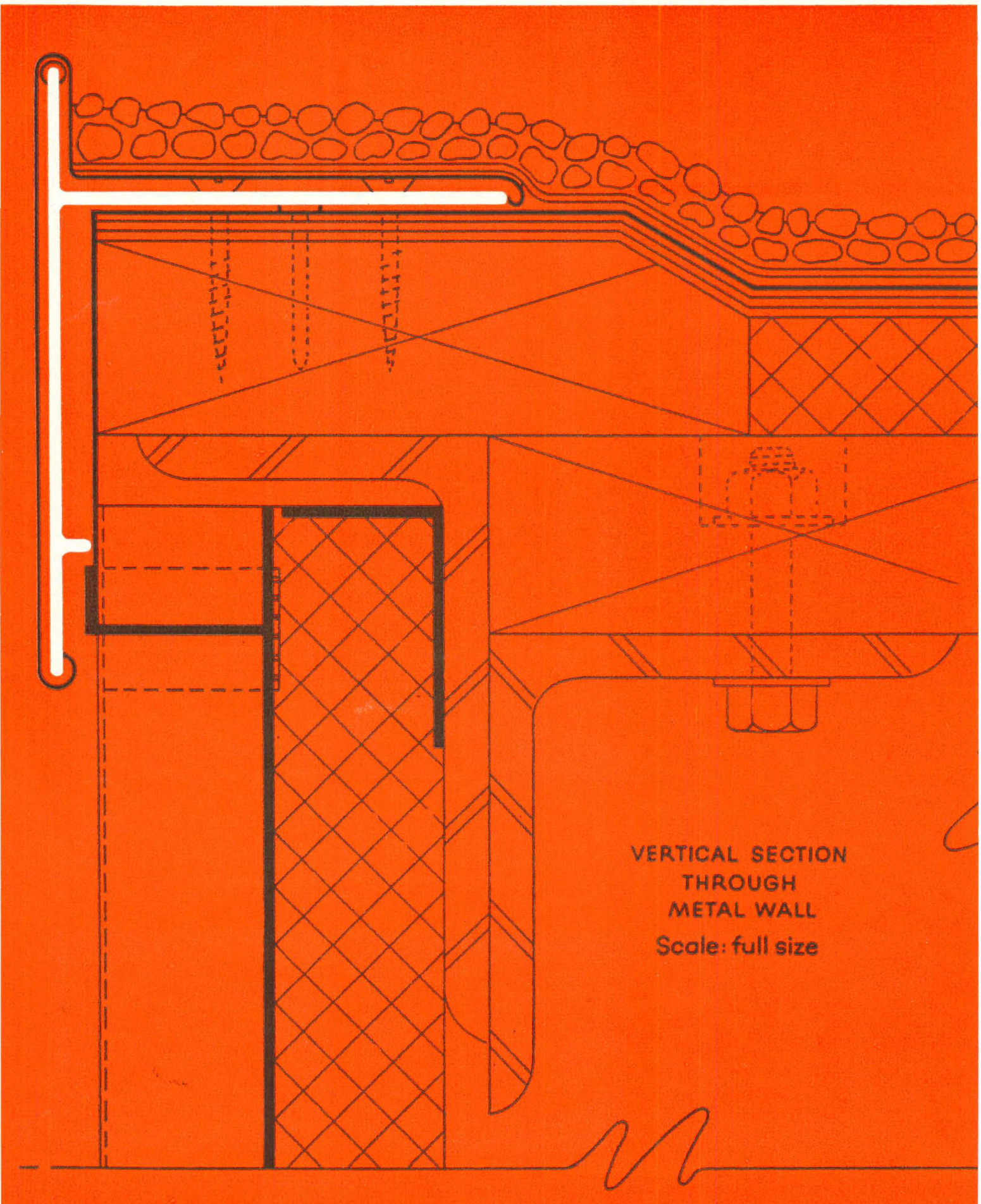


Left below is one of Tor Hörlin's three stucco paintings on the board of management floor. The motif of this one is "Air." The photo, incidentally, also shows two curved corridors and one end of the central core. The center and right pictures show the left and right panels of Mr. Hörlin's 150,000-piece mosaic in the entrance hall. The left panel depicts the rotating beam of a lighthouse (left center of design) cutting the darkness in crescent-shaped intervals. The right panel shows ships and the move and play of ocean waves





New! Kaiser Aluminum grave



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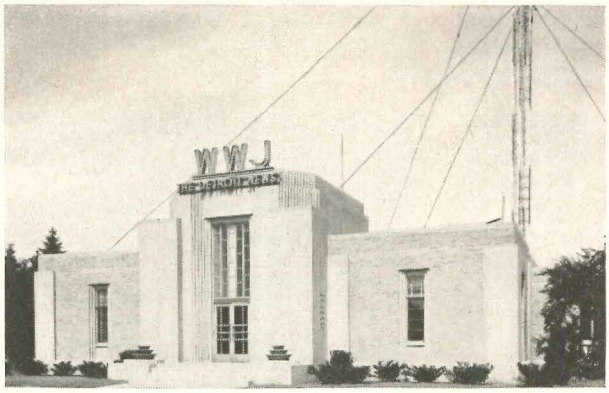
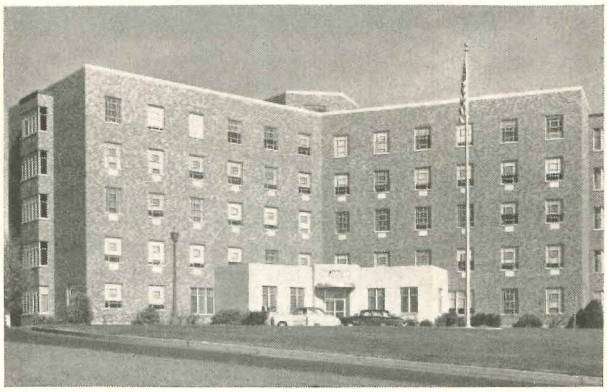
NOTE: *Increasingly, both small and large hospitals are insisting on emergency power units. It's significant that hospitals meeting certain general requirements (which most hospitals everywhere do meet) are entitled to Federal aid in financing emergency power installations.*



A Cat D326 Electric Set provides emergency power for transmitter station WWJ in Oak Park, Michigan. Even a brief interruption of commercial power can cost a radio or television station enough to pay for its Cat Electric Set in forfeited billings, and the loss of prestige. For these reasons, radio and television stations all over the country are installing Cat emergency power protection.



The 175-bed Yakima Valley Memorial Hospital in Yakima, Washington, relies on a Caterpillar D326 Diesel Electric Set for insurance power. In case of commercial power failure all critical requirements can be filled by this Cat unit. Commercial power interruptions totaled 13 in two years, and the D326 supplied power for elevators, X-ray units, diet kitchens, laundry, boiler rooms, operating suites, heating and air conditioning, etc.

A Cat D397 Electric Set is used for emergency power in case of a commercial power failure to insure power for this 16-floor Miami Beach Federal Building at Miami Beach. A wide variety of office buildings, hotels and industrial plants have found it both economical and good public relations to provide emergency power *that can be depended on* no matter what happens to normal power channels.

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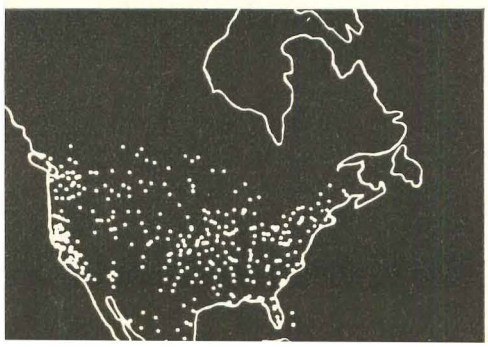

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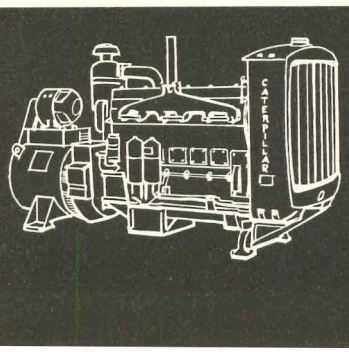


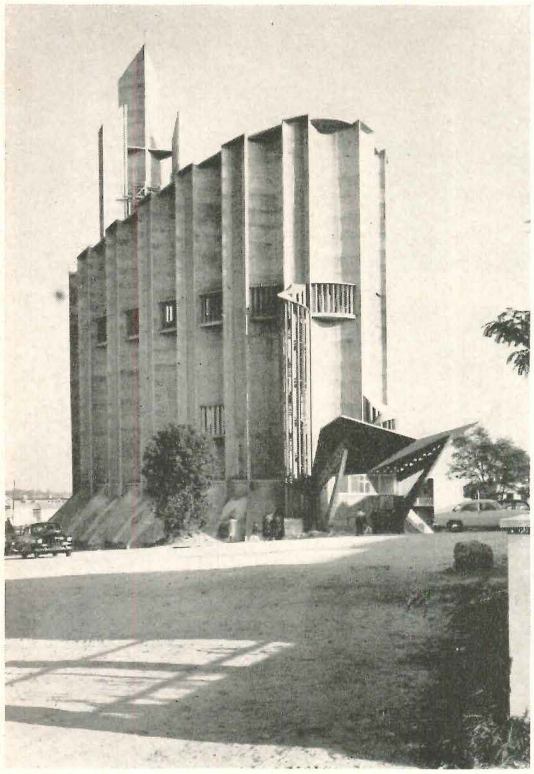
Buildings in the News

"ARCHITECTURE AND IMAGERY": TREND TOWARD "FUNCTIONAL" EXPRESSION THEME OF EXHIBIT

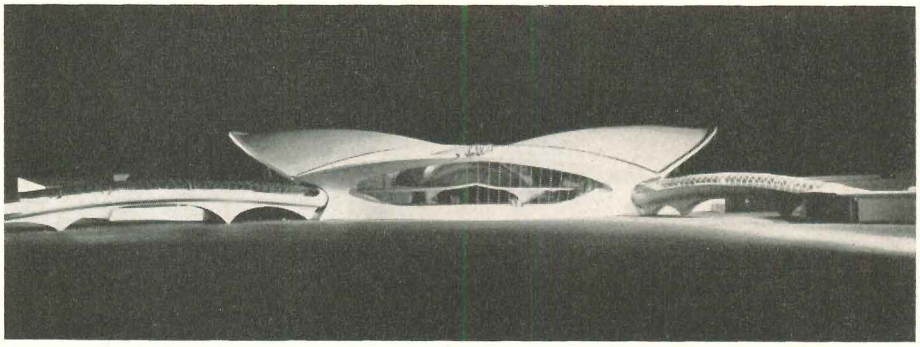
Only four buildings are included in the most recent exhibit sponsored by the Museum of Modern Art's Department of Architecture and Design; all four, the Museum feels, though different from each other, are alike in "illustrating a striking and controversial departure from some basic tenets of modern architecture."

The departure is, specifically, from the use of standardized elements, a technique which means, says the introduction to the exhibit, that "buildings put up for quite different purposes tend to look more and more alike." Of these four buildings (shown here), the museum had this to say: "Besides adequately solving functional problems, the forms of these buildings are made more memorable through the images they evoke. . . . Abandoning the repetitive rectilinear grid systems of more conventional buildings, the architects have sought monumental scale and a variety of interesting shapes. Their buildings may not constitute the beginning of a new movement in architecture, but the fact that all four of them were designed within the last two years suggests that this is a direction of increasing interest to many architects."

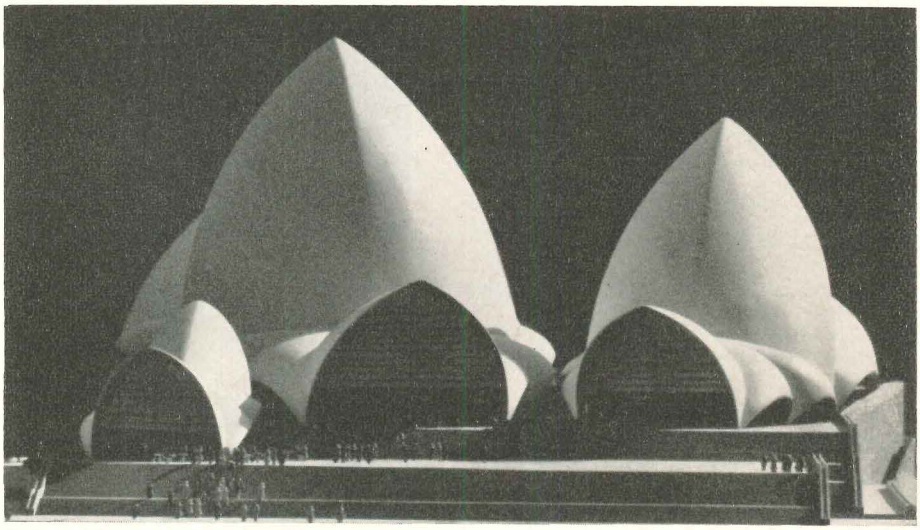
The exhibition, which is to open in New York on February 11, will be on view until April 19.



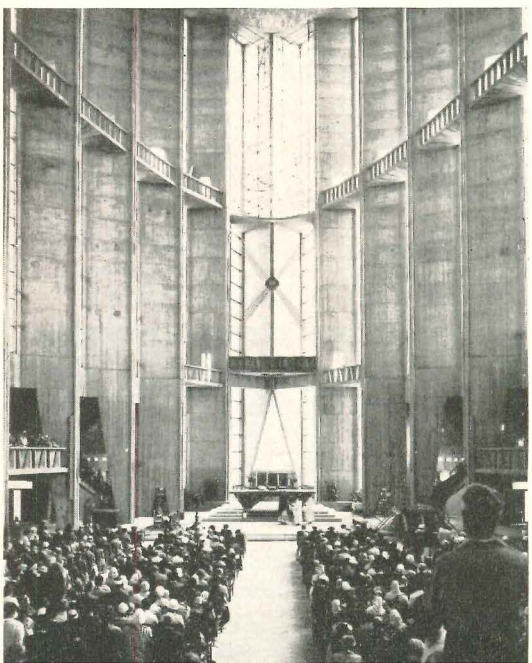
Church of Notre Dame de Royan, France; Guillaume Gillet, architect; Bernard Laffaile and René Sarger, engineers

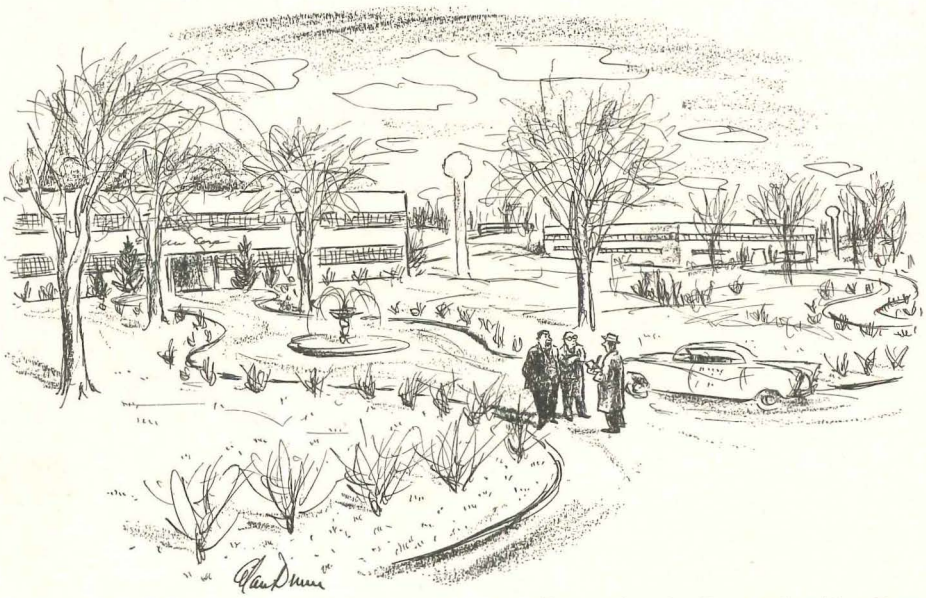


Above: model of TWA Terminal, to be built at New York's International Airport (AR, January 1958, p. 11); Eero Saarinen & Associates, architects; Ammann & Whitney, structural engineers. *Below:* competition-winning design for the National Opera House, Sydney, Australia (AR, April 1957, p. 16); Joern Utzon, architect; Ove Arup & Partners, engineers



Below: First Presbyterian Church, Stamford, Conn. (AR, November 1957, pp. 221-222); Harrison & Abramovitz, architects; F. J. Samuely and Edwards & Hjorth, engineers





—Drawn for the RECORD by Alan Dunn

"Exactly! We want the entire industrial area zoned against ranch-house, split-level residential developments!"

Dean Arnaud of Columbia Retires

Dean Leopold Arnaud of the School of Architecture of Columbia University retired last month after 24 years in his post. James Grote Van Derpool was appointed acting dean of the school, effective February 1.

Dean Arnaud received B.Arch. and M.S. in Arch. degrees from Columbia in 1919 and 1933. He studied at the Ecole des Beaux-Arts from 1919 to 1924 and from then until 1932 was an architectural designer in New York. He joined the Columbia faculty in 1929 and became acting dean of the school in 1935 and dean and full professor in 1937.

Mr. Van Derpool has been head of the Avery Memorial Architectural Library and professor of architecture since he came to Columbia in 1946. He was graduated from M.I.T.'s School of Architecture in 1927 and later attended the Atelier Gromort of the Ecole des Beaux-Arts and did graduate work at Harvard. Before going to Columbia he was on the faculty of the University of Illinois. He is a member of the American Institute of Architects.

Dean Arnaud, left, and his successor, Acting Dean Van Derpool

Florida Building Research Group

The first organized effort by building-industry groups to stimulate building research at the state level is under way in Florida. The Florida Foundation for the Advancement of Building has been organized by representatives of the Florida Association of Architects, the Association of General Contractors, and the Florida Lumber and Millwork Association, but it is planned as an organization drawing members from all sectors of the building industry.

F.F.A.B.'s president is Frank J. Rooney, Miami contractor. The recently appointed full-time executive director is L. W. von Hofen. Among the directors are Turpin C. Bannister, dean, College of Architecture and Fine Arts, and James T. Lendrum, head, department of architecture, both of the University of Florida (Mr. Lendrum formerly was director of the Small Homes Council, University of Illinois).

Dean Bannister has described the purposes of F.F.A.B. in an article written for *Florida Architect:* "a. To increase, enrich, and refine the body of knowledge and principles comprising the sciences and arts of building by research, discovery, experiment, and other appropriate means; b. to stimulate, augment, and enhance the capabilities of persons concerned vocationally with the creation of buildings by disseminating the results of research and study, and by aiding and supporting, with financial assistance and otherwise, technical educational programs conducted at collegiate, institute, and conference levels; c. to elevate by appropriate means public understanding of the desirability of high quality in buildings."

Though the impetus for specific research projects will arise from F.F.A.B. members, it is expected that most of them will be conducted for F.F.A.B. by the University of Florida's Bureau of Architectual and Community Research, a division of the College of Architecture and Fine Arts. F.F.A.B.'s committee on research will define projects, and the board of directors will approve them and arrange financing. It is emphasized that F.F.A.B. intends, not to compete with existing groups (e.g., B.R.I., B.R.A.B., etc.), but to organize the resources of Florida's building industry to investigate the problems of designing and erecting buildings under the special conditions prevailing in that state.

Competitions Open

An architectural competition sponsored by the *Mastic Tile Corporation of America* involves complete design and planning of middle-income private housing for a specific, clearly defined 160-acre site, selected to be fairly typical for such projects; the objective is to stimulate contributions by architects to the solution of middle-income housing problems. The competition is endorsed by the National Institute for Architectural Education and approved by the committee on competitions of the American Institute of Architects. Eligible are all registered architects, architectural assistants to registered archi-

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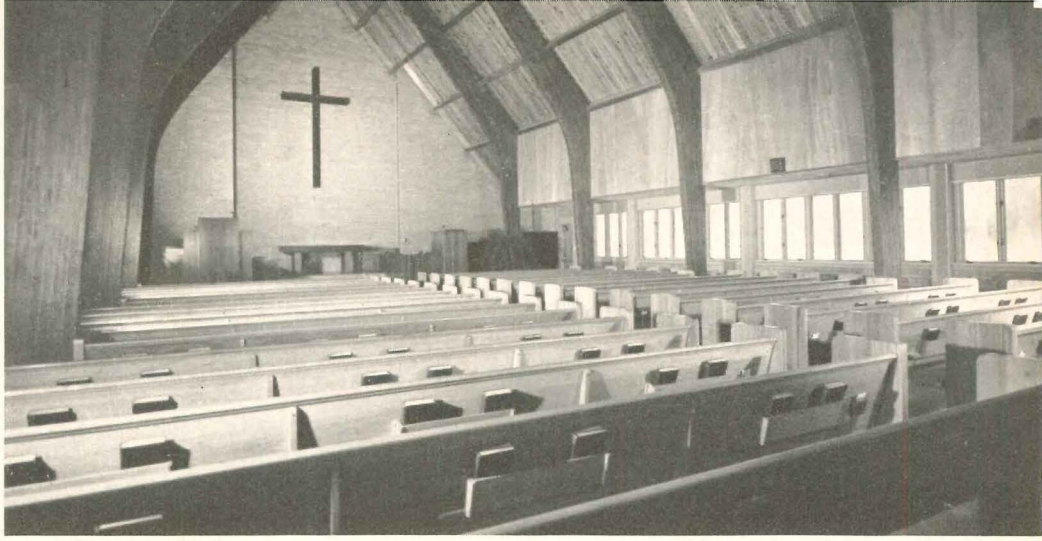
The Andersen Casement Windows in this Laramie, Wyoming, church complement the interior design by adding simple beauty and dignity. Ralph D. Peterson, Architect.



See how Andersen Windows add character, natural warmth and homelike atmosphere to this classroom in the new Lakeview School, Denville, New Jersey. Edward A. Berg, Architect.

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tects, students and graduates of recognized schools of architecture.

A. Gordon Lorimer, A.I.A., is professional adviser. The jury will consist of Pietro Belluschi, dean, School of Architecture, M.I.T. (chairman); Edward H. Fickett, A.I.A.: George Fred Keck, architect; Reginald Roberts, A.I.A.; Joseph H. Orendorff, special assistant to the administrator, HHFA. All contestants will be eligible for the grand prize of $10,000, second and third prizes of $5000 and $3000, and four merit awards of $250 each. Special awards of $2500, $1500, $1000, and four of $250 each will also be made to undergraduate students. Applications for entry kits are available from the Mastic Tile Corporation of America, Box 128, Vails Gate, N. Y., and from the company's distributors and dealers. June 30 is the deadline for submission of entries.

The five members of the jury for the 1959 *R. S. Reynolds Memorial Award,* all architects, have been selected. They are: John Noble Richards, national president, A.I.A.; Eero Saarinen; Robert E. Alexander; William W. Caudill; Carlos Contreras, Mexico City. The award in this third international contest is $25,000 and an emblem. Chief consideration will be given to projects that are original and significant and contribute to the use of aluminum. Nomination forms were due to be received at the A.I.A.'s headquarters in Washington by February 2. Entries are due by May 4, and judging will take place May 11-13.

The International Union of Architects announces an international competition for *a cultural center for Leopoldville, Belgian Congo.* The jury will consist of Richard J. Neutra, F.A.I.A.; Ernesto N. Rogers, Italy; L. Stynen, Belgium; M. Titz, Belgian Congo; C. Van Eesteren, The Netherlands; and a representative of the I.U.A. The rules and program may be requested from Le Centre Culturel du Congo Belge, 28 Avenue Marnix, Brussels. A request must be accompanied by a payment of 200 Belgian francs (which will be returned to a participant who submits an entry conforming to the rules). Projects are due by May 10. Registered architects of any country are eligible. A total of 250,000 Belgian francs is available for prizes (none of which will be less than 25,000 Belgian francs).

Photographs of the Seagram Building in New York are the subject of a national contest announced by the Chase Brass & Copper Company. Open to both amateurs and professionals, the contest is for unpublished black-and-white photographs and color transparencies that show to best advantage the exterior use of bronze in the building. First prizes in each division—black and white and color—will be $300, plus 29 others in each. Entry blanks and rules may be obtained at many photographic stores in the New York area or by writing Chase Brass & Copper Company, P. O. Box 2611, Grand Central Terminal, New York 17. The contest closes on March 15.

Rotch Scholarship Opportunity

The 70th winner of the Rotch Travelling Scholarship will be selected in April. Applicants must be American citizens whose architectural record includes study *or* experience in Massachusetts. A statement of requirements may be obtained by writing to William G. Perry, secretary of the scholarship, 955 Park Square Bldg., Boston 16, before March 1. All applications are due Monday, March 16.

Honors to Architects

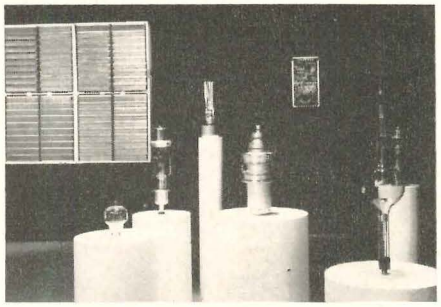
Ludwig Mies van der Rohe recently was named by Queen Elizabeth II to receive the 1959 Royal Gold Medal for Architecture. The award to Mr. Mies van der Rohe, the seventh American to win it, was made on the recommendation of the Royal Institute of British Architects.

Richard J. Neutra, F.A.I.A., has received the Grand Prize of the City of Vienna for 1958 for outstanding achievements in the field of architecture and city planning. The Austrian Consul-General in Los Angeles presented the award on behalf of the Mayor of Vienna, Mr. Neutra's native city.

Vincent G. Kling last month was selected to receive the 1959 Philadelphia Arts Festival Award in architecture. The award is one of six conferred on outstanding persons in architecture, literature, music, painting, sculpture, and drama for professional achievement and for the distinction they have brought to their native or adopted city, Philadelphia. The occasion is the second Philadelphia Arts Festival.

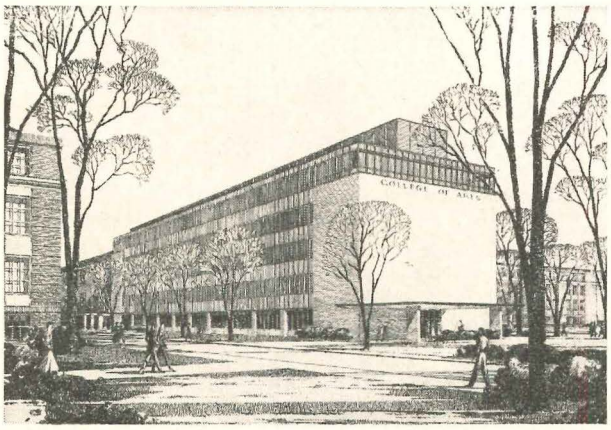
Dillon Named for B.R.A.B. Post

The National Academy of Sciences-National Research Council has announced the appointment of Robert M. Dillon as executive director of the Building Research Advisory Board. Mr. Dillon, who has been a member of the staff of B.R.A.B. for several years, has been serving as acting secretary since the resignation of W. H. Scheick last September (AR, November '58, p. 28).



"Twentieth-Century Design from the Museum Collection" has been on view at the Museum of Modern Art in New York since December 17 (the exhibit closes on February 22). The show has been developed from the one sent to Japan two years ago (AR, May '57, p. 28), but is considerably larger. Among the notable additions are samples of electronic equipment such as those shown here: in background, control and relay panels from the Ramac computer (given by I.B.M.) and on the stands, television and X-ray tubes (given by Machlett Laboratories, Inc.). This is the first time much of the Museum's design collection has been exhibited in New York. The more than 500 pieces of furniture, household accessories, and machines designed here and abroad during the past 60 years were selected by Arthur Drexler, director, Department of Architecture and Design, and Greta Daniel, associate curator. (For the Museum's latest exhibit, see page 20)

The complete group of architects who are designing the major buildings for New York's Lincoln Center for the Performing Arts (AR, July '58, p. 148) is shown above. Seated, left to right: Wallace K. Harrison, co-ordinator of the group and designer of the new Metropolitan Opera House; Philip Johnson, architect for the Theater for the Dance; Eero Saarinen, architect for the Theater of Repertory Drama; and Gordon Bunshaft, partner in charge of design of Skidmore, Owings & Merrill, whose firm is architect for the preliminary design of the Library-Museum of the Performing Arts. Standing, left to right: Pietro Belluschi, architect for the Juilliard School and residence hall; and Max Abramovitz, architect for the new Concert Hall, the building on which construction is scheduled to begin first. Meanwhile, John D. Rockefeller III, president of the Center, announced last month the four contractors who will do the building as a joint venture. They are: Turner Construction Co., George A. Fuller Co., Walsh Construction Co., and Slattery Contracting Co. The group, known as Fuller-Turner-Walsh-Slattery, is under the chairmanship of H. Chanlee Turner, Jr., president of the Turner Co. The contractors are the ones who put up the United Nations headquarters



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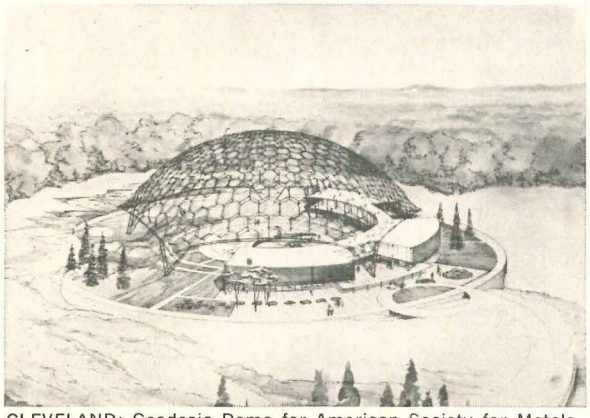

CLEVELAND: Geodesic Dome for American Society for Metals. General Contractor: The Gilmore-Olson Company, Cleveland. Architect: John Terrence Kelly, Cleveland. Dome design: Synergetics, Inc., Raleigh, N. Carolina. Aluminum Materials: Kaiser Aluminum and Chemical Sales, Inc.

THE COLUMBUS DIVISION OF NORTH AMERICAN AVIATION, INC.

A Washington Report by Ernest Mickel

AS THE SEASON OPENS: CONGRESSIONAL VIEWS ON THE NATION'S BUILDING NEEDS

The 86th Congress, with its heavy Democratic majorities in both Houses, opened last month with a flood of new bills stuffed into the House hopper, some of them portending the customary controversies on construction legislation. The House received the high volume of new measures on the first day, January 7; the Senate, by its different rules, did not begin to grind on proposed laws until a little later.

The way for renewed argument on the question of Federal aid to the states for school construction was opened by Rep. Lee Metcalf (D-Mont.), whose first-day bill called for "a massive transfusion" of Federal funds into state coffers for school construction and teacher salary purposes. It suggested a formula introduced last year which would make each state eligible for an allotment of $25 per school-age pupil the first year. Senator James E. Murray (D-Mont.) was sponsoring a similar measure in the other body.

The first year's grants to states on the basis outlined in the Metcalf measure would pour a total of $1.1 billion into state coffers for construction and salaries. A graduated method of increasing the Federal contribution for four years was devised: $50 per child the second year, $75 the third, and $100 the fourth and each succeeding year.

This system would give the states around $2.25 billion the second year, $3.5 billion the third, and $4.7 billion the fourth and years thereafter.

The estimates are based on each state's school-age population as projected and would consider children five to 17 years of age to be in this group. The population projections used by the sponsors of the new legislation were those prepared by the Bureau of the Census at the request and expense of the Research Division of the National Education Association.

The figures as worked out by the author of the bill would be subject to some change because of a provision which constitutes an incentive for the states to keep up with such a program. This states that an allotment would be reduced if any state's relative effort drops below the national average. Effective date of the reduction, however, would be postponed for three years, thus giving state legislatures an opportunity in two sessions to work out details of their programs.

In introducing his proposal the first day Congress met, Representative Metcalf issued this statement:

"Despite prodigious efforts of states and local districts to build adequate educational facilities, the rate of construction barely kept pace with increased attendance and obsolescence in the past year. The approximately 71,000 classrooms built last year was the peak effort, which barely dented the backlog of 140,000. This year, the states and local districts, bumping up against constitutional or legal debt ceilings, will be able to build fewer classrooms than last year.

"Not only are we short 140,000 classrooms, but they become more expensive each year—as construction costs mount, and the youngsters move on into secondary schools where classroom costs are higher. In addition, we are short at least 135,000 qualified teachers."

Full hearings on the school construction aid proposals will be held, this being a new Congress. Objectors to a plan for Federal assistance already have been heard from. The U.S. Chamber of Commerce, one of the staunchest advocates of total state and local responsibility for school construction and administration, had indicated clearly, even before Congress returned to Washington, that it intended to fight the battle harder than ever this year.

No school construction measure was sent to the White House last year, although education committees spent a great amount of time on the legislation.

One construction aid bill which did get passed and sent to the White House—but was vetoed by the President—was that extending the aid-to-airport-construction program. This matter also was given first-day attention in the House hopper when Rep. Oren Harris (D-Ark.) dropped in a bill to extend the program five years from July 1 and to increase Federal grants to $100 million a year. The present law, running out on June 30, authorizes $60 million each year to be allotted to states on a matching basis for their new construction and improvement programs at airfields.

The Harris bill specified Federal aid of $95 million a year to the states and $5 million to territories and possessions. For administrative purposes Alaska would be treated as a territory and receive grants from the territorial fund. The bill to increase and extend the Federal-aid airport program last year was reported unanimously from the House Committee on Interstate and Foreign Commerce and passed by the House by a vote of more than two-thirds under suspension of the rules.

Sen. Mike Monroney (D-Okla.) carried out his previous promise to introduce the same measure in the Senate as soon as possible. There it was scheduled for the Interstate and Foreign Commerce group.

Housing and depressed area legislation showed up the first day in the House also. (The Senate had agreed to defer introduction of bills until after it heard the President's State of the Union message delivered on January 9.)

There was urgent need for new housing authorization if the Housing and Home Finance Agency was to continue its various programs uninterrupted through the balance of the fiscal year. Thus three minority members proposed on the first day that the House approve a joint resolution giving the Federal Housing Administration $6 billion additional authority for the operation of its loan insurance programs, the Community Facilities Administration $200 million to continue its college housing loan activities, and the Urban Renewal Administration $100 million for its loans and grants. The proposed resolution also would provide an additional $100 million in the urban renewal field to replenish a similar amount drawn from the President's reserve for such purposes when Congress failed to approve additional authority for URA last year.

Sponsors of this resolution were Reps. McDonough (R-Calif.), Widnall (R-N.J.) and Betts (R-Ohio). There was quick action on the part of some Senators to suggest similar emergency legislation.

These proposals would provide authority for the housing programs to operate until the end of the present fiscal period, June 30. A heavy load of applications last year has depleted the authority badly, particularly in the FHA loan insurance and college housing areas.

Rep. Walter (D.-Pa.) put in his proposal for depressed areas legislation. This loan-and-grant aid to locations with chronic unemployment was passed by Congress last year but vetoed by the President. The measure includes a program of Federal assistance for the construction of community facilities of virtually all types in these specific regions.

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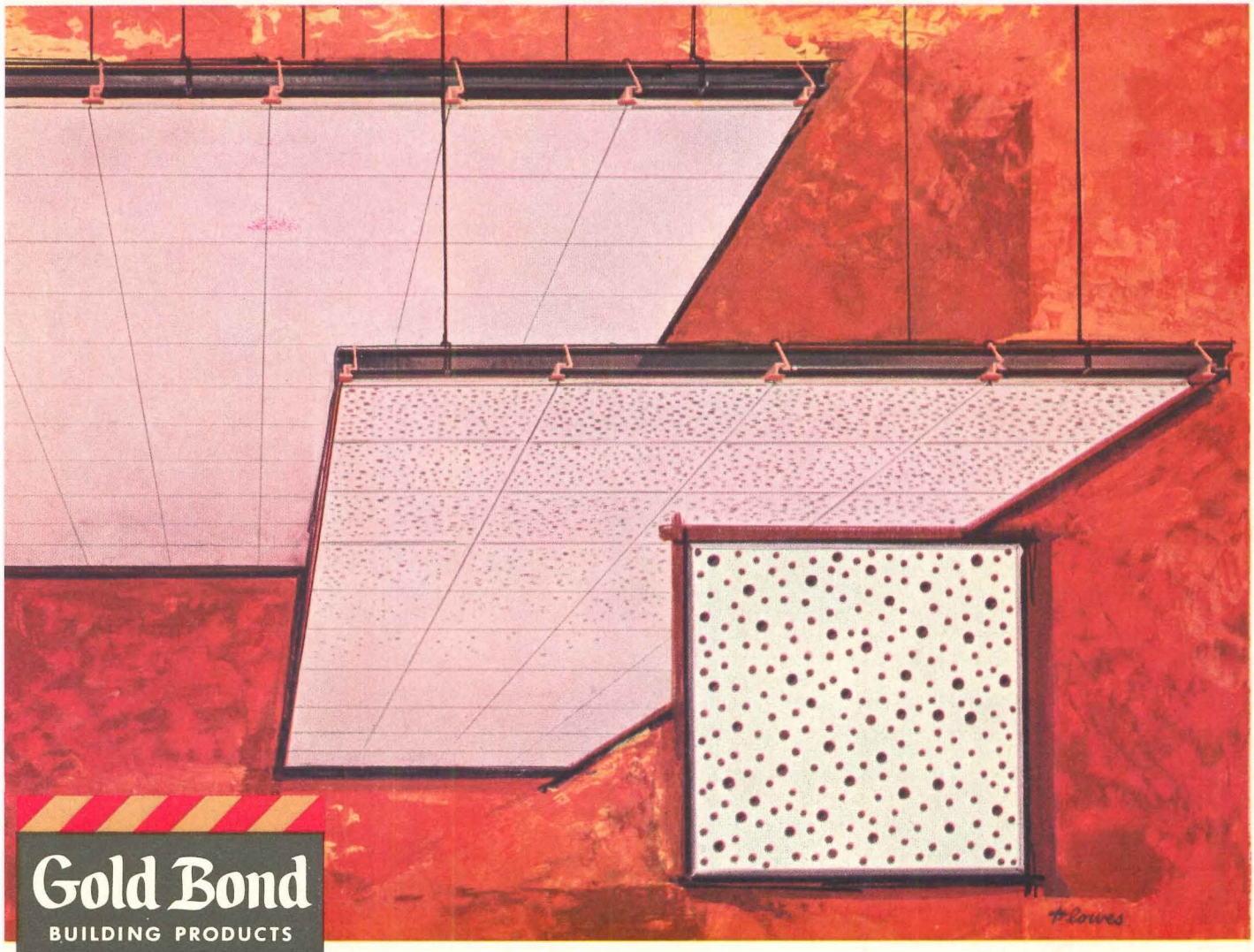


ahead of tomorrow

Washington Topics *by Ernest Mickel*

Mason Named HHFA Administrator Following Cole's Resignation

The Senate Banking Committee last month unanimously approved the President's nomination of Norman P. Mason, since 1954 Federal Housing Commissioner, to succeed Albert M. Cole as Administrator of the Housing and Home Finance Agency.

Mr. Cole will join the Reynolds Aluminum Service Corporation, a subsidiary of the Reynolds Metals Company, as its executive vice president. There he will be in charge of "developing and guiding programs for the use of aluminum in monumental (large commercial) building, urban renewal and residential construction."

The date on which Mr. Cole will relinquish his post, which he had held for the past six years, has not yet been decided upon.

Architects, Contractors Both See A Big Year for Building

The nation's organized architects joined with other segments of the construction industry at the turn of the year in predicting prosperity for 1959. The eradication of city slums and the improvement of blighted urban areas everywhere poses a challenge of major concern to the architects, said John N. Richards, F.A.I.A., Toledo, Ohio, president of the American Institute of Architects. Looking into the months ahead, he said the general challenge equals "any we have faced in the long history of architecture."

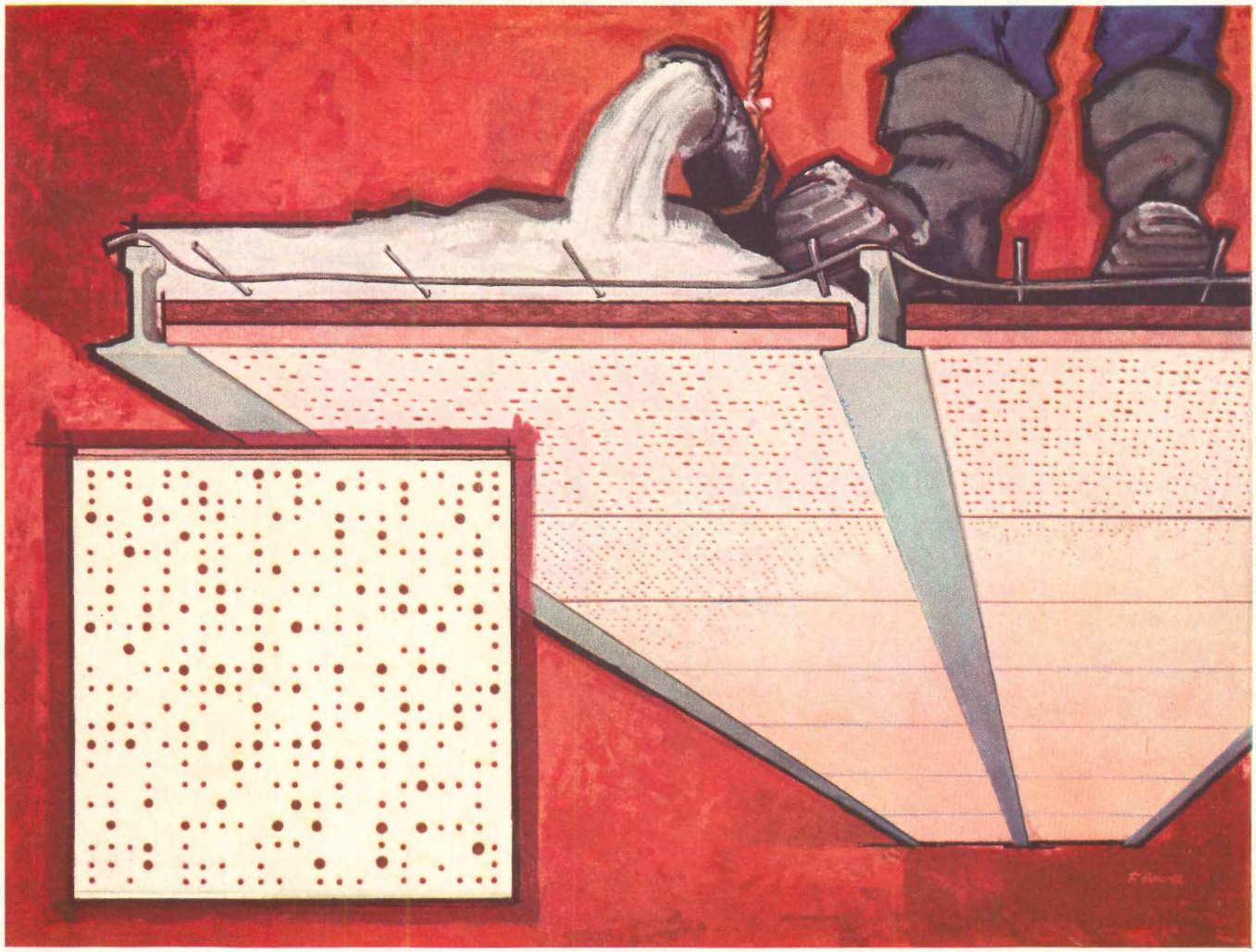
At the same time, the A.I.A. president indicated his belief that unprecedented material opportunity lies ahead for a profession which promises to be in ever-increasing demand. He spoke of forecasts projecting $600 billion worth of construction for the next 10 years and noted that this amount represents more than the present value of all existing private structures in the nation.

In his comments on 1958 and 1959, Edmund R. Purves, F.A.I.A., the Institute's executive director, reviewed the greater cooperative efforts in which A.I.A. has joined with other construction organizations and predicted closer cooperation and understanding in 1959 and the years ahead.

Observed Mr. Purves: "We all experienced the frantic conditions brought about by the tremendous post-war expansion of building. Just keeping up with the phenomenal growth of our own organization and coping with the day-to-day problems created by this new 'bigness' kept us fully occupied. But the realization of our interdependence gradually dawned. Now we are well aware of the necessity of working together for the benefit not only of the entire building industry, but more importantly for the benefit of the public we serve."

While architects looked optimistically to the months ahead, the general contractors were talking of the beginning of a new growth era in construction. William G. Dooly, manager of public relations and publications for the Associated General Contractors of America, Inc., said an expected six per cent increase in dollar volume of new construction in 1959 should signal the start of a new era of construction growth along with a generally prosperous economy. Noting that dollar volume of new construction in 1958 approximated $49 billion, he said that A.G.C. was looking for the figure to approach $52 billion this year.

The six per cent boost that A.G.C. has been predicting would be the largest year-to-year increase in four years and would push construction



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volume far ahead of any past annual record.

The Federal government, meanwhile, said it foresaw a seven per cent jump in new construction volume this year over last. This would push this year's outlay to around $52.3 billion. The government prediction, coming jointly from the Departments of Commerce and Labor, assumed a continuing rise in total output of goods and services.

As for the important housing segment, the government foresaw construction of 1.2 million non-farm units, a slight rise over the 1958 volume.

C.S.I. Opens New Headquarters With Permanent Secretary

The Construction Specifications Institute launched a new era in its brief career early this year with the opening of a headquarters office in Washington, D. C., staffed with its first full-time executive officer. George F. Lamb, widely known for his C.S.I. activities on the West Coast and for his devoted energy in the area of the organization's professional status, was retained by the Board of Directors to serve as executive secretary of the 3200-member Institute (AR, Jan. 1959, p. 28).

With the appointment of the 46-year-old executive officer, C.S.I. let it be known that it was anticipating its third straight year of spectacular membership expansion. Its nearly 3200 members were affiliated in 31 chapters throughout the country, though the organization is only 11 years old. The aim is for 50 chapters and 5000 members by May 31.

Mr. Lamb is a specification writer with broad experience in the construction field. He takes over all administrative functions formerly given to volunteers under the guidance of Harry C. Plummer, director of engineering and technology for the Structural Clay Products Institute, who served as chief administrator of C.S.I. affairs up to January 1.

Mr. Plummer now is serving his fourth term as national secretary-treasurer of C.S.I.; he is also a director of the Institute. He will continue in these positions.

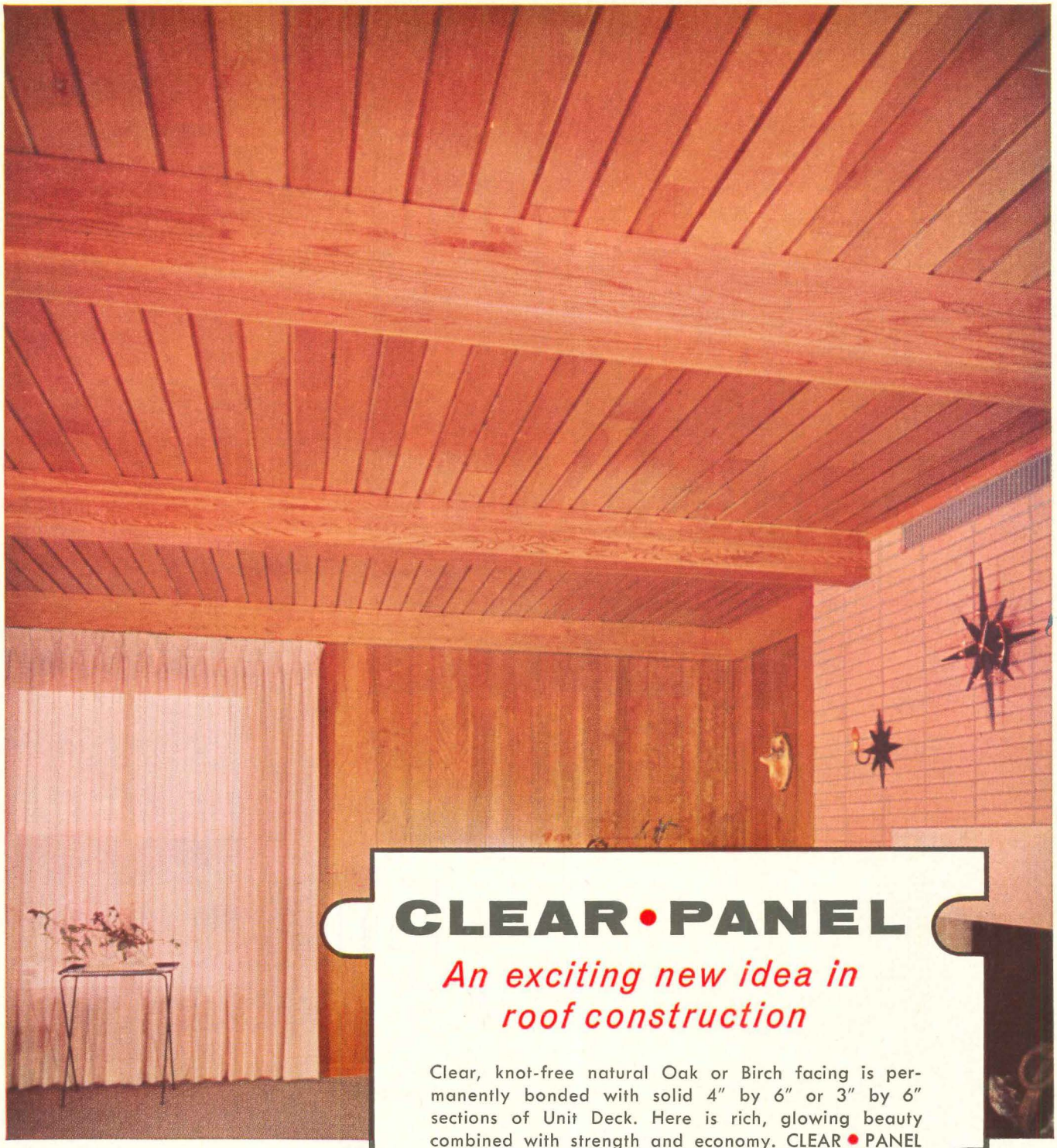
Taking over his new duties, Mr. Lamb relinquished presidency of the Institute's Southern California chapter at Los Angeles.

Chief gains expected for the C.S.I. from establishment of the new office lie in the areas of committee coordination and closer liaison with sister industry groups. More than 50 committees now will have closer supervision with resultant benefits to the local chapters. Communications with such organizations as the American Institute of Architects, the American Standards Association, the American Society of Testing Materials and the Producers' Council, Inc., will improve importantly because one man can give full time to administration of C.S.I. affairs.

Efforts will be directed toward improving the professional status of the specification writer. "I believe that there is a bright future for specifiers and that the success of the C.S.I. will have a considerable bearing on that future," the new executive secretary commented.

Some Federal Cut-Backs Indicated In Pre-Budget Estimates

Even before the President's budget recommendations for fiscal 1960 appeared formally last month, there was assurance that certain construction spending programs were to come under the "hold back" category as far as White House recommendations to Congress were concerned.



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Washington Topics

Secretary of Health, Education, and Welfare Arthur S. Flemming said new requests for Federal construction funds in his department would be less than the amounts appropriated for fiscal 1959, the current period. Hospitals and health centers in the Hill-Burton program, waste treatment plants, medical and dental research facilities and similar aid programs would be included.

It was explained, however, that actual expenditures, swollen by carry-over funds, would probably exceed those of this fiscal year.

The 85th Congress voted $45 million for waste treatment plants, $186.2 million for the Hill-Burton program, and $30 million for health research facilities.

The waste treatment aid program will expire at mid-year unless Congress votes extended authorization and the White House approves. President Eisenhower has said that this program should be discontinued as far as Federal assistance is concerned. The other programs have had their authority continued.

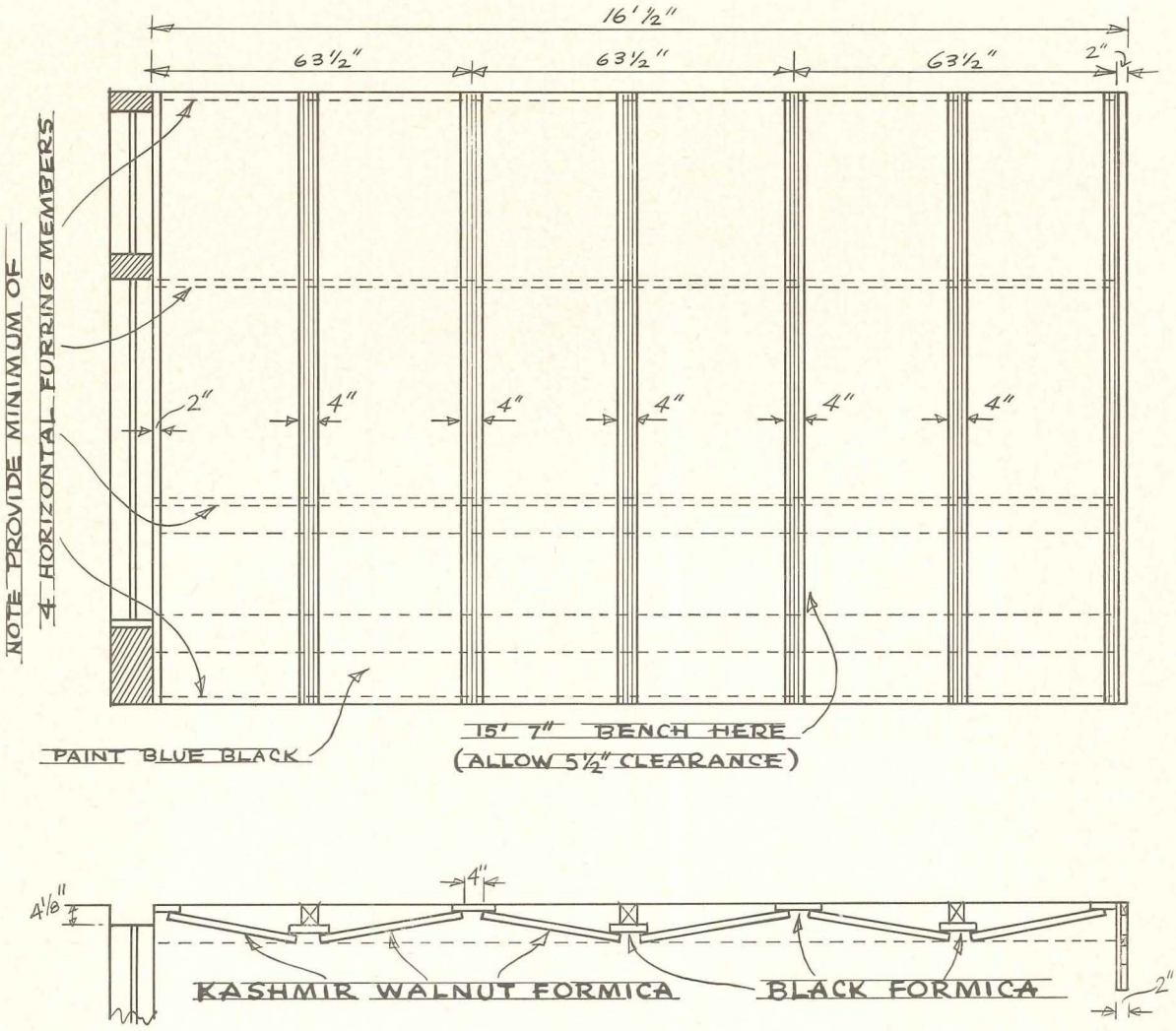
A.I.A. Will Meet in New Orleans Despite Some Objections

The American Institute of Architects at the turn of the year faced a delicate problem in connection with racial segregation and its forthcoming annual convention in New Orleans.

The Institute's Board of Directors had taken note of possible complications at its fall meeting in Clearwater, Fla., in November. It was not until later, however, that individual chapter actions prompted the Institute to issue a statement telling of the firm decision to proceed with preparations at New Orleans as scheduled.

The board considered changing the location of the 1959 meeting to Florida, but decided against this move after hearing the New Orleans chapter spokesmen and talking the problem out thoroughly.

Late last year the Institute headquarters learned that the Washington State Chapter had passed a resolution demanding that the A.I.A. secure assurance from Louisiana's Governor that there would be no discrimination at the New Orleans meetings and protesting that Washington members would not attend without this assurance. The resolution was circulated immediately by the chapter to all A.I.A. groups



This feature wall of Formica was created on angular planes for more interesting design and better acoustics. Full 4′ x 10′ Formica sheets of Kashmir Walnut were shop veneered to ¾ ″ poplar faced plywood. Six sided construction was employed with edge banding of the same as the face and a standard backing sheet.

Shadow lines were established with recessed 4″ sections of black Formica.

The panels were mounted to horizontal furring members with beveled finishing nails through the face.

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throughout the country. It was not long before reactions were evident, the northern California chapters joining in with their own resolutions. New Jersey proposed that the 1959 convention be dropped if it could not be switched to another city and that a business meeting in Washington be substituted for this year's convention.

More than a dozen chapters, of the 130 groups throughout the nation, had expressed an opinion along the lines of the Washington State Chapter by the first of the year.

In the light of this controversy coming out so strongly in some chapter actions, the Octagon in Washington, D. C., issued the following statement:

"The choice of New Orleans, La., as the site for the 1959 convention of the American Institute of Architects was made by the Board of Directors, whose membership represents all parts of the nation, in 1954.

"The site was chosen in good faith by the board prior to the widespread acrimony which now exists in the nation's social affairs. The New Orleans chapter and, indeed, many other architects of the Gulf States Region of the A.I.A. have made elaborate plans over a considerable span of time to serve as host to the profession in its national 1959 meeting.

"It should be clearly understood that the American Institute of Architects, as a professional society devoted to the planning of man's physical environment, has neither jurisdiction or competence in matters of the sort which now represent social controversy. That this controversy now appears to have been introduced into the affairs of the A.I.A. is a matter of sadness and regret.

"This, among other matters of customary concern, was discussed by members of the board at its November 11 meeting held in Clearwater, Fla. The board discussed this unfortunate matter thoroughly, alone and in the company of delegates from the New Orleans Chapter who had asked that they be permitted to make an appearance at the meeting. The decision of the board was that it would serve only to cause still further controversy in the ranks of the professional society to abandon the host city for 1959. Accordingly, it was decided that the convention be held, as scheduled, in New Orleans."

School Building Conference Suggests Cost Measures

A recent conference sponsored by the Interstate School Building Service in Nashville, Tenn., turned up suggestions that use of stock materials and installation of standardized plumbing, lighting, hardware and other features could shave school construction costs.

Reporting on the three-day conference, R. N. Finchum, planning specialist in the U. S. Office of Education, said it was concluded that these procedures could effect considerable cost savings:

1. Installation of structural tile or light aggregate concrete blocks with glazed finish up to the wainscot height in corridors in lieu of more expensive ceramic tile.
2. Elimination of all plaster under all chalk and bulletin boards.
3. Minimum use of expensive automatic mechanical devices.

Mr. Finchum said the conference found that to hold the average cost to only $10.21 per sq ft for 69 buildings studied, school officials had made certain school plant construction economies through planning, design, materials selection and administration.

continued on page 316

Shown above is a reception room created with CURON Wall Covering by designer Marvin Culbreth. At left is one of the series of special silk-screened CURON panels.

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Construction Cost Indexes

Presented by Clyde Shute, Director of Statistical Policy, Construction News Div., F. W. Dodge Corp., from data compiled by E. H. Boeckh & Assoc. Inc.

Labor and Materials: U.S. average 1926-1929=100

NEW YORK

PERIOD	RESIDENTIAL Brick	RESIDENTIAL Frame	APTS., HOTELS, OFFICE BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Steel
1930	127.0	126.7	124.1	128.0	123.6
1935	93.8	91.3	104.7	108.5	105.5
1939	123.5	122.4	130.7	133.4	130.1
1946	181.8	182.4	177.2	179.0	174.8
1947	219.3	222.0	207.6	207.5	203.8
1948	250.1	251.6	239.4	242.2	235.6
1949	243.7	240.8	242.8	246.6	240.0
1950	256.2	254.5	249.5	251.5	248.0
1951	273.2	271.3	263.7	274.9	271.8
1952	278.2	274.8	271.9	265.2	262.2
1953	281.3	277.2	281.0	286.0	282.0
1954	285.0	278.2	293.0	300.6	295.4
1955	293.1	286.0	300.0	308.3	302.4
1956	310.8	302.2	320.1	328.6	324.5
1957	318.5	308.3	333.1	345.2	339.8
September 1958	335.1	320.7	357.7	377.4	366.7
October 1958	335.9	321.5	358.7	378.2	367.5
November 1958	335.9	321.5	358.7	378.2	367.5
	% increase over 1939				
November 1958	172.0	162.7	174.4	183.5	182.5

ATLANTA

PERIOD	RESIDENTIAL Brick	RESIDENTIAL Frame	APTS., HOTELS, OFFICE BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Concrete	COMMERCIAL AND FACTORY BLDGS. Brick and Steel
1930	82.1	80.9	84.5	86.1	83.6
1935	72.3	67.9	84.0	87.1	85.1
1939	86.3	83.1	95.1	97.4	94.7
1946	148.1	149.2	136.8	136.4	135.1
1947	180.4	184.0	158.1	157.1	158.0
1948	199.2	202.5	178.8	178.8	178.8
1949	189.3	189.9	180.6	180.8	177.5
1950	194.3	196.2	185.4	183.7	185.0
1951	212.8	214.6	204.2	202.8	205.0
1952	218.8	221.0	212.8	210.1	214.3
1953	223.0	224.6	221.3	221.8	223.0
1954	219.6	219.1	233.5	225.2	225.4
1955	225.3	225.1	229.0	231.5	231.8
1956	237.2	235.7	241.7	244.4	246.4
1957	241.2	239.0	248.7	252.1	254.7
September 1958	245.3	240.8	257.8	264.7	263.9
October 1958	246.5	242.0	259.3	265.9	265.1
November 1958	246.5	242.0	259.3	265.9	265.1
	% increase over 1939				
November 1958	185.6	191.2	172.7	173.0	179.9

ST. LOUIS

1930	108.9	108.3	112.4	115.3	111.3
1935	95.1	90.1	104.1	108.3	105.4
1939	110.2	107.0	118.7	119.8	119.0
1946	167.1	167.4	159.1	161.1	158.1
1947	202.4	203.8	183.9	184.2	184.0
1948	227.9	231.2	207.7	210.0	208.1
1949	221.4	220.7	212.8	215.7	213.6
1950	232.8	230.7	221.9	225.3	222.8
1951	252.0	248.3	238.5	240.9	239.0
1952	259.1	253.2	249.7	255.0	249.6
1953	263.4	256.4	259.0	267.0	259.2
1954	266.6	260.2	263.7	273.3	266.2
1955	273.3	266.5	272.2	281.3	276.5
1956	288.7	280.3	287.9	299.2	293.3
1957	292.0	283.4	295.2	307.1	302.9
September 1958	298.3	289.2	306.4	320.2	315.5
October 1958	298.9	289.8	307.2	320.6	316.3
November 1958	298.9	289.8	307.2	320.6	316.3
	% increase over 1939				
November 1958	171.2	170.8	158.8	167.6	165.8

SAN FRANCISCO

1930	90.8	86.8	100.6	104.9	100.4
1935	89.5	84.5	96.4	103.7	99.7
1939	105.6	99.3	117.4	121.9	116.5
1946	159.7	157.5	157.9	159.3	160.0
1947	193.1	191.6	183.7	186.8	186.9
1948	218.9	216.6	208.3	214.7	211.1
1949	213.0	207.1	214.0	219.8	216.1
1950	227.0	223.1	222.4	224.5	222.6
1951	245.2	240.4	239.6	243.1	243.1
1952	250.2	245.0	245.6	248.7	249.6
1953	255.2	257.2	256.6	261.0	259.7
1954	257.4	249.2	264.1	272.5	267.2
1955	268.0	259.0	275.0	284.4	279.6
1956	279.0	270.0	288.9	298.6	295.8
1957	286.3	274.4	302.9	315.2	310.7
September 1958	291.4	276.5	313.3	329.2	322.8
October 1958	292.0	277.1	314.2	329.7	323.3
November 1958	292.0	277.1	315.1	330.2	325.0
	% increase over 1939				
November 1958	176.5	179.0	168.4	170.9	179.0

Cost comparisons, as percentage differences, for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:

index for city A = 110
index for city B = 95

(both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95} = 0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926-29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.

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Required Reading

A Thorough and Comprehensive Book on the Curtain Wall

THE CONTEMPORARY CURTAIN WALL: ITS DESIGN, FABRICATION, AND ERECTION. *By William Dudley Hunt, Jr., A.I.A. F. W. Dodge Corp., 119 W. 40th St., New York 18. 454 pp., illus. $12.75.*

BY JOHN HANCOCK CALLENDER, A.I.A.

Almost 30 years ago in this magazine (October 1929) Robert L. Davison stated that insulated metal panels were the only rational solution to the problem of the non-structural or curtain wall. Twenty years later (February 1948) Davison was still maintaining the same position, but the "inevitable" wall still appeared to be as far from realization as it had been in 1929. Then, with a suddenness that is rare in building technology, curtain walls appeared. Not since the advent of the skyscraper has a new building development met with such instantaneous popularity. In the last five years, the curtain wall has come into such universal acceptance that one recent building in New York attracted some attention by *not* using such a wall.

When technological developments come this fast, books inevitably lag behind. Indeed, the periodical press has had all it can do simply to report current developments. Thus there has not until now been a thorough and comprehensive technical book on the curtain wall, although such a book was badly needed.

The Contemporary Curtain Wall by William Dudley Hunt, Jr., a present RECORD editor, meets this need more than adequately. It covers every aspect of the complex subject with gratifying thoroughness. The book is well organized, clearly written, and well illustrated with both photographs and drawings. The selection of photographs is especially commendable and includes such relatively recent examples as the Seagram Building in New York and 3325 Wilshire in Los Angeles.

The book begins logically with a consideration of the *functions* the curtain wall must perform. It must keep rain out of the building, of course, and it must resist the pressure of the strongest wind that is likely to be encountered. The curtain wall itself should not burn and, in the event of a fire, it should not fall from the building. It should keep heat in the building in the winter and keep it out in the summer. It should prevent condensation from occurring on the interior surface of the wall or within the wall. And, in most cases, it must provide natural light and view for the occupants of the building—often ventilation, too.

The *elements* of which the curtain wall is composed are taken up one by one: frame, facing, insulation, windows, glass, sunshades, joints, sealers, fasteners, fireproofing, sound insulation. The *materials* used for curtain walls are then discussed in detail; this section constitutes the major portion of the book. Included are not only the metals, porcelain enamel, and glass, but also plastics, concrete, ceramic veneer, stone, and composite panels employing several materials. The parts are then assembled into a whole in a chapter on *methods*, and a final chapter attempts to peer into the future. After mentioning such possibilities as syntactic resins, crystalline glass, foamed aluminum, translucent metals, electroluminescence, and thermoelectric heating and cooling, the author turns to the problem of the future of architecture and gives serious consideration to the effect that the expected increase in the standardization of curtain wall components may have upon the age-old architectural tug of war between uniformity and variety.

A generous appendix includes, among other useful data, an exhaustive list of standards and specifications, a list of pertinent trade associations, professional societies and government agencies, and a lengthy bibliography.

Art: General, Modern, Italian

THE PRAEGER PICTURE ENCYCLOPEDIA OF ART. *Frederick A. Praeger, Inc., 15 W. 47th St., New York 36. 584 pp., illus. $17.50.*

MODERN ART: A PICTORIAL ANTHOLOGY. *Edited by Charles McCurdy. Macmillan Co., 60 Fifth Ave., New York 11. 489 pp., illus. $9.50.*

ART AND ARCHITECTURE IN ITALY: 1600 TO 1750. *By Rudolf Wittkower. Penguin Books, Inc., 3300 Clipper Mill Rd., Baltimore 11. 428 pp., plus 192 plates. $12.50.*

The Praeger book is the result of an international collaboration of art scholars and the editorial staffs of Georg Westermann Verlag, Germany, Thames and Hudson, London, and the Praeger firm in New York. It covers painting, sculpture, architecture, and crafts through the ages to the present and includes 192 color plates and 416 black-and-white illustrations. Sections on architecture are interspersed throughout the book, which consists alternately of general essays and alphabetical reference sections. There is a complete index. This is a beautiful and invaluable volume.

The book, edited by Mr. McCurdy of the Museum of Modern Art Library, is divided into six sections, each containing an essay by an expert and many illustrations (none, however, in color). The topics are considered from about 1850 to the present—except painting in the United States, which is started in 1885, and painting in Latin America, in 1925. Arthur Drexler, director of the Museum of Modern Art's Department of Architecture and Design, contributes the 110-page "Architecture: An International Survey, 1851-1956." The other three chapters treat painting in Europe, sculpture, and design. There are an excellent bibliography and a glossary.

Professor Wittkower's work, one of the admirable Pelican History of Art series, maintains the comprehensive and authoritative standards already set by other volumes in the series. The text is followed by detailed notes and a bibliography, the plates (black and white), and a good index.

Multiple-Dwelling Architecture

APARTMENTS AND DORMITORIES. *By the Editors of Architectural Record. F. W. Dodge Corp., 119 W. 40th St., New York 18. 232 pp., illus. $8.95.*

The 53 apartments and dormitories presented in this book should have a wide field of interest because of their variety. In size, the projects range from a two-family house to the Vallingby section of Stockholm, planned for 80,000 people; geographically, they are in many parts of the U.S.A. and in Europe, South America, and Japan as well. They were built between 1950 and 1958.

The initial section of the book contains articles on economic and sociological problems and trends in hous-

continued on page 64

TERRAZZO . . . the floor that gives "lifetime" wear

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Required Reading

Multiple Dwellings . . .

ing and on technical aspects of apartment construction, such as heating, partition walls, vertical transportation, and special cost-cutting techniques. The projects are classified according to size and type under the following headings: apartments: community-scale projects, large projects, small projects; campus dormitories and apartments. There are 350 halftones and line cuts.

Emergency Surgery Was Necessary

NAPOLEON III AND THE REBUILDING OF PARIS. *By David H. Pinkney. Princeton University Press, Princeton, N. J. 245 pp., illus. $6.*

This is an account of two energetic men, Napoleon III of France and the Baron Haussmann, and of how during two decades they applied their energies to a city. They found Paris an overgrown medieval town with a million people, slum-infested, ill supplied with water, congested with sewage, and choked with traffic. They silenced the conservative and the timid, turned finance into prestidigitation, and pushed through a program of public works which made Paris a model for the whole world for the better part of a century. Professor Pinkney is, to say the least, enthusiastic about their accomplishments. He weaves a fascinating account of the projects, the men who conceived them, the men who left the farms of central France to build them, the financial magic tricks that made them possible, and the men of the opposition who exposed the finances, routed Haussmann, and stopped the show. As the reanimation of an era, the story is a complete success. As an account of a city, street by street, it is a success rather heavily qualified by the absence of adequate maps.

It is probably captious to complain that this study, which does so well what it sets out to do, does not end up by illuminating our own problems. Washington has a sewage crisis which compares with the one Haussmann faced in Paris; New York's traffic tangle is as urgently in need of drastic measures as Haussmann's Parisian one was; and redeveloped Philadelphia's post-blitzkrieg look, with its frequent loss of comfortable human scale, poses problems which beset Haussmann, too. But Haussmann's solutions, bold as they were, do not emerge as much help to us because they do not emerge as the product of any real

continued on page 374

SHEPLEY BULFINCH RICHARDSON & ABBOTT

The firm of Shepley, Bulfinch, Richardson and Abbott has lived with its own architecture for eighty-six years. Since the days of Henry Hobson Richardson its founder, the firm has done work for great governmental, medical, commercial and academic institutions with even longer life spans. These clients who must also live a long time with their architecture, resist creative innovation for its own sake in the fear that the new and untested will not wear well either as art, or in materials and detail. They also feel that buildings which are too original, even if good in themselves, disturb the harmonies of older building groups. These imperatives are met with sympathy by Shepley, Bulfinch, Richardson and Abbott. They have practiced long enough to have seen taste change, and materials and detailing fail or succeed. They too are against introducing new buildings in an alien spirit to harmonious groups, partly since successive generations of their own firm have often planned these groups and added buildings to them through the years. It is clear that these demands, self-imposed and client-imposed, are difficult to solve in contemporary terms, but this is what the firm is trying to do. Since Henry R. Shepley has spoken of this problem often and well, a selection has been made from his speeches and writings.

"To use contemporary architecture adjacent to Classic or Georgian or any of the great evolved styles successfully, it has to be done in a wholesome way, without clichés or mannerisms, and generally with a certain richness of pattern; and the detailing has to be distinguished, and the materials appropriate and sound . . .

"I believe it is important that the unity of the campus be based on the scale and spacing of buildings. If materials and color are consistently and carefully selected with reference to the adjoining buildings, and applied to a structure which has been thoughtfully organized in plan and elevation, scale of open-

ings, position of rooflines and building heights, to relate to the corresponding elements of the best of the nearby campus buildings, a contemporary building will be produced which is in complete harmony with the atmosphere and architecture adjacent to it . . .

"Our philosophy is rooted in the fact that a college or university is a growing concern and its buildings should follow the history of growth and evolution. Well known examples of this tradition over long periods of development can be observed in many fine campuses throughout the world, Oxford and Cambridge Universities being outstanding in this respect . . .

"In working for an institution with a distinguished historical background and buildings representative of different styles and times, the architect has a special professional responsibility. He cannot go to extremes in experimenting with novel forms and fads but must discriminate thoughtfully between the different philosophies and phases of contemporary architecture to be sure he uses only those that will stand the test of time. Furthermore it is not proper to subject these institutions to the high obsolescence factor of experimental structures, or those that cater to passing fashion. Much of this type of modern has aged poorly and is soon outmoded.

"If a building is too far ahead of its time there is no yardstick by which its permanent worth can be measured. It is in effect starting from scratch. Later when evolution catches up with it, its crudeness and lack of quality become forcibly apparent.

"An architectural revolution was certainly necessary, but when success was achieved most of the leaders of the profession, instead of consolidating their gains and weighing and evaluating the various revolutionary philosophies, and distilling what was permanent, continued their preoccupation with inventive originality. In their excitement, they lost sight of the fact that really great architecture cannot be achieved by revolution but must in the end be the result of a process of evolution where the excellence and quality of each step can be compared with the step before and from there back to the great things of the past. Excellence is not spectacular or novel or fashionable but it remains, and there is no substitute for it.

"The test of time is actually somewhat fourth-dimensional, which makes it difficult, but if we figuratively lift our eyes and try to imagine our building fourth-dimensionally, that is, see it in its relation to past and future as well as present, we may find we should break one of our cherished rules of technocratic or aesthetic morality and as artists liberate it from being too grim an example of the Strong Statement or the Pure Solution. After all, our cherished rules are not static, but are always changing as our architecture develops, and if we tie ourselves to a formula we very soon find we are left behind and on the defensive in the onrush of new concepts that are flooding in on us from all sides."

H. H. Richardson 1873–1886

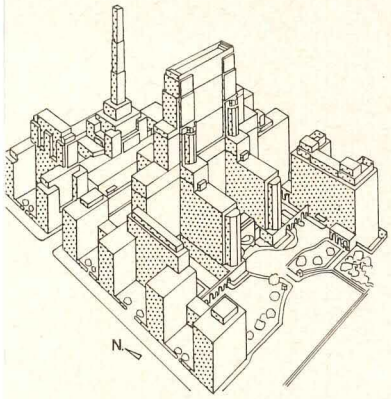
Shepley, Rutan & Coolidge 1886–1915

Coolidge & Shattuck 1915–1924

Coolidge, Shepley, Bulfinch & Abbott 1924–1952

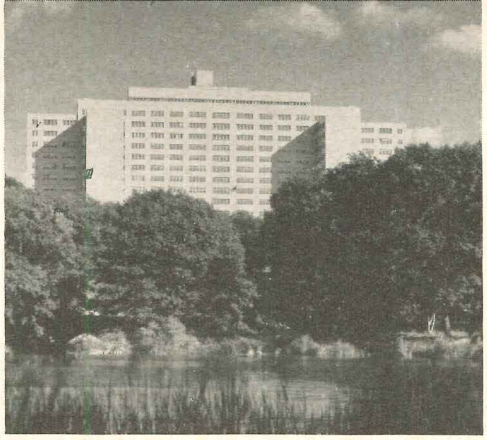
Shepley, Bulfinch, Richardson & Abbott 1952–

SCOPE: Illustrations suggest the nature and size of Shepley, Bulfinch, Richardson & Abbott commissions. Buildings shown in photographs are typical of the firm's transition period which began in the thirties, approximately, after many years devoted to the revival of historical styles. The manner of design of this period just precedes the development of the firm's present approach, shown on the following pages.



New York Hospital

HOSPITAL WORK

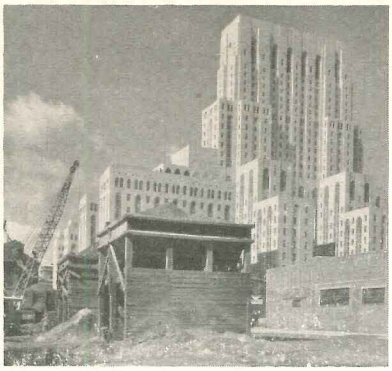


Haskell

Rhode Island Hospital

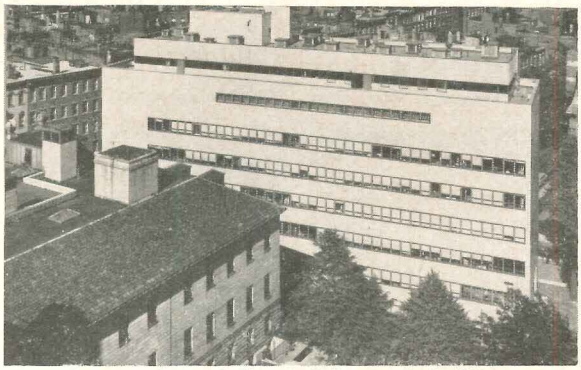
© Ezra Stoller

Veterans Administration Hospital, Boston



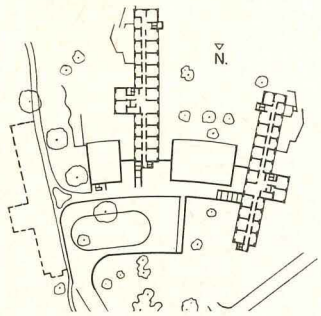
Gottscho-Schleisner

New York Hospital and
Cornell Medical Center



© Ezra Stoller

Massachusetts General Hospital Research Building

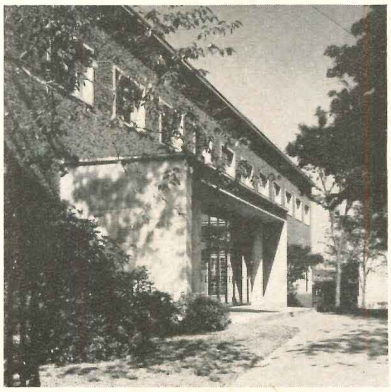


Dormitory Plan, Wellesley College

ACADEMIC WORK

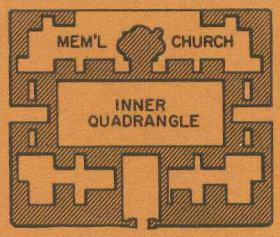
Gottscho-Schleisner

Northeastern University, Boston, Mass.

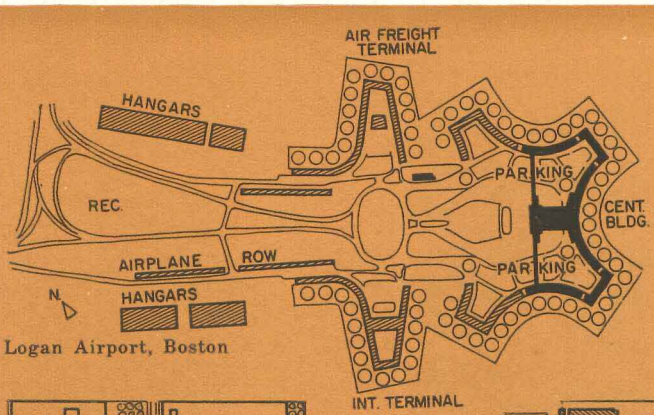


Paul S. Davis

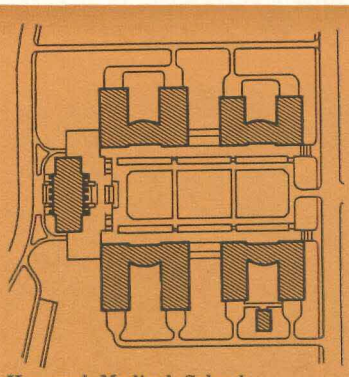
Lamont Library, Harvard



Stanford University, California

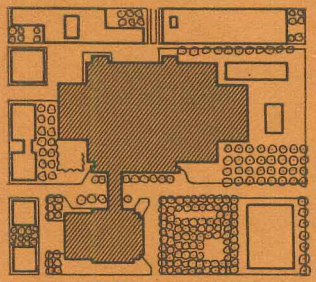


Logan Airport, Boston

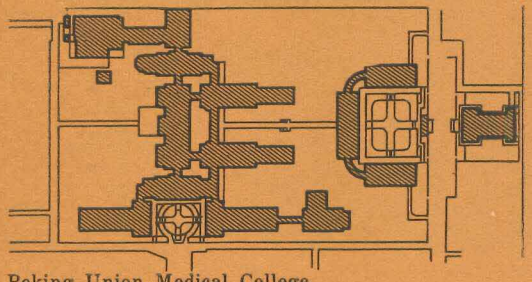


Harvard Medical School

MASTER PLANNING

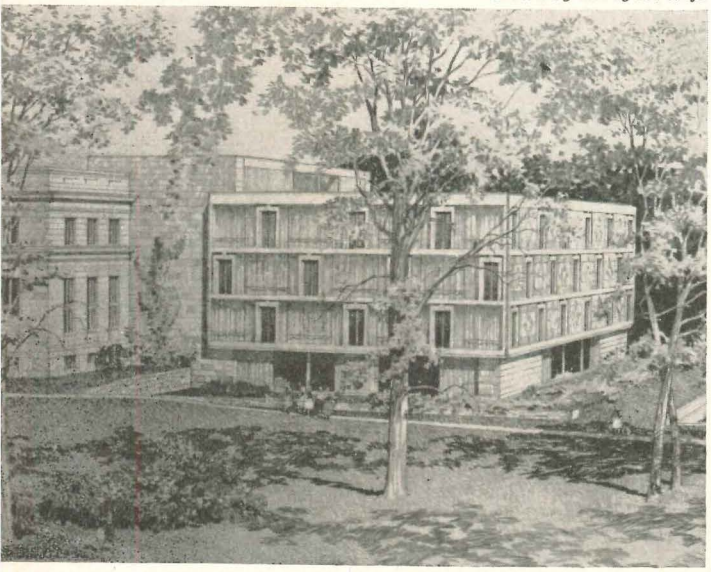


County of Los Angeles
Auditorium and Music Center

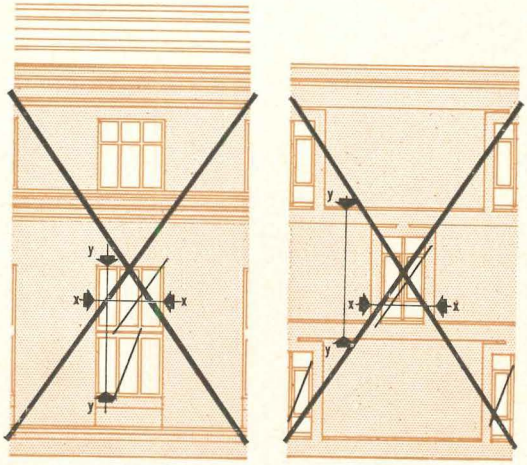


Peking Union Medical College

drawn by Harry N. Wijk

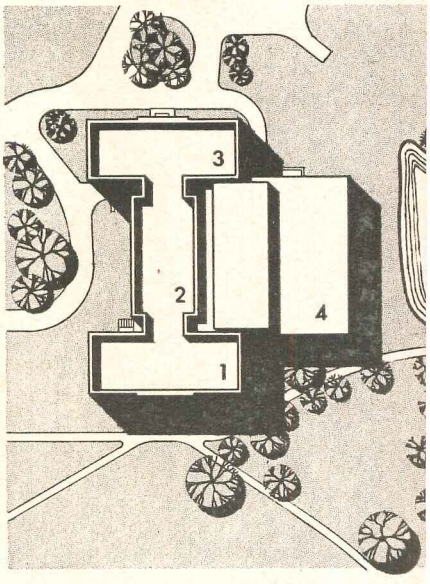


Preliminary rendering showing connecting element



WELLESLEY COLLEGE LIBRARY

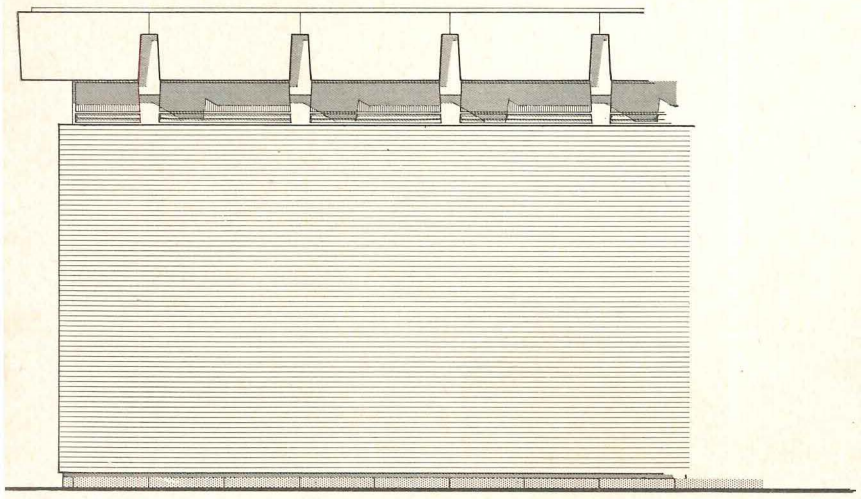
The original library (1) designed by Shepley, Rutan & Coolidge, was later enlarged by the same firm (2). Another architectural office balanced the composition (3) and now the present firm has expanded the building once more while completely revamping the library facilities (4). As the diagram at the left shows, proportions of bays of the new and old façades are identical, the horizontal bands of the new façade are the same overall depth as the windows of the old, and the overall width of windows is the same. The new façades adapt to orientation in the amount of glass wall used but the consistent pattern of windows and horizontal bands on all three sides imposes the concept of similar elevations on the new structure, as on the older building.



CONTRACTOR: *George A. Fuller*
MECHANICAL ENGINEERS: *Stressenger, Adams, Maguire and Reidy*
ELECTRICAL ENGINEERS: *Thompson Engineering*

Preliminary study of central court

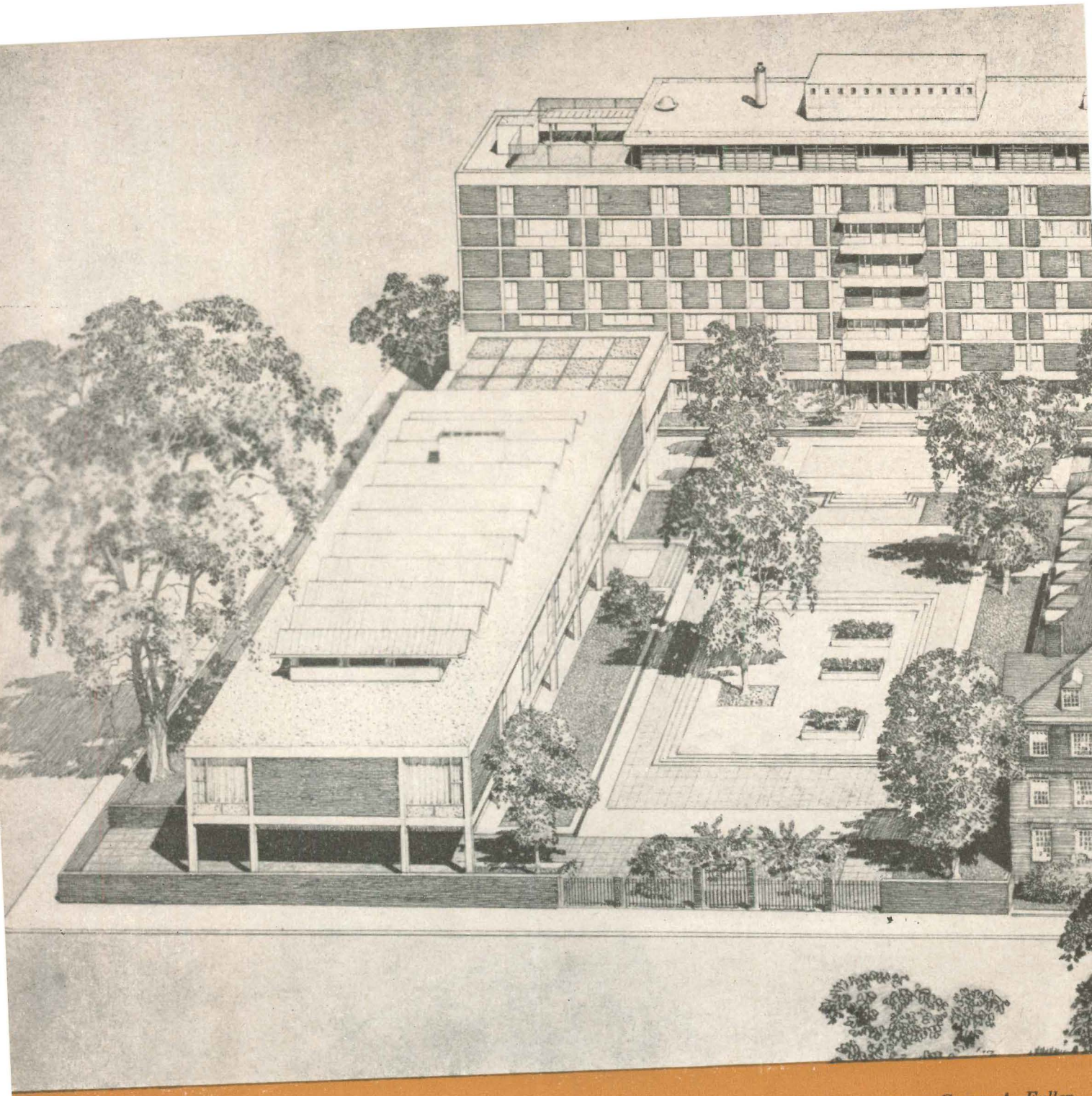
MUSIC BUILDING FOR PHILLIPS EXETER ACADEMY



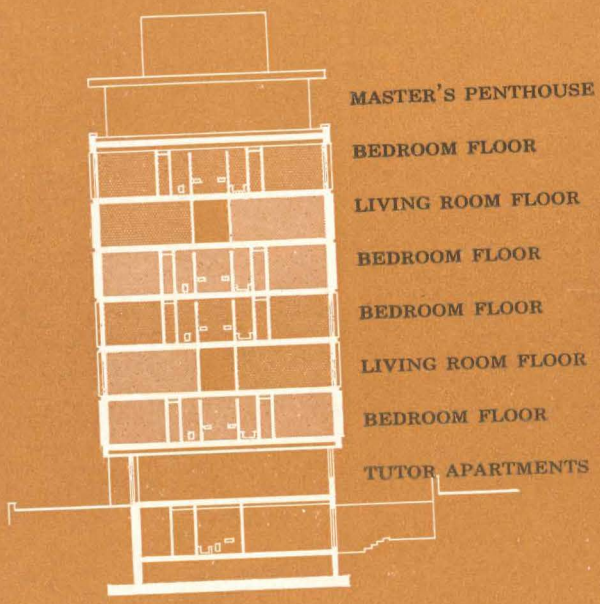
This structure, designed to house the Academy's Music Department, will be the first contemporary building in a Georgian atmosphere. To reduce the transmission of sound to neighboring areas, glass is kept to a minimum and the focus of the building becomes the skylit central court which serves as the core of a "world of music". All major rooms open visually to this court which can be extended by means of sliding glass doors to the exterior terraces. The major portion of the exterior wall is water struck brick resting on a "toe space" of dark granite. The unifying and dominating white marble cornice is designed in relation to the Georgian cornices.

THE HARVARD WORK

Map of Harvard University. Black rectangles are buildings done by the firm through its years of association with Harvard; the circles indicate locations of current work recently completed, under construction or in project form. 1. International Legal Studies Building 2. Harvard-Yenching Institute 3. Non-Resident House 4. Quincy House 5. Leverett House

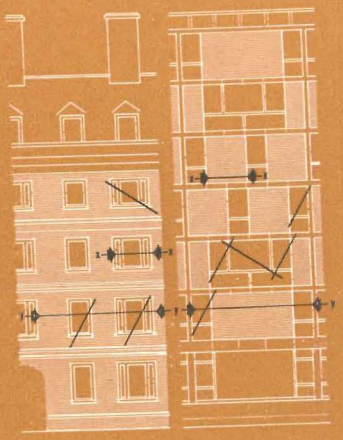


CONTRACTOR: *George A. Fuller*
STRUCTURAL ENGINEER: *Abraham Woolf*
MECHANICAL ENGINEERS: *Merrill Associates*
ELECTRICAL ENGINEERS: *Thompson Engineering Company*
LANDSCAPE ARCHITECTS: *Hideo Sasaki and Associates*
LIGHTING CONSULTANT: *Richard Kelly*



In an ingenious "skip-stop" scheme of staggered living and bedroom areas, two corridors, one on the third and the other on the sixth floor, serve six floors. Both sides of the corridor open onto living rooms. Each living room has an interior stair which leads either up or down to a four bedroom suite

drawn by Harry N. Wijk

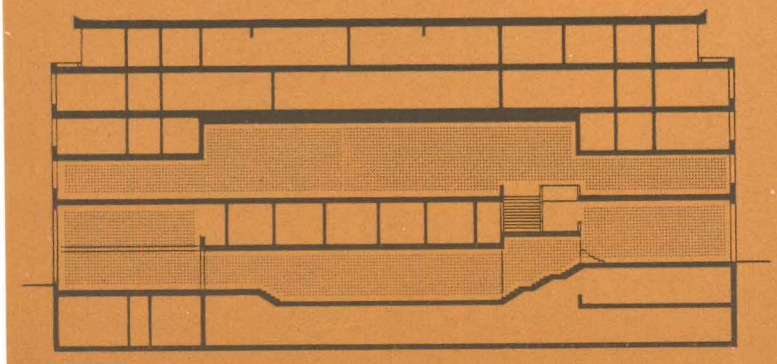


QUINCY HOUSE

In order to consolidate complete House facilities on one block, Harvard's existing Mather Hall was separated from Leverett House and incorporated in the first new residence House to be built since the thirties. It will be the eighth great undergraduate residence structure at Harvard. Students are accommodated mainly in four-man suites, Mather having singles and doubles. The penthouse is the House Master's residence; tutor's apartments, guest suites and House offices are on the ground floor. Tutorial suites are on all floors. A new Commons Building (low element at left in drawing) houses the kitchen, main dining hall, grill, junior and senior common rooms and tutorial offices shared by all members of the House. A smaller, separate structure is the library.

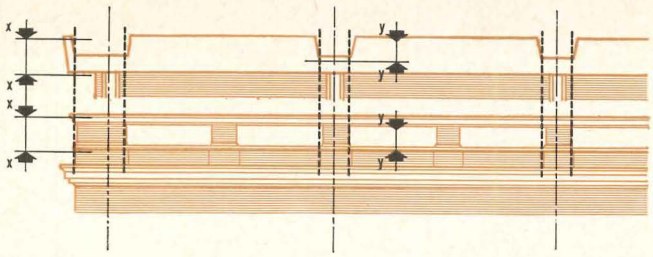
The width of bays in Quincy House correspond to a unit of window spacing in Mather Hall. The wider windows at Mather control the width of the brick panels on Quincy. Proportions of both the wide and narrow windows of the Georgian building are repeated in the fenestration of its modern neighbor

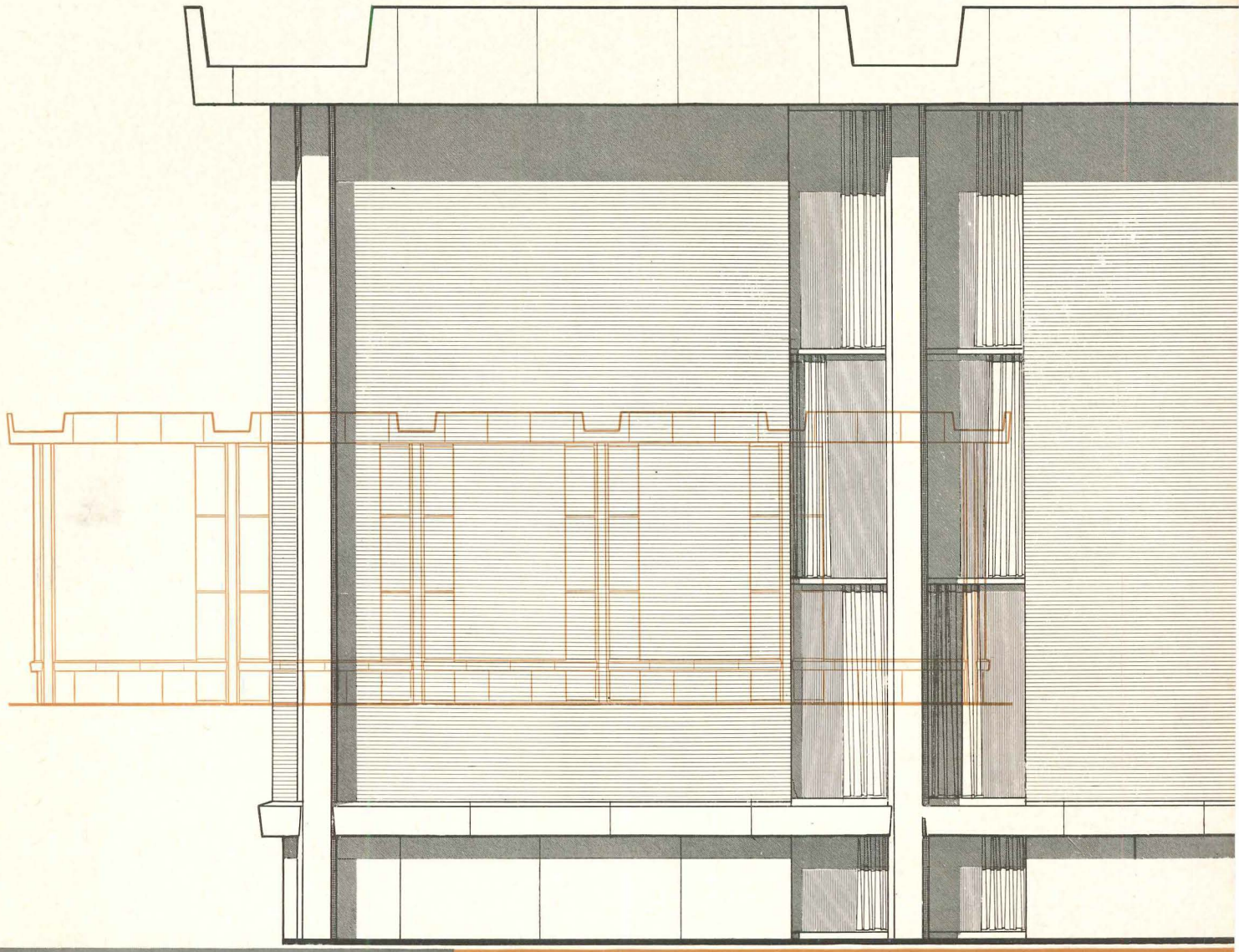
drawn by Harry N. Wijk

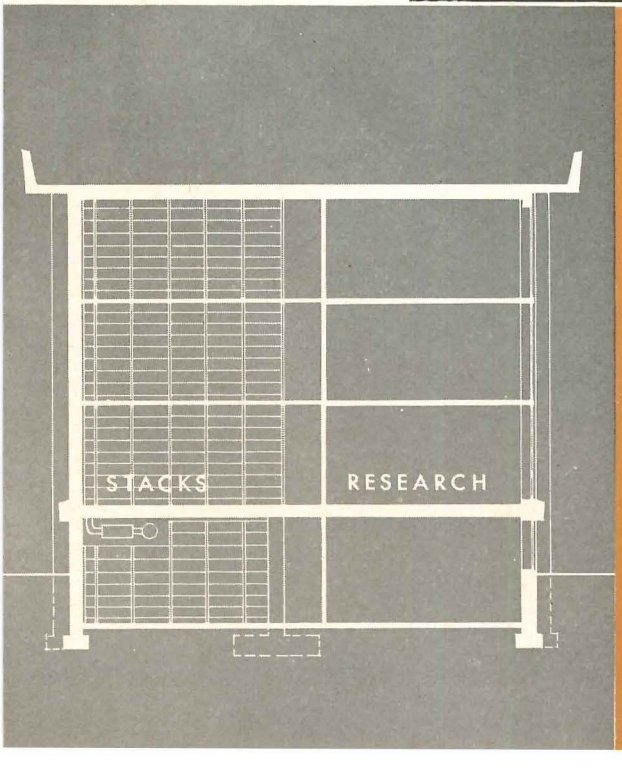


PROPOSED NON-RESIDENT HOUSE

The general shape of the building was dictated by the most favorable interpretation of the zoning envelope in terms of cubage. Designed for Harvard students who live at home, the building provides all the common facilities found in the typical House plan: kitchen, dining hall, grill, library, common rooms, House Master's residence, house and tutorial offices. Section at left shows relation of second floor dining hall to ground floor common rooms. The plan provides a few suites and single rooms for transients.



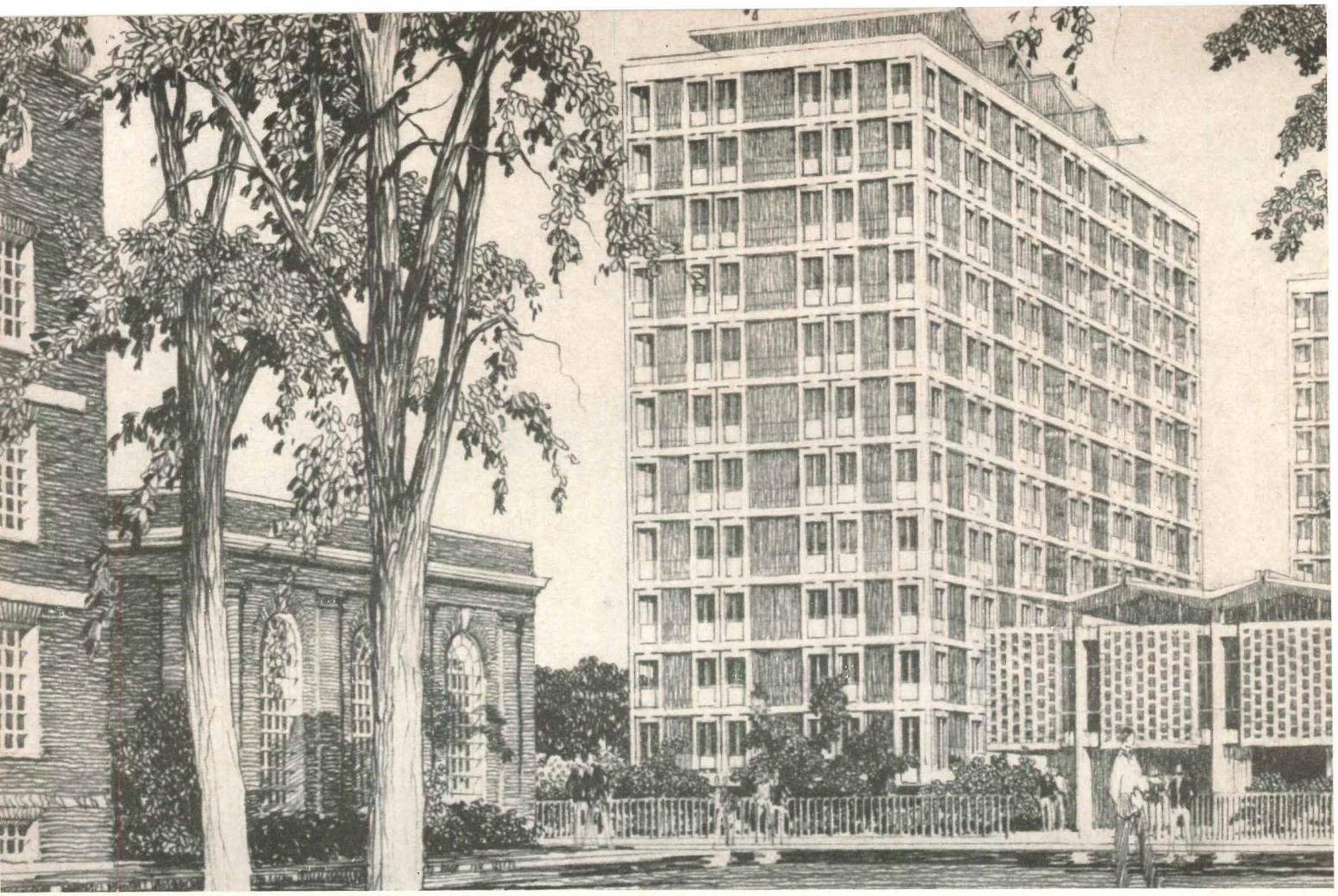


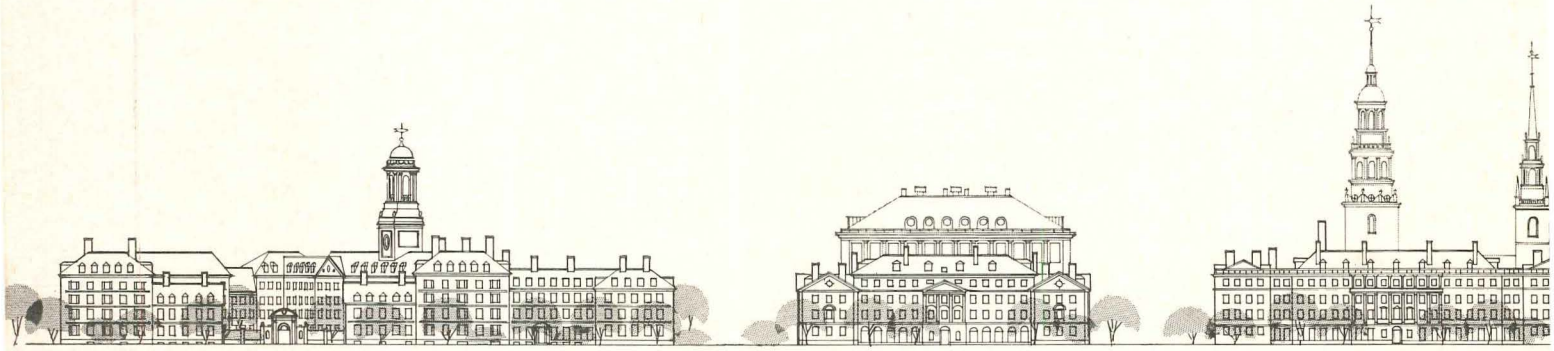


HARVARD -YENCHING LIBRARY

CONTRACTOR:
George A. Fuller
STRUCTURAL ENGINEERS:
Linenthal and Becker
MECHANICAL ENGINEER:
Leo J. Crowley
ELECTRICAL ENGINEERS:
Thompson Engineering

This building houses, in a carefully controlled climate, an invaluable and irreplaceable collection of ancient and modern literature of the Far East. Because of strict humidity and temperature requirements, the stack areas are windowless and the small studies for research have only narrow floor to ceiling vision strips. The elevation is a direct expression of this section, with its heavy first floor slab carrying all three floors of self-supporting steel stacks. The exposed vertical fins give needed stiffness to the columns over their three story height. The roof slab is turned up at the edges to become a cornice which is notched over the column to express its non-structural nature. As the diagram at the top of the page indicates, the cornice is also carefully related to the adjacent building to which this structure is linked.





Eliot House

Winthrop House: Gore Hall
Indoor Athletic Building

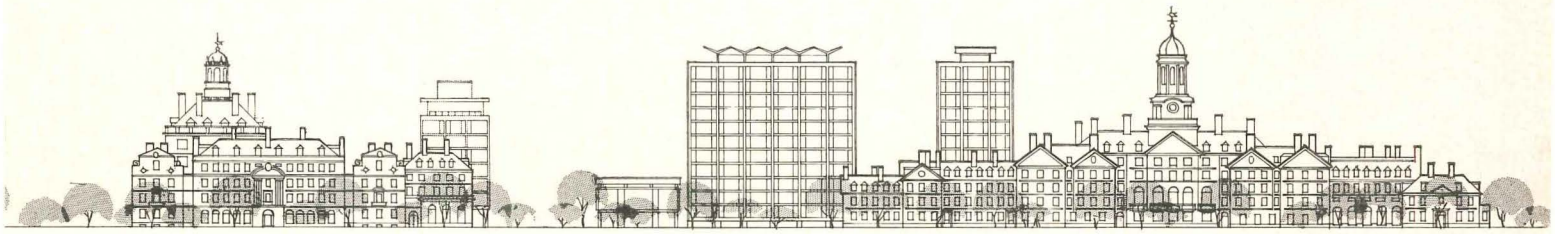
Winthrop House: Standish Ho
Lowell House
Memorial Church

"the gayest and loveliest urban profile any American city can show" LEWIS MUMFORD

ADDITION TO LEVERETT HOUSE

Harvard authorities have always considered 350 students the desirable maximum for any one House. In this case, however, the architects were asked to design an addition to McKinlock Hall (capacity 168, mostly in large suites) to house 282 students in single and double rooms. Lack of land and potential views dictated the final solution which calls for 2 towers, 11 floors high. Accommodations are provided for a resident senior tutor, guests and other tutors. Offices and meeting rooms occupy the ground floors. Two-story structure in foreground of perspective is an early study of the House library.

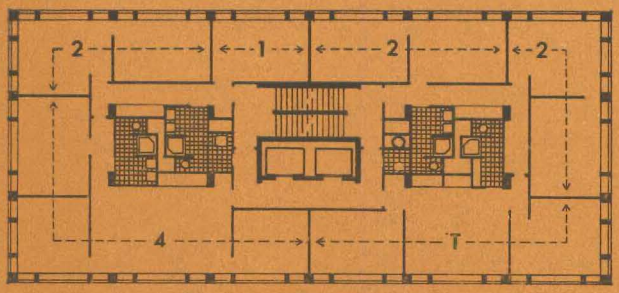
drawn by Harry N. Wijk

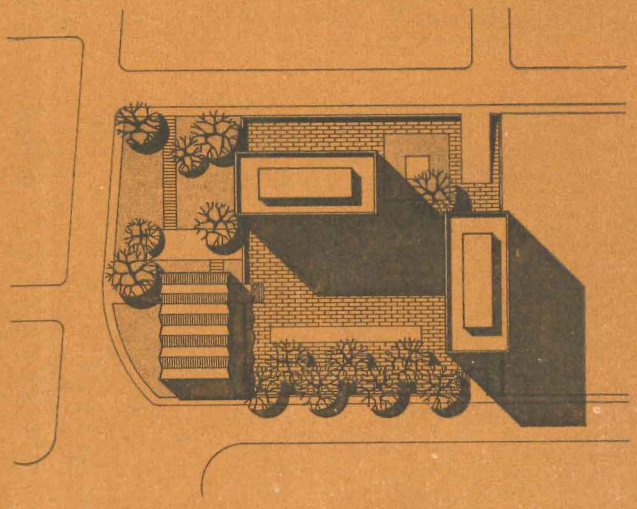


Leverett House: McKinlock Hall
Adams House
Quincy House

Leverett House Addition

Dunster House



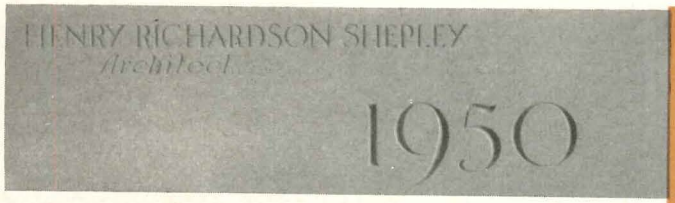


CONTRACTOR: *George A. Fuller*
STRUCTURAL ENGINEER: *Abraham Woolf*
MECHANICAL ENGINEERS: *Merritt Associates*
ELECTRICAL ENGINEERS: *Thompson Engineering Company*
LANDSCAPE ARCHITECTS: *Sasaki and Walker*

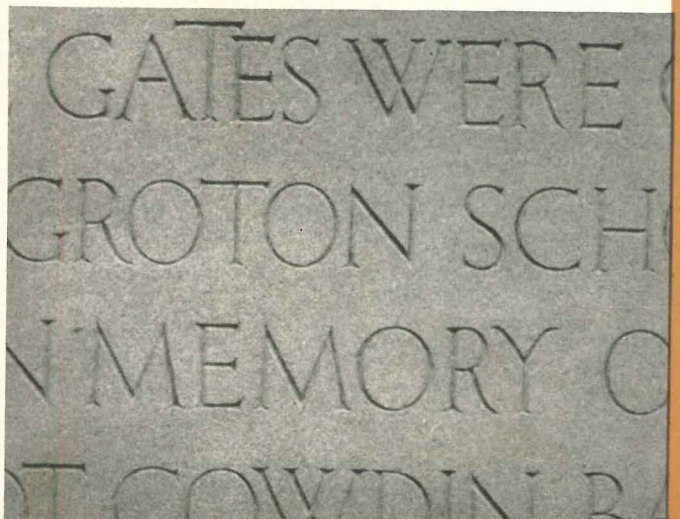
A SEARCH FOR RICHNESS

Shepley, Bulfinch, Richardson and Abbott had long been concerned in their traditional work with the enrichment of surface. They have used materials decoratively in the recent past as well (note their use of brick over the windows of the New York Hospital built in the early thirties) and continue to do so, as the treatment of limestone on the proposed façade of the Leverett House Library shows.

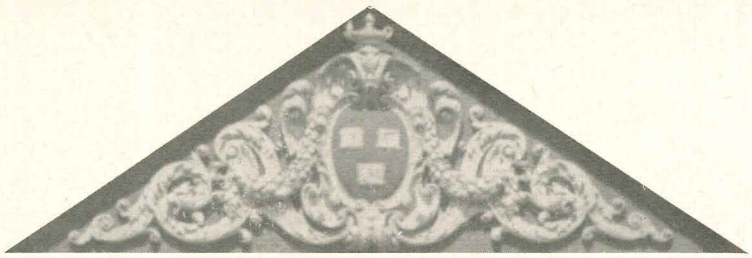
The rules of ornamentation intrinsic to the various historical styles in which the firm built were skillfully and imaginatively followed as can be seen in the detail of the Dunster House pediment on the opposite page. During the long period in which the arts of painting, sculpture and lettering were relatively neglected in their application to building by most contemporary architects, the firm continued to concern itself with them. Now that more of the best contemporary painters, sculptors and graphic artists are working with architects toward a better integration of the arts, the firm will have many strong sources upon which to draw.



Cornerstone, Johann Fust Community Library, Boca Grande, Florida

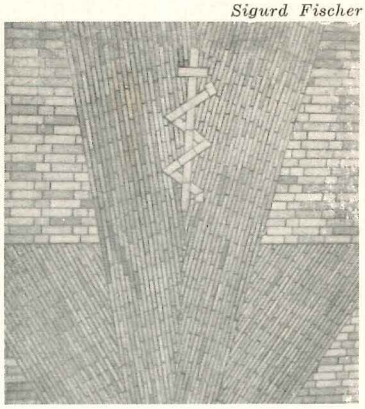


Plaque. Gates of Groton School, Groton, Connecticut

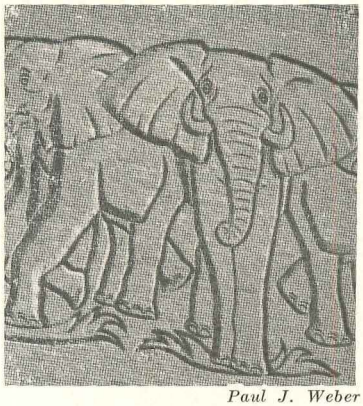


Dunster House pediment. Harvard University

Sigurd Fischer

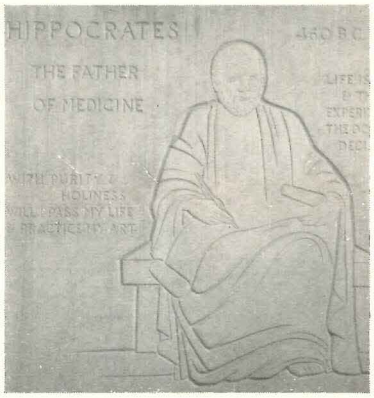


Brick detail. New York Hospital

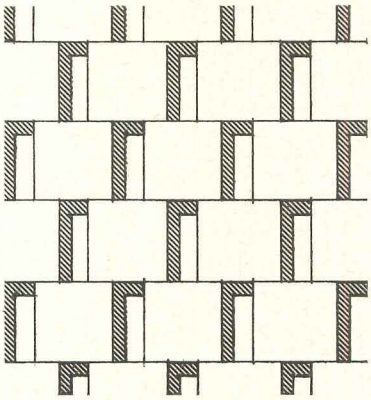


Paul J. Weber

Detail of decorative relief by Katherine W. Lane Biological Laboratories, Harvard University



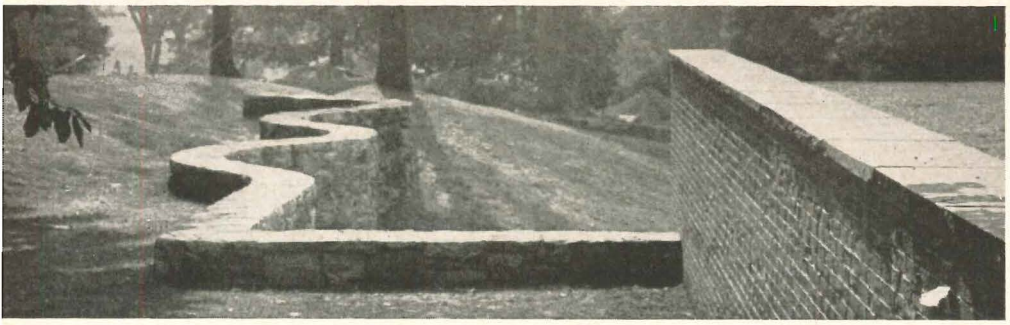
Detail of Malvina Hoffman frieze for Joslin Clinic



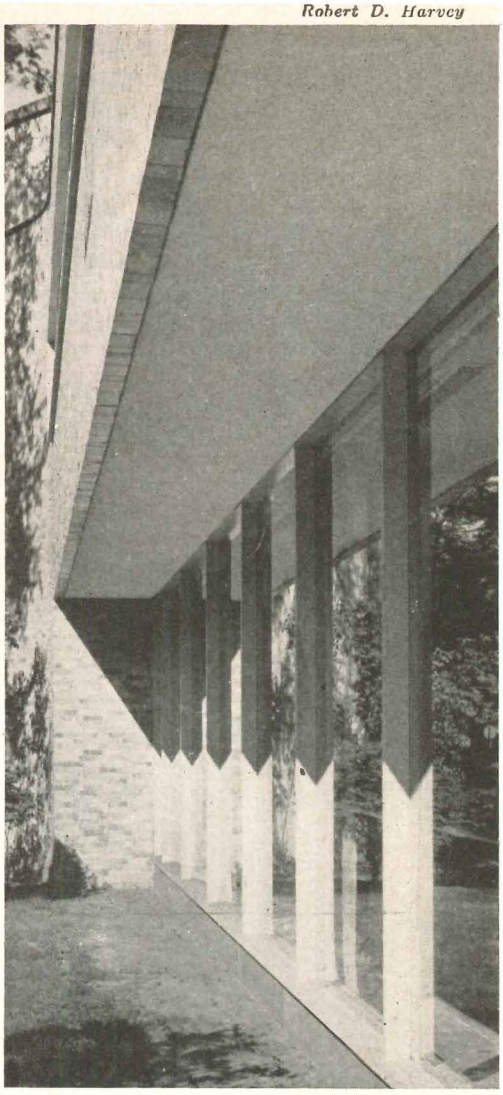
Detail of proposed façade, Leverett House Library, Harvard University

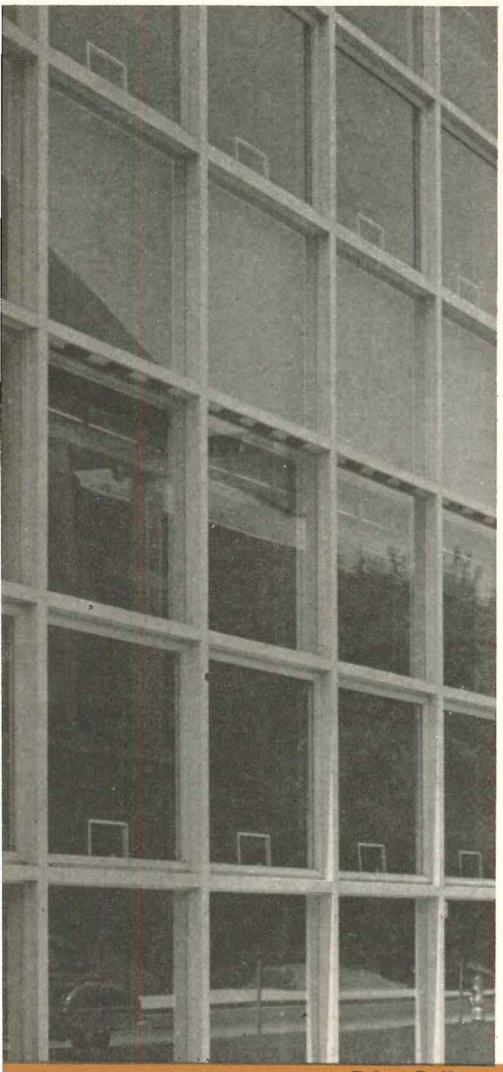
George H. Davis

Detail of projected mural by Nivola for lobby of International Legal Studies Building, Harvard University

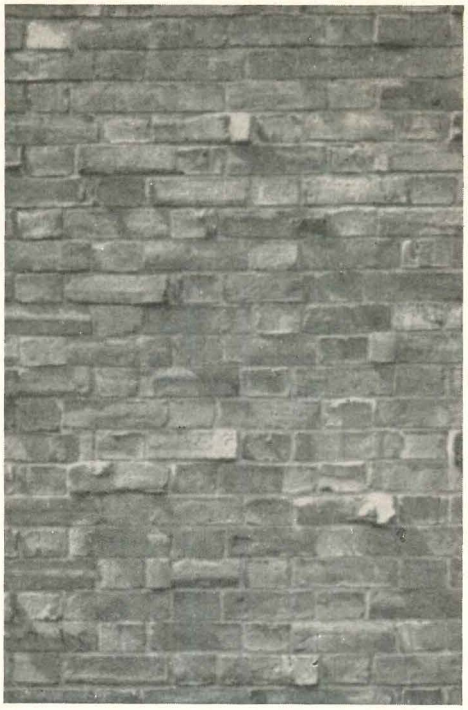


Robert D. Harvey





Robert D. Harvey



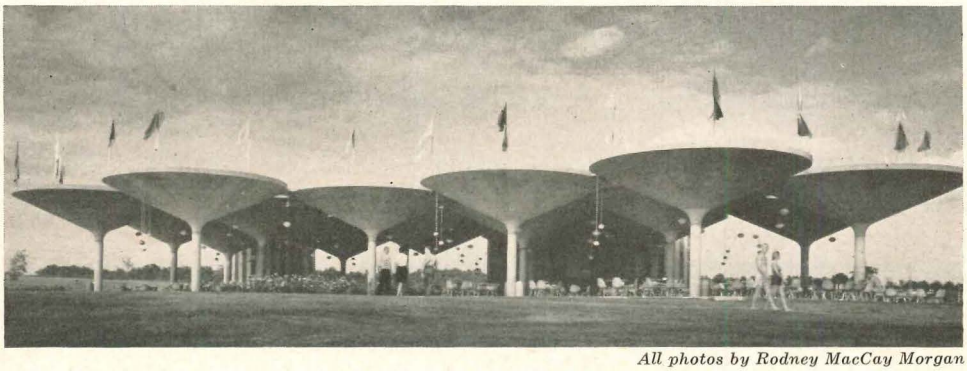
© Ezra Stoller

The firm of Shepley, Bulfinch, Richardson and Abbott, thinks a great deal about problems of obsolescence. Since the institutions which are their clients have memories of long, distinguished pasts, and hopes for longer futures, the firm does the best it can to build for eternity. This precludes the use of materials or methods of detailing which are relatively untried. Even the most innovative of the firm's buildings, therefore, follows proven tradition in the handling of wood, brick and stone.

A GAY DINING PAVILION FOR SWIMMERS

Robin Lake, Ida Cason Callaway Gardens, Pine Mountain, Georgia

Aeck Associates, Architects; Drake & Funsten, Structural & Mechanical Engineers
Charles F. Howe, Electrical Engineer; Beers Construction Co., General Contractors



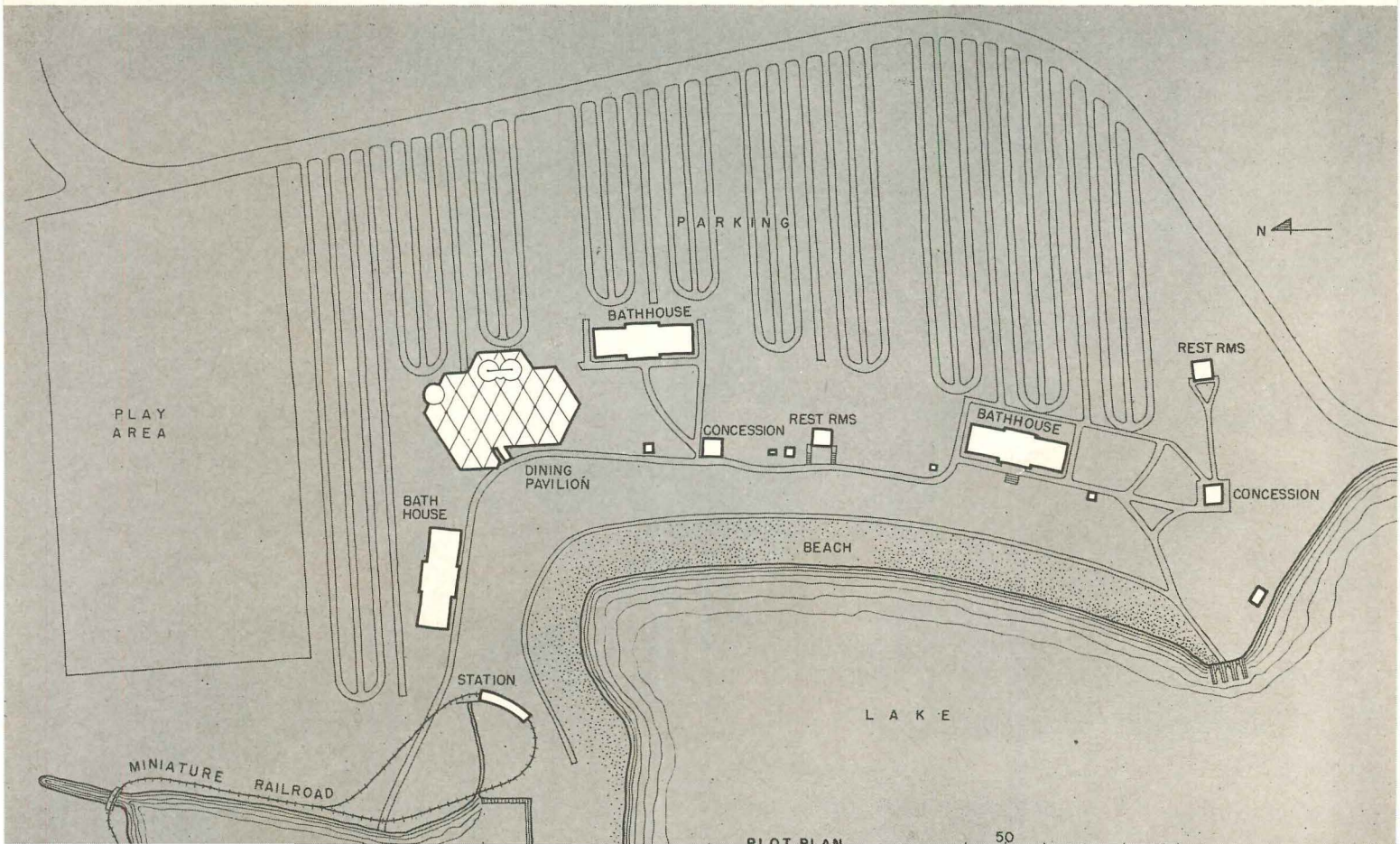
All photos by Rodney MacCay Morgan

Dining Pavilion For Swimmers

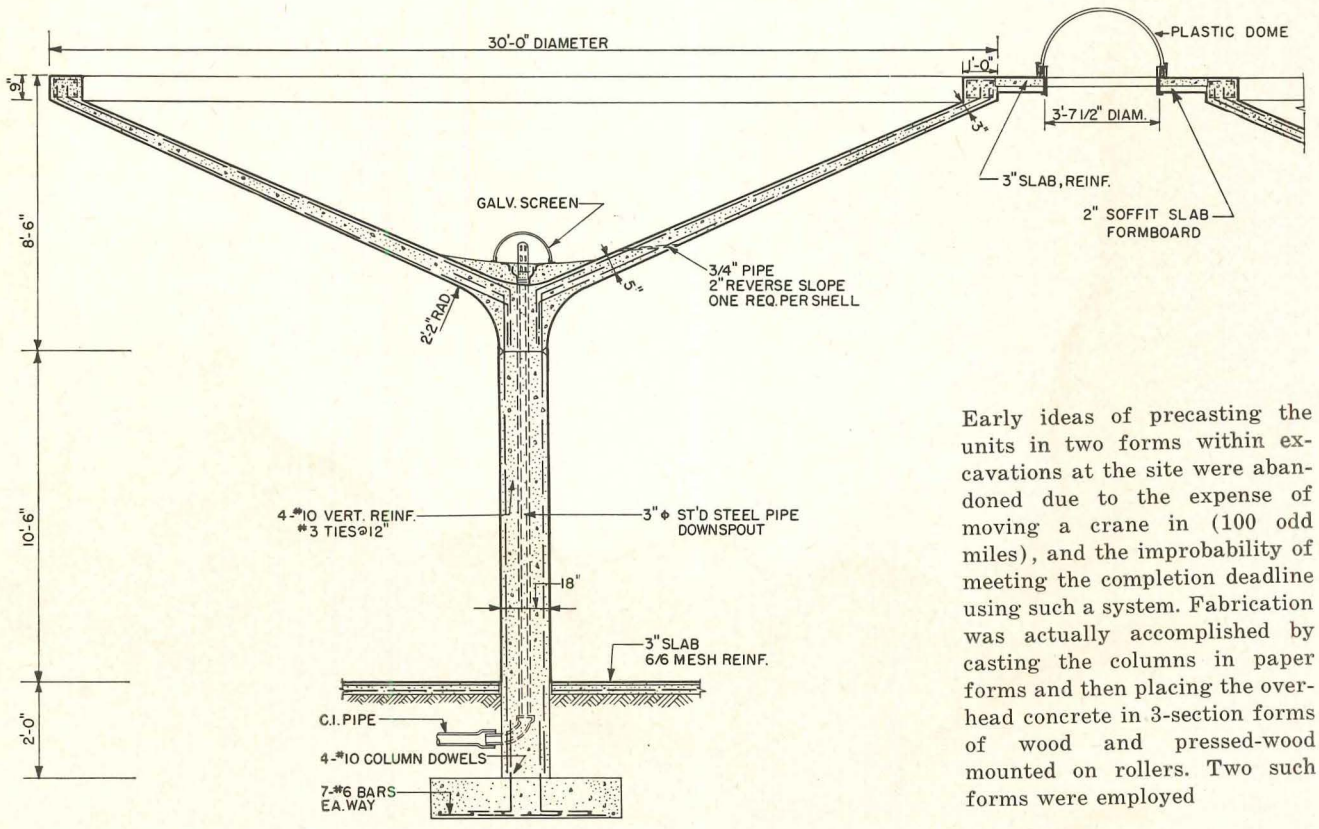
Appropriately gay in character and economical to build, this pavilion was designed also to rest at ease between two existing bathhouses within a pervasive natural environment. The rough-sawn board and batten and stucco idiom of the "rustic" structures nearby was discarded in favor of a series of forms architect Richard Aeck describes as "derived from and related—however abstractly—to plant forms and not familiar building forms. The idea was to make the building an entity within itself rather than a background for planting."

The broad setting—the Ida Cason Callaway Gardens—consists of 5000 acres of wooded land containing several lakes for boating and fishing, a club house offering complete meals, a golf course, and extensive horticulturally-developed trails for riding, hiking, and motoring.

Details of the mushroom-like, circular concrete units that shelter the 1000-seat restaurant are shown on the right-hand page.



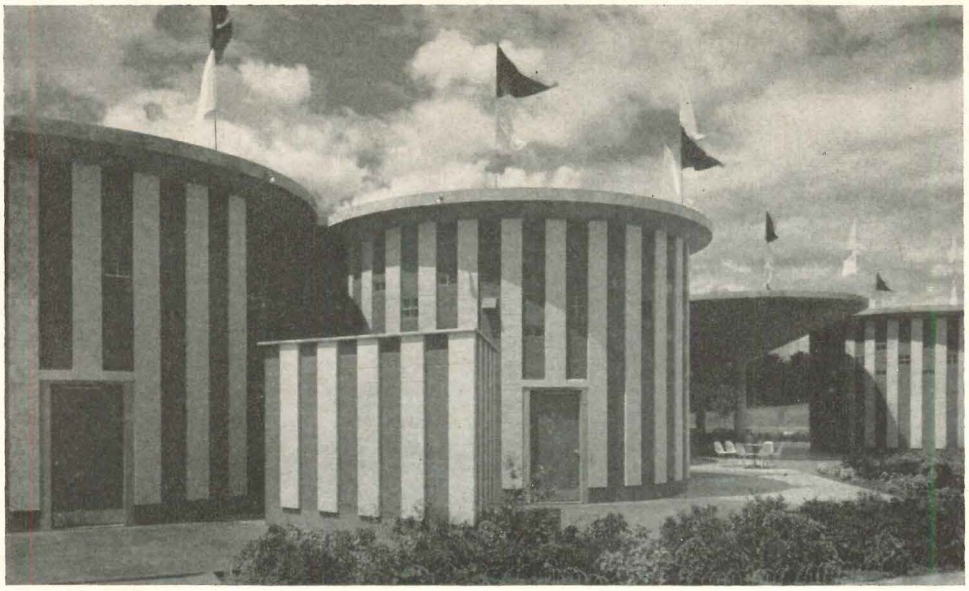
PLOT PLAN



TYPICAL CONCRETE SHELL UNIT

Early ideas of precasting the units in two forms within excavations at the site were abandoned due to the expense of moving a crane in (100 odd miles), and the improbability of meeting the completion deadline using such a system. Fabrication was actually accomplished by casting the columns in paper forms and then placing the overhead concrete in 3-section forms of wood and pressed-wood mounted on rollers. Two such forms were employed

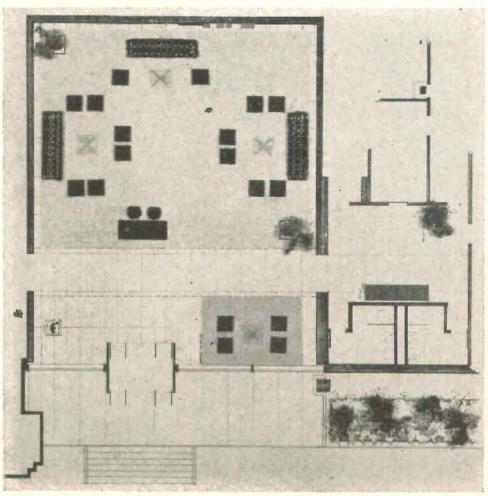
Dining Pavilion For Swimmers



Service and rest room areas, shown above, are enclosed within walls of stacked concrete block laid in alternating 6- and 8-in. thickness; a technique that minimizes the troublesome jointing problems inherent in a radial wall and creates, as well, an attractive vertical pattern. The 6-in. blocks are painted blue; the 8-in. ones yellow.

Plastic chairs in red, orange, yellow, and turquoise set about white-topped tables add a festive note, furthered by the suspended plastic lights in blue, orange, yellow, and white. Natural overhead light comes through the 42-in. milky-white bubbles set in the pale blue concrete decking that links the concrete mushroom elements.

The rough slab-on-grade is topped by 2 in. of integrally colored, light- and dark-gray concrete forming a pattern of alternating equilateral triangles constructed with their apexes on the column centers



AN OLD FOOD COMPANY BUILDS A NEW CENTER FOR RESEARCH

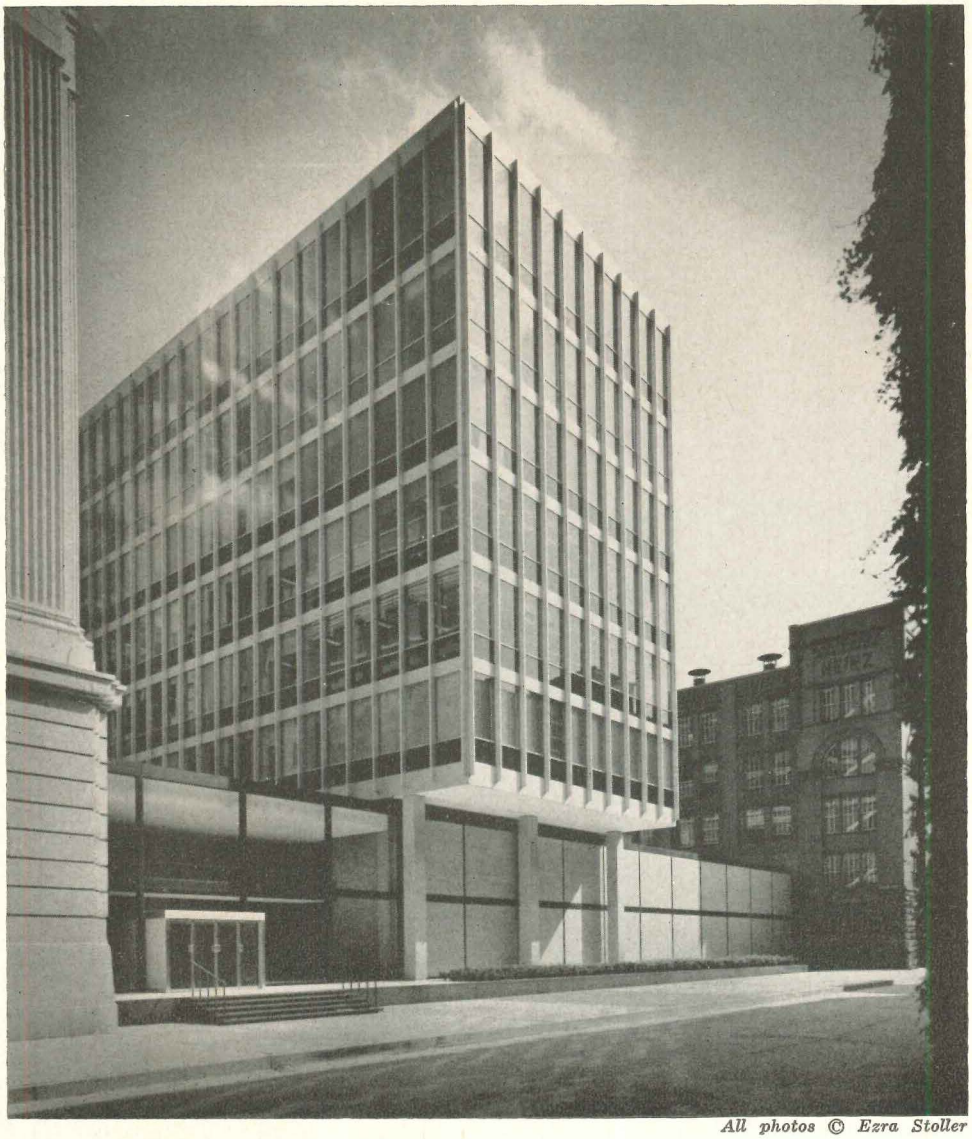
H. J. Heinz Co. Research Center, Pittsburgh

Architects & Structural Engineers: Skidmore, Owings & Merrill; Gordon Bunshaft, Partner in Charge Frederick C. Gans, Project Manager

Mechanical Engineers: Jaros, Baum & Bolles

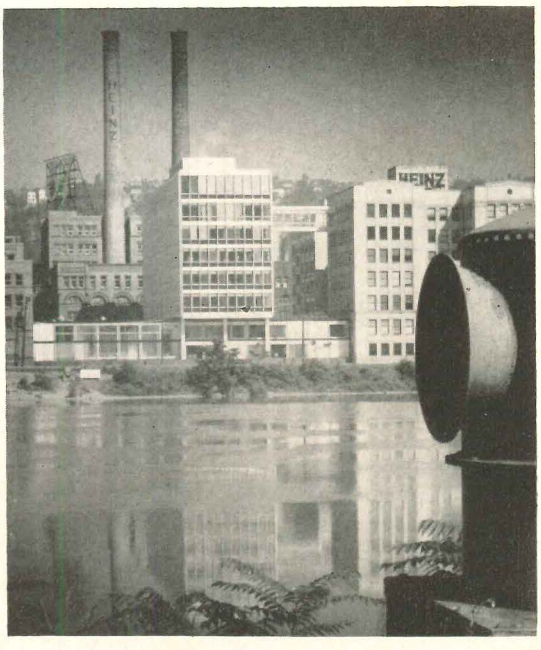
Interior Consultants: The Knoll Planning Unit; Florence Knoll in Charge

General Contractors: The George A. Fuller Company



All photos © Ezra Stoller

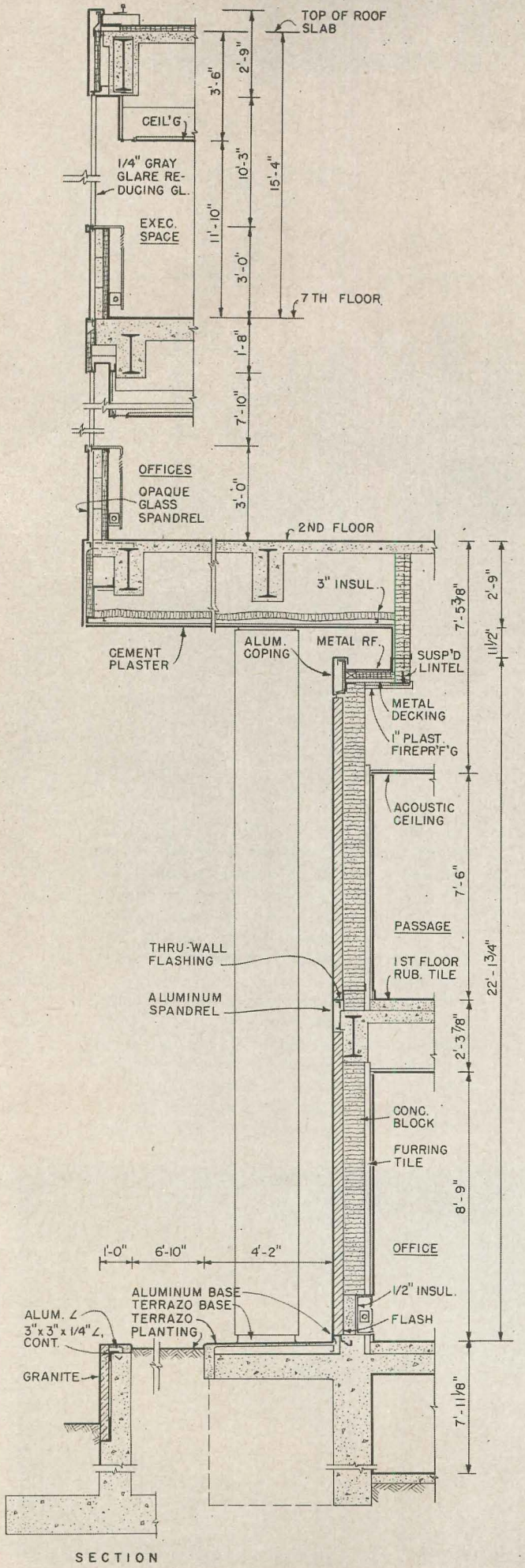
H. J. Heinz Research Center



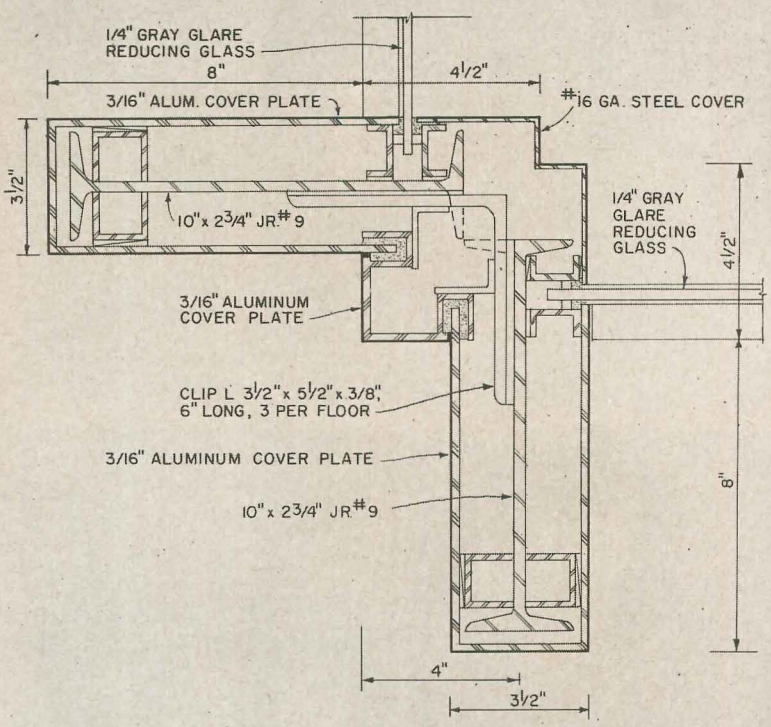
Set within the 27-block Heinz industrial complex on the Allegheny River in Pittsburgh, this gleaming new building contains seven laboratories devoted to product development and control, a library, a pilot plant, and a floor of executive offices for the company's international organization.

The two-element design consists of a glass enclosed, six-story block of laboratories and offices poised gracefully upon a 20-ft-high metal- and brick-clad base which houses the lobby, pilot plant, and certain work areas. Below ground level, there is an enclosed and ventilated—but empty—space; so provided for flood protection. The machinery usually located in the basement is housed on the top floor.

The elegant, 19-ft-high foyer (shown overleaf, p. 173) features a mural by Stuart Davis and a bronze statue of the company's founder; has a white terrazzo floor and acoustic plaster ceiling, and walls of gray brick or white plastic laminate. It contains Barcelona chairs in black leather, placed on a one-piece beige carpet 154 sq yds in area.



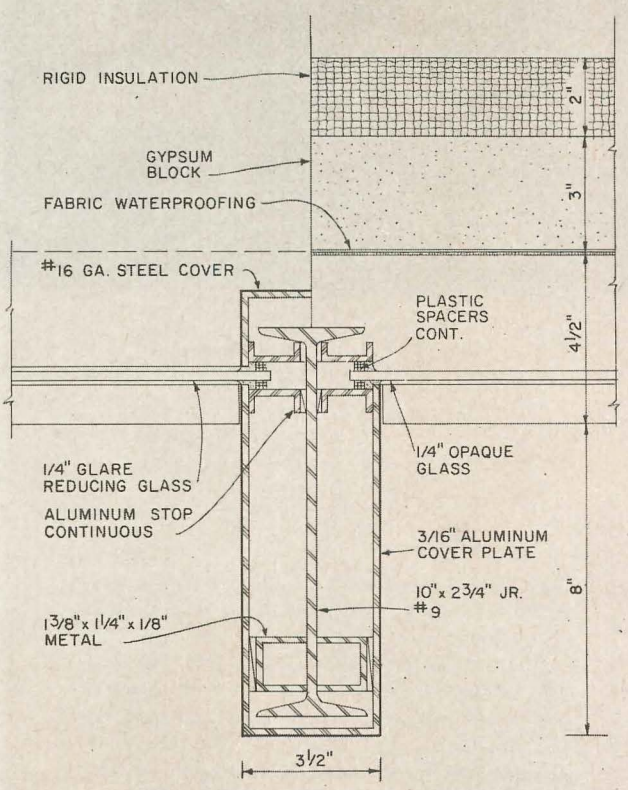
SECTION



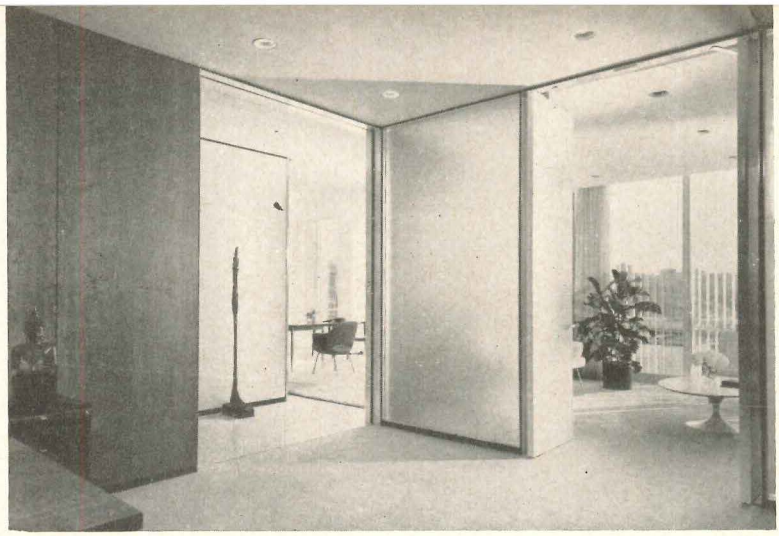
CORNER MULLION

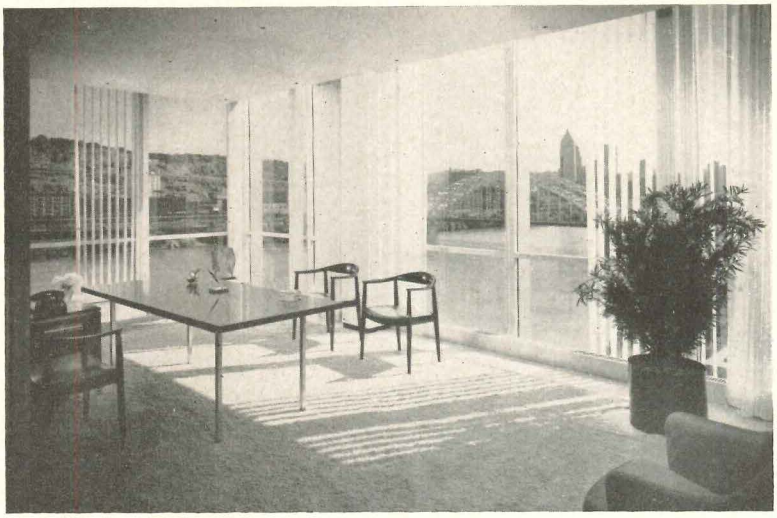
Details of the aluminum and gray glass skin for the upper floors are shown on this page, as well as the Skidmore "notch" detail separating this airy treatment from the solidity of the speckled gray brick and matte-black metal at ground level. The extruded finish pieces are anodized; the dark gray spandrel panels are ceramic coated glass.

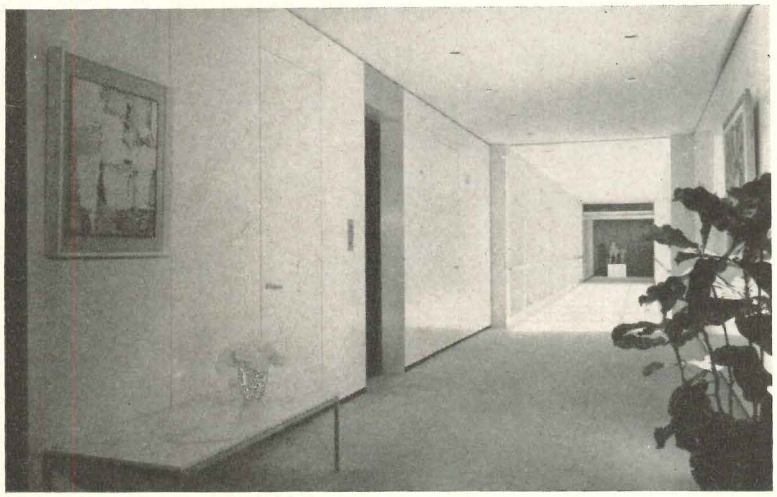
Both exterior metal and glass are cleaned monthly from an electrically operated scaffold platform which rides on four cables and is suspended from a perimetrical track located at the top of the building.



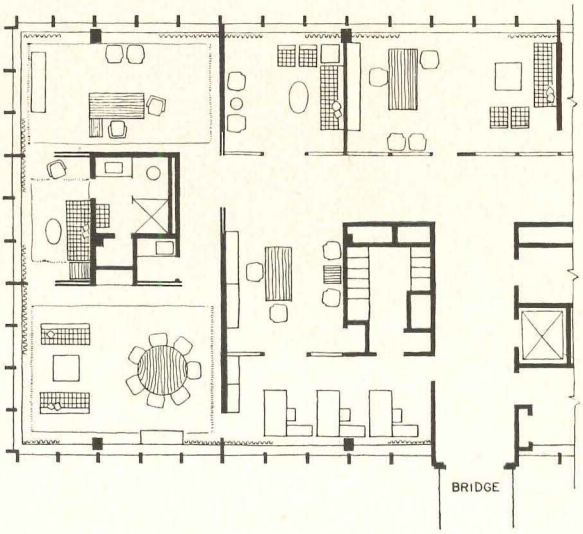
MULLION







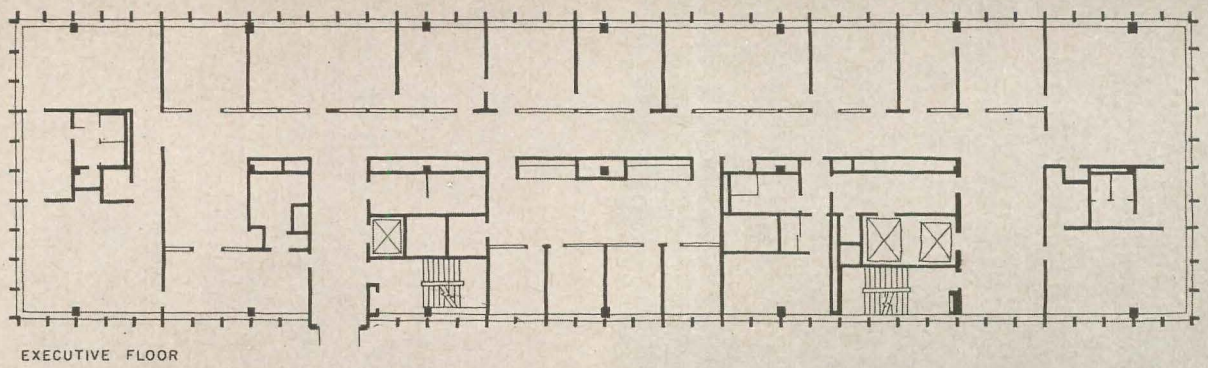
H. J. Heinz Research Center



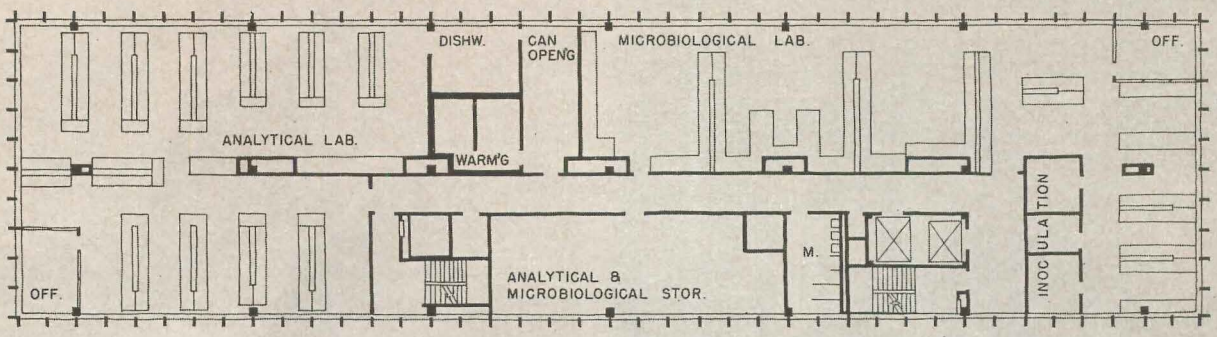
The suite for H. J. Heinz II—located on the top or executive floor—is shown in the plan above and the two upper photos. This area has a travertine floor partially covered by beige carpeting, walls of teak or blue silk, and an acoustical plaster ceiling. The chairs are teak, Wegner designed, and come from Denmark.

The glass enclosed bridge (third photo) that links the new executive floor directly to offices in the old building adjacent, is entered through an area with walls of white plastic laminate. The executive dining room —newly refurnished— is located in the old building and reached by way of the bridge

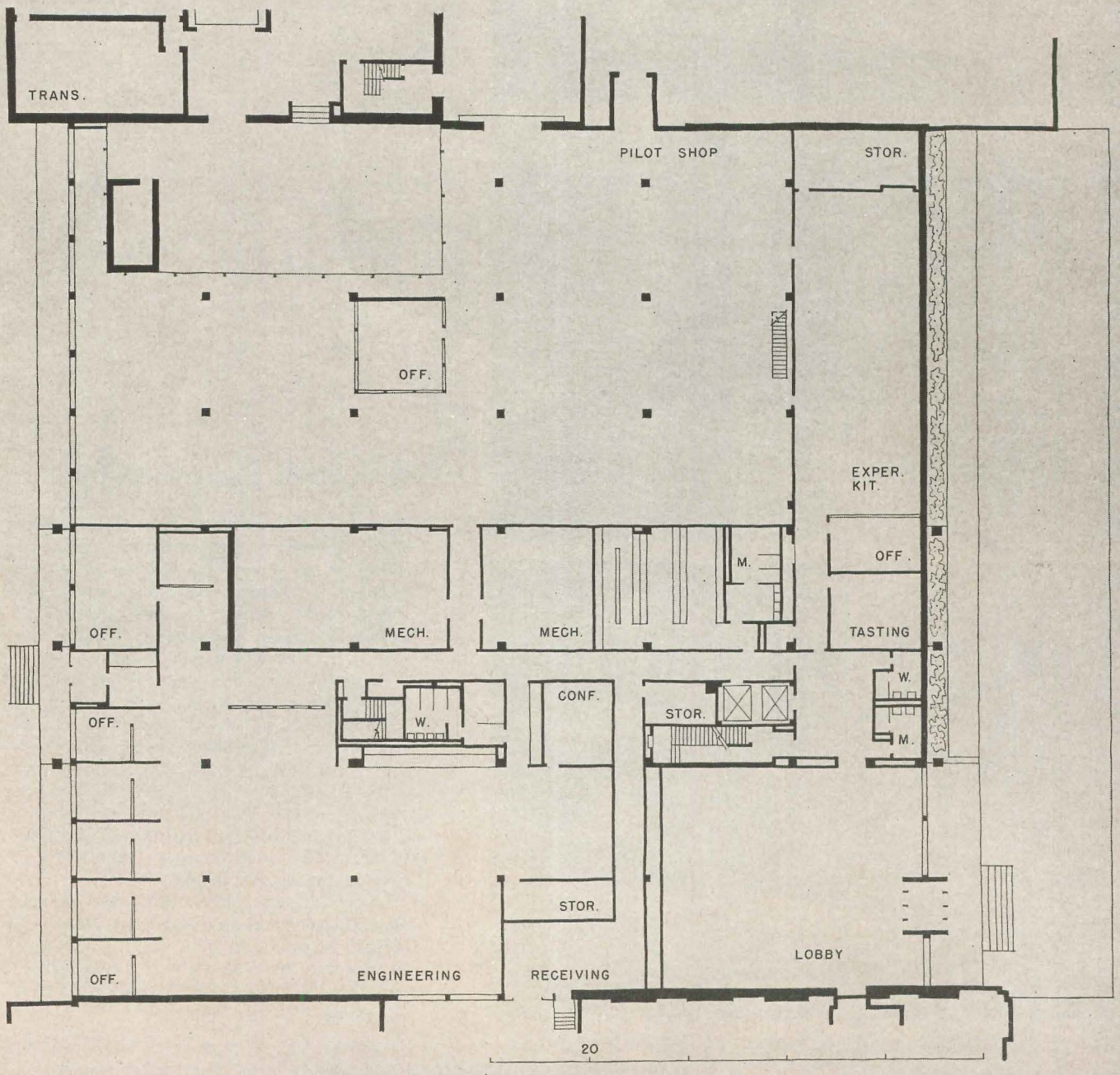
In the laboratories and kitchens, the emphasis is upon cleanliness and orderliness. The floors are off-white rubber tile, the walls are white glazed structural tile, and the acoustic ceilings are of plastic on glass fiber. All cabinets, bench tops, and cooking equipment are stainless steel. The labs have built-in outlets for vacuum lines, gas, steam, distilled water, and compressed air. The air in the building is electrostatically filtered

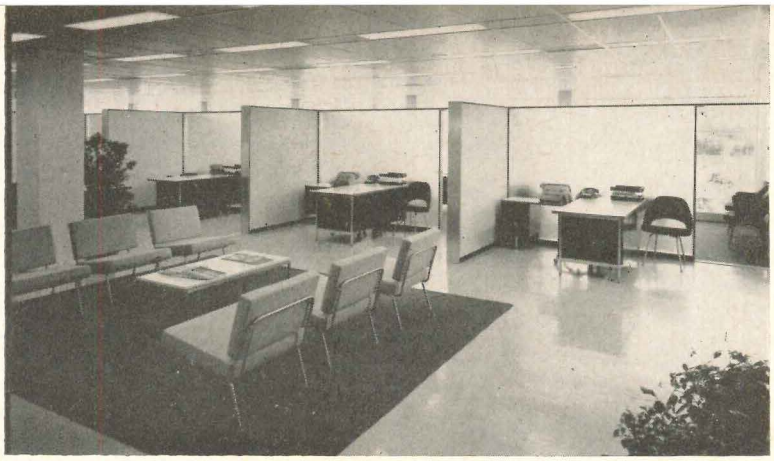


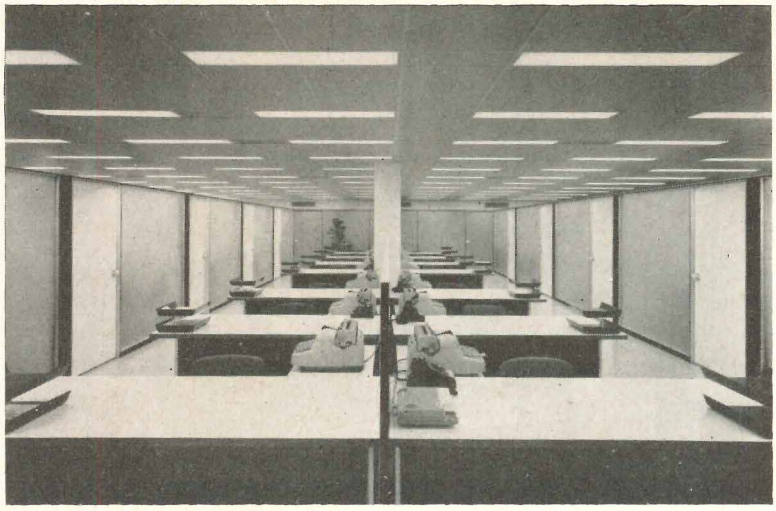
EXECUTIVE FLOOR

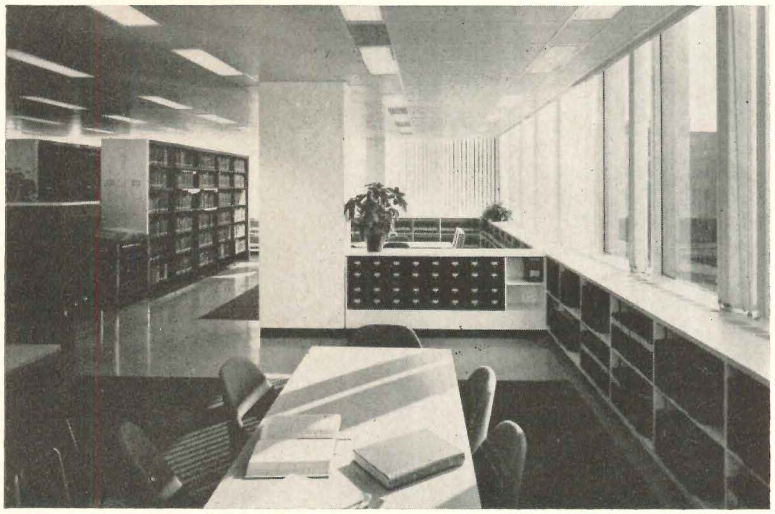


TYPICAL LABORATORY FLOOR









H. J. Heinz Research Center

Note the arrangement of upper floor private office, secretarial, and reception spaces, as shown in top photo. The private offices are enclosed by screens of translucent glass within metal frames; the wing walls that define individual secretarial activity are clad in natural Pandanus cloth.

In the general office area, second picture, the private offices—again—are shut off by floor-to-ceiling panels of obscure glass and reached through doors of white plastic laminate. The desks in the larger area have white plastic tops; the chairs are upholstered in cobalt blue; the wall at the rear is red-orange in color—calculated, probably, to bring this plane forward (visually) and shorten the room's length.

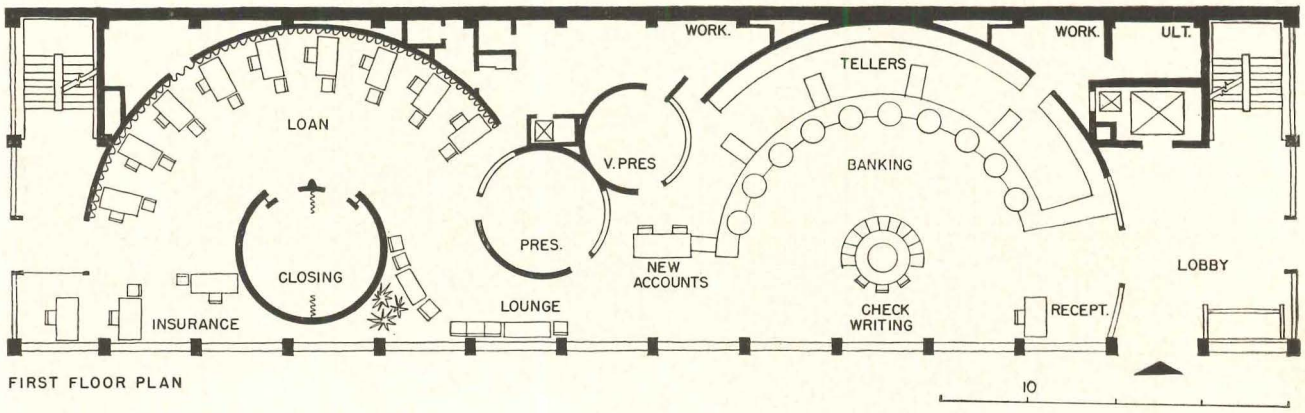
The two lower photos show the library, which houses works on nutrition, food technology, agriculture, and related subjects. In this area the table tops are white plastic, and the chairs are upholstered in a vivid red-orange fabric

DESIGN FOR CONTRAST WITH NEIGHBORING SHOPS

In order to provide a contrast in this building with its merchant neighbors with their requirements for show windows and displays, the architects used large expanses of exterior masonry unbroken by windows. It was felt that such treatment would likely also be appropriate to the institutional character of the building. An effort was made to integrate function and esthetics with reasonable economics in construction. Another major consideration was the desire to create space which would not only be functional but interesting and pleasant in which to work and carry on business transactions. The architects say: "This building was saved from being a mere repetition of its neighbors by the open-minded attitude of its owners which allowed a logical and architectural solution to their problems."

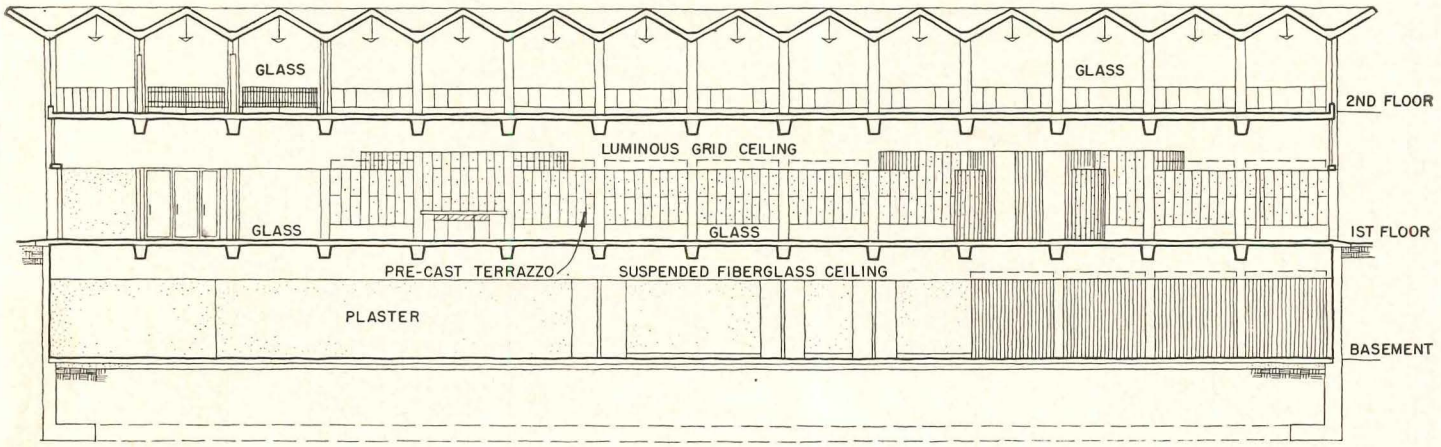
Colorado Federal Savings and Loan Association Building, Denver, Colorado; W. C. Muchow, Associates, Architects; Ketchum & Konkel, Structural Engineers; Stark & Konkel, Mechanical Engineers; Swanson-Rink, Electrical Engineers; Al Cohen, Contractor

Colorado Federal Savings and Loan Association

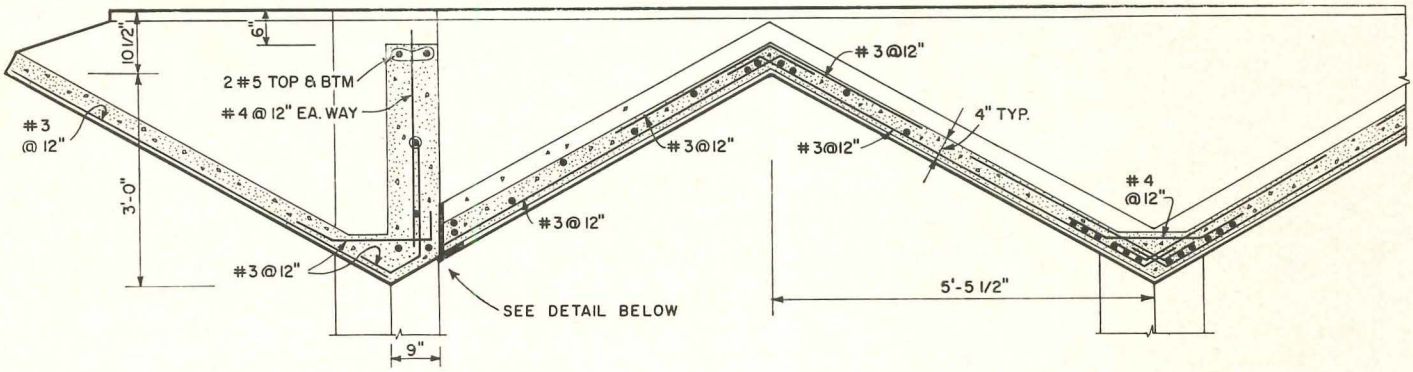


FIRST FLOOR PLAN

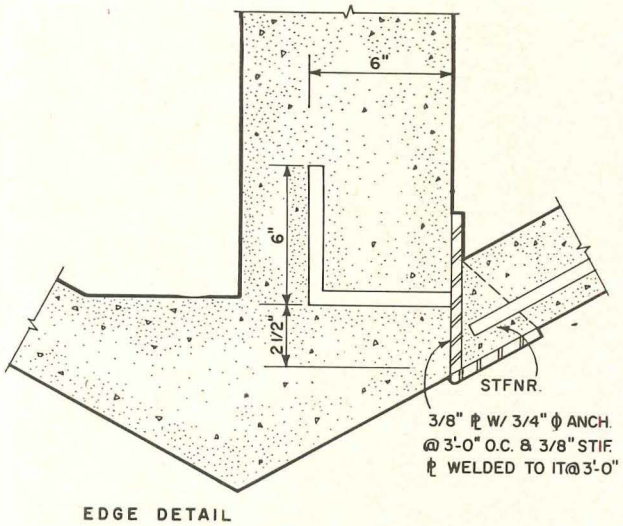
The interior of the building, which the owners wished to be as open as possible, is broken up with curved divider-walls used to create separate spaces for various functions without completely closing off one space from another. Rough-cast quartz terrazzo is used with glass and walnut paneling on both exterior and interior to provide a warm, but dignified appearance. Colors are mainly natural greens and yellows. Concerning their design for the building, the architects say: "The true success of the building will be determined, not by the publicity and degree of acceptance it achieves at its opening, but by its performance and success during the ensuing years while it is in use. We tried to make this building as useful and enjoyable in ten years as on opening day."



LONGITUDINAL SECTION

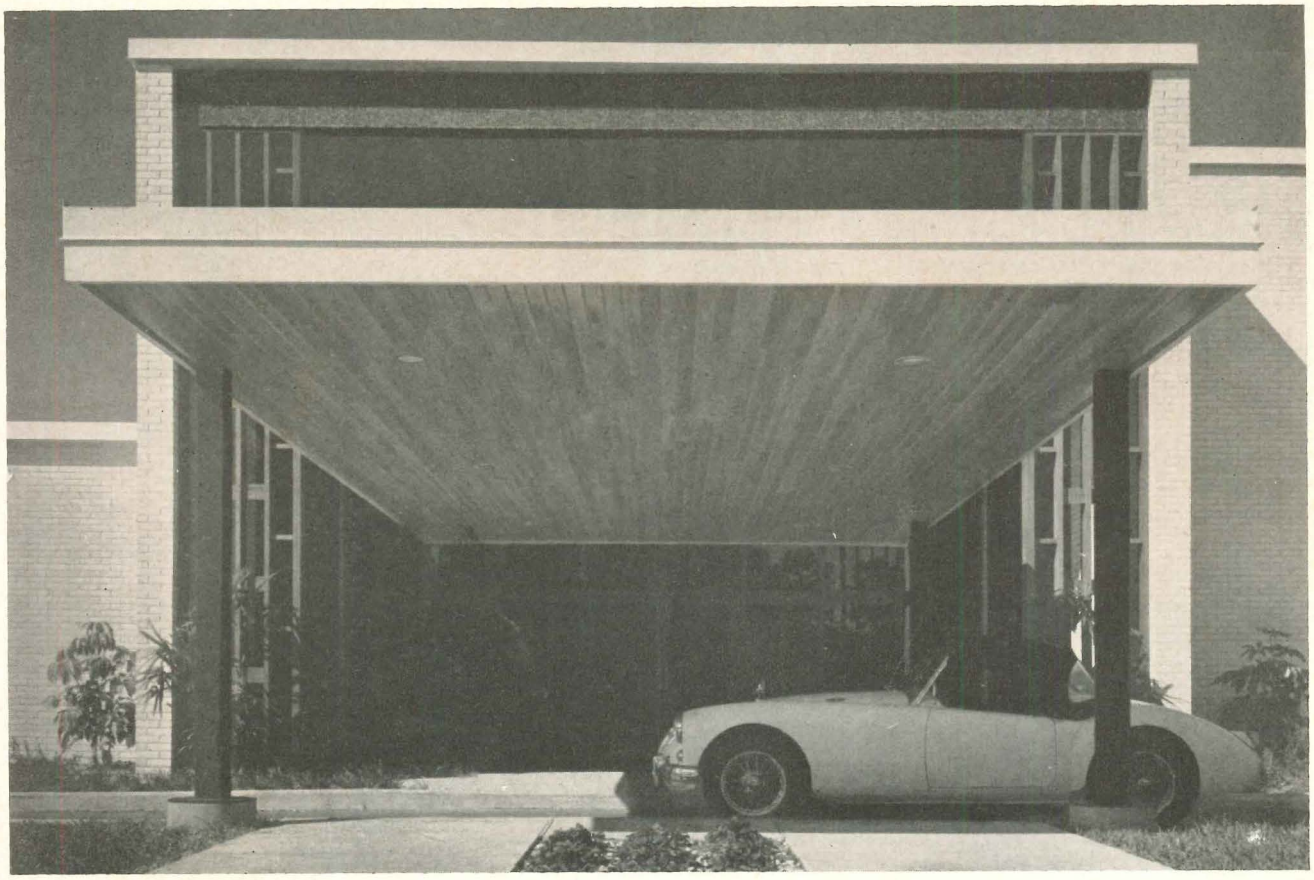


TYPICAL TRANSVERSE REINFORCING DETAIL

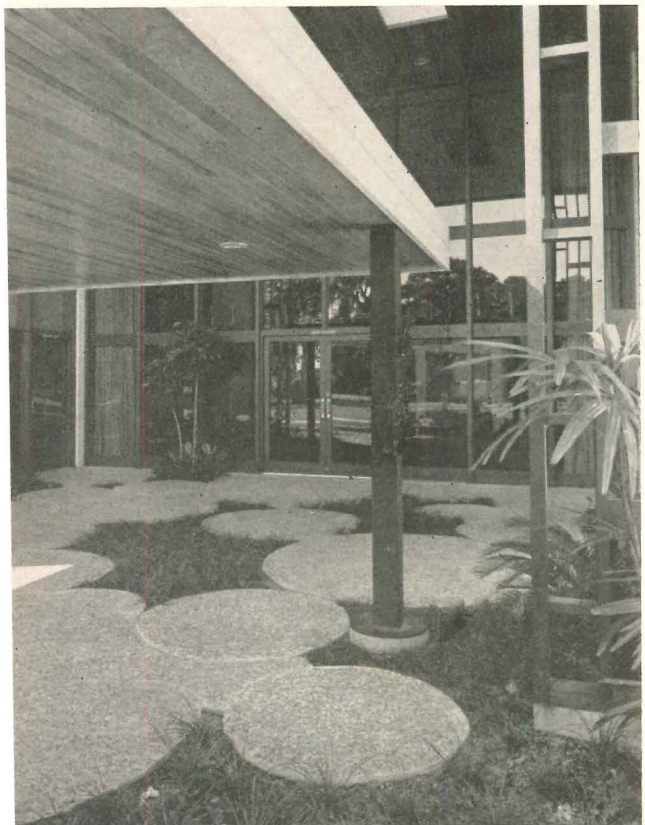


EDGE DETAIL

The building has a basement and two floors. The main floor contains facilities for all of the institution's functions with the exception of a small office located on the second floor. Rental space, which will ultimately be used for expansion, occupies the remaining second floor area. The concrete folded-plate roof was used because it proved to be an economical method for spanning the space without interior columns



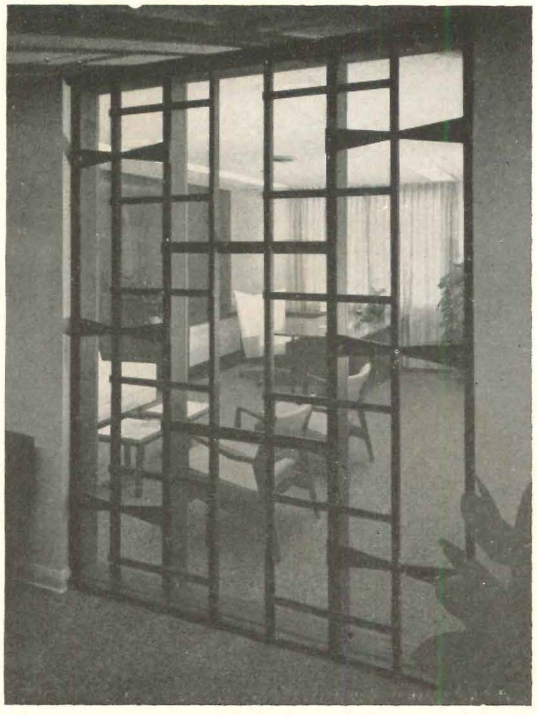
INFORMAL WARMTH FOR SMALL FLORIDA BANK

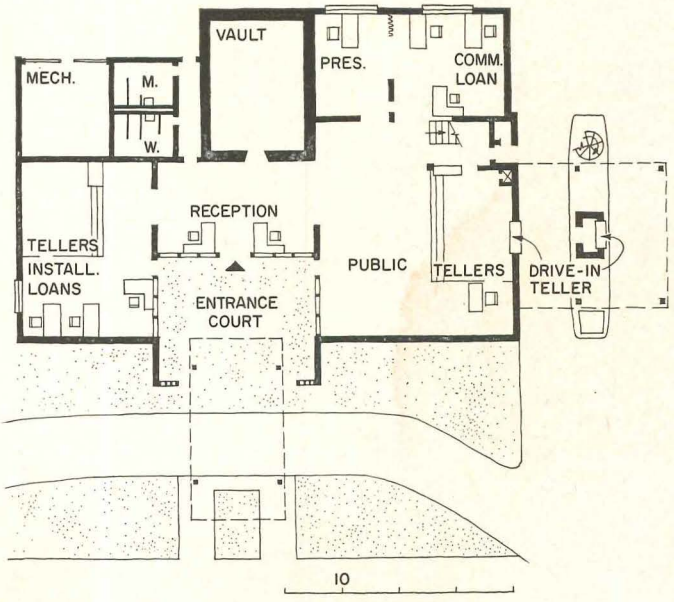


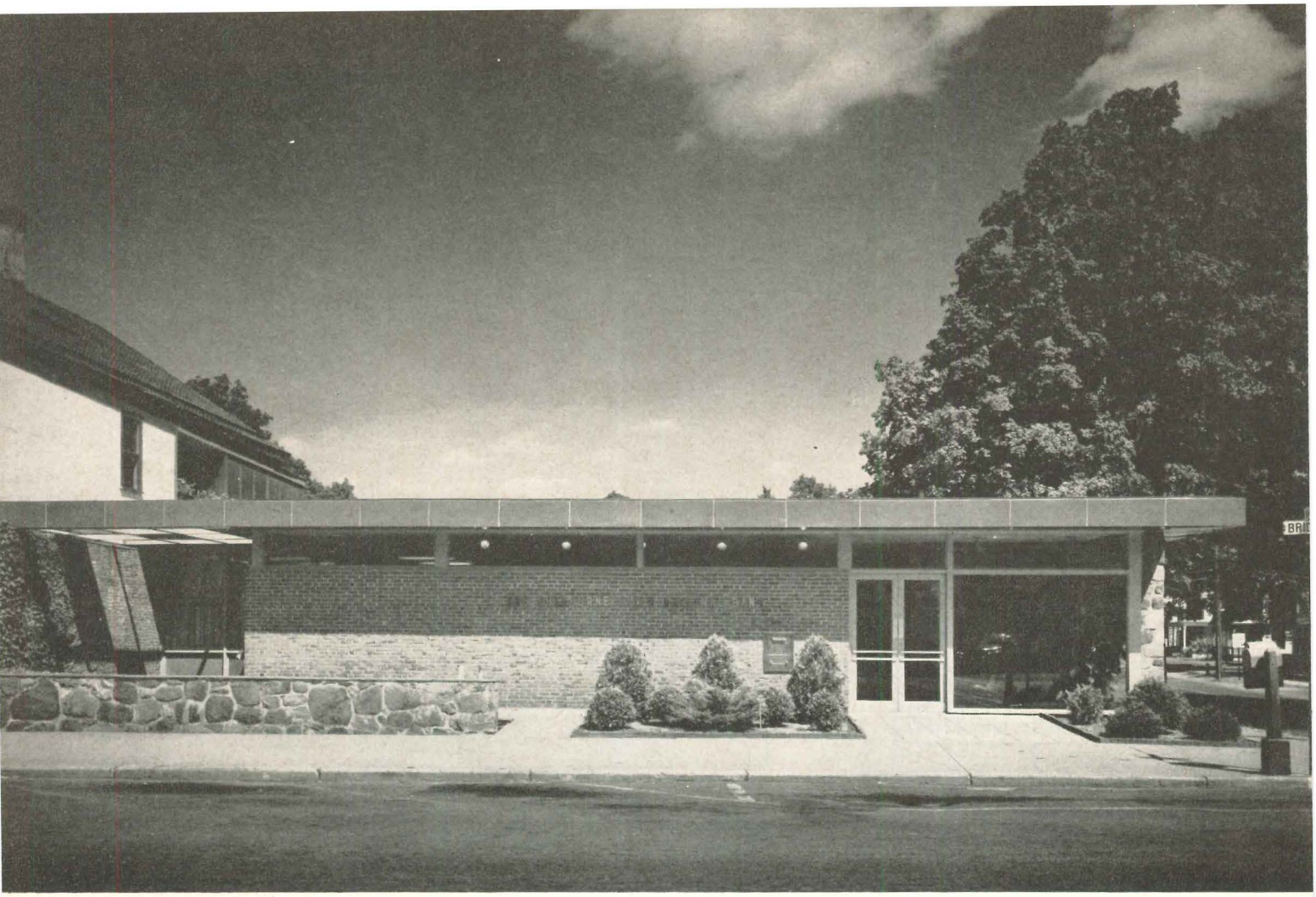
Northside Bank, Tampa, Florida; Pullara, Bowen, and Watson, Architects and Engineers; Jack Holmes, Landscape Architect; Ranon and Jimenez, Contractors

This two-story building houses the complete facilities of a community bank which was formerly a savings and loan institution. The owners felt that their new building should have a warm, informal, and friendly atmosphere rather than the stiff, cold tone so often associated with banking. All departmental areas may be entered from the main entrance. Each department has an additional entrance affording customers the opportunity of visiting only the areas they desire without passing through other departments. The entrance marquee allows customers to enter the bank without being exposed to inclement weather. Low counters for tellers create a friendly atmosphere between customers and staff and allow added space for tellers. The extra-large president's office with folding door to commercial loan area is also used for large meetings.

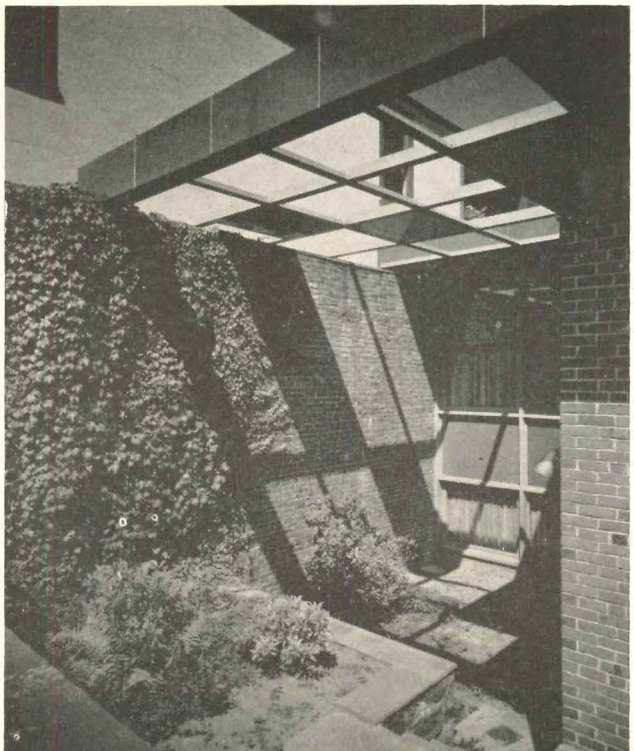
William G. Amick photos







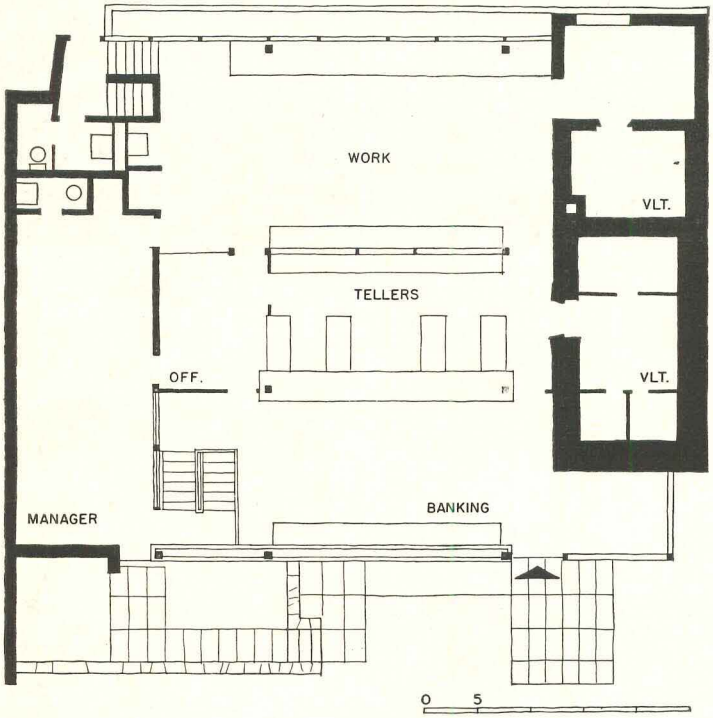
NATIONAL BANK FOR SMALL RURAL COMMUNITY

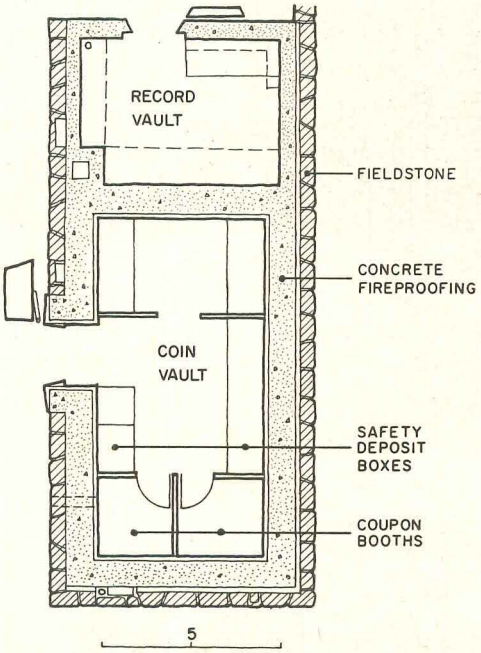


Shelburne Falls National Bank, Shelburne Falls, Mass.; Carl Koch & Associates, Architects; Leon Lipshutz & Margaret Ross, Associates-in-Charge; Robert Mackintosh, Landscape Architect; Reardon and Turner, Mechanical Engineers; John F. Griffin Co., Contractors

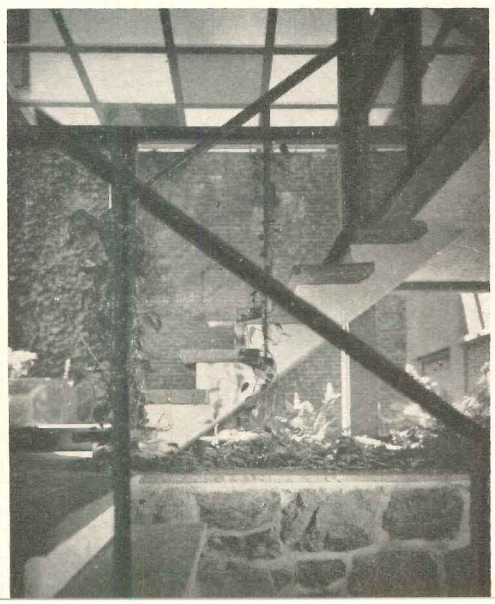
All of the facilities of a national bank are provided for in this building in which banking for the townspeople and farmers of the surrounding area and a number of industries is handled. The owners requested that the building be kept very informal and homelike in order to make their customers feel they could use the bank as a downtown meeting place as well as for the conduct of their banking business. They also felt that there should be as little institutional character as seemed feasible. After having occupied the building for some time, the owners say: "We are very pleased with our building, not only for its fine appearance but because it has proved to be a most efficient and functional layout for banking."

Joseph W. Molitor photos

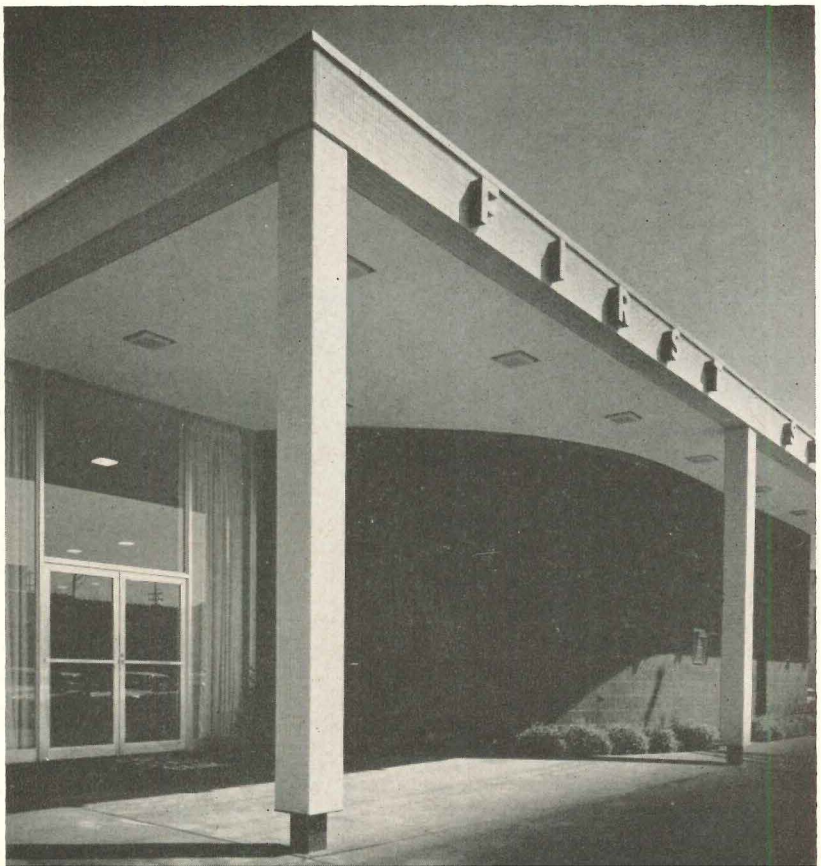


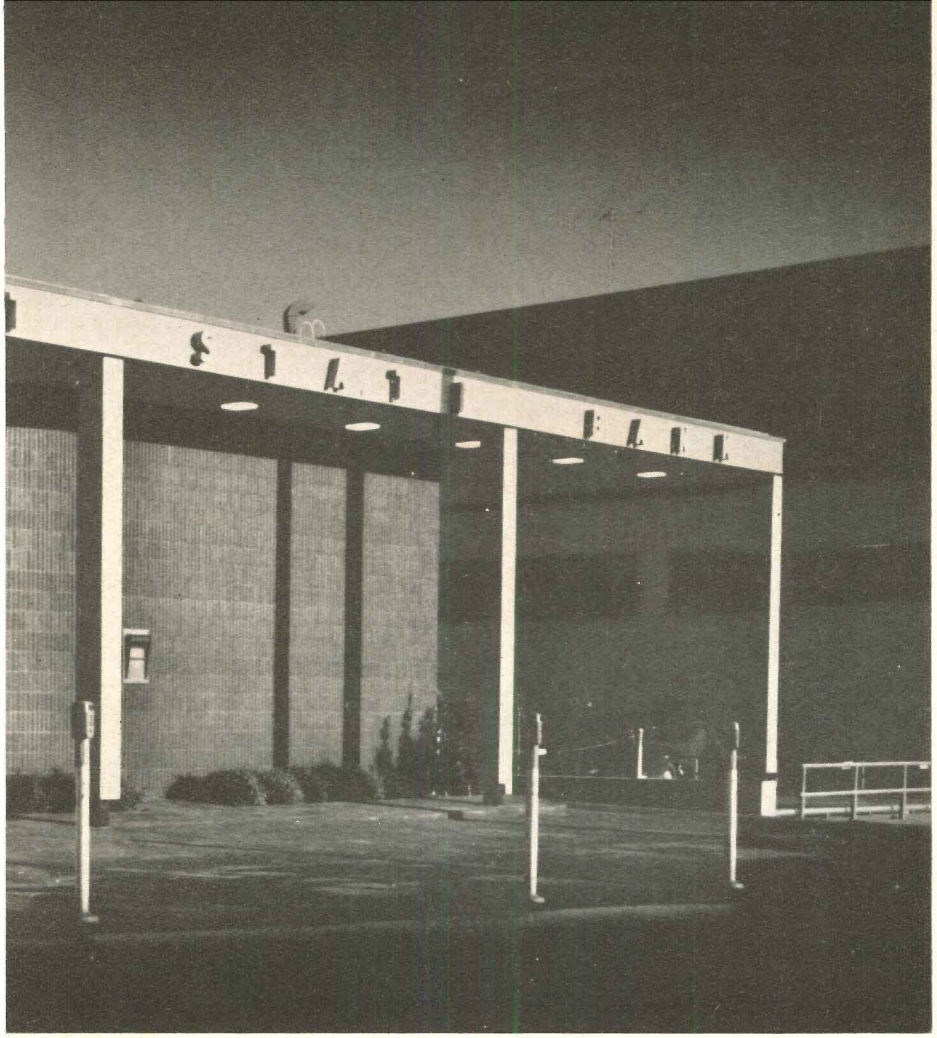


The building is designed as one integrated area serving all of the bank's functions with only the vault and the manager's office separated from the main banking floor and tellers' areas by permanent partitions. Tellers and customers are only separated from each other by chest-high counters. Windows at the rear of workroom overlook a landscaped yard which may eventually become the driveway for a future drive-in window if this seems necessary. The meeting room, traditionally reserved for the private business of the bank officials is made available to local groups for gatherings. A private entrance through a sunken, planted court is provided for this room, in order to avoid disturbing regular bank business transactions.



CUSTOMERS DRIVE *INTO* STATE

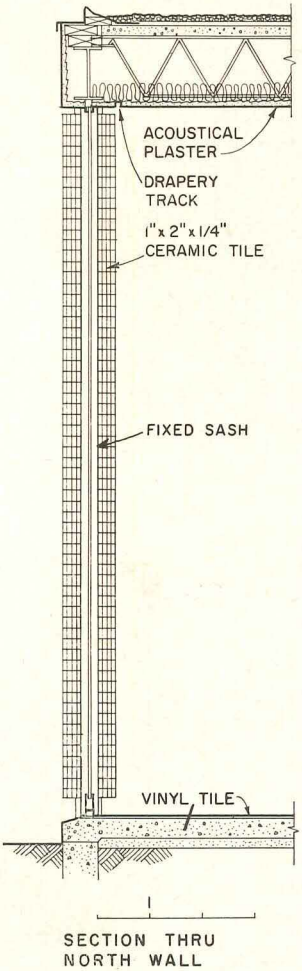




BANK LOCATED IN TEXAS

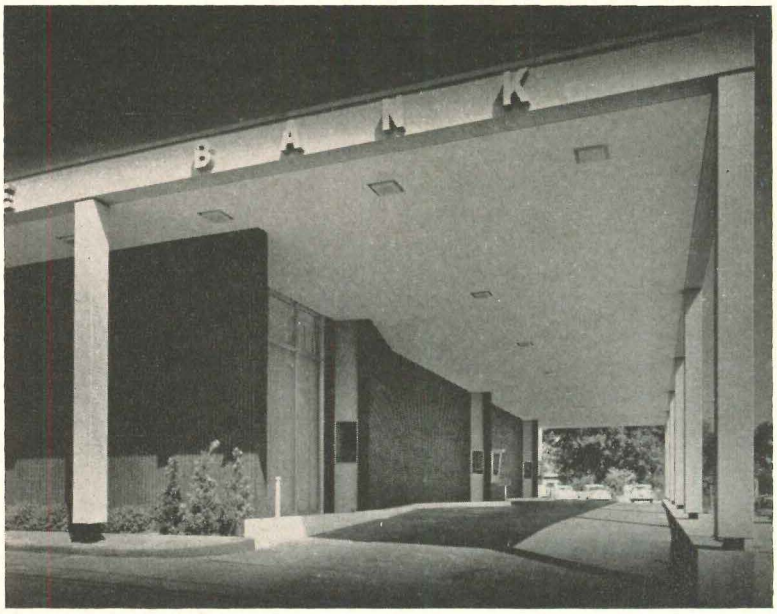
First State Bank, Longview, Texas; Wilson, Morris, Crain & Anderson, Architects; Walter P. Moore, Structural Engineer; Cook and Holle, Mechanical Engineers; Wilmoth Construction Company, Contractors

This building houses a newly organized state bank in a small Texas city which formerly had only two banks, both of them national. The owners desired a building which would solve the actual problems of present-day banking as they now exist rather than a stale, accepted solution related to the problems of banking as they existed in the past. Indicative of the architects' attention to the owners' demands is the provision of a structure which includes under its simple roof a space for customers to drive directly into the building to carry on their transactions at one of the three drive-in windows. The site is located at the edge of downtown business district on a busy, major street. The architects were responsible for the entire design including interiors and furnishings.

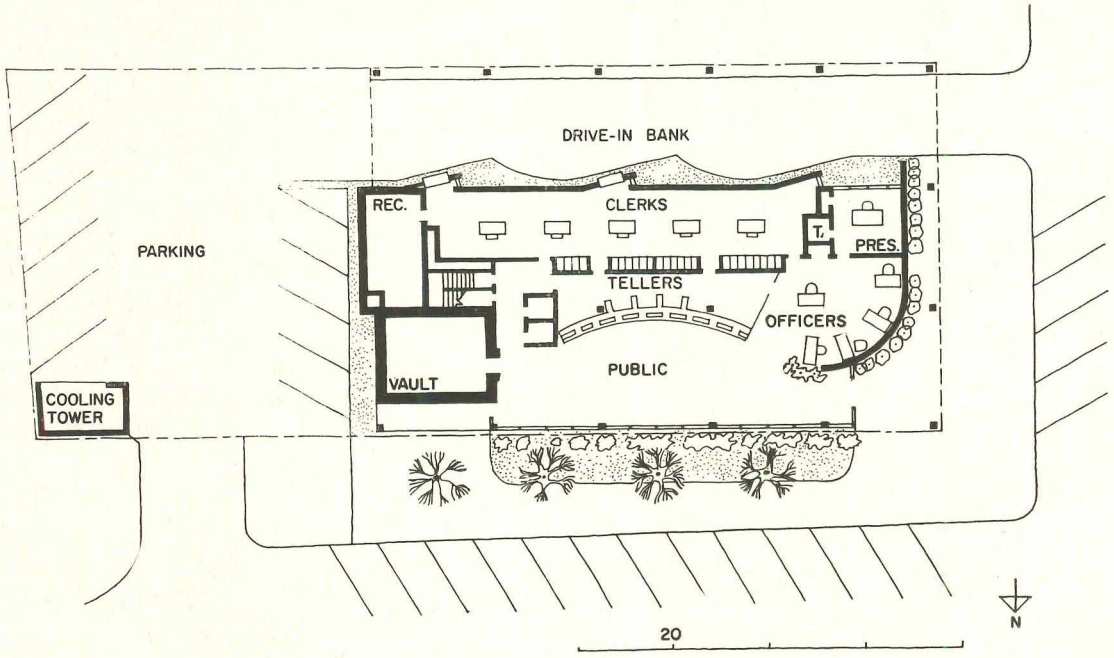


SECTION THRU NORTH WALL

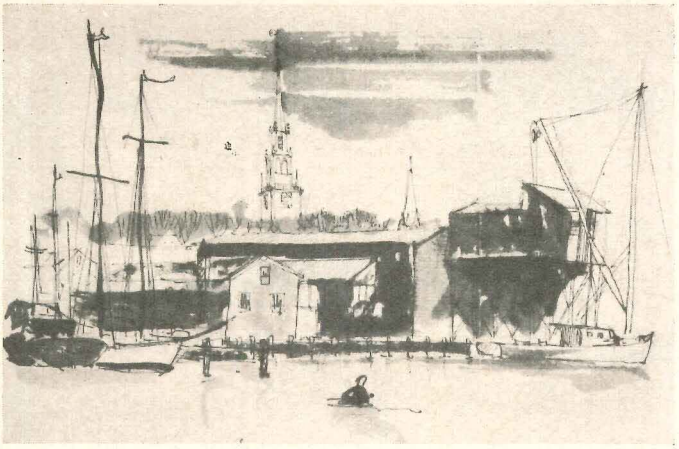
The steel frame structure of the building extends out to include and cover the drive-in area at one side. The columns and facia are finished with ceramic tile. Windows in the public area extend from the floor of the first story to the ceiling of the second. All solid exterior walls are constructed of black brick, stacked upright and exposed on the interior and exterior of the building



First State Bank

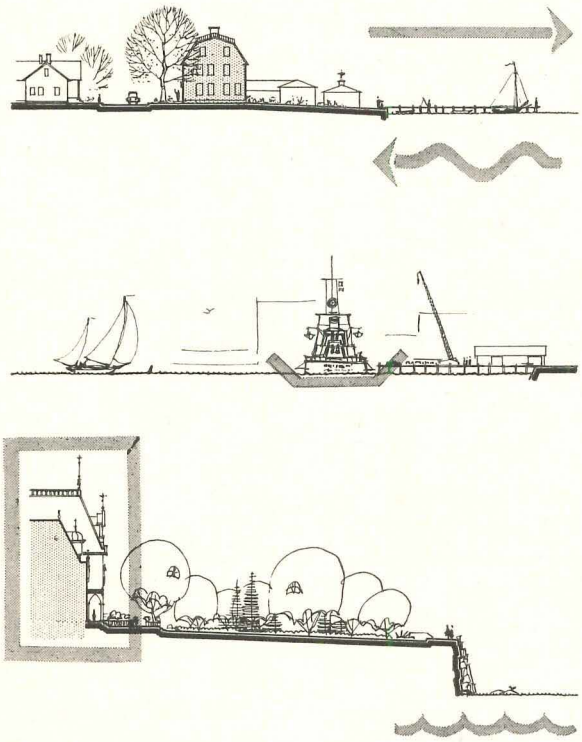


The owners and architects made a point of opening up the building as much as possible on the street sides and of giving importance to the drive-in facilities provided. Entry to the public areas is through the main entrance from the sidewalk at the front or from the parking area at the rear through a secondary entrance. At the request of the owners, the lobby area was made larger than is usual in banks of this size. All public facilities are located adjacent to the public spaces with no separation from them other than a change in the flooring material from light-gray vinyl tile to carpet. Counters are mahogany with white laminated plastic tops. Private areas such as directors' room, coffee room, toilets and the like are located above the tellers on the second floor



New-Old Newport

Newport's popular Jazz Festival creates challenging architectural and planning opportunities to revitalize this historic town. Recently at the School of Architecture at Princeton University, the redesign of Newport was the subject of a student program under the direction of architect Enrico Peressutti of Milan.

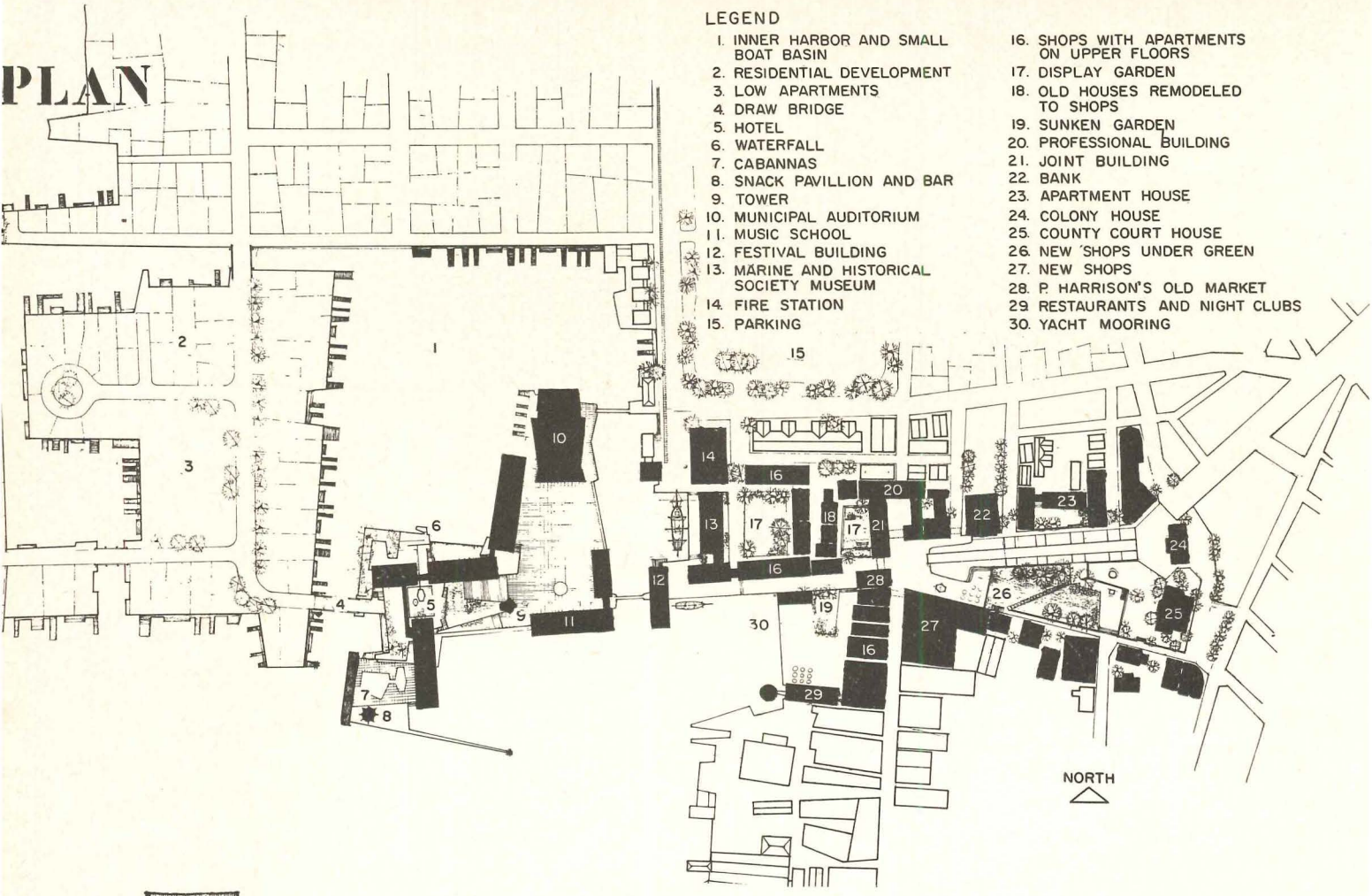


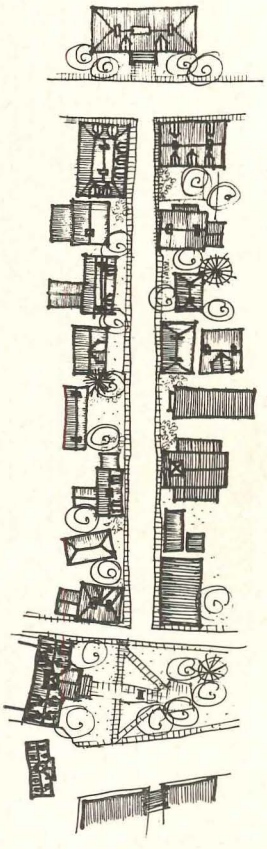
The relation of the three existing Newports to the water set the stage for the problem. Top: pre-revolutionary houses along the Point north of the Long Wharf front on the street, and back up to the calm waters of Narragansett Bay. Center: Navy activity takes place on the Bay's surface. Below: the great villas of the summer colony face their lawns and gardens, the public Cliff Walk (partly ruined by recent hurricanes), rock ledges, the open Atlantic, and Spain. At top of page: a water color study along the waterfront, part of an examination of the character of Newport. Masts are echoed by the slim spire of eighteenth-century Trinity Church; only spires and cupolas stand higher than the trees.

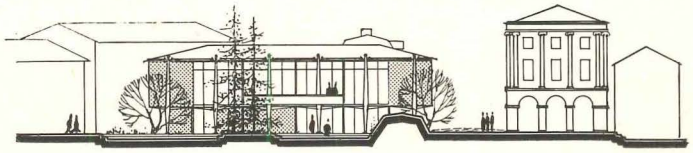
There are three Newports. First there is the old town, around Washington Square, where hundreds of pre-revolutionary buildings line the streets, and create what Henry James called "tiny sunny empty Newport vistas, perspectives coming to a stop like the very short walks of very old ladies." Then there is the fabulous summer colony, lately languishing but still probably the most impressive encyclopedia of American building extant, where Gothic Revival houses, stick style and shingle style villas, and monumental piles in the Renaissance manner line streets on the ocean side of the island, and face the crumbling Cliff Walk which follows the shore. And finally, there is the Navy, with ships enlivening the bay.

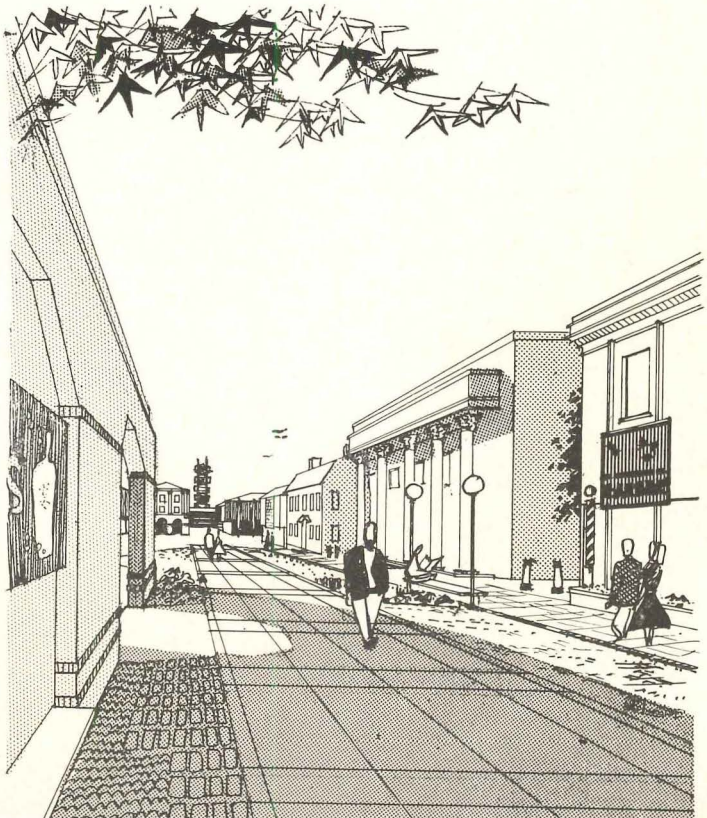
The last years have seen the great Newport jazz festivals. The shock of their incongruity in this setting gives an added thrill to the proceedings. A solution to the problems generated by the people who crowd the Jazz Festival could revivify sagging downtown Newport, and perhaps even bring the three disparate Newports together, to provide a replacement for the vanishing glory of the seaside High Society.

The problem was a natural for Princeton. Each fall during recent years architect Enrico Peressutti has come from Milan to give second-year graduate students a long problem meant to focus attention on architectural character, by emphasizing the intimate contact of their designs with the fully developed expression of another time. Last fall sixteen students took on the job of putting life back into Newport, by whatever means they could, as long as these means included a jazz festival area for 15,000 people, hotel accommodations for 600, and parking for everyone. The students, directed by Charles W. Moore for the six weeks before Mr. Peressutti arrived, visited the site, than came to a set of group decisions: they rerouted automobile traffic around the business district and selected a site for development along the bay beside the Long Wharf. Individually, they made and evaluated preliminary schemes, then worked on detailed studies for the immediate development of Washington Square, leaving all existing buildings but removing the cars. After this, they studied in detail the "joint" between the Square, the waterfront, and their own additions. Finally, they tried to find an architectural character for the whole site.

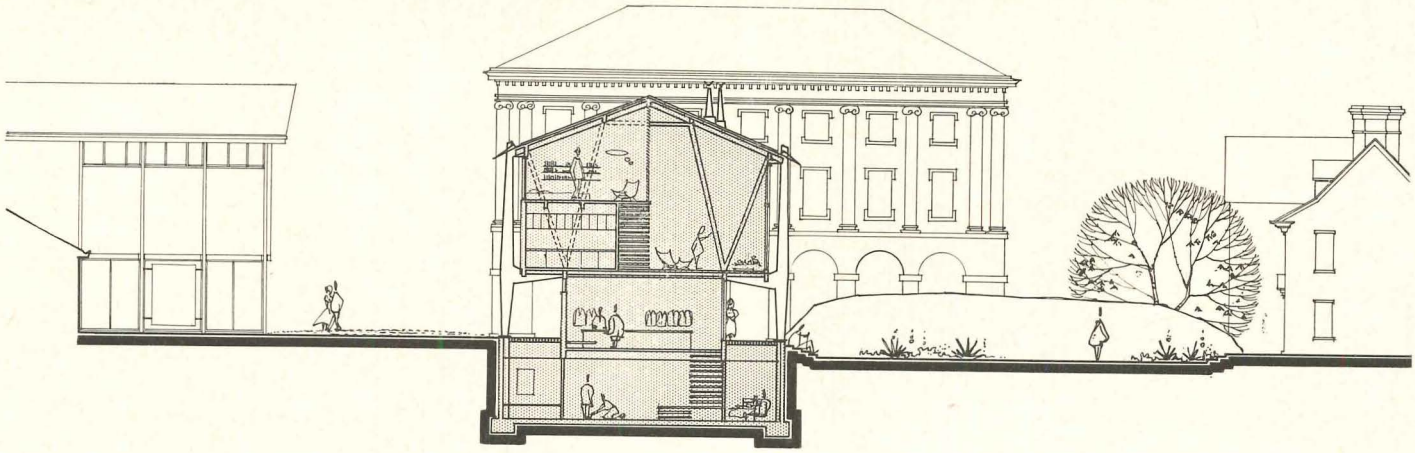




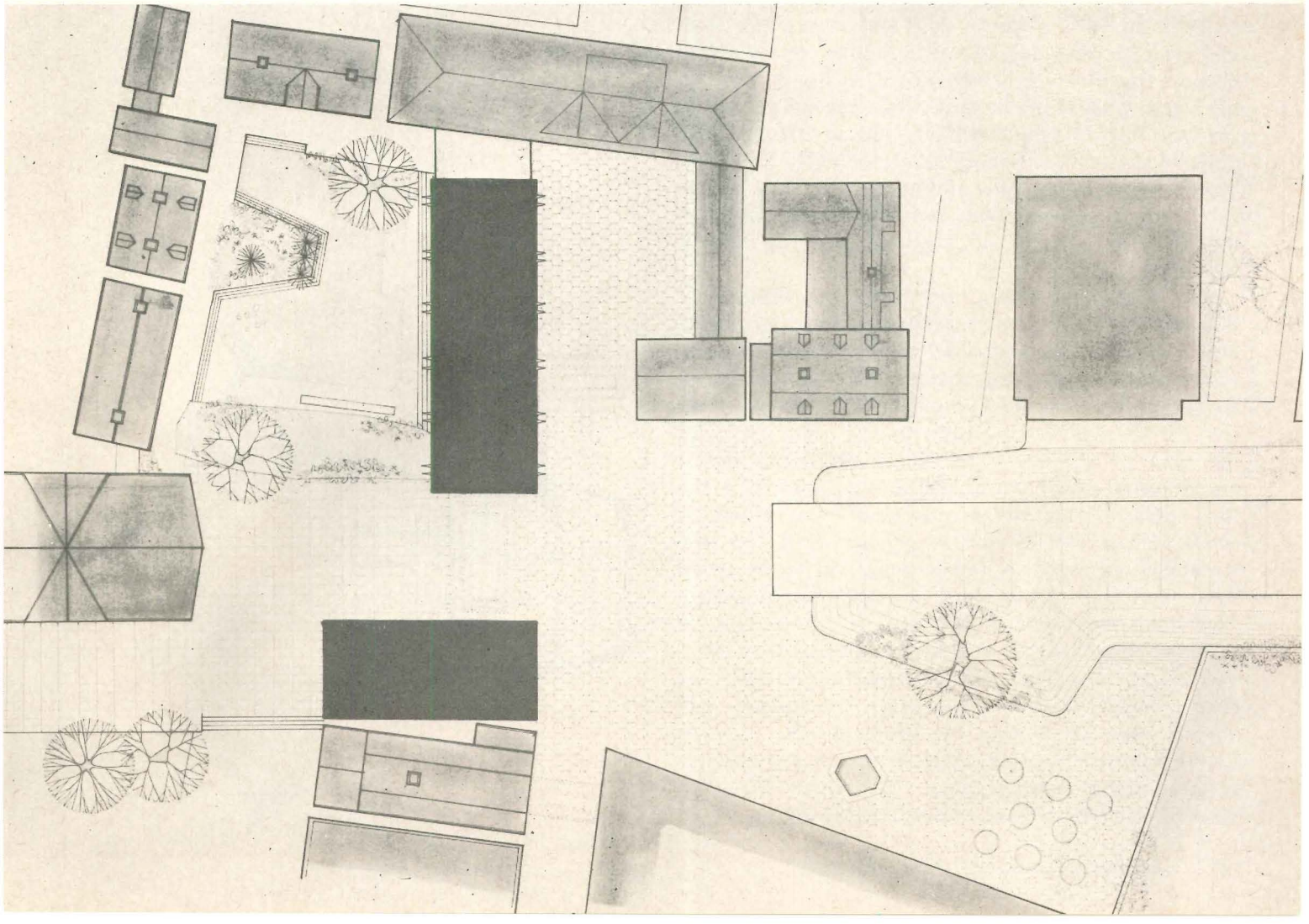


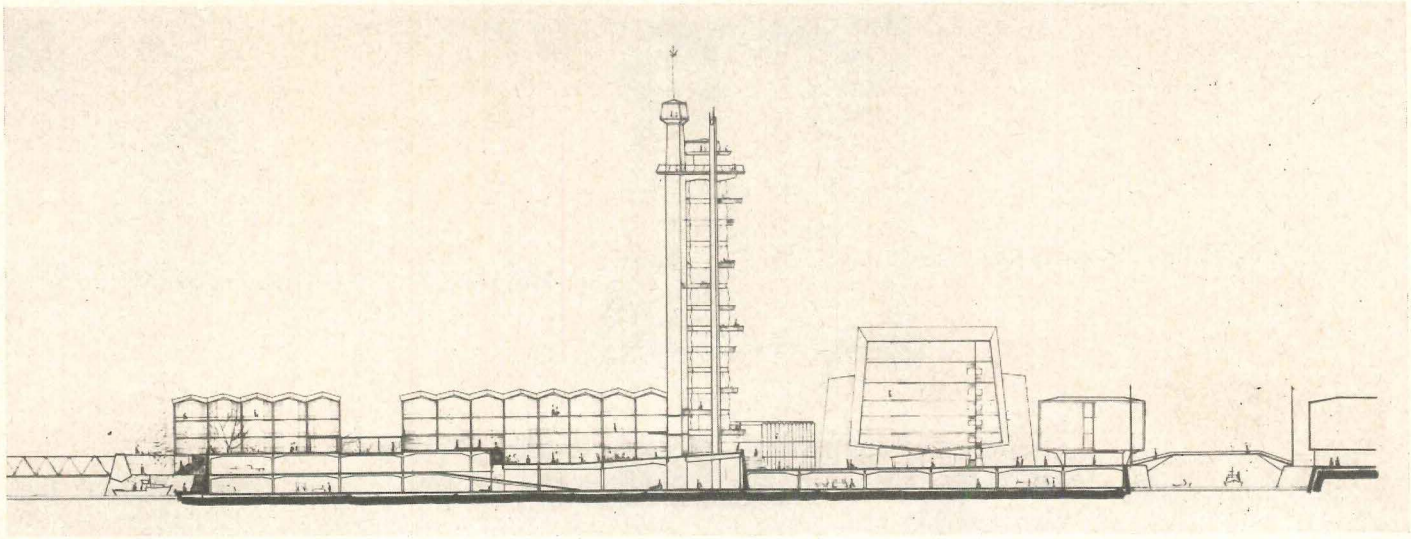


Above: Clarke Street, a study of the spatial character of the old town, the "tiny sunny empty . . . vistas." *Right:* looking down remodeled Washington Square to the historic Brick Market and a new tower. *Above right:* a new building at the northwest corner of the Square, shown in relation to the Brick Market it was designed to enhance.

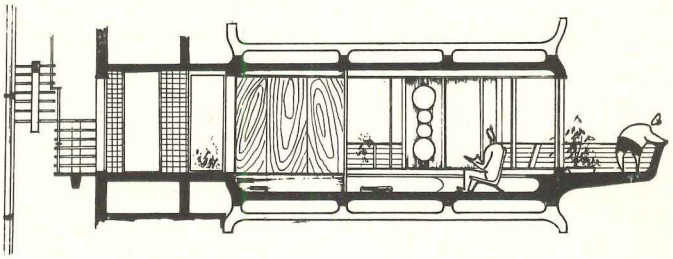


In the scheme illustrated, Washington Square (the triangular space in the plan opposite) is given a paved ramp leading downhill from the pre-revolutionary Colony House, east of the Square. The green beside the ramp is level with it on the east, but slopes more gently, so that beneath its western end there is space for shops. These should keep life in the Square after cars have been removed. The northwest corner of the space is given a new shops-and-apartment structure, which shows in the section above and the plan below. This is to serve, with the Brick Market which adjoins it to the south, as a "joint" between the historic Square and the projected additions. Another new building (top of plan below) provides a visual stop to the commercial area in narrow Thames Street. West of the Brick Market, a bayside promenade passes an historical museum and old ships, and looks to a tower farther west. A large area of railroad yards, once a pond, has been scooped out again to make an inner harbor, in which is an island, with a square for the large Jazz Festival concerts, hotel and convention facilities, and parking. Still farther west, a waterside residential area replaces docks.

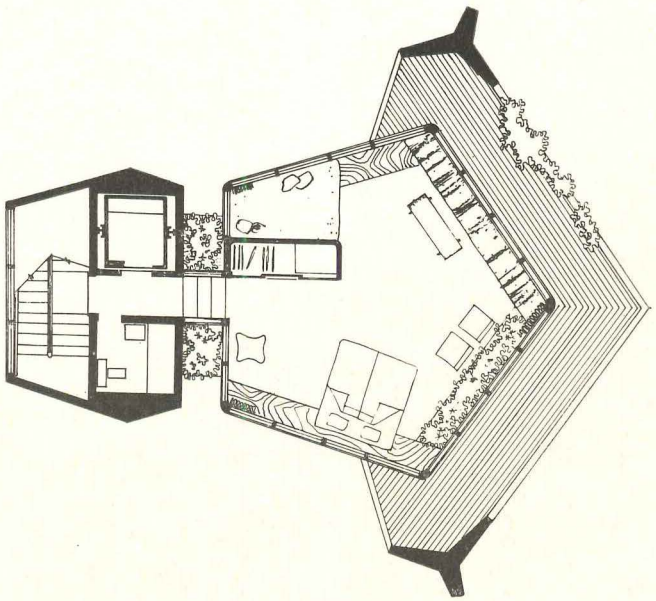


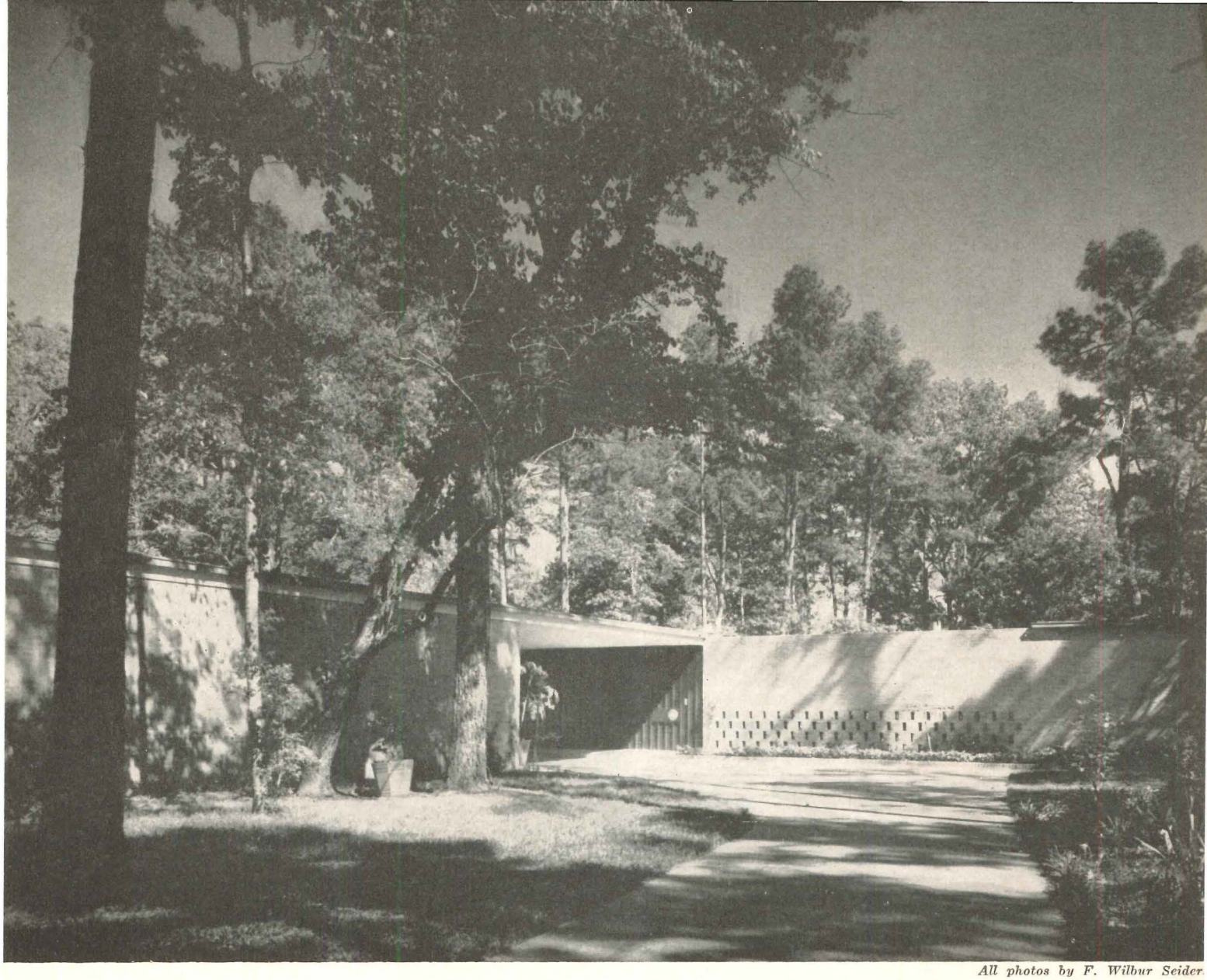


The island in the newly created harbor is lifted on layers of parking above the water level, so as to put developed areas beyond the reach of waves pushed by hurricanes. (Cars could be moved with the hurricane warning.) Because the Jazz Festival square required a controllable space which would not seem barren when crowds were absent, the biggest new buildings, including a civic auditorium and convention center, were disposed around it. Their balconies, rentable to festival-goers, look out over the square and back to the masts of sailing ships. As a central symbol for the new development, a tower was introduced. This spire is thin, since the point was to enhance the Newport skyline, not to hide it. The dimensions of the Trinity Church tower, the chief landmark of the skyline, influenced the new structure; one luxurious room per floor looks down on the Festival, the harbor, the bay, and the rest of Newport.



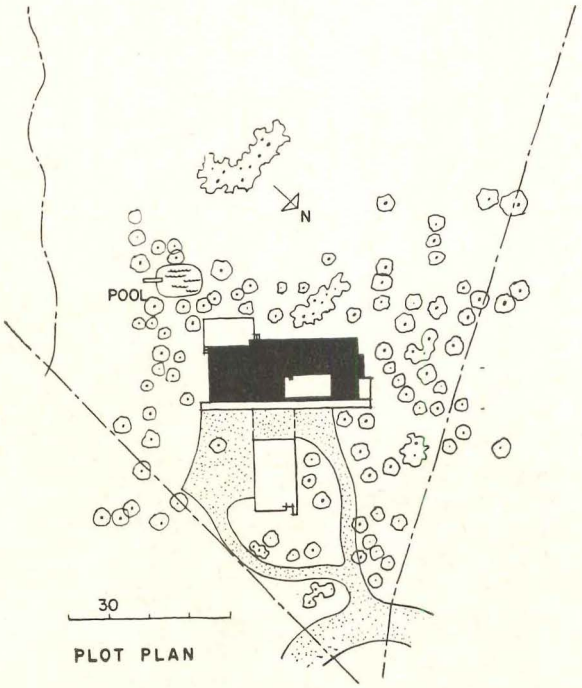
The drawings shown are from the scheme of William Turnbull, Jr., whose design the jury placed first, because it seemed to offer, with minimum construction, the maximum revitalization of downtown Newport. The dramatic clarity of the island location for the new hotel center made it, they thought, the kind of scheme which could catch the public imagination. Other student solutions favored by the jury included such diverse features as a system of small bistros placed to attract jazz fans into the streets of the town, a harbor made active by small boats and boat yards, and an academy of music. The chief requirement was that the proposals, in addition to providing the new facilities demanded, should put the existing old town back on its feet, and offer a focus which could enhance the summer colony as well. In solving the problem, the students found themselves concentrating on the architectural character of the additions. "The past," Mr. Peressutti says, "is in us as well as around us."





All photos by F. Wilbur Seider

PRIVACY, SPACIOUSNESS MARK TEXAS HOUSE



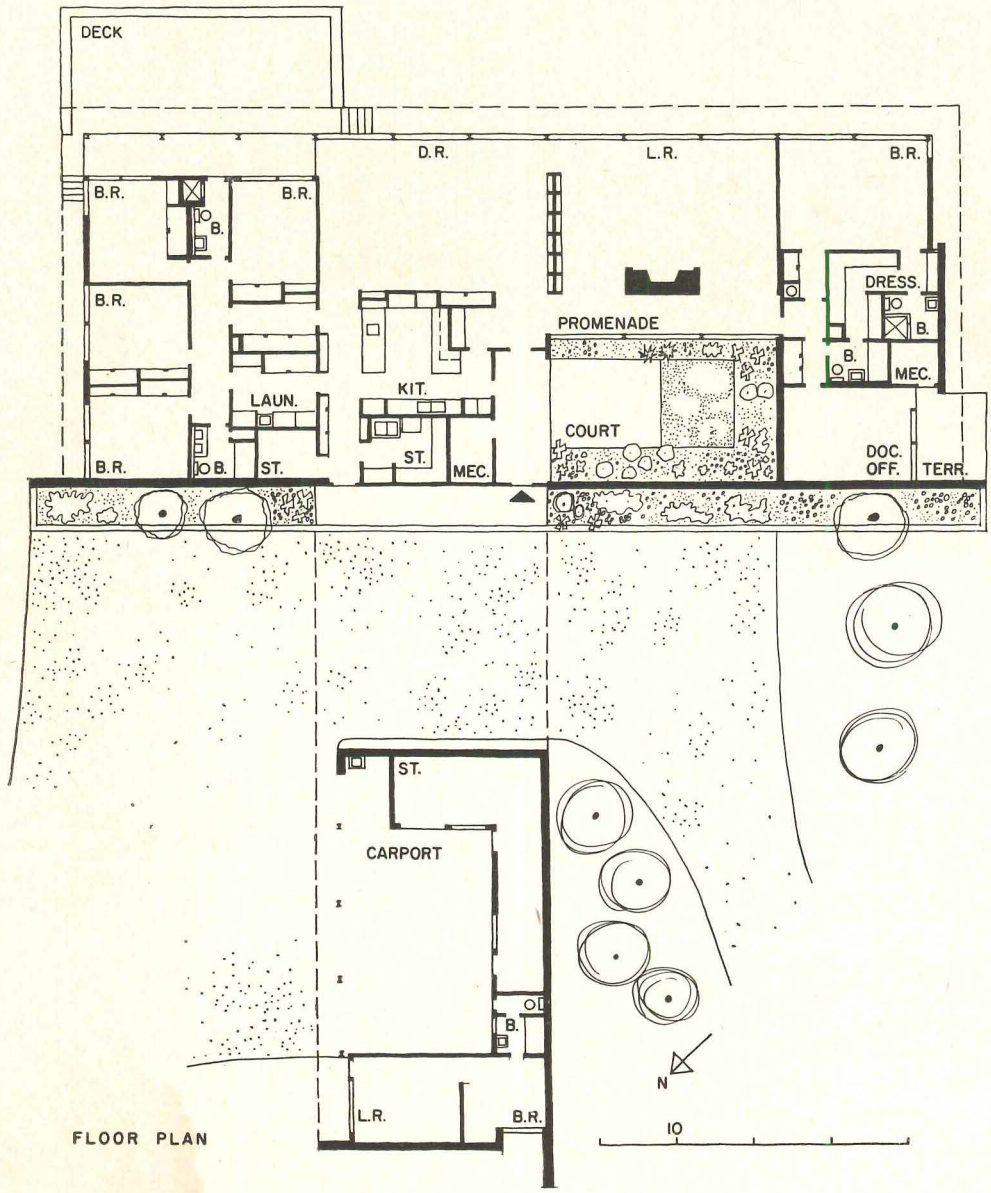
Residence for Dr. and Mrs. Mavis P. Kelsey
Houston, Texas

Wilson, Morris, Crain & Anderson
Architects

Walter D. Moore, Structural Engineer

Cook & Holle, Mechanical Engineers

J. S. Koenig, Contractor



Privacy, Spaciousness Mark Texas House

The plan of this house was based on the dual requirements of privacy and spaciousness for a family consisting of a doctor, his wife, and four boys ranging in age from 10 to 16. It incorporates—with marked success*—many of the best features of today's residential design: the solid front and open rear façades, the enclosed patio, the noise and activity zoning, the combined dining and family room, the provision for outdoor living.

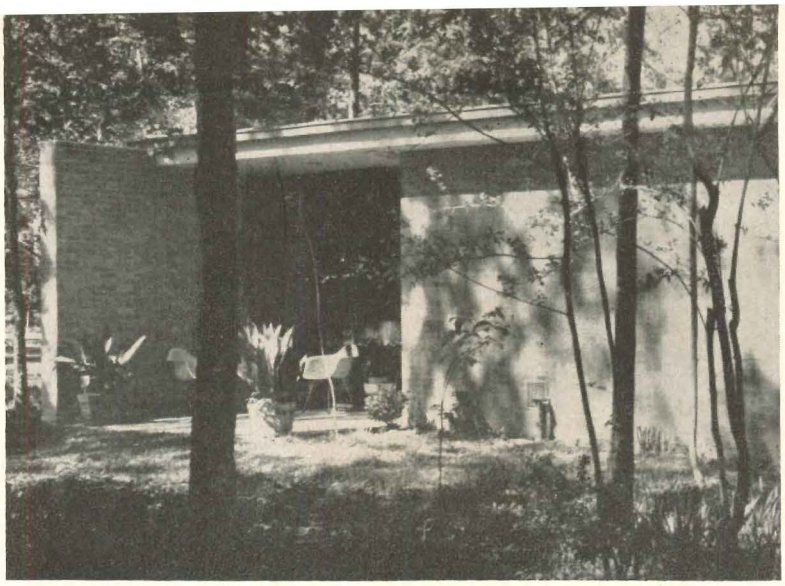
The house is situated on a triangular 4½-acre lot, heavily wooded, on the bank of a bayou. The narrow front and great depth of the property suggested the T-shaped arrangement of residence and carport, with the carport forming a shield for the main entrance. The approach side of the house is completely "buttoned-up" and the rear, facing the swimming pool, ravines and dense woods, is all glass.

The boys' bedrooms and the master suite are separated by a living area 60 feet in length, divided at its midpoint by a bookcase unit.

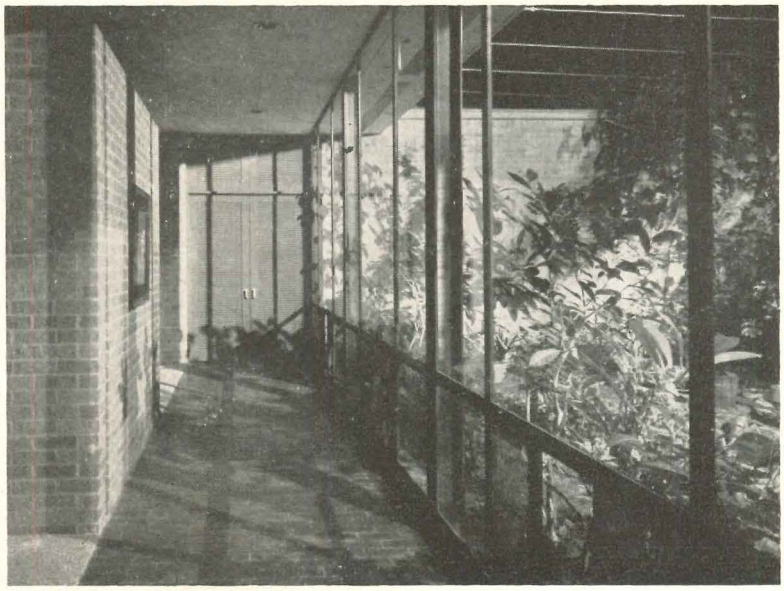
An acoustic tile ceiling over this area provides sufficient soundproofing to allow TV on one side of the divider and quiet talk on the other.

* The house received the First Honor Award for Residences in Texas Architecture '58, sponsored by the Texas Society of Architects at the State Fair of Texas.

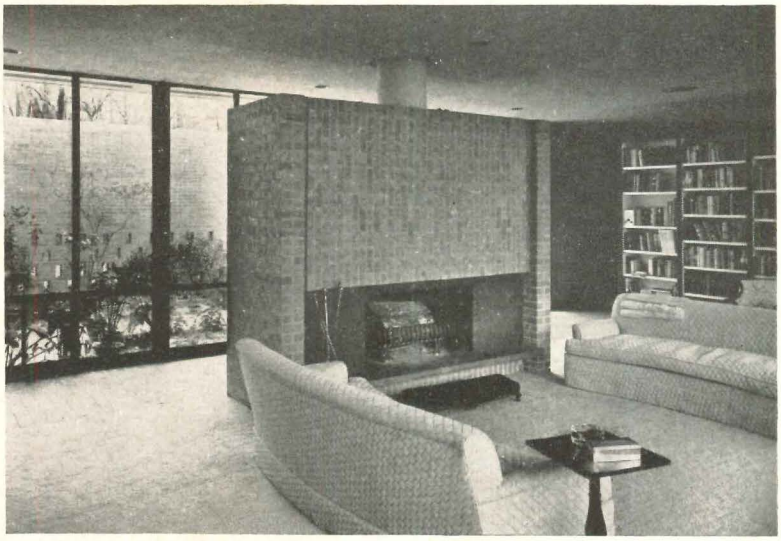
Privacy, Spaciousness Mark Texas House



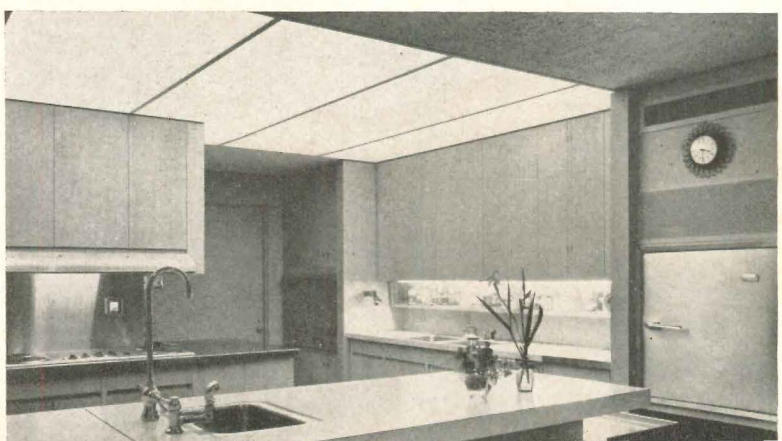
Master suite includes a home office or study for doctor-owner; it has its own entrance and small secluded terrace



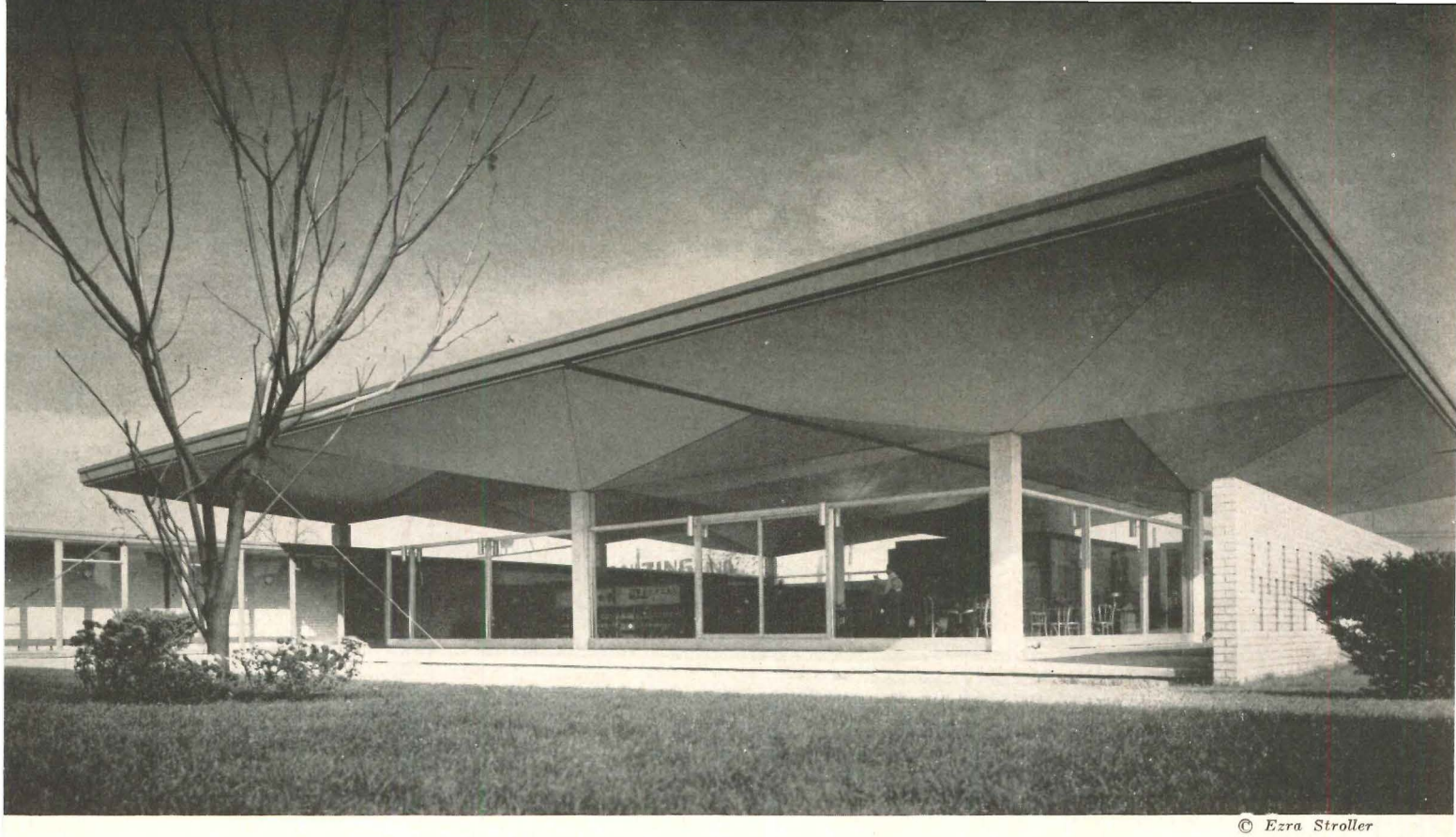
Approach to master suite from entrance hall is by brick-paved "promenade" along edge of luxuriantly planted patio



Adult half of living area, adjacent to master bedroom, is carpeted; dining and multi-purpose end has wood block floor



Kitchen is a completely inside area in center of house; an illuminated ceiling is used to give it cheerful lighting



© Ezra Stroller

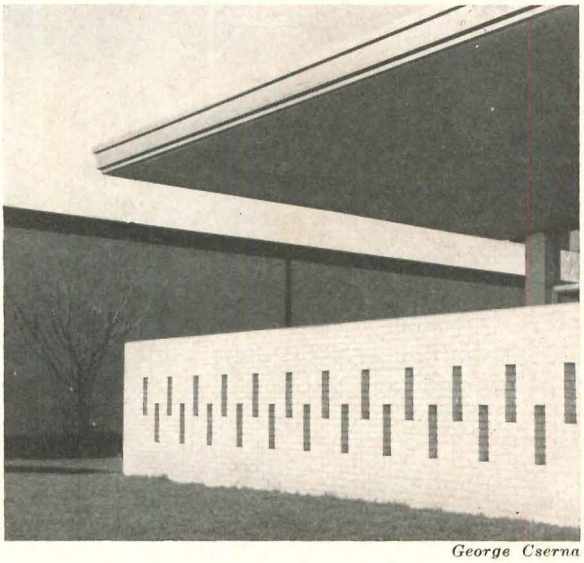
FRESH NEW CONCEPT FOR GARMENT MANUFACTURING PLANT AND OFFICE BUILDING

Barkin, Levin & Co., Inc., Long Island City, N. Y.

Ulrich Franzen, Architect

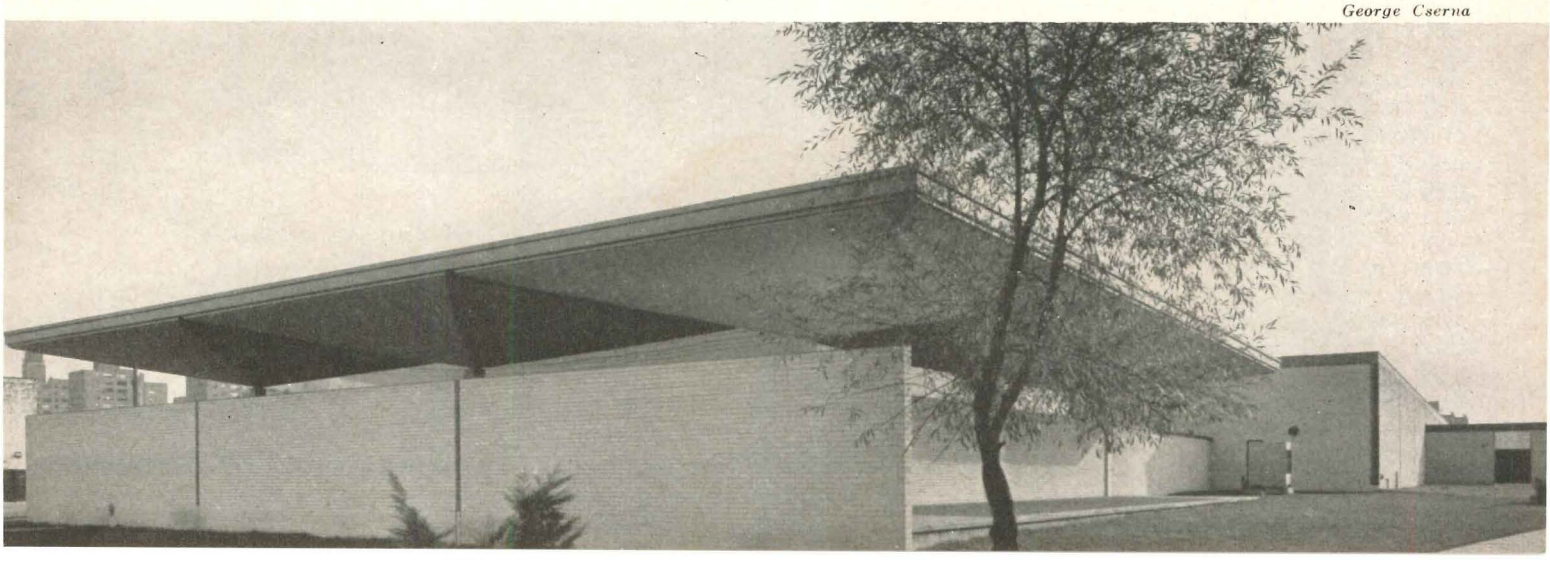
Seelye, Stevenson, Value & Knecht, Engineers

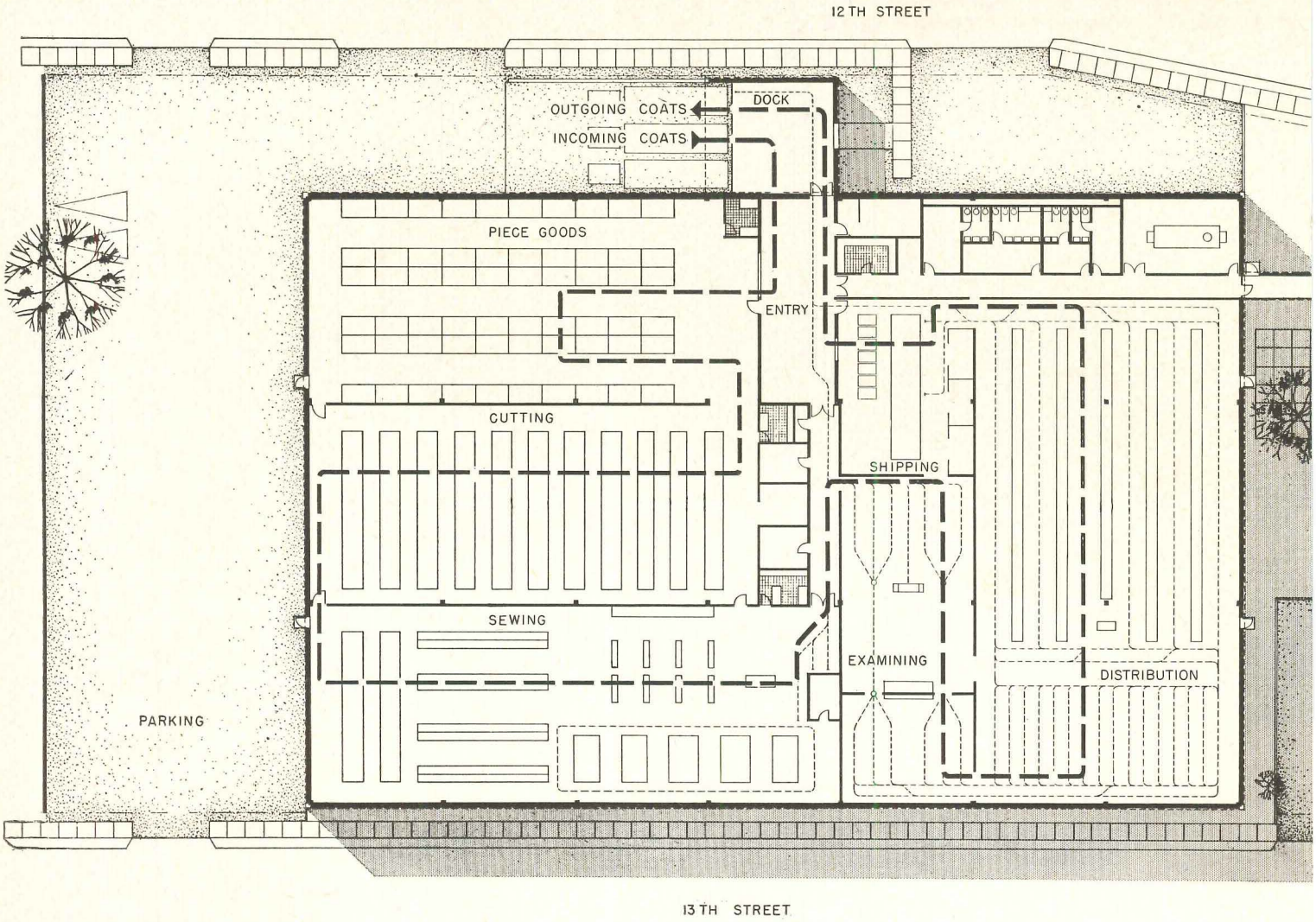
Schumacher & Forelle, Inc., Contractors



George Cserna

George Cserna



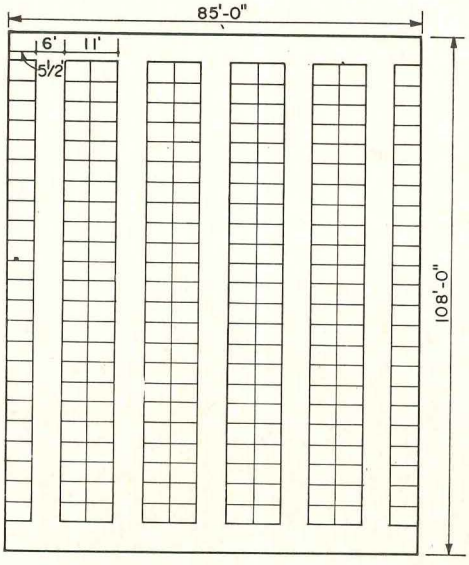


Garment Plant and Office

This plant, in which quality ladies' coats are manufactured, establishes a number of firsts in the garment industry in its conception, design and execution. It makes a break with industry tradition by its location outside the New York garment district. The plant design was based on new basic research into industry problems.

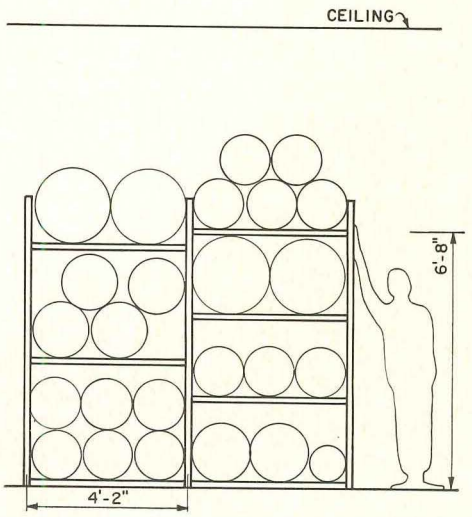
The plant owners turned to the architect for much more complete services than is usual in this industry. These included studies of relocation, new concepts of design, materials handling and automation, storage facilities, efficient flow lines, color studies, new types of furniture and fixtures, and coat presentation brochures.

One example of the completeness of the studies made by the architects of this building is the basic research they did on the problem of cloth storage in garment plants. The method of storage traditionally used is indicated in the plan and elevation shown at right. In this instance, the storage heights can be no more than a man can reach since all work is done by hand. Removal of cloth is made difficult by the relative inaccessibility of the stored materials

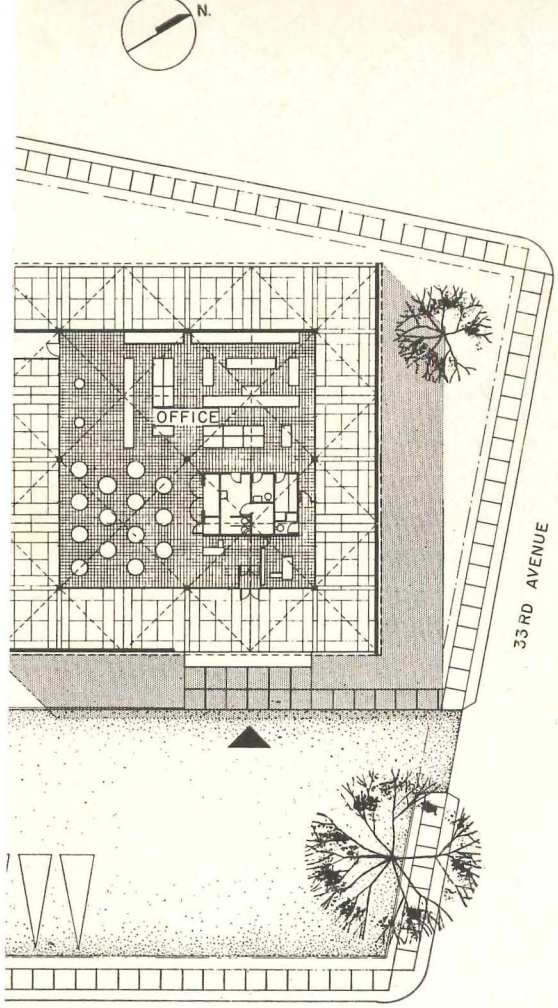


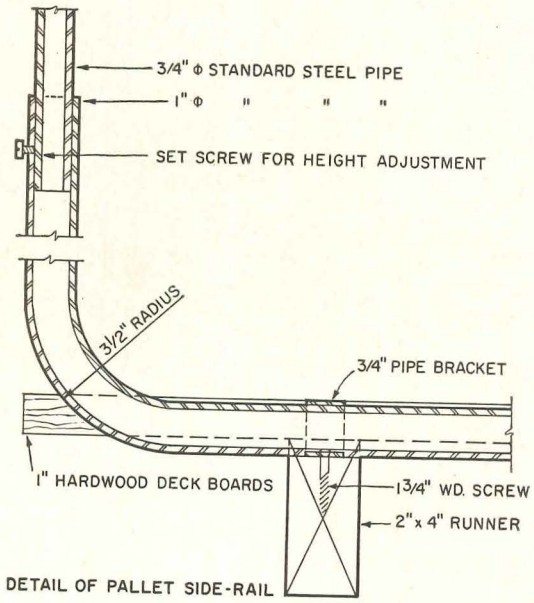
3000 UNITS / 3.12 = 947 LIN. FT. OF SHELVING

AREA 9,180 SQ. FT.

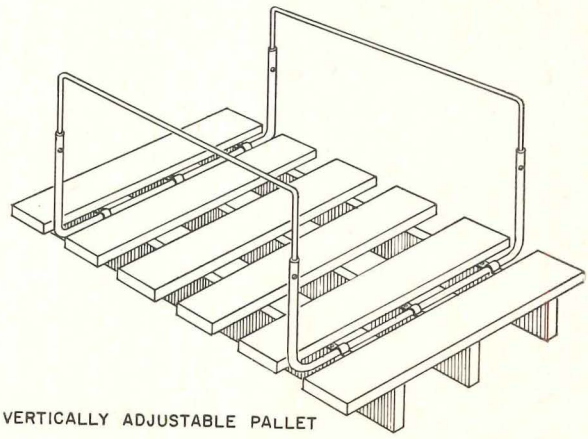


13 UNITS / 4.166 FT. BAY = 3.12/LIN. FT. OF SHELVING





DETAIL OF PALLET SIDE-RAIL

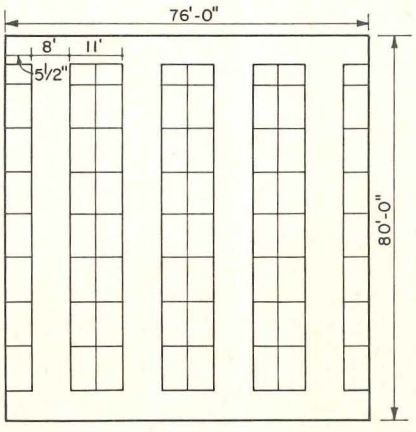


VERTICALLY ADJUSTABLE PALLET

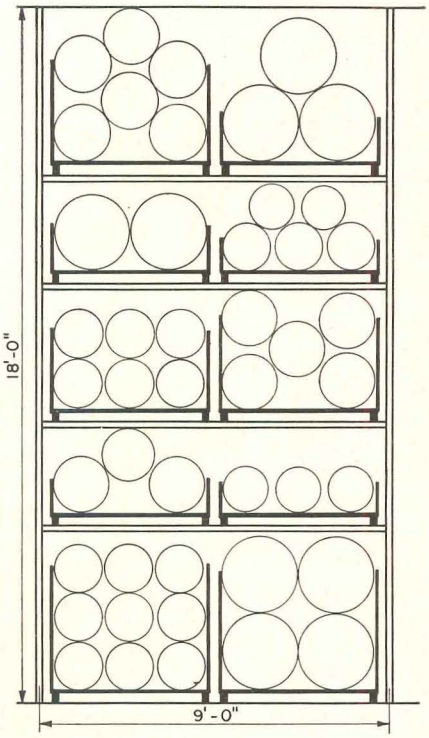
This is the first coat plant to consolidate all of its manufacturing processes under one roof. The architect-engineer-owner team attempted to provide the best working conditions and the most efficient operation possible. To accomplish these ends, all plant spaces and equipment were custom-designed for the particular needs.

Research by the architects into the feasibility of using palletized and fork-lifted fabric storage resulted in the discovery that an equal amount of cloth could be stored by these methods in about two-thirds the floor area formerly needed. Linear feet of shelving required for the new method is only 55 percent of the old. The architects also devised an adjustable pallet design to accommodate various size rolls of cloth and make them accessible

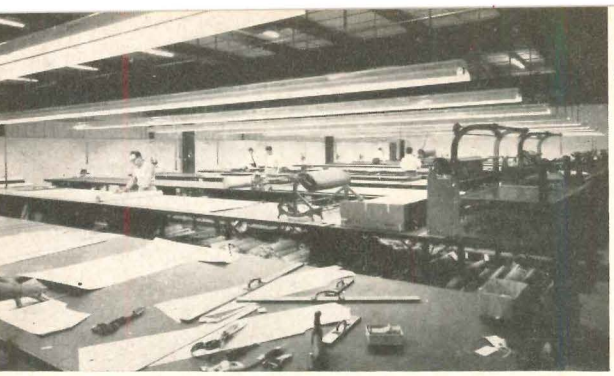
AREA 6,080 SQ. FT.



3000 UNITS / 5.65 = 530 LIN. FT. OF SHELVING



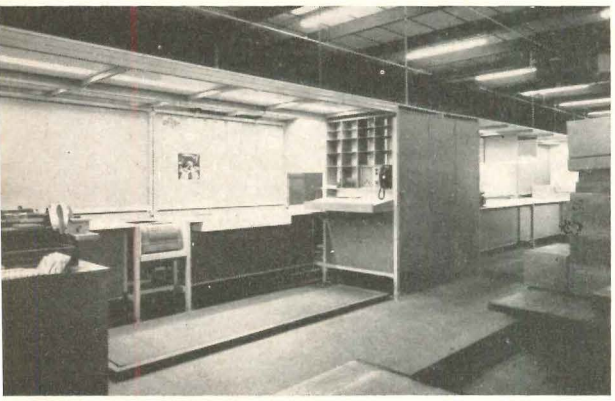
50 UNITS / 9 FT. = 5.65 UNITS / LIN. FT. OF SHELVING



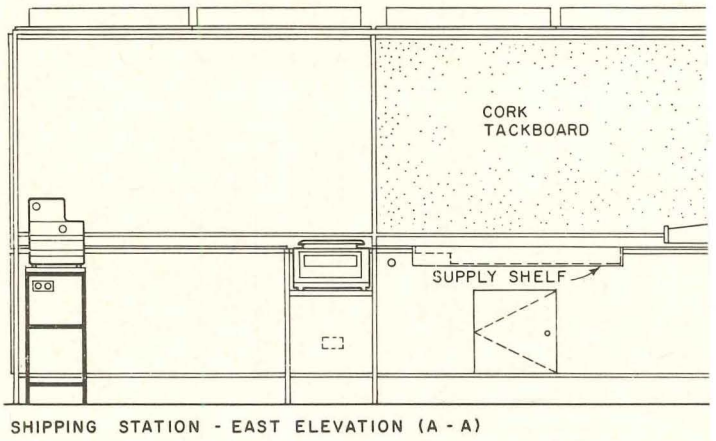
Photos: © Ezra Stoller

Cutting Room

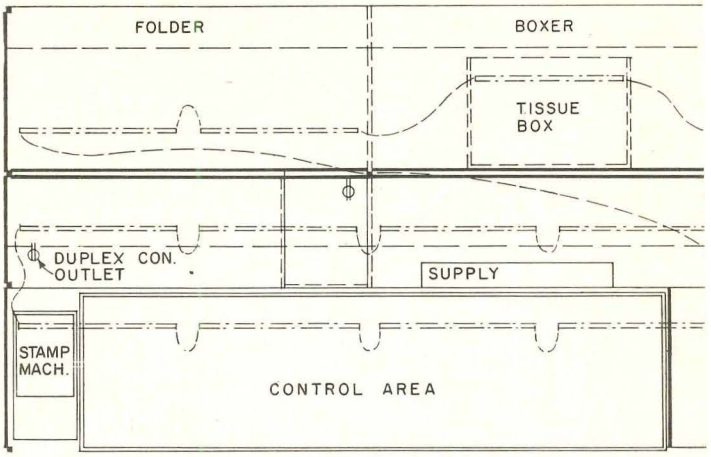
Distribution Area



Shipping Unit



SHIPPING STATION - EAST ELEVATION (A - A)



SHIPPING STATION PLAN

Garment Plant and Office

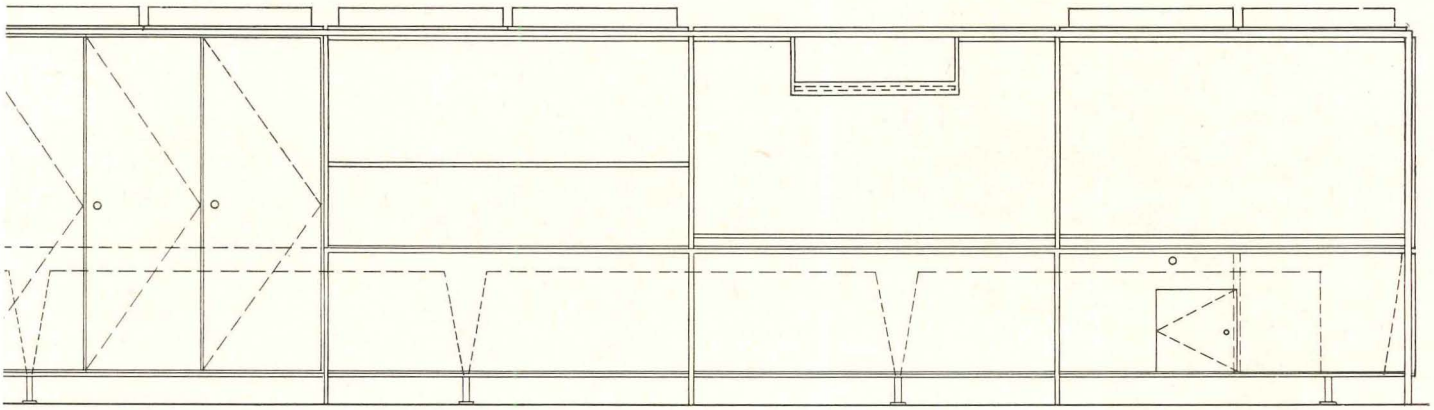
Concerning the major problems facing the garment industry, which they hoped to solve in this building, the owners say: "Manufacturing of coats under the expensive, cramped, and archaic conditions now prevalent has become economically unfeasible. We feel that we must be the equals in research, technological improvements, automation, and in every way of all other industries.

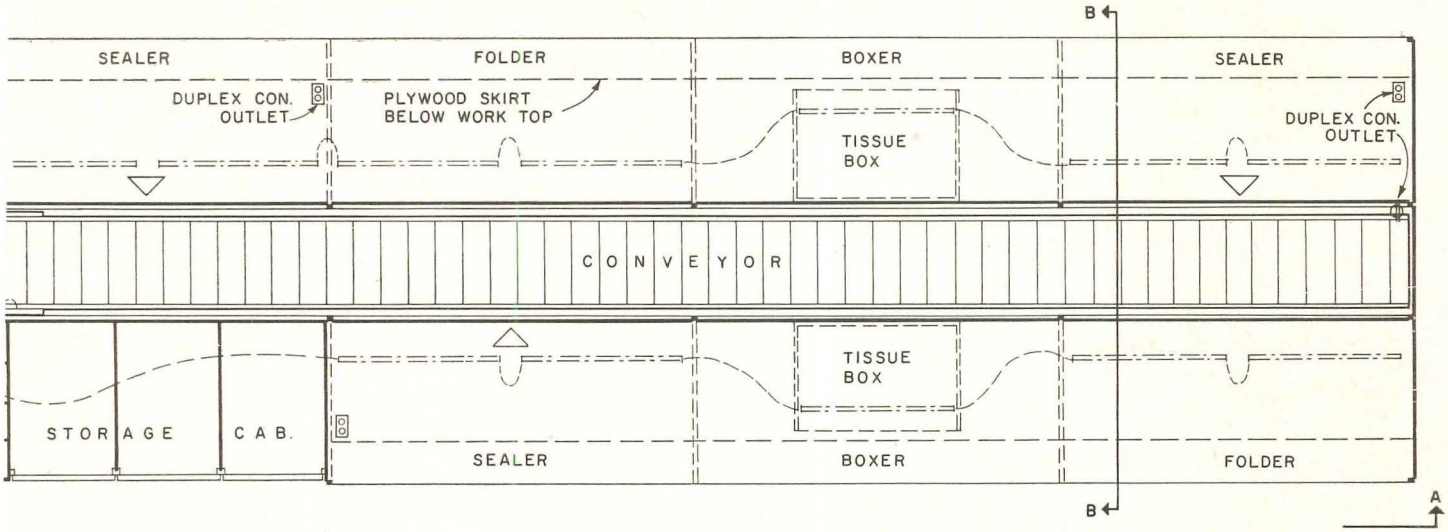
"Young people are not coming into the industry in sufficient numbers to create the strong, vigorous labor force we want and need. A change-over is taking place from original to second-generation management and the sons have more involved bases for judging success than did their fathers. New concepts of working conditions demand new appraisals of management's social consciousness.

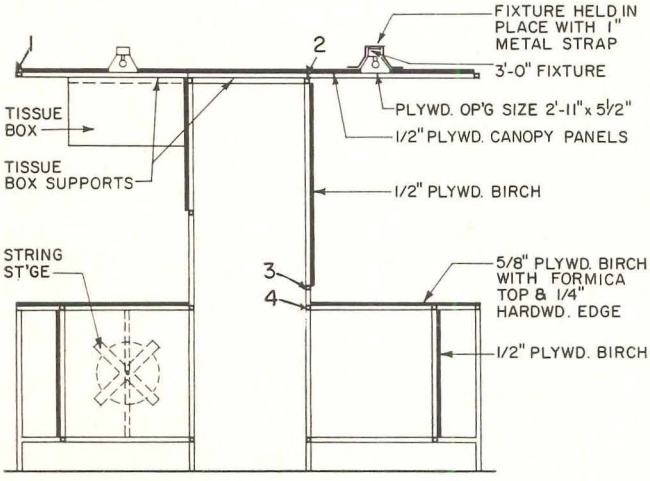
"For reasons such as these, we turned to architecture for answers to our problems. We wanted a simple, basic building, strong and clean, to symbolize the garment industry's acceptance of its many challenges."

Concerning their role in the solution of the owners' problems, the architects say: "We consider this the first modern plant for manufacturing coats in the garment industry, housing under one roof the entire process of manufacture from cloth to finished products. Flow of the products, from the receipt of the raw materials to the shipment of the finished coats was scientifically planned. Each department and work station was developed as an independent unit without the inhibiting influences of a preconceived building volume. Only after the principles of flow had been developed was the volume of the building studied. Departments were then laid in accordance with our concept of the perfectly functioning organism for this type of operation.

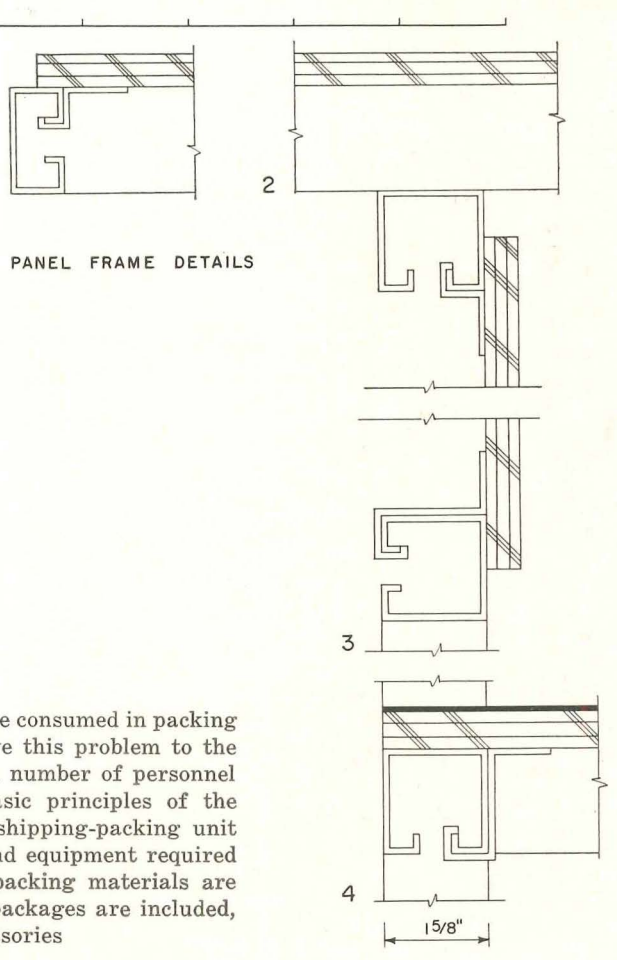
"We believe that the final result is a building which combines efficiency with pleasant working conditions. A tangible gage of the achievements made is a 50 per cent saving in space and a 30 per cent saving in the time required for making coats. These savings add to an 80 per cent improvement."





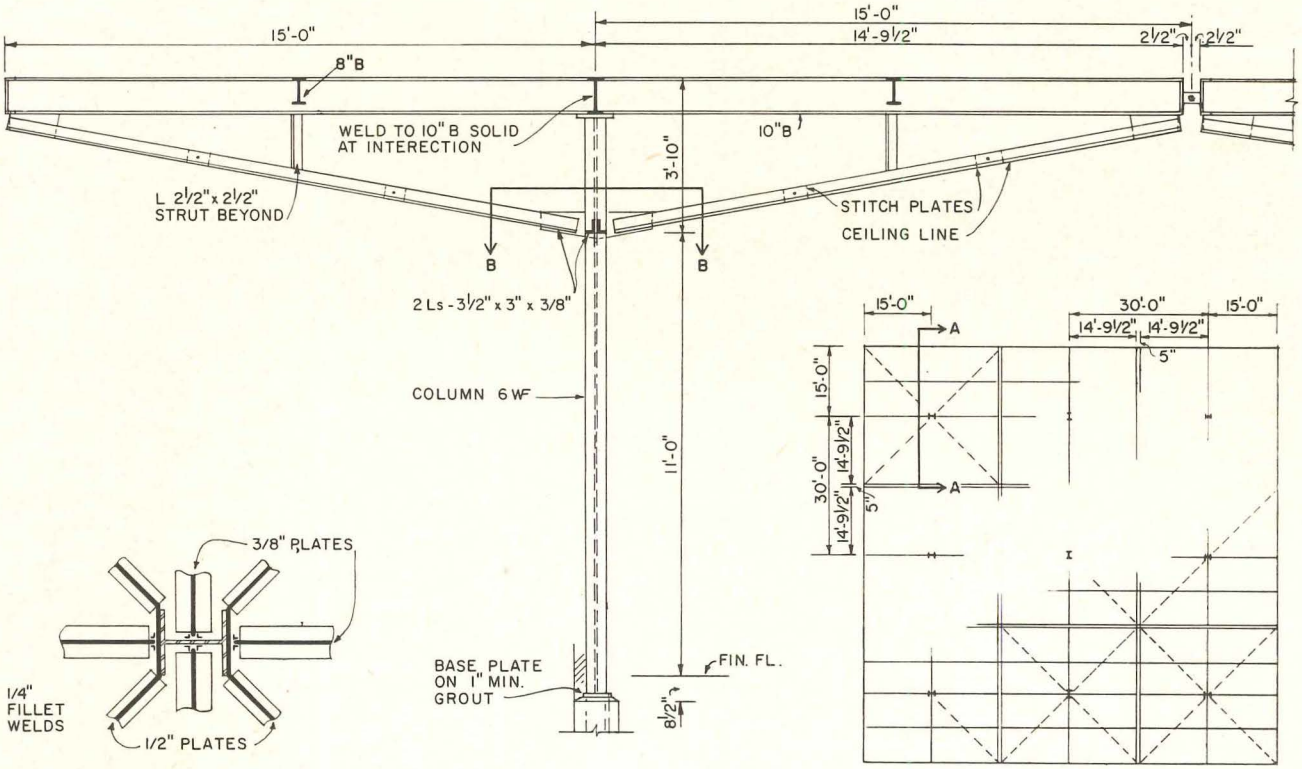


TYPICAL TRANSVERSE SECTION (B-B)



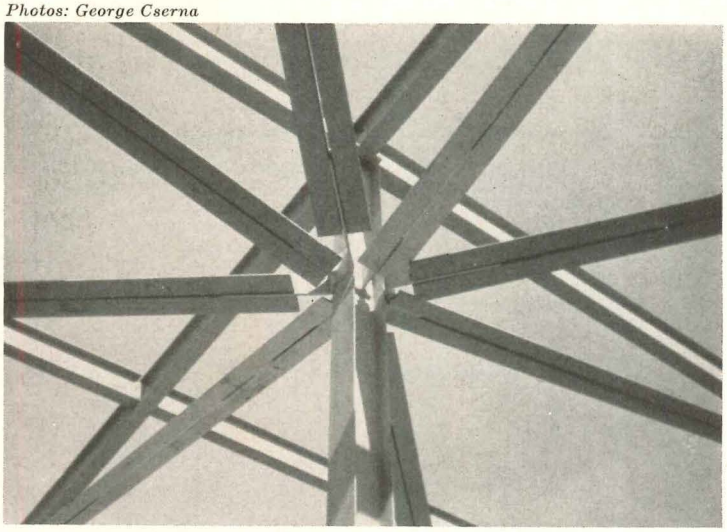
PANEL FRAME DETAILS

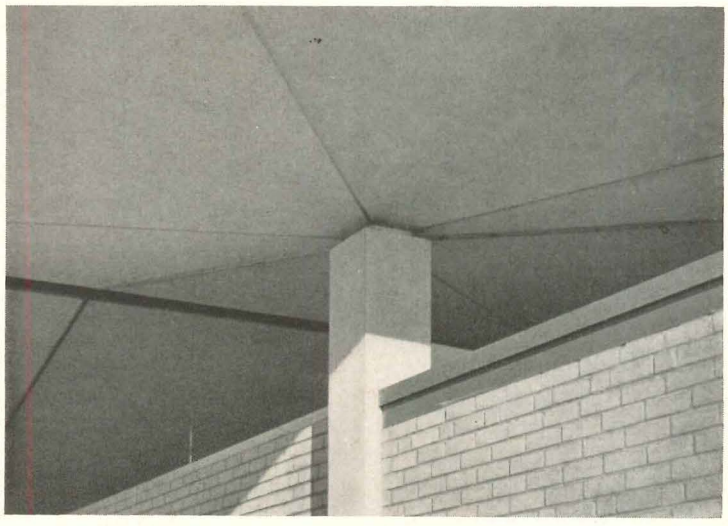
In volume production such as is carried on in this plant, the time consumed in packing and shipping operations can become critical. In order to solve this problem to the best possible advantage in time saving, ease of handling, and number of personnel required, the architects made scientific inquiry into the basic principles of the operations. One result of this study was the design of the shipping-packing unit shown in the drawings. The unit contains all of the spaces and equipment required for folding, boxing, and sealing the coats. In addition, all packing materials are readily available in the unit. Scales for weighing completed packages are included, as are stamp machines, tissue paper cabinets, and other accessories



PLAN OF SLOPING MEMBERS AT COLUMNS (B-B) SECTION AT COLUMN (A-A) ROOF PLAN OF OFFICE BUILDING

Photos: George Cserna





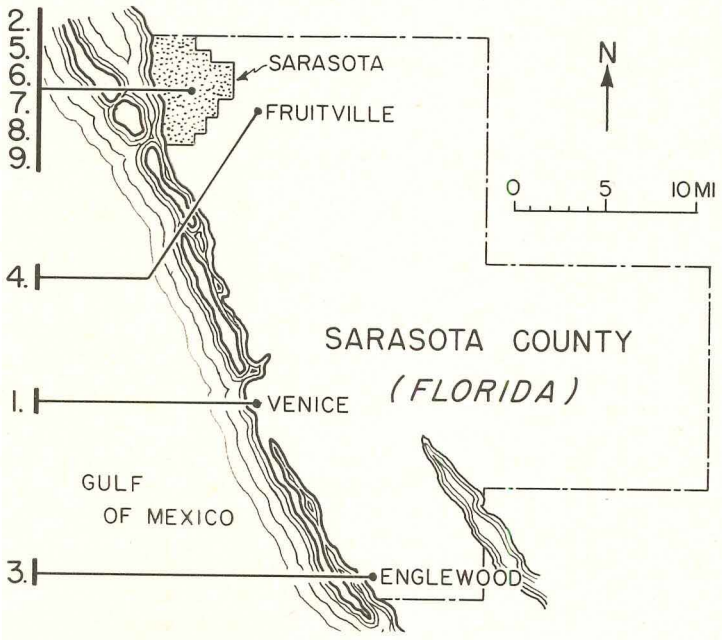
Garment Plant and Office

The manufacturing portion of the plant has a conventional steel frame structure with non-bearing concrete block walls. In contrast with this is the office section which is conceived as a glass-walled multipurpose pavilion. The structure here is a series of umbrellas, framed with relatively light steel shapes. Each umbrella is supported on a column and forms three-hinged arches with adjacent umbrellas at their common connections. The structure resulted in very reasonable costs and allowed the office area to be designed with a minimum number of interior columns. Another advantage of the umbrella structure was the feasibility of providing the deep, protective cantilevers on all sides of the office. A conventional poured gypsum slab was used over the roof framing of both office and factory and finished with built-up roofing. 8-in. solid brick walls were used on some portions of the office and free-standing walls outside are of the same material

BUILDING TYPES STUDY 267
®

SCHOOLS

SARASOTA'S NEW SCHOOLS: A FEAT OF ECONOMY AND IMAGINATION



1. JUNIOR HIGH: *Mark Hampton & John Crowell, Architects*
2. PRIMARY: *Mark Hampton, Architect*
3. ELEMENTARY: *Bolton McBryde and West and Waters, Architects*
4. ELEMENTARY: *Bolton McBryde and West and Waters, Architects*
5. ELEMENTARY: *Gene Leedy, Architect; William Rupp, Associate*
6. HIGH SCHOOL: *Paul Rudolph, Architect*
7. JUNIOR HIGH: *Ralph & William Zimmerman, Architects*
8. ELEMENTARY: *Ralph & William Zimmerman, Architects*
9. ELEMENTARY: *Victor Lundy, Architect*

Seldom does one run across a community school-building program of such consistent interest as the one now under way in Sarasota County, Florida.

Under the guidance of a very enlightened school board, with Philip H. Hiss as chairman, the four-year-old program has demanded a balance of quality and economy, good environment and good function, reasonable first costs and reasonable long-range costs. To date, the program has produced eight completed schools or additions, and has two more on the boards. Nine of these are shown here. The tenth will be presented in the March issue of ARCHITECTURAL RECORD. They are all worth studying; as a group they are fairly remarkable.

From the outset, the program was spurred on by a rather unique attitude: "The Board felt that it was more important to pick the best architects, even though they had not previously designed schools . . . a good architect not only should be able to design a school as well as any other type of building, but *not* having designed one previously might give a fresh mind and an open approach to the problem . . ." Few of the architects finally selected *had* designed a school before.

The group of schools also offers some good points for comparison: they were built about the same time (1955-1958); they are in the same locality; to a large extent, they were built for the same "client." Against this background of similarity, nearly every one has a totally different structural concept, and the school types range from elementary to high schools, from simple classroom additions to complete educational complexes.

As for the school board's current reaction to the buildings, Mr. Hiss states, "It should be obvious that the program is a dynamic rather than a static one, and that we have learned as we have gone along . . . We believe strongly that a school . . . like it or not, is an important environmental factor in a child's growth, and should contribute positively to his education. It should be esthetically good, and it should be a pleasant place encouraging learning. Although we have not made any very scientific studies as to the results, contact with teachers and students leads us to believe that the new schools have been most successful in creating a more attractive learning environment."

Planning Procedures—Team Work

In reply to an inquiry about what the Board felt had been learned from the program thus far, Mr. Hiss prepared the following listing:

"1. State survey teams are most helpful in bringing in an experienced school view for recommending school sites, types of schools needed . . . number of rooms needed . . . recommended additions to existing plants; classification of present buildings relative to their degrees of obsolescence. In matters of anticipating costs of building, survey

team calculations need to be supplemented by . . . site and site development, cost rise or fall trends.

2. Architects, unfamiliar with the effect of school space upon the administrative and curriculum aspects of a school program . . . need local school recommendations. . . .

3. School personnel, unfamiliar with building . . . need to counsel with architects for interpreting their ideas into school plans . . . Architectural experience, ability, and imagination can further develop and even change drastically school views that . . . have seemed to be consistent and most effective.

5. . . . once a school committee and one architect have worked together on one school, much value may be derived from their findings in working with other committees and other architects.

6. . . . we must build ahead of our anticipated growth if we are to maintain our present levels of academic excellence . . . having enough classrooms for the school program (and specialized ones), as science rooms, art rooms, music rooms, home economic rooms, etc., in order that these facilities may be used fully for their respective departmental programs, and do not become general classrooms . . . because of excessive school population". . .

It was felt strongly that, for future schools, the Board must "Encourage the freedom of architects and school committees to first create on paper what they feel to be the most ideal but realistic school they can imagine. From this . . . a shaping of ideas to budget and the shaping of budget to ideals may begin."

Special School Features

"It is also to be noted that with additional laboratory facilities, more lab time may be scheduled for developing student skills and techniques . . . that cannot be taught from a textbook or by teacher demonstration. Flexibility of room size in the Englewood and Fruitville Elementary Schools is intended to encourage teacher-team approach in elementary teaching. The possibility of small and large group activities is a major feature. The design of larger-than-minimum elementary classrooms is not intended as facilities for crowding more children into the rooms, but rather to allow for greater flexibility in the grouping and activities . . . within the classroom. The use of the out-of-door classrooms allows each teacher two rooms of space . . . All of these schools are equipped with a conduit for educational television . . . daylight screens are used for audio-visual programs."

Costs of the Schools

Against this almost idyllic background of wants and procedures, and most seem to have been satisfactorily solved, the costs of the schools appear quite reasonable. A detailed cost breakdown on each is given in the table below, and on the first page of each school presentation. The figures are broken into several commonly used quantities, with explanatory notes in the footnotes below. In the comparisons, of course, the type and scope of the school should be considered, as well as any special functions not ordinarily provided.

SCHOOL	BUILDING CONSTRUCT.[1] COST ($)	GROSS FLOOR AREA[2] (sq ft)	NET EDUCATION. FLOOR AREA[3] (sq ft)	PUPIL CAPACITY[4]	PUPIL STATION CAPACITY[5]	GROSS AREA COST ($ per sq ft)	NET EDUCATION. AREA COST ($ per sq ft)	COST/ PUPIL ($)	COST/ PUPIL STATION ($)	NET COST/ GROSS COST x 100%[6] (%)
1. VENICE JUNIOR HIGH	408,458.00	37,380	26,030	297	512	11.00	15.70	1,375.00	800.00	70
2. PROJECT— AMARYLLIS PARK ELEMENTARY	—	—	—	—	—	—	—	—	—	—
3. ADDITION— ENGLEWOOD ELEMENTARY	271,889.00	22,103	12,707	243	243	12.30	21.40	1,119.00	1,119.00	58
4. ADDITION— FRUITVILLE ELEMENTARY	185,443.00	15,308	11,955	297	297	12.10	15.50	618.00	618.00	78
5. BRENTWOOD ELEMENTARY	594,735.00	70,547	37,600	648	708	8.40	15.80	918.00	740.00	53
6. RIVERVIEW HIGH	1,070,898.00	92,093	66,642	594	1109	11.60	16.10	1,805.00	965.00	72
7. BROOKSIDE JUNIOR HIGH	494,153.00	56,282	40,188	486	781	8.80	12.30	1,020.00	630.00	71
8. BOOKER ELEMENTARY	454,714.00	61,480	34,629	648	753	7.40	13.10	700.00	600.00	57
9. ADDITION— ALTA VISTA ELEMENTARY	154,068.00	18,416	13,089	324	324	8.40	11.70	476.00	476.00	71

NOTES:

1. Does not include costs of site development, equipment or professional fees. For these costs, consult individual buildings in following pages.

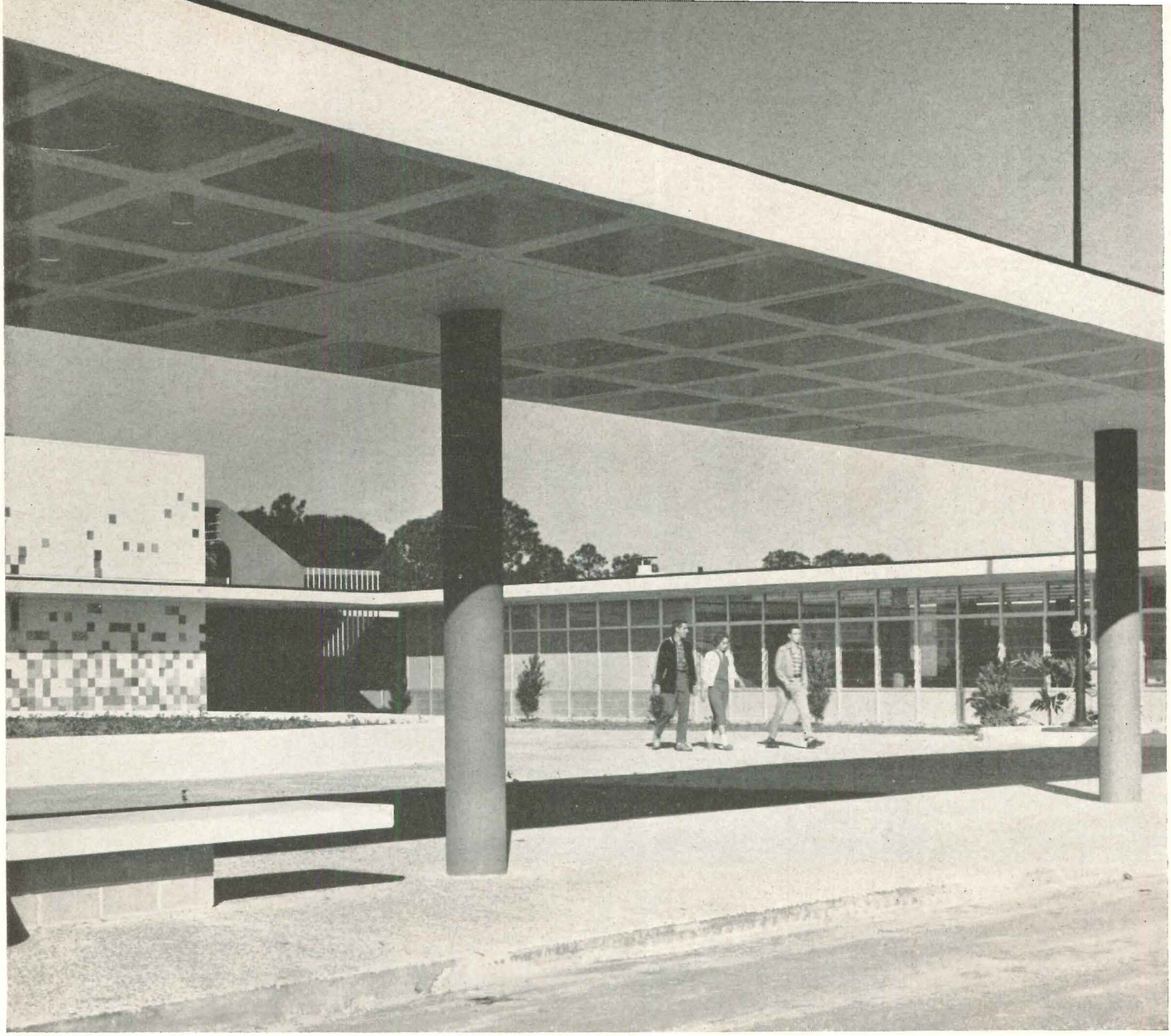
2. Includes the total sq ft area of the schools. Sarasota School Board interprets this to include stairways and developed basement areas at full value, and such spaces as passages, sheltered platforms, porches, covered play areas and the like at one-half area.

3. Includes the total sq ft area of all interior spaces utilized for strictly educational purposes. Measurements are taken inside, wall to wall, of all classrooms, special purpose classrooms, shops, laboratories, and the like. Also included are auditoriums (but not their lobbies), cafeterias (except kitchens and auxiliary spaces), libraries, band rooms, gymnasium shower and locker rooms, offices.

4. Actual classroom capacity (not including special-purpose classrooms). Sarasota School Board assumes each classroom to have a capacity of 27 pupils, regardless of classroom size.

5. Used by Sarasota School Board as an aid in determining actual school educational effectiveness, to help in relative comparisons of various school plants. Ordinary classrooms are assumed to have a pupil station capacity of 27 pupils each. Other spaces are assumed to have pupil station capacities as follows: Kindergarten (Double Sessions)—40 pupils, Science Laboratories—25 pupils, Commercial Education—25 pupils, Home Economics—25 pupils, Art—25 pupils, Shops—20 pupils, Band or Chorus Rooms—35 pupils, Gyms or Playrooms—35 pupils, Gyms or Playrooms, with partition—70 pupils, Swimming Pools—25 pupils, General Education Laboratories or study halls—35 pupils.

6. Sarasota Board rates schools on use of floor area by the percentages shown. It should be noted that outdoor classrooms and similar areas are included in gross area figures, tending to lower the percentages for schools with facilities of this kind.



All photos pages 205 through 226 by Philip H. Hiss

1. Venice Junior High School, Venice, Florida

Mark Hampton, Architect; John Crowell, Associate Architect; Russello & Barker, Structural Engineers; Charles T. Healey, Mechanical Engineer; Bolt, Beranek and Newman, Acoustical Consultants; B. B. Bradley, Landscape Designer; Chester Mabry Construction Co., Contractors

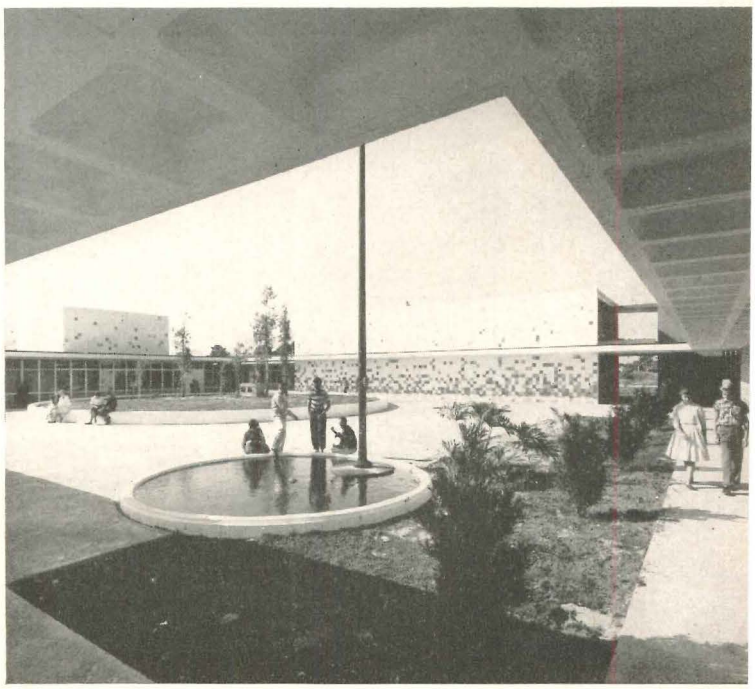
BUILDING COSTS [1]

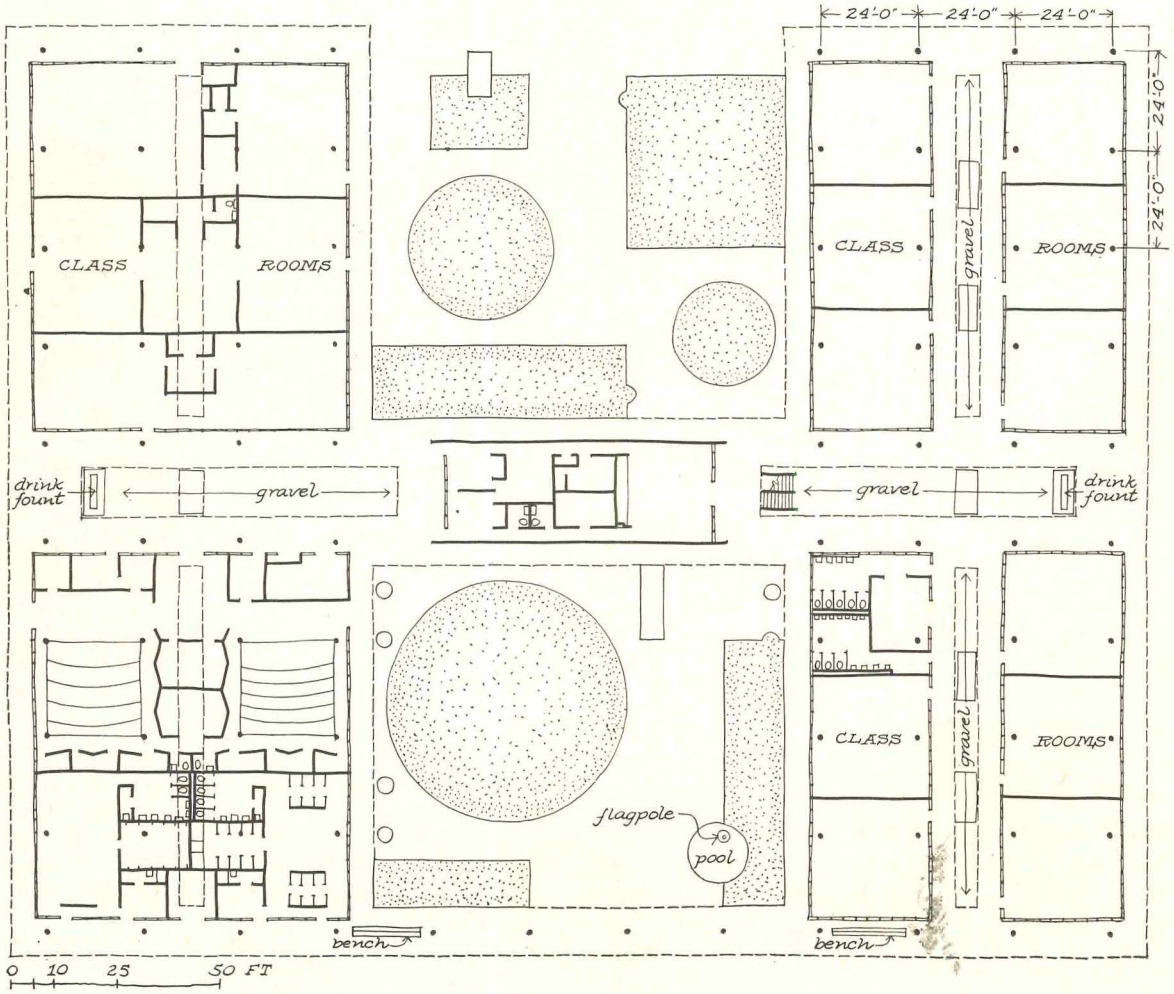
Land (From Federal Government)		$ 500.00
Site Development [2]		106,631.00
Equipment		38,400.00
Professional Fees		31,107.00
Building Construction [3]		
General Construction	$293,310.00	
Plumbing	33,260.00	
Heating & Ventilating	21,658.00	
Electrical	39,230.00	
Cabinet Work	8,000.00	
Painting	13,000.00	408,458.00
TOTAL ACTUAL COST		**$585,096.00**

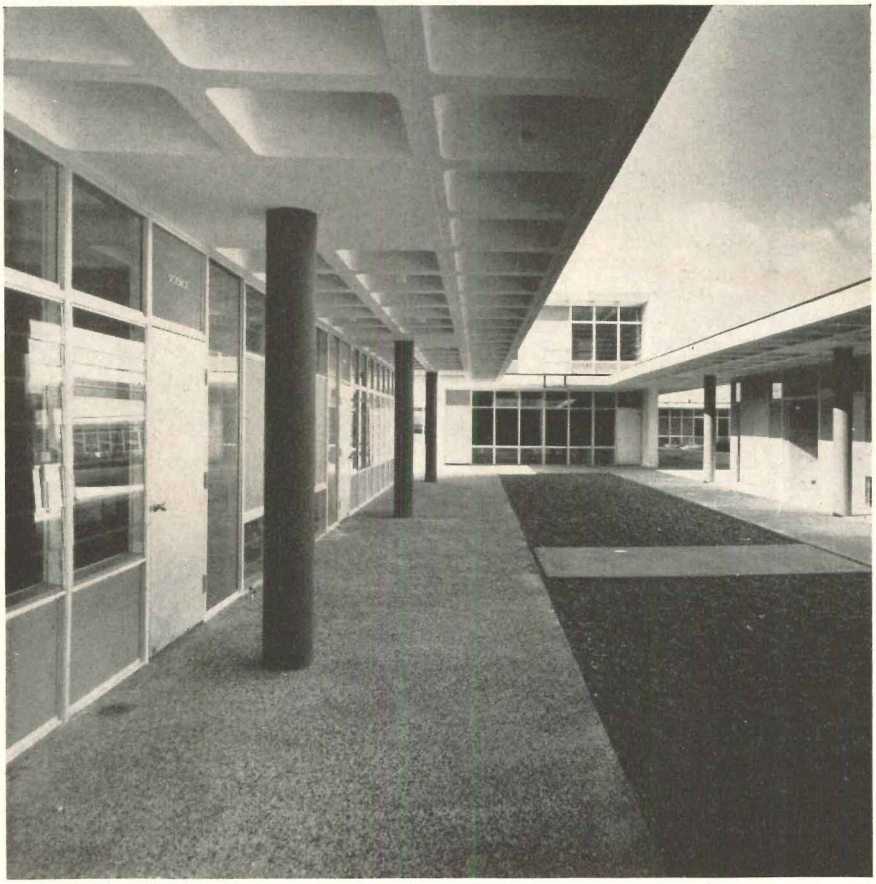
[1] See page 204

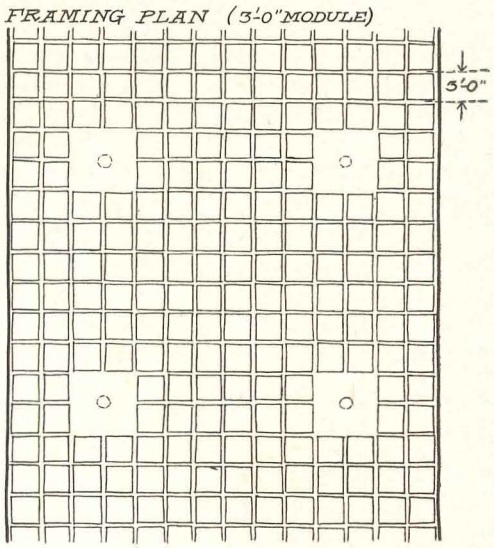
[2] Includes larger amount than usual of paved areas (parking, roads, play).

[3] Does not include work on existing high school kitchen and dining room.




24'-0"
24'-0"
24'-0"
24'-0"
24'-0"
CLASS
ROOMS
gravel
CLASS
ROOMS
drink fount
gravel
gravel
drink fount
flagpole
pool
CLASS
ROOMS
gravel
bench
bench
0 10 25 50 FT



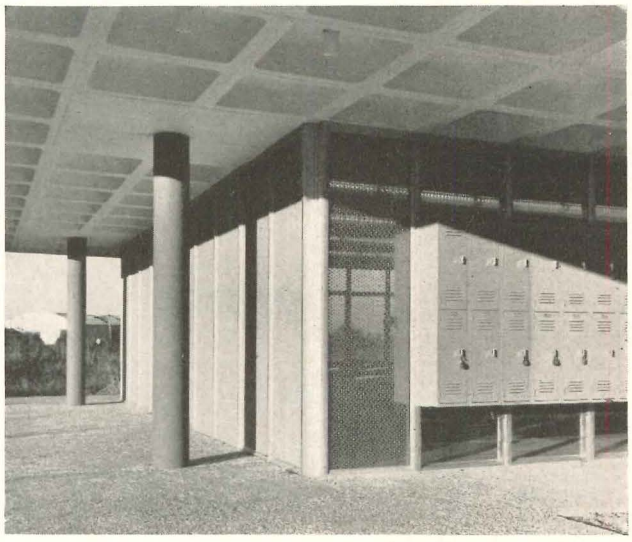


The structure is reinforced concrete with 24-by-27-ft bays subdivided on a three-ft module both ways. Round columns support a two-way waffle roof slab formed on removable metal domes to compose a gird of concrete beams

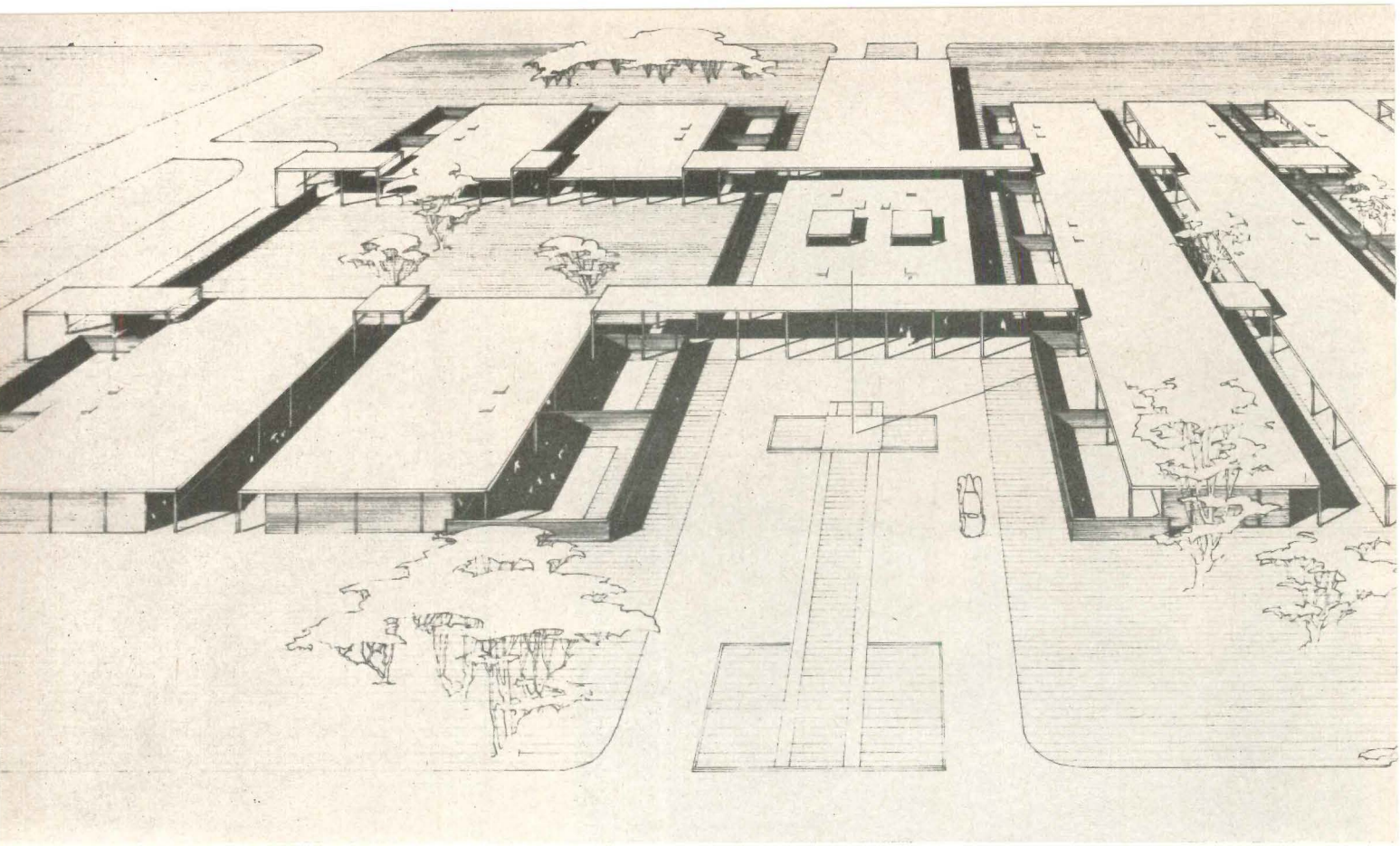
1. Venice Junior High School

The school is located between an existing high school and an elementary school. An important program requirement was the recognition of the transitional position of activities in this junior high between those of the lower and higher grades of the nearby schools. The problem included development of a site plan for the entire complex, with provisions for playground needs of all students. These include a stadium, athletic field and auditorium which are shared by high school students and also used for general municipal events. Traffic was carefully studied to allow efficient transportation to and from all three schools simultaneously. Joint parking facilities are provided for both high schools, auditorium, and stadium. Music facilities had a high priority in the building program because of student interest and the enthusiastic support of these activities by the community. Music rooms and similar special facilities are shared by the high schools.

Interior partitions between classrooms are constructed with steel studs on which chalkboard or perforated hardboard is mounted from floor to ceiling. Floors are generally vinyl-asbestos. Ceilings are painted concrete with acoustical asbestos compound sprayed between beams. Exterior doors are aluminum.

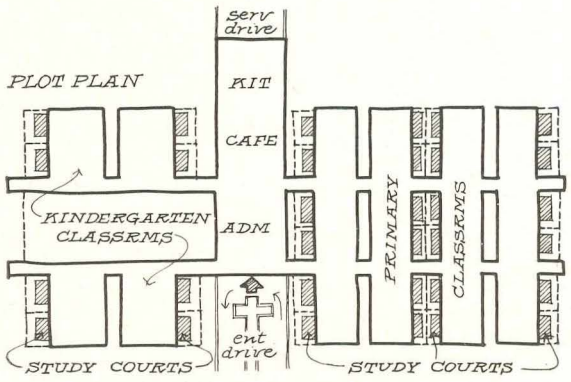


Exterior materials were chosen for their durability when exposed to rot and termites prevalent in area, and for gay color. Concrete block walls are stuccoed and painted or covered with patterns of ceramic tile. Aluminum curtain walls are glazed or filled with asbestos-cement fiberboard panels. Student lockers are supported directly on these units with shelf angles bolted to the aluminum mullions of the curtain wall units



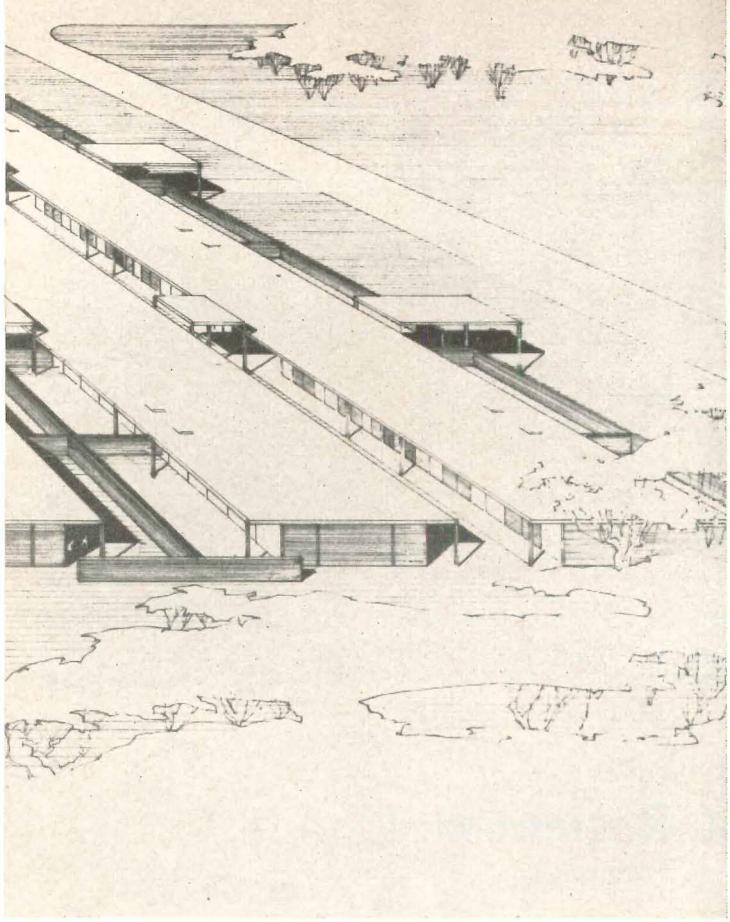
2. Project: Amaryllis Park Elementary School, Sarasota, Florida

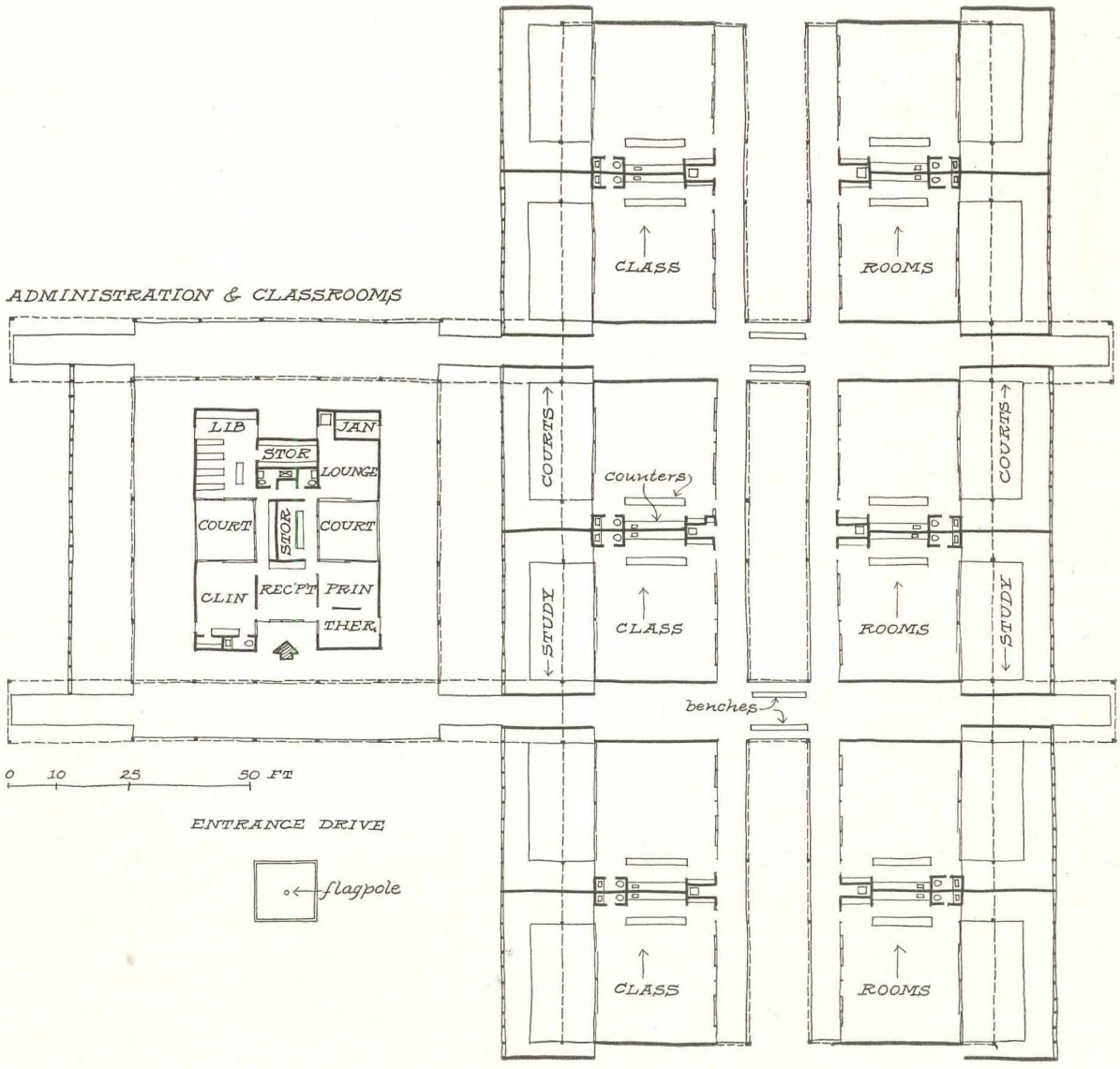
Mark Hampton, Architect; J. C. Russello, Structural Engineer; Ebaugh & Goethe, Mechanical Engineers

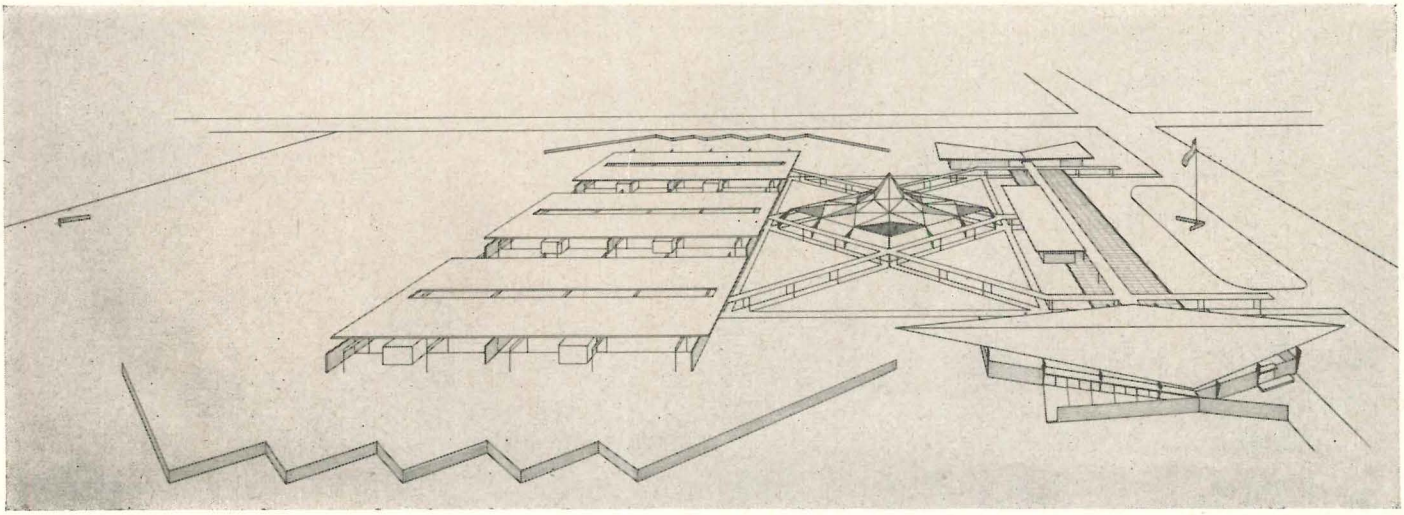


The first construction phase of this school will include 12 elementary classrooms and the administration unit. Eventually, 12 additional elementary and 8 kindergarten classrooms and a cafeteria will be added. Study indicated the desirability of separating the kindergarten areas from the elementary, yet closely relating both to administration and the cafeteria. Enclosed playfields and study courts, provided for all classrooms, allow teachers to supervise study and play groups simultaneously. Double classroom units are used to facilitate the addition of self-contained units at a later time, as they are needed. The manner of grouping the classrooms allows plumbing to be placed independently of paving and provides outside access to heaters for maintenance and service.

An exposed steel structure is used with 16-by-16-ft and 16-by-32-ft bays. Materials were chosen for a combination of requirements including scale, costs, visual effects, and easy maintenance. They include exposed concrete brick and ceramic tile walls, glass and wood jalousie windows, sliding glass doors, laminated plastic counter tops, vinyl-asbestos floors, and acoustical plaster ceilings. Preliminary cost estimates indicate that the first classrooms to be built should cost about $11.00 per sq ft (figured on gross area).




ADMINISTRATION & CLASSROOMS
LIB
JAN
STOR
LOUNGE
COURT
STOR
COURT
CLIN
REC'PT
PRIN
THER
CLASS
ROOMS
COURTS
counters
benches
0 10 25 50 FT
ENTRANCE DRIVE
flagpole



3. Englewood Elementary School, Englewood, Florida

Bolton McBryde and West and Waters, Associated Architects; M. M. Prewitt, Structural and Mechanical Engineer; R. M. Thompson Co., Contractor

BUILDING COSTS [1]

Site development [2]		$ 22,926.80
Equipment (chairs and desks)		9,000.00
Professional Fees		17,634.49
Building Construction		
General Construction	206,274	
Plumbing	13,800	
Heating and Ventilating	13,700	
Electrical work [3]	26,115	
Cabinet work	7,500	
Painting	4,500	271,889.00
TOTAL ACTUAL COST		**$321,450.29**

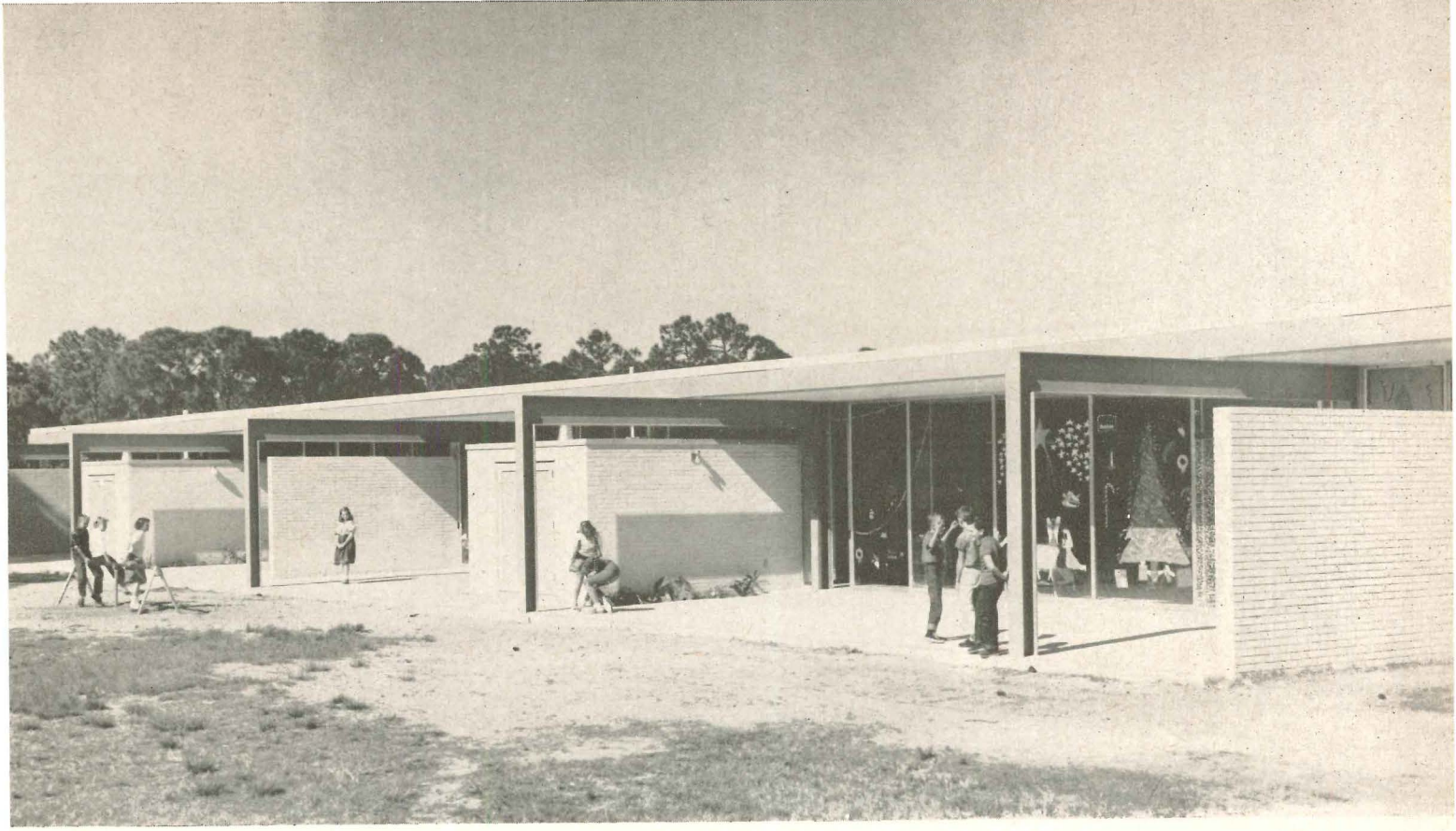
[1] See page 204

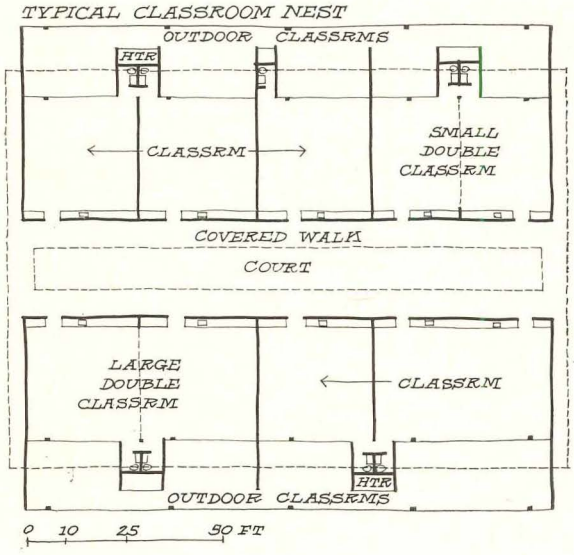
[2] Includes water supply and sewage system.

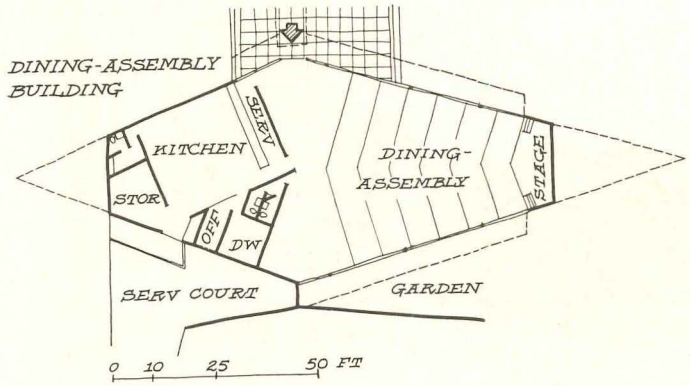
[3] Includes service for existing buildings and future 17 classrooms and administration.

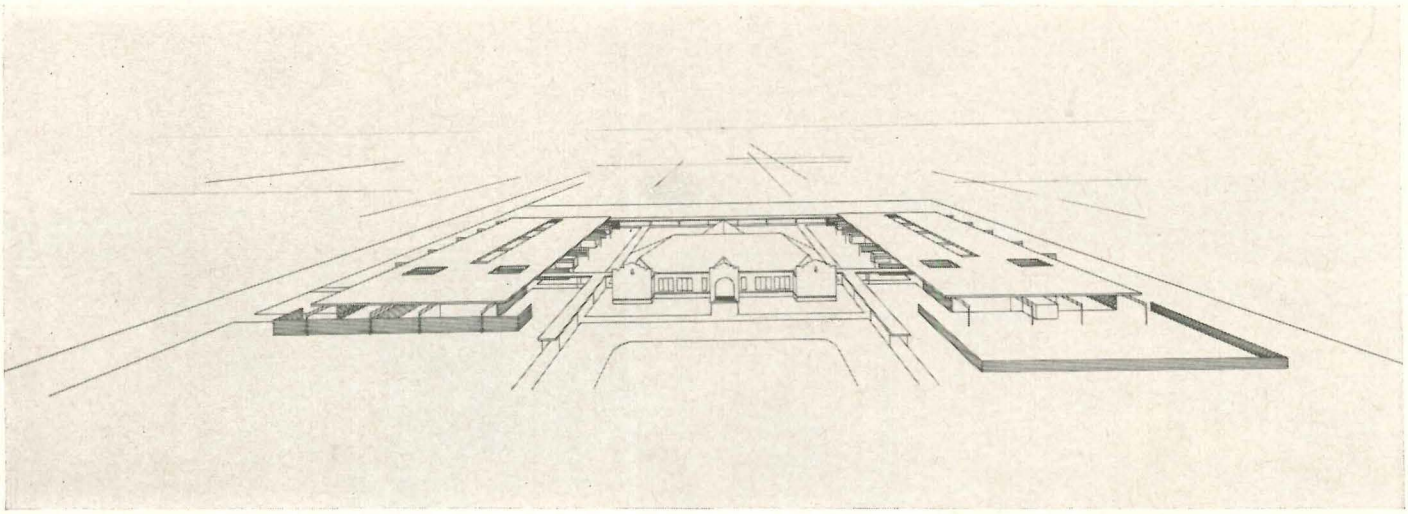
An experimental teaching concept prompted the master plan (above) of this school. It is essentially an ungraded school—classes are not broken down into set first-through-sixth grades, but into varying combinations of them, with teacher-teams. Classrooms are separated into "nests" and many have moveable partitions to change sizes.

The first stage of construction of the school, as shown here, includes one classroom "nest" of nine rooms, and the dining-assembly building. An existing school building on the site will be removed during the last phase of construction. The ultimate scheme adds three more "nests", a central playroom, an administration unit, and a butterfly-roofed experimental educational studio. The buildings have exposed steel frames, concrete brick walls, built-up roofs over poured gypsum on steel bar joists. Outdoor classrooms may be screened at a later date. Conduit and outsized blowers provide for audio-visual work in darkened rooms.




TYPICAL CLASSROOM NEST
OUTDOOR CLASSRMS
HTR
CLASSRM
SMALL DOUBLE CLASSRM
COVERED WALK
COURT
LARGE DOUBLE CLASSRM
CLASSRM
HTR
OUTDOOR CLASSRMS
0 10 25 50 FT


DINING-ASSEMBLY BUILDING
SERV
KITCHEN
STOR
OFF
DW
DINING-ASSEMBLY
STAGE
SERV COURT
GARDEN
0 10 25 50 FT



4. Fruitville Elementary School Addition, Sarasota County

Bolton McBryde and West and Waters, Associated Architects; M. M. Prewitt, Engineer; B. R. Brown, Inc., Contractor

BUILDING COSTS [1]

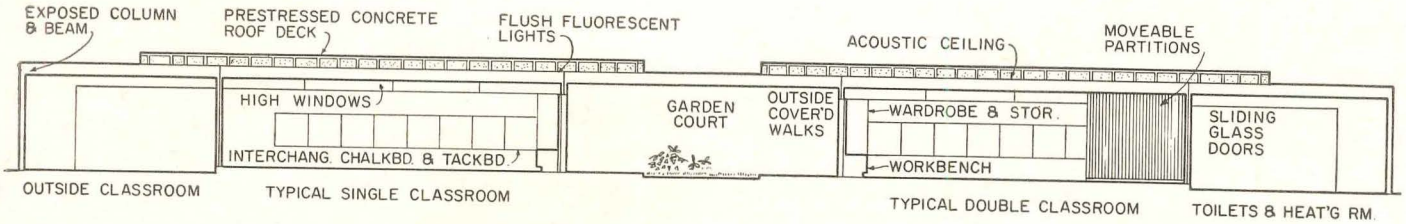
Site Development [2]		$ 17,349.45
Equipment (chairs & desks)		5,500.00
Professional Fees		12,595.07
Building Construction		
General Construction	140,649.57	
Plumbing	12,404.49	
Heating & Ventilating	5,150.00	
Electrical work [3]	16,410.00	
Cabinet work	8,500.00	
Painting	2,329.41	185,443.47
TOTAL ACTUAL COST		**$220,887.99**

[1] See page 204
[2] Includes water supply and sewage system.
[3] Includes electrical service for existing school buildings and future 13 classrooms and cafeteria.

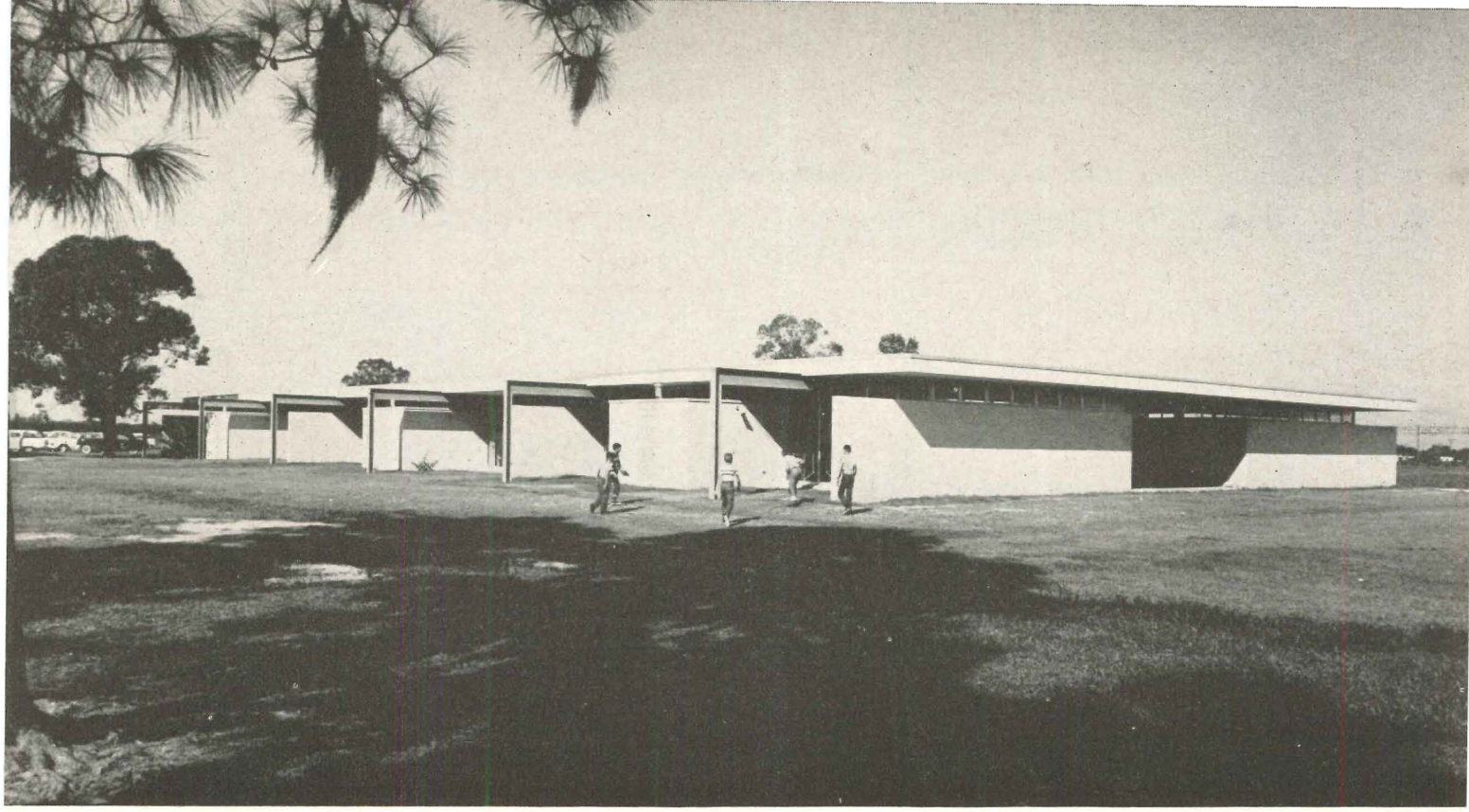
This addition is the first stage of a master classroom expansion plan for an existing permanent school, which will be retained (see sketch above). The usual elementary teaching patterns are used. However, the architects incorporated a similar system of flexible rooms as at Englewood: "we felt that such flexibility in no way hampered the present graded, separated pattern of the Fruitville school, and may very well encourage the teachers to experiment with new methods in order to improve our common objective."

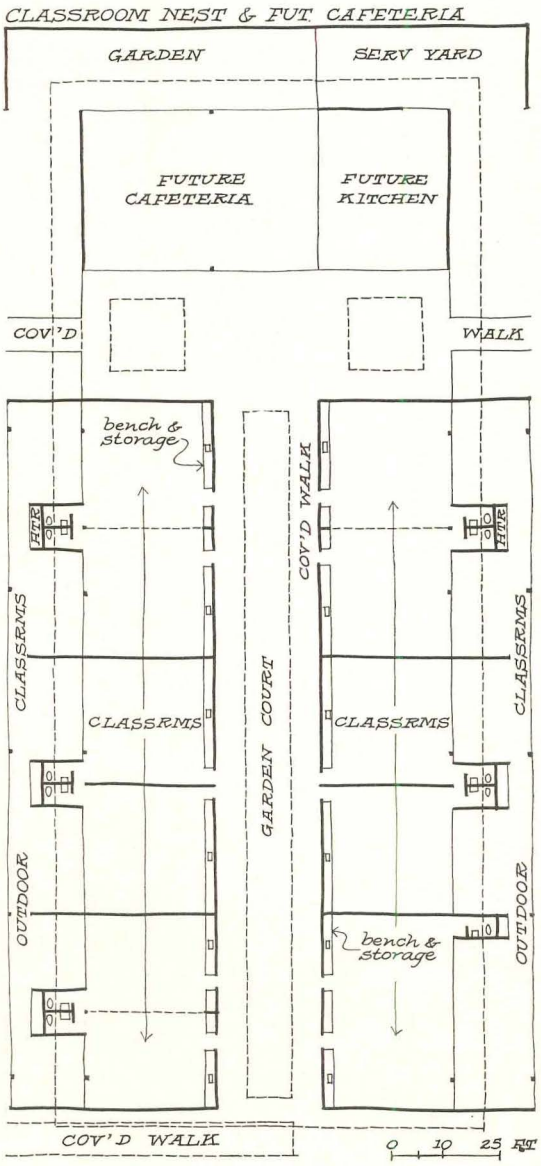
The eleven classrooms of this unit are oriented north and south for easier sun control. There are wide overhangs all around. A separate heating unit for each two classrooms was selected for economy in stage-by-stage construction, and for ease in switching to air conditioning in the event that a 12 month teaching cycle was set up.

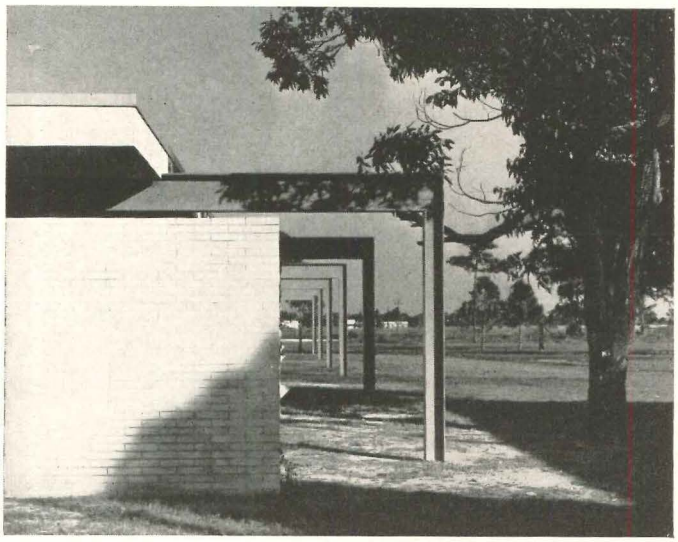
The frame is steel, with concrete brick walls, terrazzo floors. All materials were chosen to be "fire-proof, people-proof, and element-proof, consistent with the least possible maintenance and commensurately low first cost."

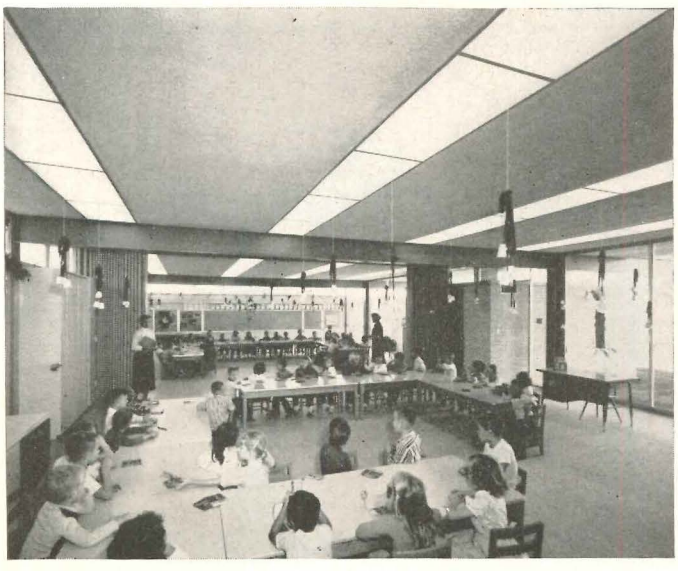


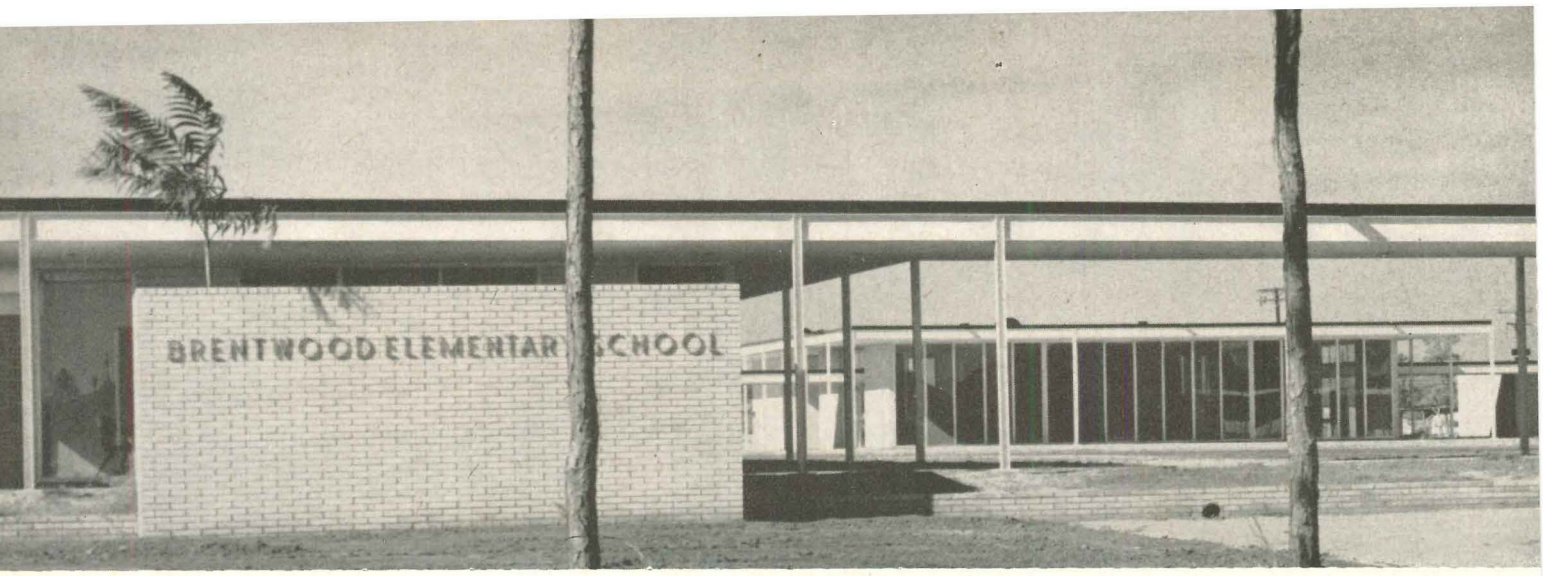
SECTION THRU CLASSROOM NEST




CLASSROOM NEST & FUT. CAFETERIA
GARDEN
SERV YARD
FUTURE CAFETERIA
FUTURE KITCHEN
COV'D WALK
bench & storage
HTR
CLASSRMS
CLASSRMS
CLASSRMS
CLASSRMS
GARDEN COURT
COV'D WALK
OUTDOOR
OUTDOOR
bench & storage
COV'D WALK
0 10 25 FT







5. Brentwood Elementary School, Sarasota, Florida

Gene Leedy, Architect; William Rupp, Associate Architect; Charles T. Healy, Mechanical Engineer; H. J. High Construction Company, Contractor

A double indoor-outdoor classroom unit, with a central service-core, is the basic planning element in this crisp, colorful school. The core contains storage, work space, coats, restrooms, children's cubicles and an individual residential-type forced-air heating unit serving both classrooms. Thus, the classrooms are freed of clutter, and function almost independently. Each classroom has an adjoining walled-in outdoor instruction area; gates give access to large play courts. Opposite classroom walls have obscured glass and louvered vent panels.

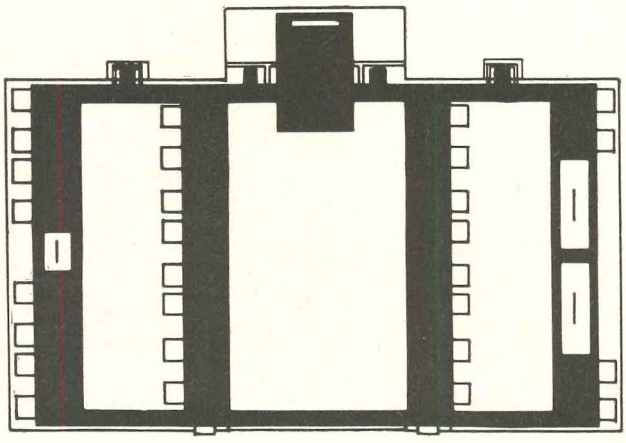
The classrooms are linked by roofs and covered walks, designed at a single level for unity. Only the cafetorium is raised to dominate the group and the central assembly court (seen from the east in photo above). Eight-foot overhangs are used over all glass areas to avoid excessive glare. The covered walks at the front adjoin the drive and parking lot, and serve as bus loading docks. The entire school complex is raised on a filled-in platform edged by retaining walls to offset low land conditions and give adequate drainage.

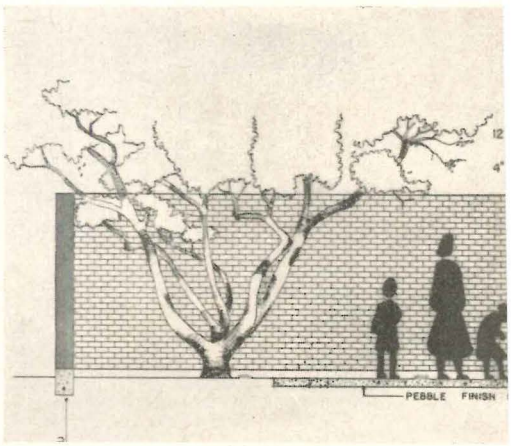
The school has 24 classrooms; four more units are used to provide a library, an art room, an administrative suite, and a teacher's lounge.

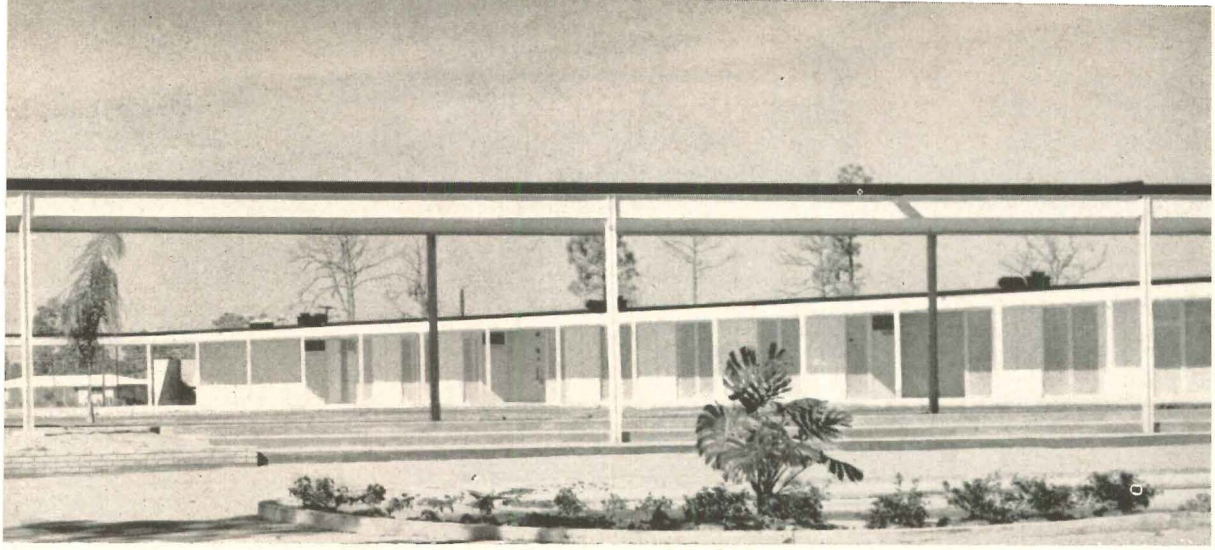
BUILDING COSTS[1]

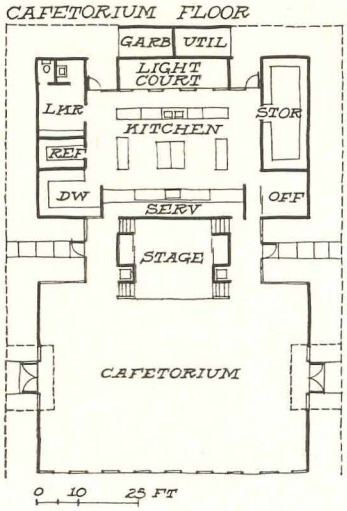
Site development[2]		$ 97,378.53
Equipment (chairs & desks)		28,000.00
Professional Fees		38,520.00
Building Construction		
General Construction	437,735	
Plumbing	47,400	
Heating & Ventilating	19,800	
Electrical work	69,300	
Cabinet work	12,000	
Painting	8,500	594,735.00
TOTAL ACTUAL COST		**$758,633.53**

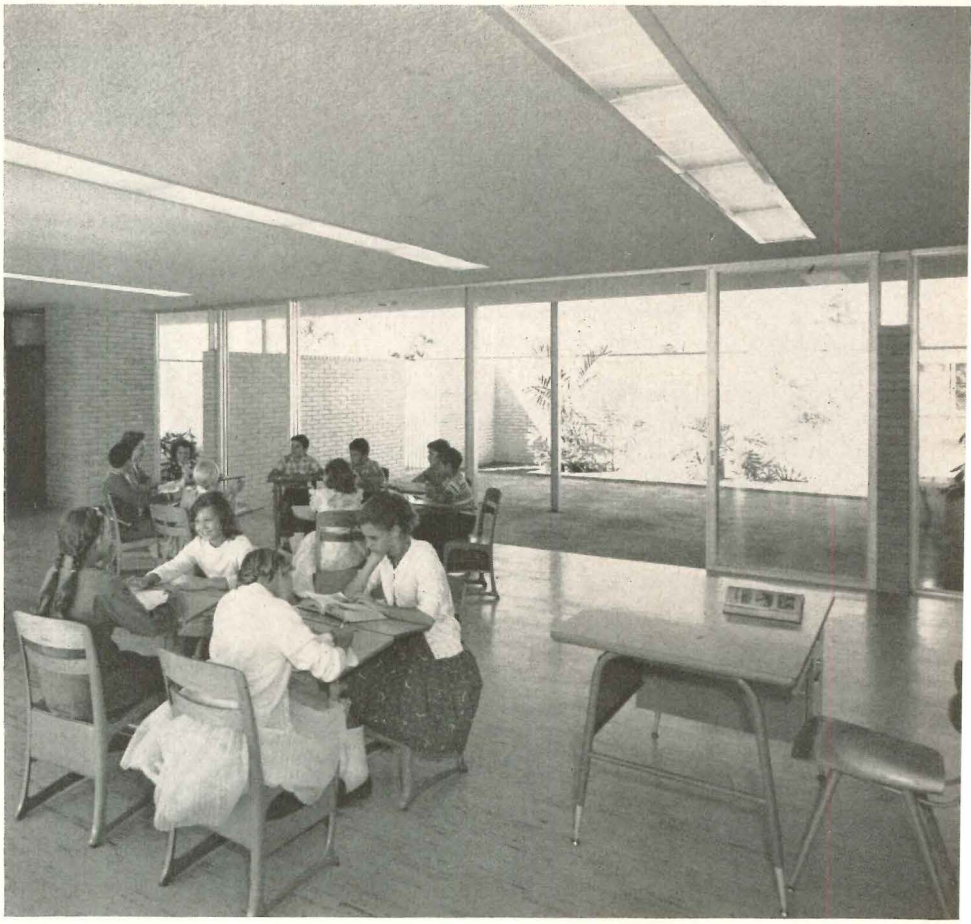
[1] See page 204
[2] Includes extensive grading and fill, water supply and sewage systems. Land was donated.

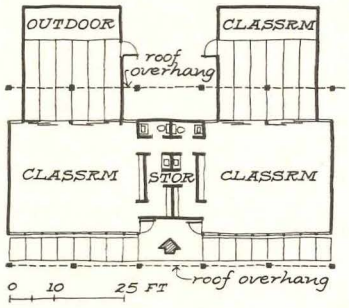


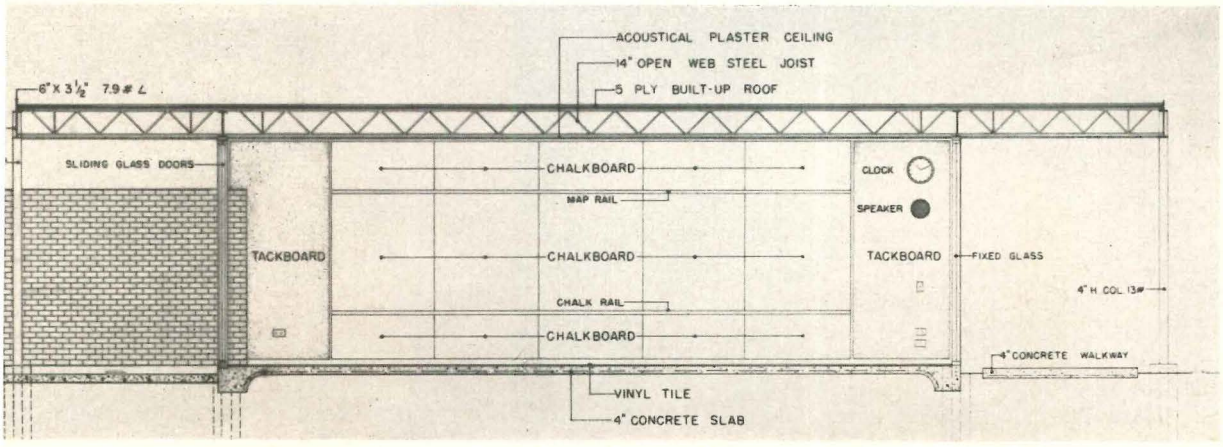


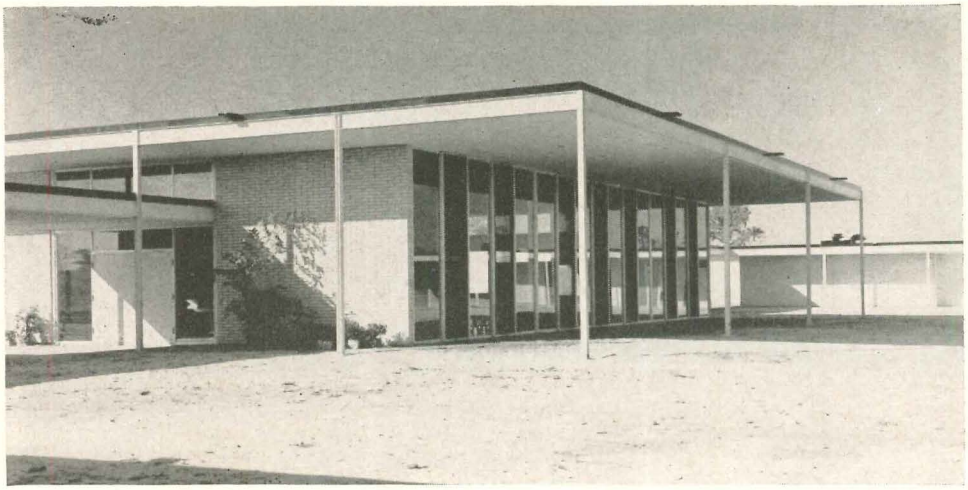



CAFETORIUM FLOOR
GARB
UTIL
LIGHT COURT
LNR
KITCHEN
STOR
REF
DW
SERV
OFF
STAGE
CAFETORIUM
0 10 25 FT




OUTDOOR
CLASSRM
roof overhang
CLASSRM
STOR
CLASSRM
0 10 25 FT
roof overhang

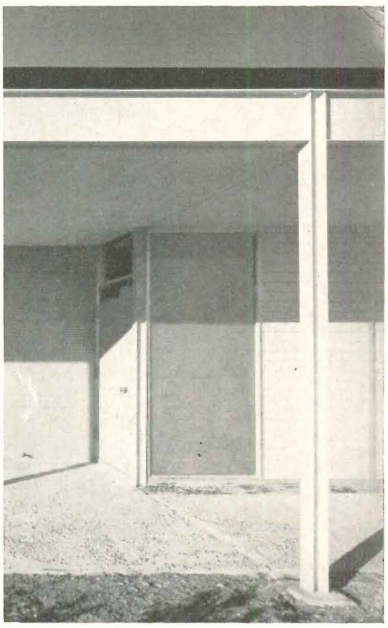

ACOUSTICAL PLASTER CEILING
14" OPEN WEB STEEL JOIST
5 PLY BUILT-UP ROOF
6" X 3½" 7.9# ∠
SLIDING GLASS DOORS
CHALKBOARD
MAP RAIL
CLOCK
SPEAKER
TACKBOARD
CHALKBOARD
TACKBOARD
FIXED GLASS
4" H COL 13#
CHALK RAIL
CHALKBOARD
4" CONCRETE WALKWAY
VINYL TILE
4" CONCRETE SLAB

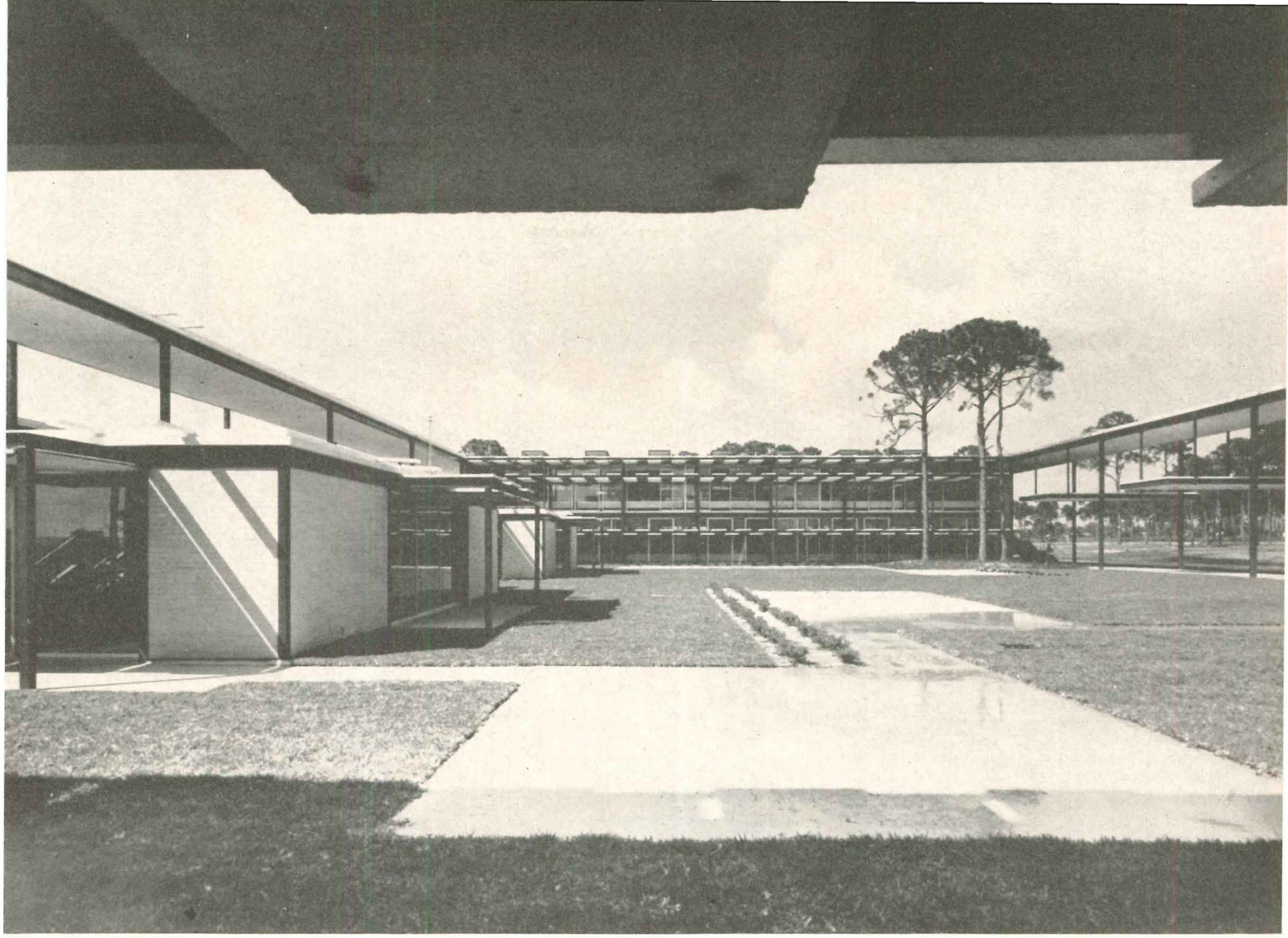


5. Brentwood Elementary School

The cafetorium (above and below) was designed to dominate the building group. The stage was placed between the assembly-dining area and the kitchen to act as a sound buffer. Light and a very pleasant atmosphere is provided in the kitchen by a small indoor garden court, which is separated from the kitchen by sliding glass doors.

The light steel structure and most walls are painted white. Color accents of red, blue, and yellow-gold are provided on recessed walls at the entrance to each double classroom unit, and on the face of all toilet rooms on the west side of the building. Recesses (right) prevent traffic from entering directly on flow of pedestrians on walk





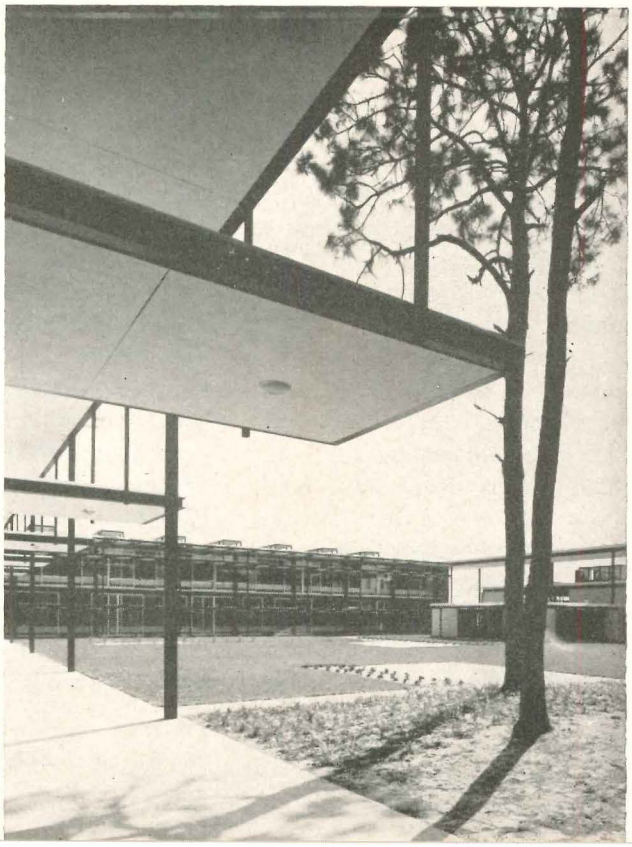
6. Riverview High School, Sarasota, Florida

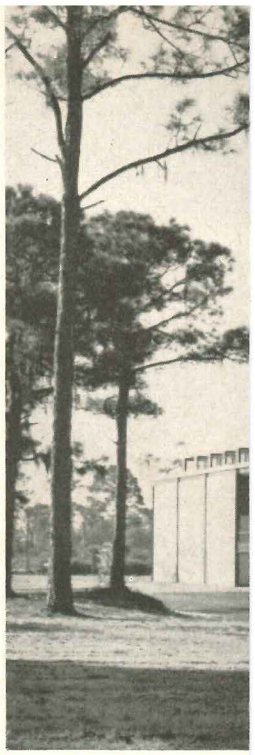
Paul Rudolph, Architect; Bert Brosmith, Job Captain; Russello & Barker, Structural Engineers; Charles T. Healy & Associates, Mechanical Engineers; J. L. Coe Construction Co., Contractors

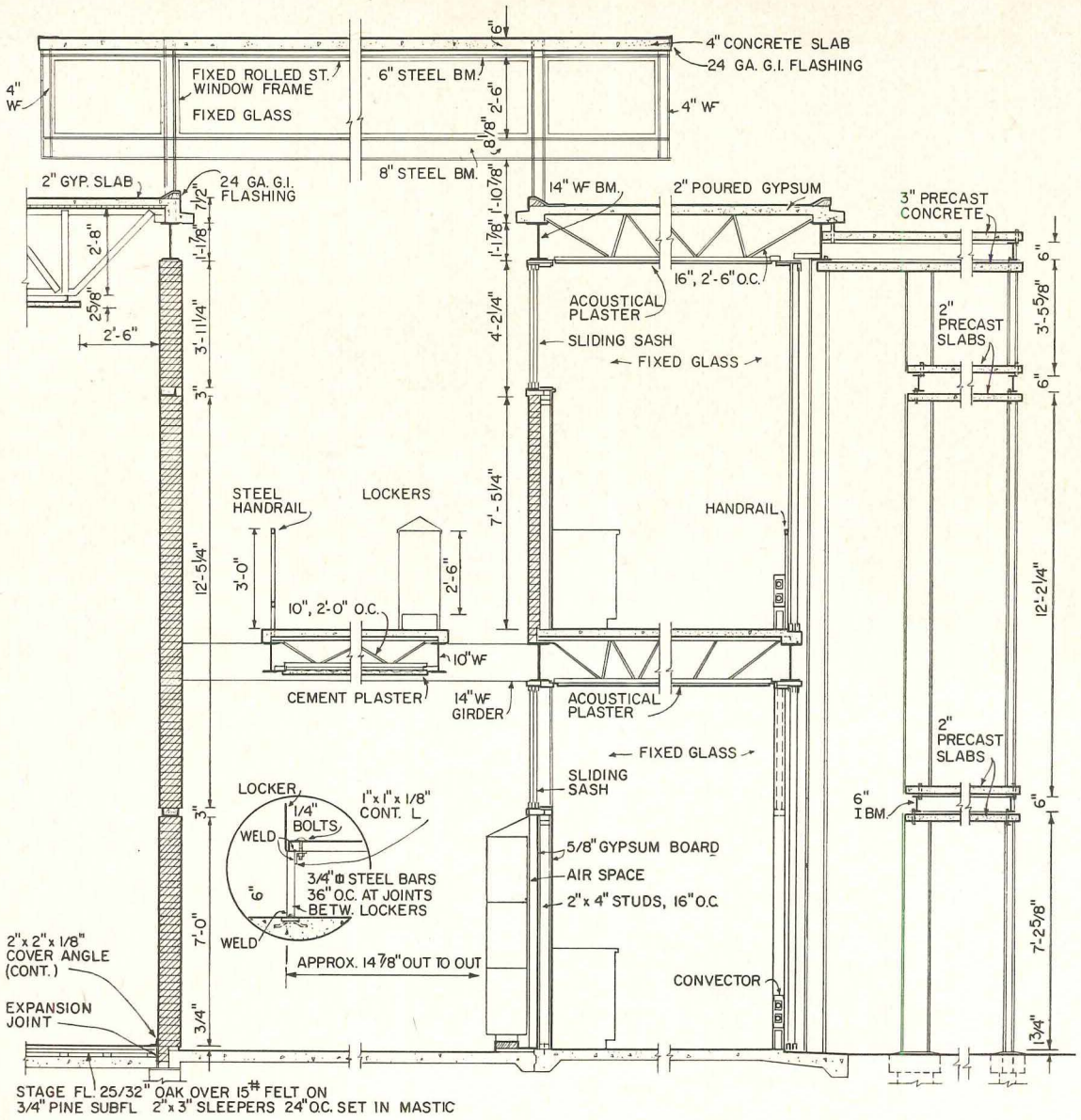
BUILDING COSTS [1]

Land Cost		$ 19,588.94
Site Development [2]		138,179.88
Equipment (chairs & desks)		106,800.00
Professional Fees		72,315.00
Building Construction		
General Construction	800,958.09	
Plumbing	47,970.00	
Heating & Ventilating	61,140.00	
Electrical work	82,170.00	
Cabinet work	63,700.00	
Painting	14,960.00	1,070,898.09
TOTAL ACTUAL COST		**$1,407,781.91**

[1] See page 204
[2] Includes water supply and sewage system, athletic fields and outdoor equipment.

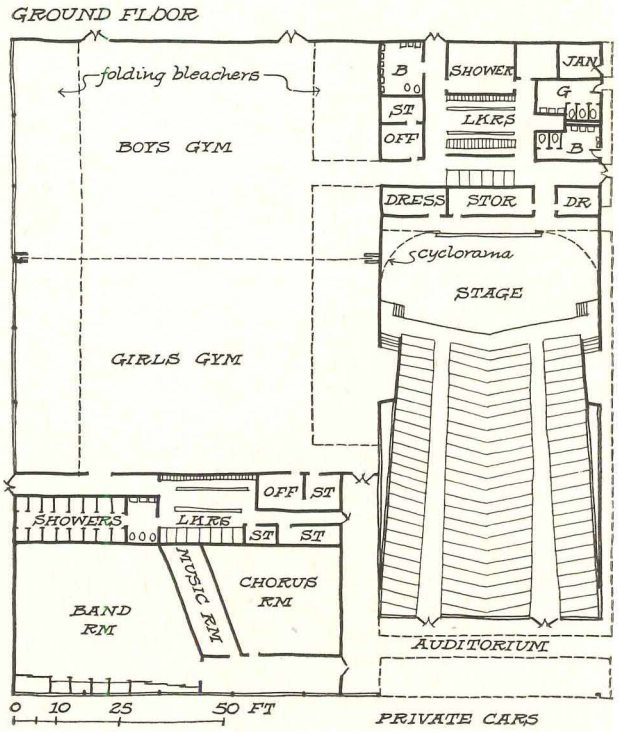


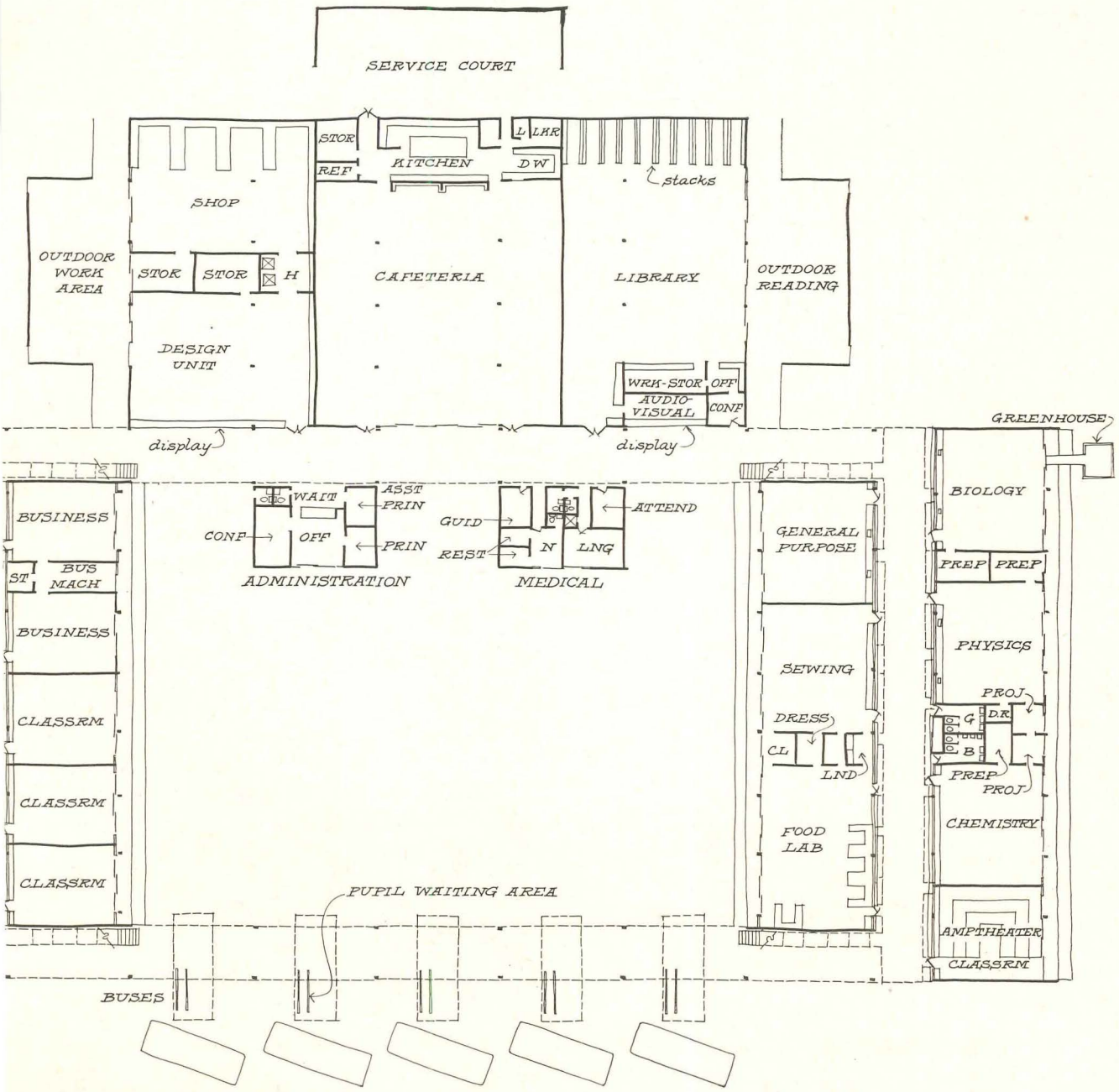


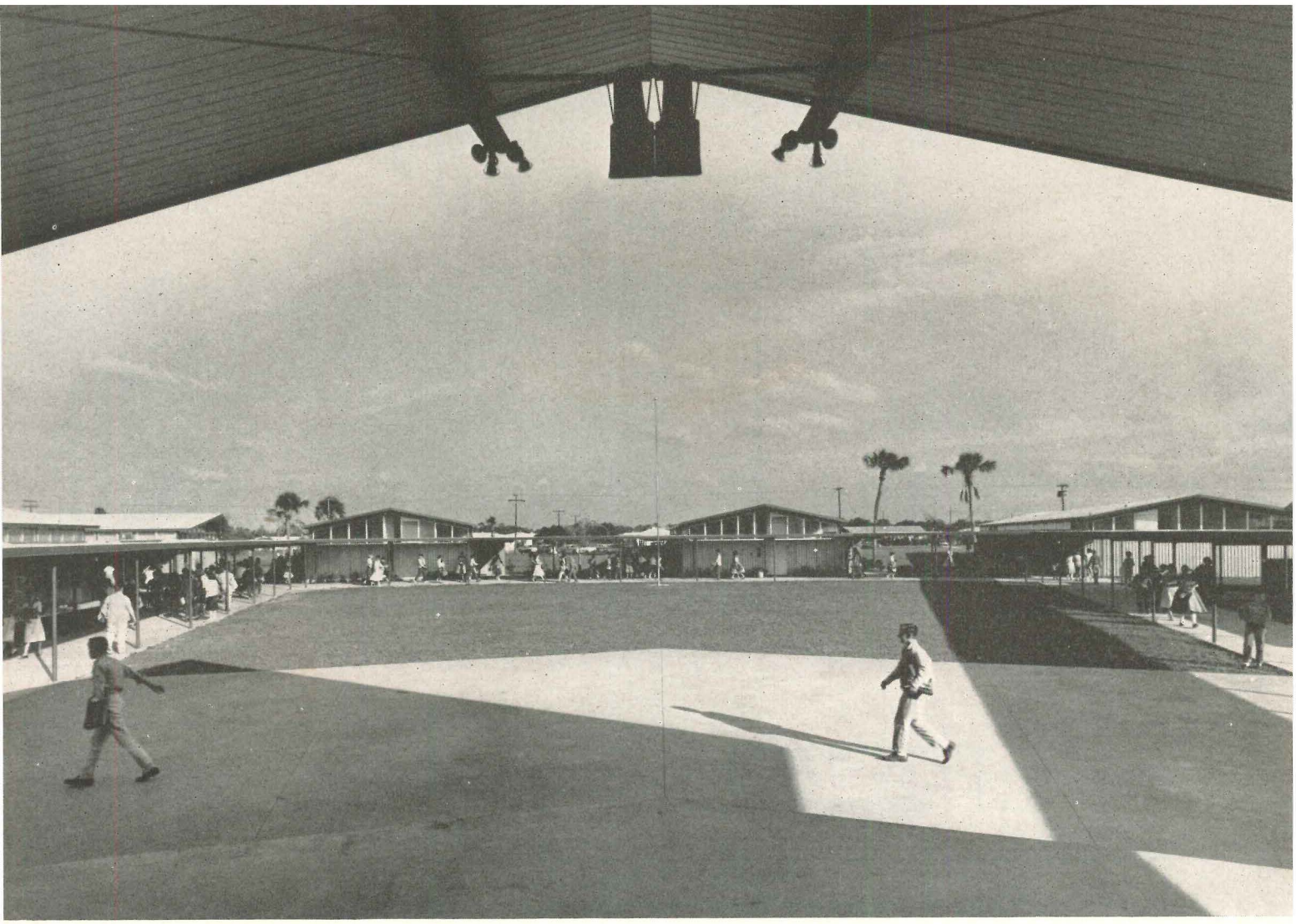


6. Riverview High School

This school has facilities for a complete secondary educational program. Although economics partially dictated the two-story building, other considerations weighed heavily: unification with the classrooms of the high-ceilinged public-use spaces (auditorium, gym, music rooms) and the desire for a scale appropriate to the importance of the building and in contrast with the flat Florida landscape. Outdoor facilities include playfields and equipment for all sports and parking for 360 automobiles. Because of the climate, special care was taken to provide the best possible ventilation and to control sunlight. Canopies are designed to exclude direct sunlight, yet allow passage of air. To accomplish this, adjacent canopy roof slabs alternate top and bottom of their supports for free flow of air. Light and air are admitted to the walk-ways between classrooms through monitor-like penthouses on the roof. All exterior walls are silicon-waterproofed concrete brick, exposed inside and out.




SERVICE COURT
STOR
REF
KITCHEN
L
LKR
DW
stacks
SHOP
OUTDOOR WORK AREA
STOR
STOR
H
CAFETERIA
LIBRARY
OUTDOOR READING
DESIGN UNIT
WRK-STOR
OFF
AUDIO-VISUAL
CONF
display
display
GREENHOUSE
BUSINESS
ST
BUS MACH
BUSINESS
CLASSRM
CLASSRM
CLASSRM
WAIT
ASST
PRIN
CONF
OFF
PRIN
ADMINISTRATION
GUID
ATTEND
REST
N
LNG
MEDICAL
GENERAL PURPOSE
SEWING
DRESS
CL
LND
FOOD LAB
BIOLOGY
PREP
PREP
PHYSICS
PROJ
G
DR
B
PREP
PROJ
CHEMISTRY
AMPTHEATER
CLASSRM
PUPIL WAITING AREA
BUSES



7. Brookside Junior High School, Sarasota, Florida

Ralph & William Zimmerman, Architects; William Poole, Structural Engineer; Maurice H. Connell and Associates, Heating & Ventilating Engineers; L. W. Ross, Contractor

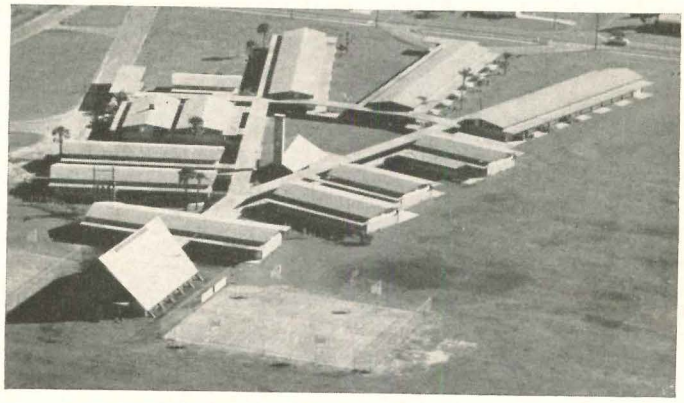
BUILDING COSTS[1]

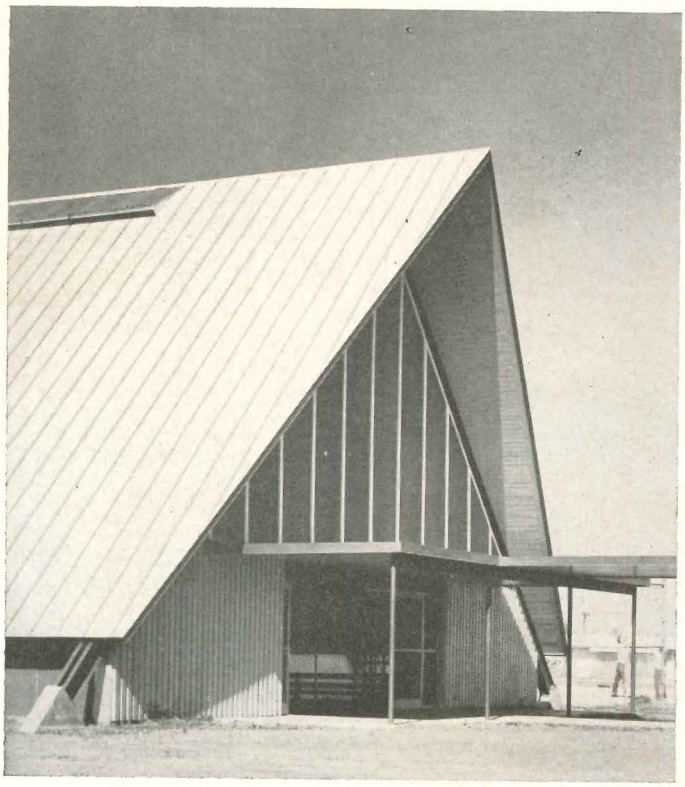
Land Cost		$ 40,000.00
Site Development		—
Equipment		29,955.54
Professional Fees		29,476.96
Building Construction		
General Construction	$347,531.98	
Plumbing (incl. Heat-Vent)	—	
Heating & Ventilating	53,165.00	
Electrical Work	48,600.00	
Cabinet Work & Fin. Carpentry	31,556.00	
Painting	13,300.00	494,152.98
TOTAL ACTUAL COST		**$593,585.48**

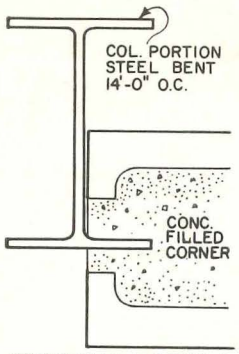
[1] See page 204

The first school to be constructed under the present Sarasota program, this building was completed in 1955. Without its success, the other schools in the program might never have been. The architects were faced with a mandate, laid down by the school board and the citizens of the county, to produce an outstanding contemporary school on a low budget. Considerable time was spent studying the then existing schools. Data was gathered on their layouts, materials, construction, and instruction methods and on the best efforts being put forth elsewhere. It was found that the schools being built in Sarasota county at the time were poorly oriented (they neither took advantage of the good nor corrected the bad aspects of Florida climate). The schools were mostly concrete block and concrete frame. They were forbiddingly institutional in appearance, damp, cold in winter, and hot in summer. Maintenance costs were high. Ventilation was poor. Materials and equipment were low quality.

As a result of their studies, the plan of this school was opened up. The structure was lightened with steel bents. Classrooms have large areas of glass and jalousies and good quality materials were used.

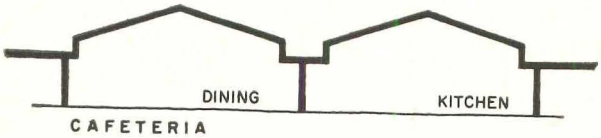




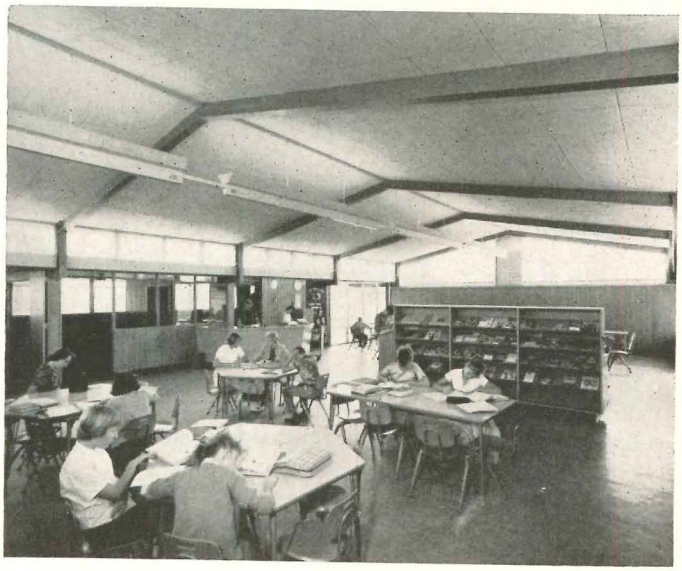


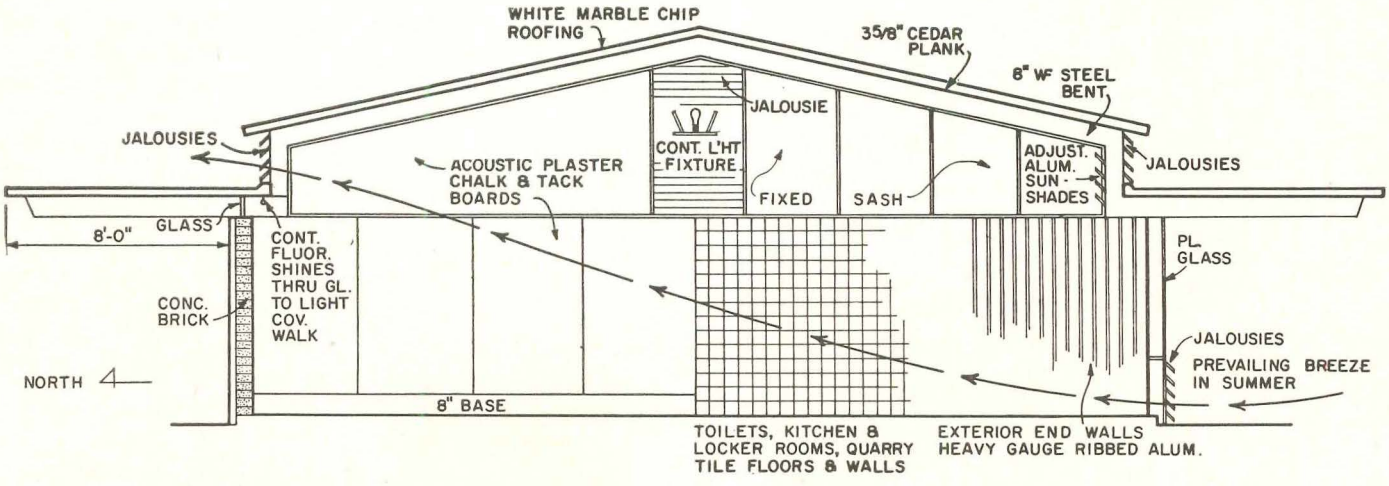
INTEGRALLY COLORED & WATER-PROOFED HOLLOW CON. BRICK
3" x 8" x 12" NOMINAL

LIBRARY



CAFETERIA





TYPICAL CLASSROOM

0 2 4 6 8 10 FT.

8. Booker Elementary School, Sarasota, Florida

Ralph & William Zimmerman, Architects; Kenneth Brumbaugh, Electrical Engineer; William Zimmerman, Landscape Architect; Settecasi & Chillura, Contractors

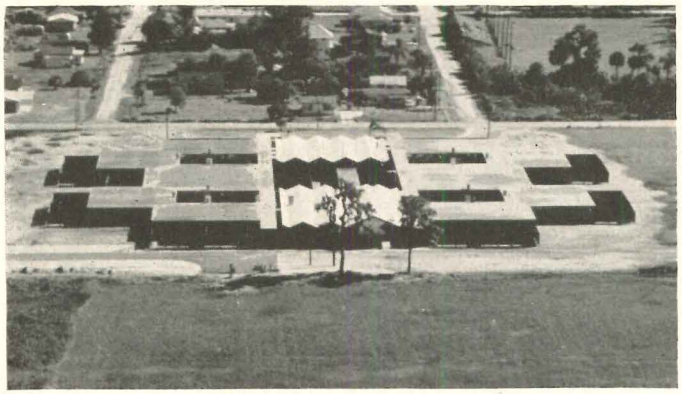
BUILDING COSTS[1]

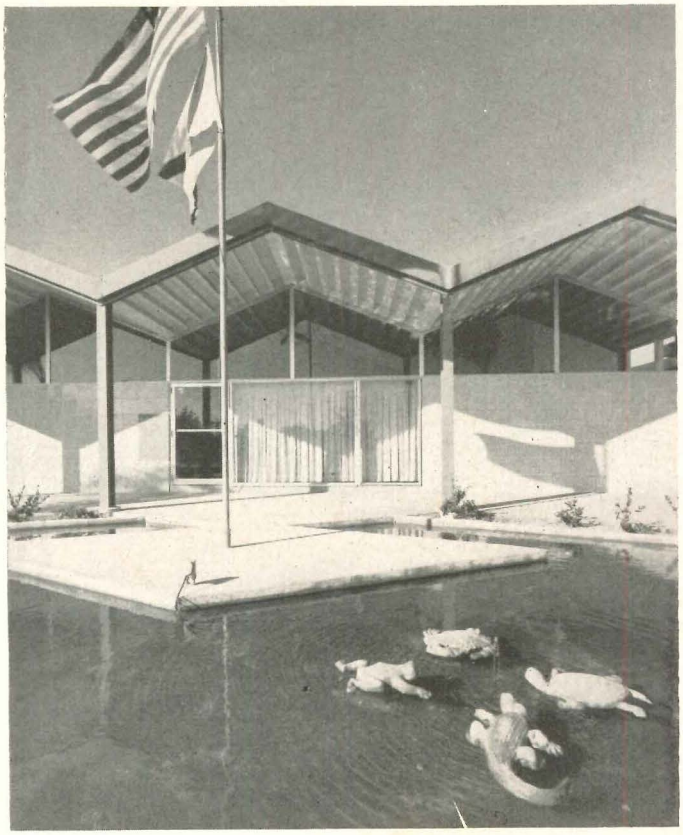
Land Cost		$ 19,980.20
Site Development		25,922.17
Equipment		21,452.41
Professional Fees		27,282.84
Building Construction		
General Construction	$330,920.95	
Plumbing	28,988.00	
Heating & Ventilating	17,274.00	
Electrical Work	38,752.00	
Cabinet Work	29,326.00	
Painting	9,453.00	454,713.95
TOTAL ACTUAL COST		**$549,351.57**

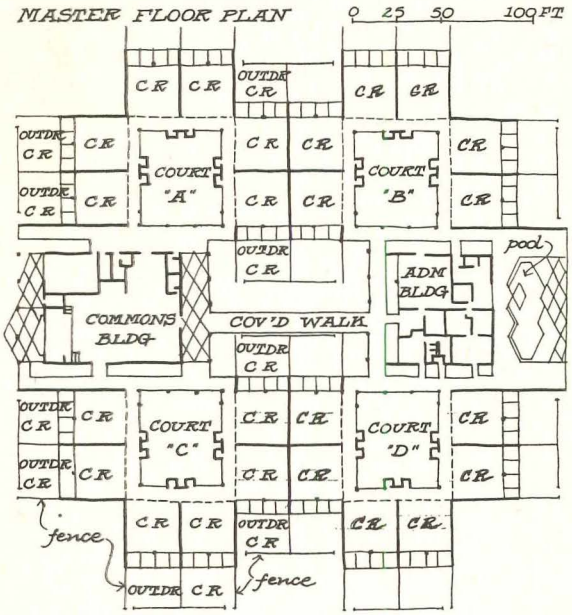
[1] See page 204

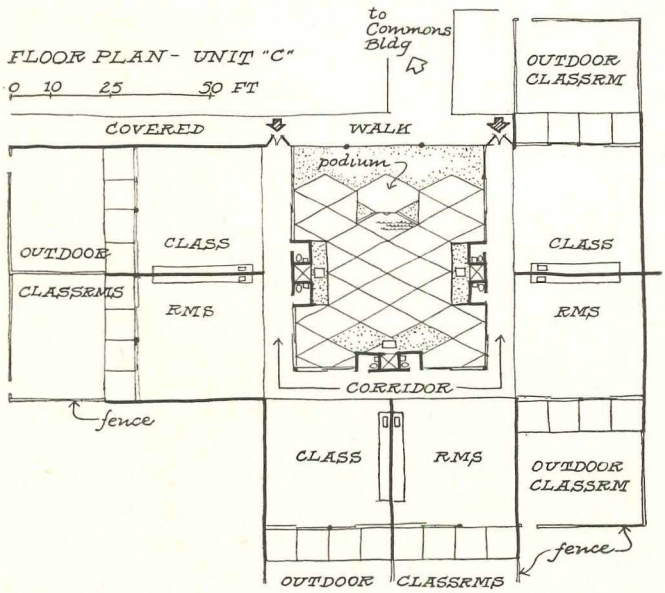
[2] Includes water supply and sewage system, fencing.

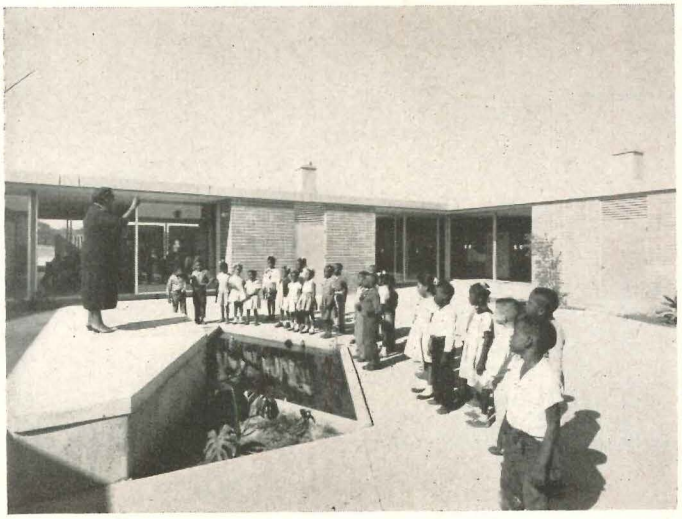
In this school, designed by the architects who did the first school in the program, many of the principles followed in the earlier school are applied with refinements. The open plan of the other school is used here, but in a quite formal manner. Four clusters (school villages) of six classrooms each are grouped around an enclosed common courtyard. Decentralization is achieved and the breaking down of the student body into smaller groups for privacy and to give younger children a greater sense of security. The four school villages are placed around a large central compound, along with the administration unit and common areas such as the cafeteria-auditorium, music room, library, and so on. On the opposite side from the courtyard, each classroom has a private outdoor study-play area. Corridors are separated from the rooms only by movable storage units. Each pair of classrooms shares two toilet rooms, and heating system but has its own project sink and drinking fountain. Meals are delivered from the adjoining high school by carts. Steel bents are used here, as in the earlier school, but with exposed long-span steel decking rather than the 4-in. wood decking formerly employed.

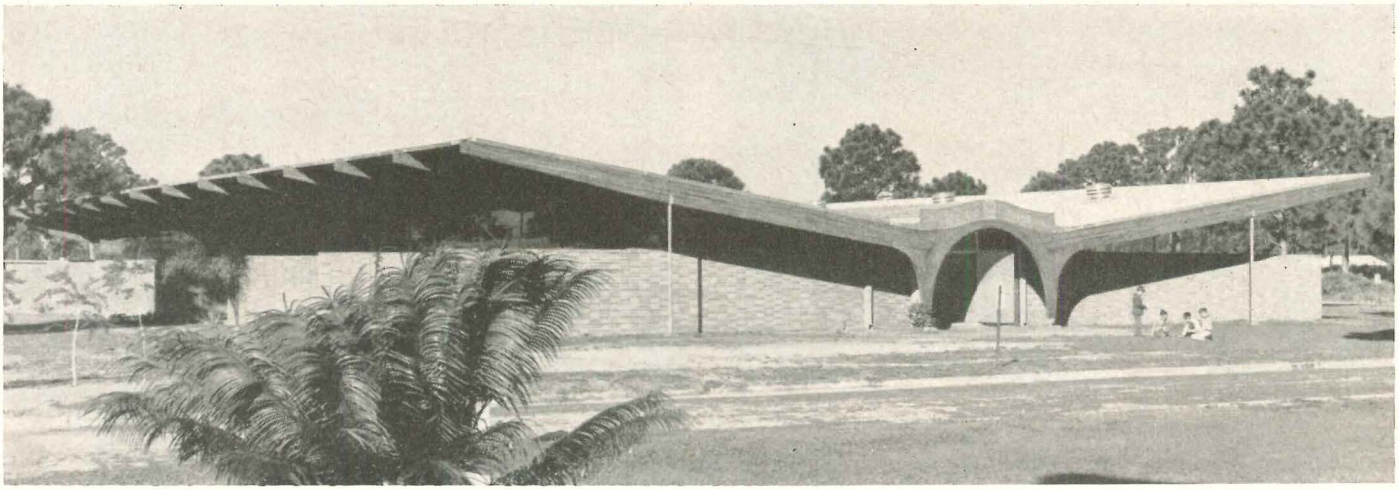





MASTER FLOOR PLAN
0 25 50 100 FT
CR
OUTDR CR
COURT "A"
COURT "B"
COURT "C"
COURT "D"
COMMONS BLDG
COV'D WALK
ADM BLDG
pool
fence


FLOOR PLAN - UNIT "C"
0 10 25 50 FT
to Commons Bldg
COVERED WALK
OUTDOOR CLASSRM
podium
OUTDOOR CLASSRMS
CLASS RMS
CORRIDOR
fence
OUTDOOR CLASSRMS





9. Alta Vista Elementary School Addition, Sarasota, Florida

Victor A. Lundy, Architect; Kenneth D. Brumbaugh, Electrical Engineer; Louis H. V. Smith, Mechanical Engineer; William E. Poole, Structural Engineer; George D. Brown, General Contractor

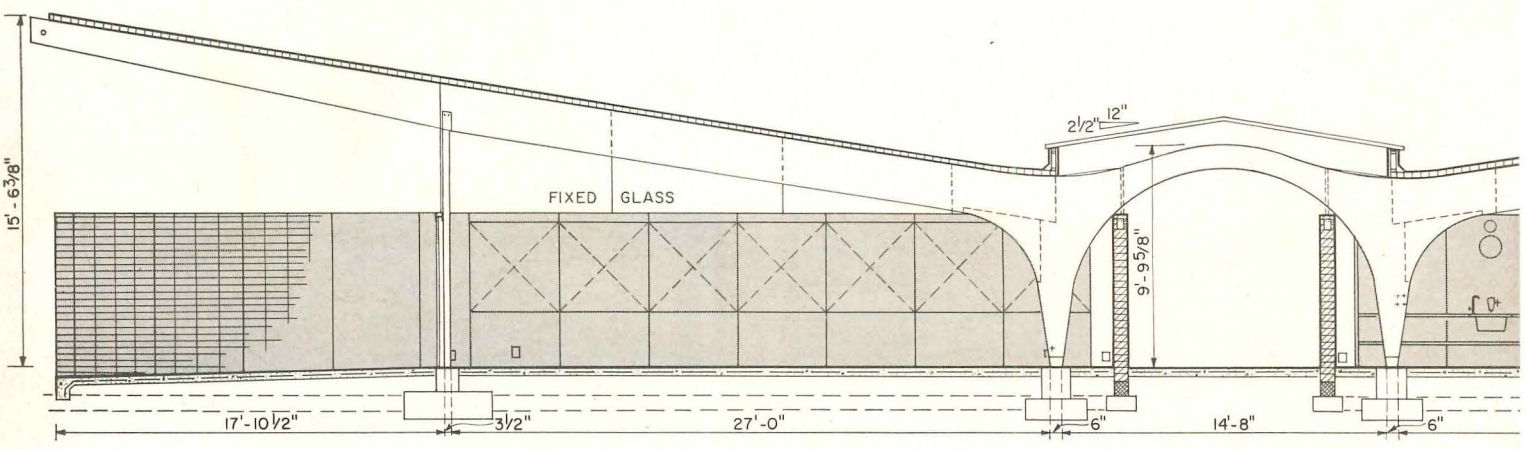
BUILDING COSTS[1]

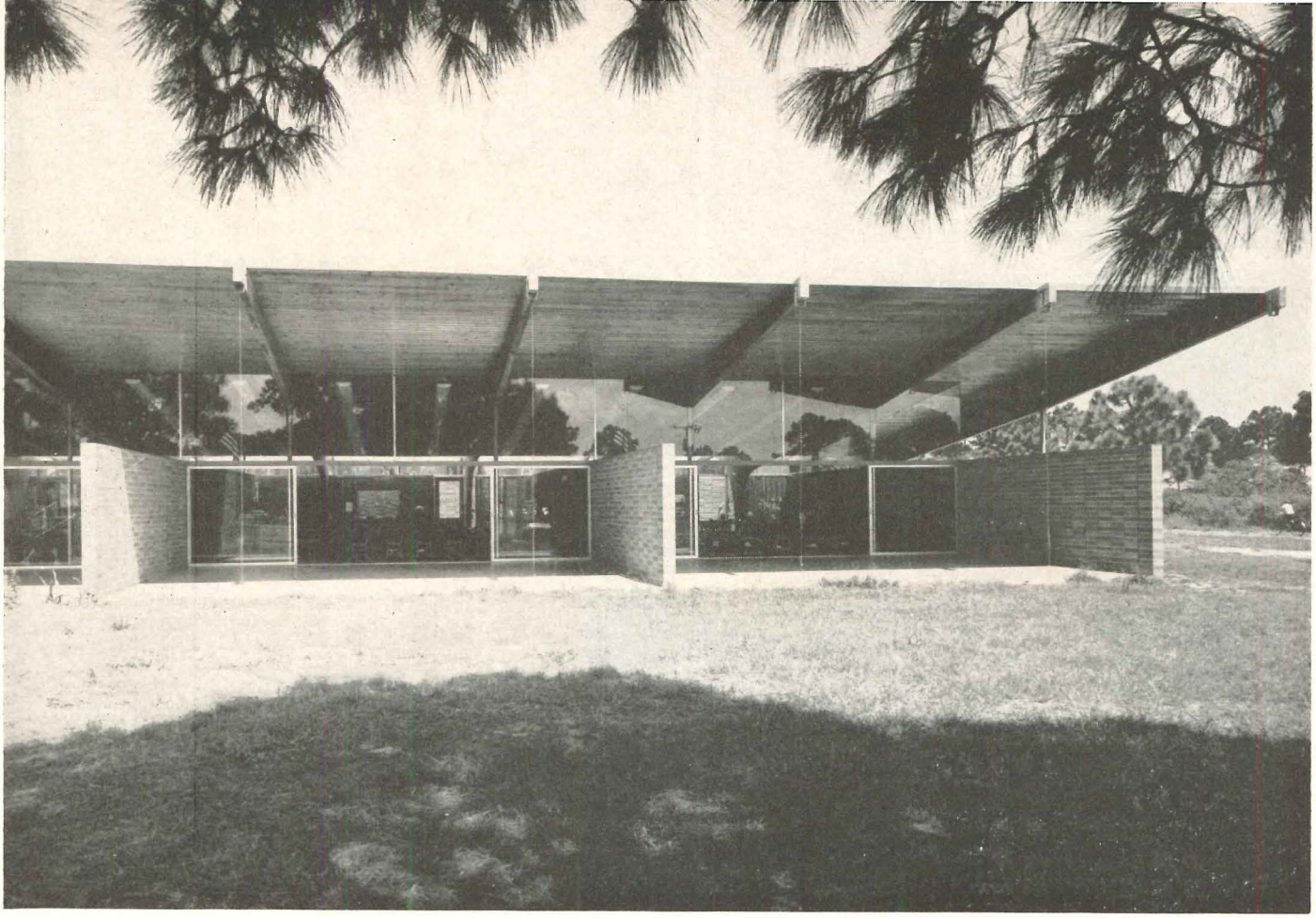
Equipment (chairs & desks)		$11,000.00
Professional Fees		9,250.00
Building Construction		
General Construction	$117,352.28	
Plumbing	13,110.00	
Electrical work	14,700.00	
Cabinet work	5,334.00	
Painting	3,572.00	154,068.28
TOTAL ACTUAL COST		**$174,318.28**

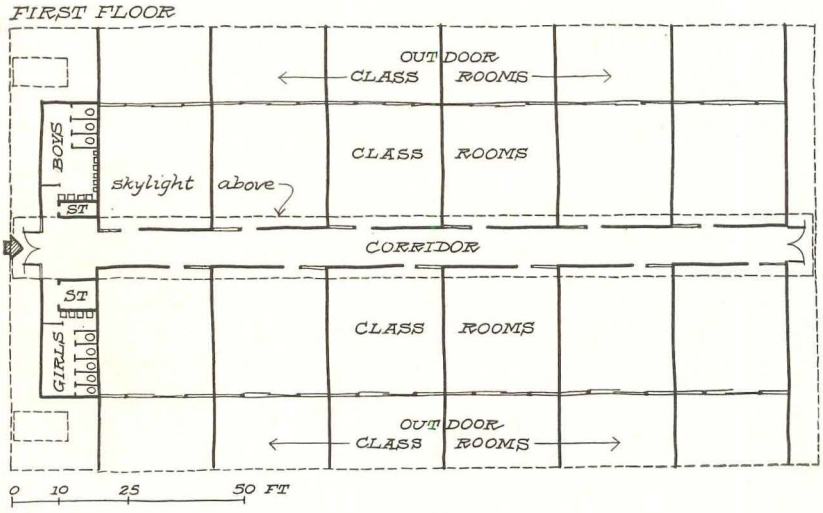
[1] See page 204

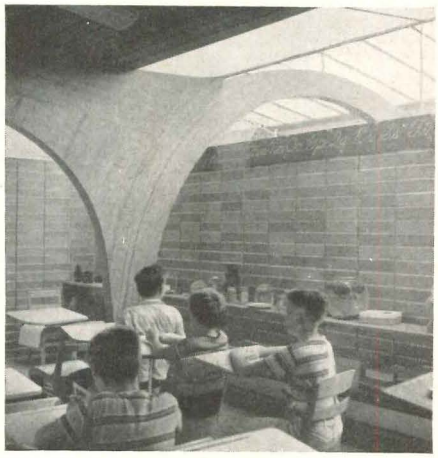
Perhaps the most "different" of the new Sarasota Schools is this soaring twelve-classroom addition to an existing elementary school. The roof structure is conceived as a great shade shelter over the indoor-outdoor classrooms, and stands by itself. The wing-shaped structural bents are glued laminated wood, set 14 ft on center. This is the maximum span for the 3-by-5 double tongue-and-groove fir decking used for the ceiling.

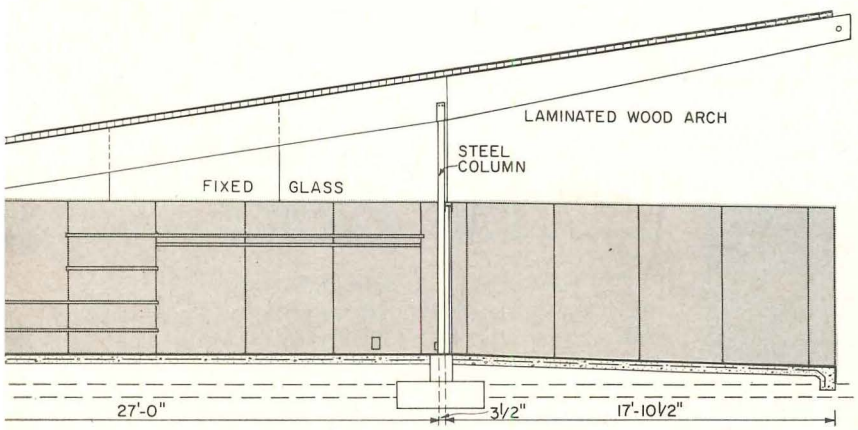
The openness of the school is emphasized by keeping the concrete brick walls down to door height (6 ft 8 in.), with glass over for a noise barrier. The double-loaded corridor is roofed by a continuous aluminum-frame skylight of glare reducing wire glass. The outdoor spaces are ample for outdoor classes and are sheltered by 18-ft overhangs. The heating system is hot water radiation, tied into the existing boiler of the old school. Steel fin tube radiators are set on the floor in front of fixed sections of glass in all the classrooms.

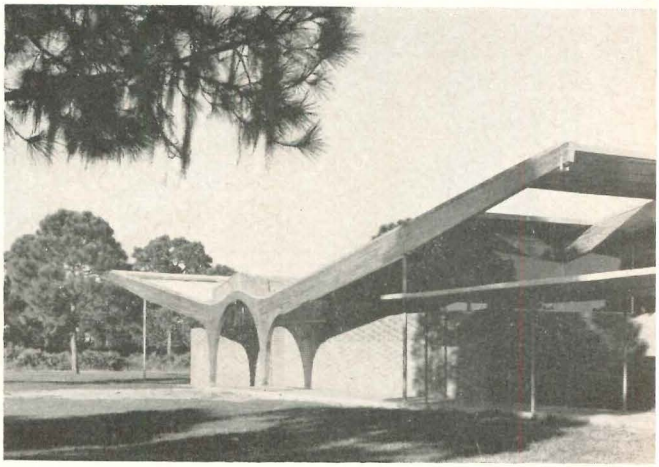


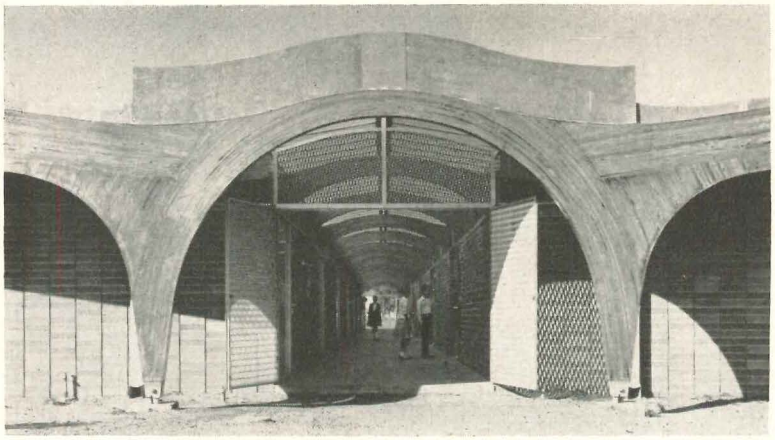


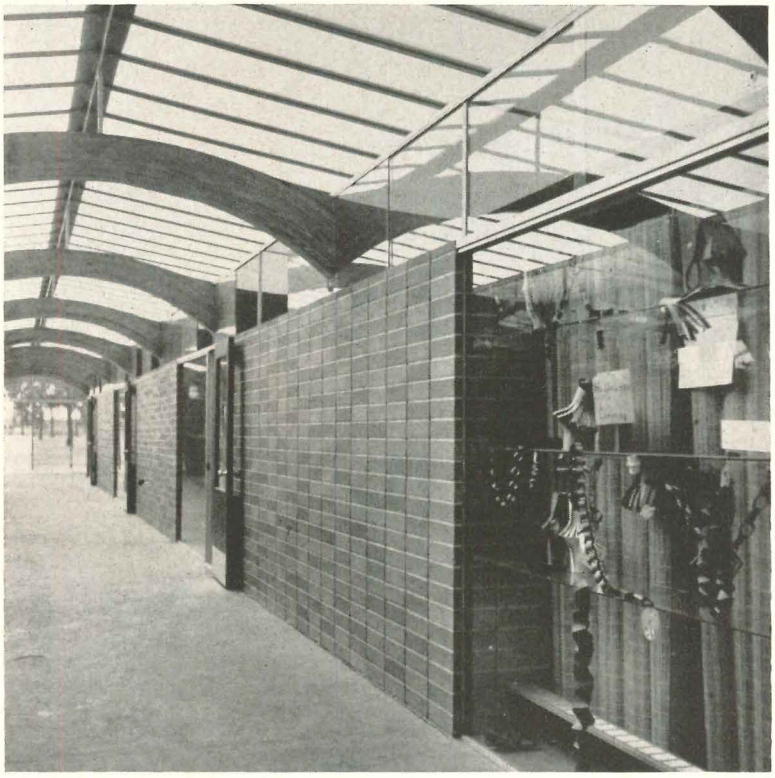

FIRST FLOOR
OUT DOOR CLASS ROOMS
CLASS ROOMS
BOYS
ST
skylight above
CORRIDOR
ST
GIRLS
CLASS ROOMS
OUT DOOR CLASS ROOMS
0 10 25 50 FT

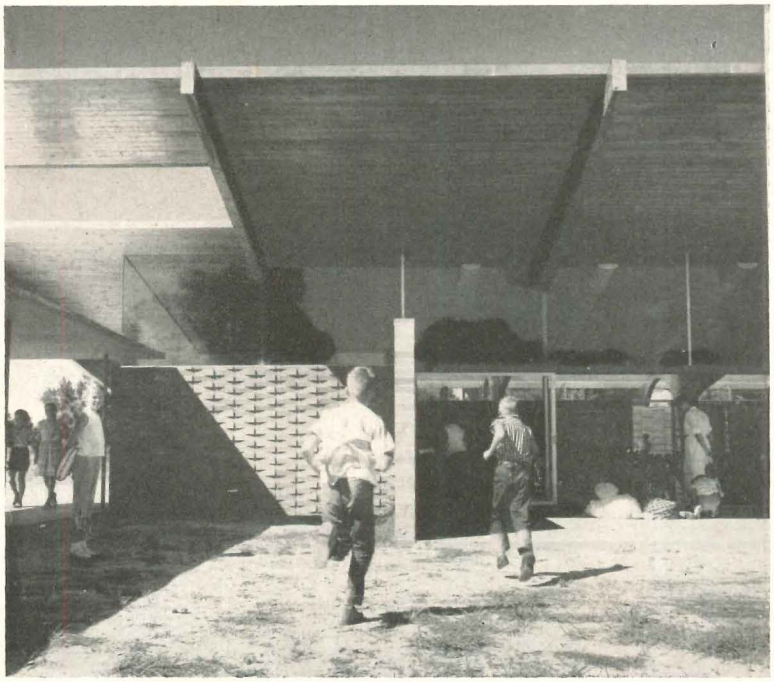



LAMINATED WOOD ARCH
STEEL COLUMN
FIXED GLASS
27'-0"
3 1/2"
17'-10 1/2"









Alta Vista School

The "up and outwards" openness and the materials used in the school create a bright, warm and friendly atmosphere. The bents are stained southern yellow pine; the decking is white fir. Masonry walls are in three different shades of earth tone, and occasionally set in ornamental patterns.

A modular system of galvanized steel uprights is built flush into all walls, inside and out. These accommodate a range of brackets for interchangeable shelves, chalkboards; display cabinets and the like.

The new wing runs east and west. It is placed carefully with relation to the existing school, and connected to it by a covered walk. Each classroom has a roof vent. The corridor skylight has a shading screen on top for sun control

Architectural Engineering

OH SAY (WHAT) CAN YOU HEAR? Further evidence that new schools are running into noise problems is given in a publication of the Texas Engineering Experiment Station carrying the somewhat unlikely title of, "A Sound Survey of the Geometric School Plant." Fourteen Texas schools were surveyed in a two-part program: interviews with teachers, and sound measurements of conditions brought out by the interviews. Thirty-four per cent of the teachers claimed noise was disturbing from adjoining classrooms, 23 per cent complained of corridor noise and 16 per cent complained of noises from such sources as highways, playgrounds, pencil sharpeners and squeaky doors. Significantly, strongest complaints arose in schools with open plans and those having double-loaded corridors with hard reflective surfaces. Some teachers were inhibited in their use of audio-visual aids because of disturbance to other classes. While the study is not sufficiently exhaustive to illustrate the many specific construction details to provide optimum acoustical conditions, still the major deficiencies are apparent: too lightweight walls, cross-connecting air ducts, direct openings between adjacent classrooms and from classrooms to corridors.

TOWARD IMPROVING CURTAIN WALL PERFORMANCE. Look this spring for a manual on curtain wall design and construction establishing standards the better to insure resistance to vagaries of weather, and to guarantee quality of workmanship in factory and field. Intended primarily for architects, the manual will culminate the first major effort of the Research and Development Committee of the National Association of Architectural Metal Manufacturers, Metal Curtain Wall Division, which was formed last summer. Idea is to provide data for design and specification of metal curtain walls; to let the fabricator know performance standards expected and accepted testing procedures; and to make the materials manufacturers aware of requirements of the architect and of the curtain wall manufacturer. Being given top priority is the specification portion of the manual. To test it out on practitioners NAAMM took their draft to the New York Chapter of the Construction Specifications Institute for review. Reaction was favorable, and committees of NAAMM are pushing hard on the writing of a series of standards on recommended design criteria, test procedures for water leakage and air infiltration, finishes and sealants.

PLASTIC DESIGN OF STEEL FRAMES. This has been the subject of numerous technical papers, laboratory studies and engineering symposia recently. It also has been an accepted standard specification in Great Britain since 1948. What it offers basically is greater elegance and economy in steel structures. Now American engineers have a practical approach to this new, rapid and rational design method in a manual just published by the American Institute of Steel Construction which applies to one- and two-story continuous structures. A section on analysis reviews *the* two methods of design. Details are given on column design, connections, lateral bracing and unsymmetrical sections. Many complete design examples are given in the text, and a generous appendix contains formulas and charts for continuous beams and single and multi-span rigid frames. "Plastic Design in Steel" has 104 pages and costs $4. AISC, 101 Park Avenue, New York 17, N. Y.

YES, IT'S A MOUTHFUL. From a letter in *The Architects' Journal* (London). "The hyperbolic paraboloid is the third of the great inventions for spanning space [other two, the beam and the arch]. It would be unfortunate if we were condemned to continue to trip over and tangle with the present term which is inelegant, difficult to pronounce, difficult to spell, wasteful of time and incomprehensible except to a select few. I suggest the hypoid. (Signed) W. W. J. Trollope." [Any self-respecting mechanical engineer knows that a hypoid is a gear. In view of the current rash of h.p.'s we suggest hyper-loid].

TORONTO STEEL FRAME GOING UP AGAIN; DESIGN UNCHANGED. Apparently a clean bill of health has been given the structural design of the Union Carbide Canada Ltd. building in Toronto—the one that collapsed during a windstorm last September. The 11-story frame was up and it had been welded to the seventh floor. A story in the Toronto newspaper, *The Financial Post,* reports that the steel erection procedure will be modified, however. Temporary bracing used with the original frame was said to have been insufficient to resist force of the wind. This time deep horizontal trusses will be set between columns at each floor level. Original plan was to pour concrete spandrel beams in the longitudinal direction after steel had been erected. Building had 65-ft clear span girders and was 215 ft long; columns were to be set outside the skin. Most any building failure presents a unique opportunity for full-scale test of structural design and construction techniques. In this case welded sections which took tremendous stress were the subject of much interest. According to the *Post,* only one of several hundred welds failed.

REQUIRED READING. One of the grimmest stories in a long time is unfolded in the National Fire Protection Association's full report on the Chicago School Fire last December, in which 90 pupils and three nuns died. Even though a precious 12 minutes elapsed from discovery of the fire until it was reported by phone to the fire department, the blunt fact is that this school was a set-up for a serious conflagration. The three stairwells leading to the second floor, where all the casualties occurred, were unenclosed and had a common connection through the corridor. Only one room had fire escape stairs. The only fire alarm was manual and its two switches were unidentified. And it is known for certain that combustible acoustical tile was used on second-floor classroom ceilings, and may have been used in the second floor corridor. Sprinklers could have extinguished the flames at their inception. NFPA points out, however, that these are not a substitute for stairway enclosures, but should complement them. The report, "The Chicago School Fire", is available from NFPA, 60 Batterymarch St., Boston 10. Cost is 25 cents.

THIS MONTH'S AE SECTION

A Study Of Five Schools Shows What Determines

SCHOOL FIRE INSURANCE COSTS

PART 2

By EMIL J. SZENDY, A.I.A.

This subject provides a source for much conjecture, debate, and, now and then, analysis. It will be apparent, after reading Mr. Szendy's second article that merely a casual examination of fire insurance rates in relation to various types of construction can lead to misinformed conclusions.

Calculation of fire insurance rates for four elementary schools and one high school are given. Also alternate constructions are assumed to exemplify effect of these on cost of insurance. High charges for such faults as improper fire doors are brought out in the examples. Use of sprinklers in a wood frame school is discussed.

The schools are in suburban Long Island, N. Y. They are built of inexpensive constructions. Some idea of these will be a guide in judging the significance of the insurance costs. In the elementary schools, fire-resistive wings have brick with concrete block backup, steel joists and concrete plank roof; masonry wings have a brick and block wall with wood studs and joists, wood plank roof; frame wings are of prefab wall panels (plywood outside, gypsum board inside) and plywood roof panels. The high school has a three-story portion of reinforced concrete; one story is steel frame.

School costs are given as the amount required to replace them in 1958; rates are those established by the New York State rating organization. Calculation procedures vary somewhat throughout the country, and rates will differ due to the availability of materials and variations in methods of construction, but the end result is approximately the same.

The following discussion shows how insurance charges are affected by (1) a change from one type of construction to another, (2) leaving steel unprotected, (3) using heavy timber construction, (4) protecting stairs and shafts, (5) using sprinklers. Also investigated are the influence of area and exposure charges and management faults.

Fire-Resistive and Masonry Construction

Example A has Part A of masonry construction (wood studs and joists), Part B of fire-resistive construction, and Part C of frame construction. If Part A had been built of the same fire-resistive construction as Part B at a unit cost of $21.33 per square foot of insurable value, the insurable value would have been $507,547 instead of $457,200, a difference of $50,347. The annual insurance premium on the masonry building, including building and contents (full coverage), and extended coverage ($50 deductible), at published rates of 24 cents, 32 cents, and 6 cents, respectively, is $1172.06. The annual insurance premium on the fire-resistive building, including building and contents (80% coverage), and extended coverage ($50 deductible), at published rates of 3.7 cents building, 6.3 cents contents, ½ cent extended coverage on building and 1 cent extended coverage on contents, would be $147.92. The difference in annual premium costs would be $1024.14. (See tabulation top of next column.)

BUILDING	UNIT COST	EST. COST	ANN. PREM.
Fire Resist.	$21.33/sq ft	$507,547	$ 147.92
Masonry	19.21/sq ft	457,200	1172.06
Diff., for fire-resistive		+ 50,347	— 1024.14
Annual add. cost, 30 years		+ 1,678	— 1024.14
Annual add. cost, 50 years		+ 1,007	— 1024.14
Area:	23,795 sq ft		
Contents:	$24,600		

The additional cost of fire-resistive construction would be amortized by insurance savings in 50 years, the estimated life of the building. In addition the taxpayers would have a fire-resistive building instead of one with wood joists and studs.

There are intangibles which cannot be estimated in a rough comparison of this kind, such as possible increases or decreases in rates during the 50-year period, and increases in insurable values due to rising costs.

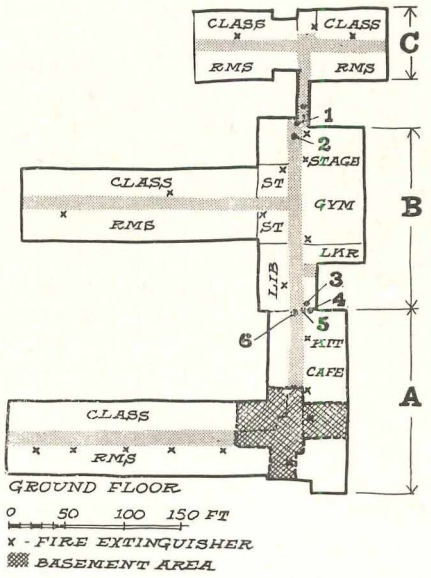
Fire-Resistive and Frame Construction. For the peak loads of school enrollment being experienced in many communities, classrooms at minimum cost are needed. These classrooms may not be needed when the peak enrollment has passed, and permanent school buildings are hard to convert to other uses. Part C of Example A, and Parts B of Examples B and C, are temporary frame classrooms added to accommodate the peak enrollment. For maximum fire-safety, each classroom has its own exit door equipped with panic hardware leading directly to grade, outside, and the additions can be evacuated in less than a minute.

Opponents of frame classrooms are likely to quote relative insurance rates to prove that such buildings are not only unwise but also uneconomical. If Part C of Example A had been built of the same fire-resistive construction as Part B, at a unit cost of $21.33 per square foot of insurable value, the insurable value would have been $194,551 instead of $124,500, a difference of $70,051. The annual insurance premium on the frame building and contents (full coverage), and extended coverage ($50 deductible), is $464.64, at published rates of 38 cents, building and contents, and 6 cents, extended coverage. The annual insurance premium on the fire-resistive building, including building and contents (80% coverage), and extended coverage ($50 deductible), would be $55.80 at published rates of 3.7 cents building, 6.3 cents contents, ½ cent extended coverage on building and 1 cent extended coverage on contents. The difference in annual premium costs would be $408.84. It would take a little over 171 years to amortize the additional cost of construction by insurance savings.

BUILDING	UNIT COST	EST. COST	ANN. PREM.
Fire-Resist.	$21.33/sq ft	$194,551	$ 55.80
Frame	13.65/sq ft	124,500	464.64
Diff., for fire-resistive		+ 70,051	— 408.84
Annual add. cost, 15 years:		+ 4,670	— 408.84
Annual add. cost, 171 years:		+ 409.65	— 408.84
Area:	9121 sq ft		
Contents:	$7500.00		

Similar comparisons can be made between masonry

EXAMPLE A: ELEMENTARY



1. Class A door
2. Class B door
3. Class A rolling shutter
4. Class B rolling shutter
5. Duct protected with vermiculite plaster over gypsum plaster
6. Class A rolling shutter

	CONSTRUCTION	BUILDING VALUE	AREA, sq ft	VALUE/ sq ft	CONTENTS VALUE	ANNUAL INSURANCE
PART A	Masonry	$457,200	23,795	$19.21	$24,600	$1172.06
PART B	Fire-res.	486,200	22,797	21.33	24,300	142.05
PART C	Frame	124,500	9,121	13.65	7,500	464.64
						$1778.75

As of September 18, 1957, the building was rated as one risk as follows:

ITEM No.*					
1b	Basis Rate	(Key rate .33)		.22	
2a	Walls	Less than 1/3 frame construction		.02	
3b	Area	53,190 sq ft (ground floor area). Subtract 10,000 sq ft. 44,000 sq ft @ .01/1000 sq ft = 0.44. Less 40% for division walls. Less 47% for fire-resistive area		.139	
12d	Occupancy Hazard	Kitchen		.04	
				.419	
19	Credits	Approved internal protection	7%		
		Special Credit	10%		
			17%	.071	
				.348	.348
23	Contents	Add			.06
					.408
24	Fire-resistive credit	Building	29.5%	.102	
		Contents	22.9%		.093
				.246	.315
24a	Special Educational Institution Credit, 15%			.037	.047
				.209	.268
				.21	.27
	Classified Experience Adjustment (Class 106-3) 8/55, plus 40%			.08	.11
				.29	.38
	Classified Experience Adjustment (Class 106-3) 5/57, plus 10%			.03	.04
	Final Net Published Rates		Building	.32	
			Contents		.42

Comments. The single, vertical sliding Class B door between the kitchen and the teachers' lunch room (in the fire wall between Parts A and B) was supplemented with a Class A automatic rolling shutter on the opposite side of the wall. The exhaust duct passing through the same fire wall was protected with an additional layer of metal lath and plaster; cost $650. The Rating Bureau agreed to accept the Class A and Class B doors installed between Parts B and C.

After reinspection, each Part was rated separately, as of February 2, 1958, as follows:

	CONSTRUCTION	BUILDING RATE	CONTENTS RATE
Part A	Masonry	.24	.32
Part B	Fire-resistive	.037	.063
Part C	Frame	.38	.38

The Extended Coverage rate on Part B was reduced from .06, building and contents, to .005, building and .01, contents.

The estimated annual saving in premium costs with each part rated separately was $1174.08 (5-year policies), if insured for 80% of insurable value.

(wood studs and joists) construction and frame construction. However, it is apparent from superficial inspection that the insurance savings will not amortize the additional cost of construction during the life of the building. Also, while a masonry building may suffer less damage in a fire, an interior in a masonry building of the same construction as a frame building provides no greater safety to the occupants than a frame building.

Unprotected Metal Lumber (Steel Joists). In buildings rated under the Fire-Resistive Schedule, the net penalty charge is 1.1 cents per hundred dollars, calculated as follows:

ITEM NO.*		GROSS	NET
4a	Unprotected metal lumber type of floor and/or roof support	.03	
15	Credit: Approved internal protection, 3%		.0291
17a	Special Credit; Schools, 25%		.0218
22	Classified Experience Adjustment, minus 49½%		.011
When applied to Part A of Example B:			
Annual Insurance Charge:		$ 75.24	
In 30 years, insurance costs:		2257.20	
In 50 years, insurance costs:		3762.00	
Floor Area, Ground floors and Second fl: 43,396 sq ft			
Cost which would be amortized in 50 yrs: 8.7 cents/sq ft			

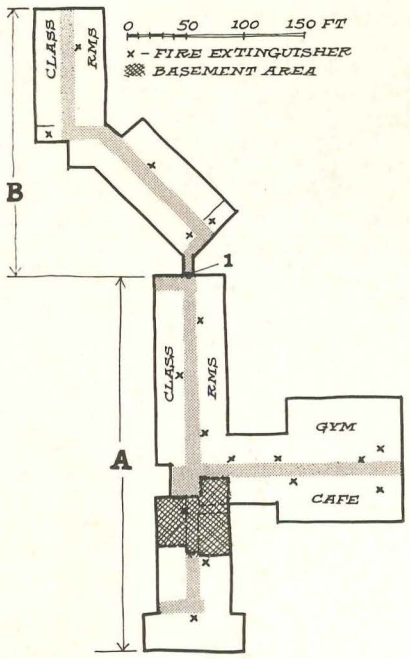
In Example B, the acoustical tile was applied on gypsum wallboard, but the assembly had not been tested and approved by the Underwriters. Installation of an approved assembly, which would have provided fire protection for the steel joists, would have added little, if anything, to the cost.

Unprotected Structural Steel (Horizontal). In buildings rated under the Fire-Resistive Schedule, the net penalty charge for unprotected horizontal structural steel is 1.8 mils per hundred dollars, calculated as follows:

ITEM NO.		GROSS	NET
4b	Unprotected horizontal structural steel	.005	
15 & 17a	Credits		.0036
22	Classified Experience Adjustment, minus 49½%		.0018
When applied to Example E, the senior high school:			
Annual insurance charge:		$ 41.98	
In 30 years, insurance costs:		1259.40	
In 50 years, insurance costs:		2099.00	

*Item numbers appear in schedules published in the first article

EXAMPLE B: ELEMENTARY



1. Fire door

	CONSTRUC-TION	BUILDING VALUE	AREA, sq ft	VALUE/ sq ft	CONTENTS VALUE	ANNUAL INSURANCE
PART A	Fire-res.	$1,021,400	46,254	$22.08	$47,400	$625.33
PART B	Frame	179,000	13,286	13.47	7,100	108.65
						$733.98

As of August, 1955, before Part B was added, the rate on Part A was: building .053, and contents .086.

After construction of Part B, an inspection revealed that the fire doors between Parts A and B were hooked back. Part A and B were therefore rated as one risk. The building rate was .10 and the contents rate .142.

Fusible links were introduced in the holdback chains on the fire doors and the building re-rated, still as one risk, as of September, 1957. The revised rates were: building .075; and contents .107, and were calculated as follows:

ITEM No.					
1b	Basis Rate	(Key rate .33)		.22	
2a	Walls	Less than 1/3 frame construction		.02	
3b	Area	45,835 sq ft (ground floor area)		.047	
7	Floor Openings	Non-standard basement to second floor		.003	
8a	Heating	Two hot air furnaces		.04	
12d	Occupancy Hazard	Kitchen		.04	
				.37	
19	Credits	Approved internal protection	7%		
21c	Credit	Special Credit	10%		
			17%	.062	
				.308	.308
23	Contents	Add			.06
					.368
24	Credit	Fire-resistive credit, building	43.5%	.133	
		contents	32.6%		.199
				.175	.249
24a	Credit	Special Educational Institution Credit	15%	.026	.037
				.149	.212
Classified Experience Adjustment (Class 106-5) 8/55, minus 33⅓%				.049	.07
				.10	.142
Classified Experience Adjustment (Class 106-5) 5/57, minus 25%				.025	.035
Final Net Published Rates			Building	.075	
			Contents		.107

Comments. The building was rated under the non-fire-resistive schedule as part of it was frame. However, as more than 66⅔% of the horizontal floor area was of fire-resistive construction, it was coded fire-resistive (Class 106-5) and the classified experience adjustments made accordingly.

Item No. 8a, the charge for the hot air furnaces, has since been eliminated from the schedule, when the furnaces are thermostatically controlled.

As of November, 1957 the building was re-rated, with separate rates established for Parts A and B as follows:

RATE FOR PART A

ITEM No.					
1b	Basis Rate	(Key rate .33)		.06	
4a	Structural Steel	Unprotected steel bar joists (metal lumber)		.03	
4b	Structural Steel	Unprotected structural steel		.005	
5a	Floor openings	Non-standard		.002	
6c	Occupancy Hazard	Kitchen		.002	
7a	Occupancy	School Class		.01	
				.109	
15	Credit	Approved internal protection		.003	
				.106	
17	Exposure	Frame one-story frame school building		.032	
				.138	
17a	Credits	Special Education Institution Credit, 25%		.034	
				.104	.104
21	Contents	Add			.05
					.154
Classified Experience Adjustment (Class 105-5), minus 49½%				.051	.078
Final Net Published Rates			Building	.053	
			Contents		.078

Comments. The current basis rate is .045 instead of .06. Item No. 7a, the charge of .01 for school class occupancy has since been eliminated from the schedule. Contents addition has been reduced from .05 to .04. Item 17, the exposure charge, was challenged and eventually reduced.

The Revised Net Published Rates as of January, 1958 were:

Building	.048
Contents	.074

RATE FOR PART B

ITEM No.					
1b	Basis Rate	(Key Rate .33)		.22	
2b	Walls	Frame Construction		.10	
3b	Area	13,127 sq ft (allow 10,000 sq ft) charge is for 4 units of 1000 sq ft		.04	
8a	Heating	Hot air furnace		.04	
				.40	
19	Credit	Approved internal protection	7%		
21c	Credit	Special Credit	10%		
			17%	.068	
				.332	
				.33	
24a	Credit	Special Education Institution Credit, 15%		.049	
				.281	
Classified Experience Adjustment (Class 105-1), plus 51%				.14	
Final Net Published Rates, Building and Contents				.42	

Comments. Item No. 8a, the charge for the hot air furnace, has since been eliminated from the schedule when the furnace is thermostatically controlled. It should be noted that, for frame buildings, the contents rate is the same as the building rate.

Comparison Study. A comparison study was made of the premium charges for the building rated as one risk, building .075 and contents .107, and the rates which applied for each part as a separate risk. It was found that the premium charge for the building rated as one risk on a five-year policy, would be about $200 less annually, than for each section rated separately. Analysis indicated that this occurred in application

of the classified experience adjustments. When rated as one risk, the entire building participated in the reduction applicable to a risk coded as fire-resistive (Class 105-5), a reduction of 49½%. When rated as a separate risk, the frame building was subject to a classified experience adjustment of plus 51% (Class 105-1).

No Benefit from Fire Wall and Fire Doors. The Rating Bureau permitted the Owners to choose the manner in which they wished the two parts rated, as one risk or as two separate sections. The rate applicable to one risk was chosen. Little benefit therefore accrues from the presence of the fire wall and fire doors between Parts A and B.

Unprotected Steel Joists. When rated as a separate risk, the rate for Part A, the fire-resistive section, is higher than any other fire-resistive building in the school district. The higher rate is directly traceable to the unprotected steel joists.

(Text continued from page 229)

Obviously, insurance savings will not amortize the additional cost of encasing the structural steel in concrete or fire-protective material. Where ceilings are installed, an approved fire-protective type might be justified. It should be noted that where only the lower flanges of unimportant members are unprotected, the charge is ⅛th when the full member is exposed.

Unprotected Structural Steel (Vertical). In buildings rated under the Fire-Resistive Schedule, the net penalty charge for unprotected vertical steel is 1.1 cents per hundred dollars, calculated as follows:

ITEM NO.		GROSS	NET
4c	Unprotected vertical floor and/or roof supports	.03	
15 & 17a	Credits		.0218
22	Classified Experience Adjustment, minus 49½%		.0110
	When applied to Example E, the senior high school:		
	Annual insurance charge:	$ 293.87	
	In 30 years, insurance costs:	8,816.10	
	In 50 years, insurance costs:	14,693.50	

Heavy Timber Roof Framing Members. Item 21d of the Non-Fire-Resistive Schedule provides a reduction of 40% when the construction is "Masonry walls with noncombustible floors and roof (excluding metal deck) throughout except that roof supports are of bay timbers, or laminated wood beams, measuring not less than 6 in. in any dimension." If the roof construction of Part A of Example A had been of heavy timbers instead of joists, the rate for the building would have been reduced from 24 cents to 10 cents, and for the contents from 32 cents to 17.63 cents, per hundred dollars. (It should be noted that the net reduction in rate is more than 40% because the Classified Experience Adjustment add 52½% to the calculated rate for "masonry" buildings.)

When applied to Part A of Example A:
Annual insurance saving: $ 540.34
In 30 years, insurance saving: 16,210.20
In 50 years, insurance saving: 27,017.00
Floor area, ground floor: 20,615 sq ft
Cost which would be amortized in 50 years: $1.31/sq ft

Wood Roof Construction. The roof on Part A of Example C is, in part, of wood construction. This particular area has three stories. (Wood roofs on buildings less than three stories in height cause the building to be rated under the Non-Fire Resistive Schedule). In the case of Example C, the insurance cost for the sloping wood roof (provided for architectural treatment) is at the rate of 7.6 mils per year, calculated as follows:

ITEM NO.		GROSS	NET
2a	Combustible roof on 3-story building	.04	
	53% of roof of combustible construction	.021	
15 & 17a	Credits		.0150
22	Classified Experience Adjustment, minus 49½%		.0076
	As applied to Part A of Example C:		
	Annual insurance charge:	$ 49.79	
	In 30 years, insurance costs:	1493.70	
	In 50 years, insurance costs:	2489.50	

Stairs and Shafts in Fire-Resistive Buildings. The savings in insurance costs will rately offset the cost of enclosing stairs and shafts in fire-resistive buildings. Using Example E, the senior high school, as the guinea pig, the saving would be at the rate of 2.2 mils per hundred dollars, calculated as follows:

ITEM NO.		GROSS	NET
5a	Floor openings, non-standard protection, per floor:	.002	
	Three floors:	.006	
15 & 17a	Credits		.0043
22	Classified Experience Adjustment, minus 49½%		.0022
	As applied to Example E:		
	Annual insurance charge:	$ 58.77	
	In 30 years, insurance costs:	1763.10	
	In 50 years, insurance costs:	2938.50	

The senior high school has three main stairways from the first floor to the third, and others in the 1-story section from the first floor to the basement.

Stairs and Shafts in Non-Fire-Resistive Buildings. In "masonry" non-fire-resistive buildings where, in order to provide fire-resistive stairways, the stairs are in masonry enclosures, the savings in insurance costs might justify standard enclosures. In the state of New York, masonry (ordinary) construction is permitted for new school buildings not more than two stories in height, and then only if the floor and roof framing is of heavy timber construction; and frame construction is permitted only for new school buildings not more than one story in height. For three-story buildings, (see Example D) the penalty charge for non-standard floor openings is at the rate of 4.8 cents per hundred dollars, calculated as follows:

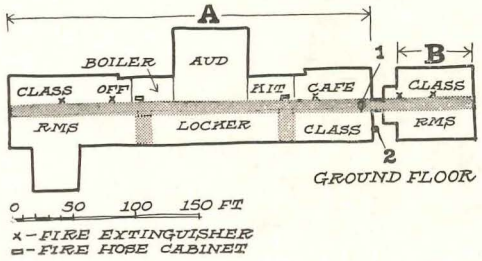
ITEM NO.		GROSS	NET
7	Floor Openings, not standard, per floor:	.015	
	Assuming three floors:	.045	
19, 21c & 24a	Credits		.0317
26	Classified Experience Adjustment masonry, plus 52½%		.048
	Classified Experience Adjustment frame, plus 51%		.048
	When applied to Example D:		
	Annual insurance charge:	$ 166.54	
	In 15 years, insurance costs:	2498.10	
	In 30 years, insurance costs:	4996.20	
	In 50 years, insurance costs:	8327.00	

Area Charges. For "masonry" and "frame" buildings of ordinary construction (wood studs and joists) there is an area charge whenever the area exceeds 10,000 square feet. Assuming an area in excess of 21,000 square feet, with no division walls, the net charge would be at the rate of 10.6 cents per hundred dollars, calculated as follows:

ITEM NO.		GROSS	NET
3b	For each each 1000 sq ft in excess of 10,000	.01	
	For 12 units	.12	
16, 19, 21c, 24a	Credits		.069
26	Classified Experience Adjustment, plus 52½%		.106
	When applied to Part A of Example A:		
	Annual insurance charge:	$ 408.57	
	In 30 years, insurance costs:	12,257.10	
	In 50 years, insurance costs:	20,428.50	

When applied to Part A of Example A:
Annual insurance charge: $ 408.57
In 30 years, insurance costs 12,257.10
In 50 years, insurance costs: 20,428.50

EXAMPLE C: ELEMENTARY



1. Class A door
2. Unpenetrated masonry walls

	CONSTRUCTION	BUILDING VALUE	AREA, sq ft	VALUE/ sq ft	CONTENTS VALUE	ANNUAL INSURANCE
PART A	Fire-res.	$957,200	41,722	$22.94	$44,200	$240.24
PART B	Frame	58,900	4,083	14.43	4,000	181.16
						$421.40

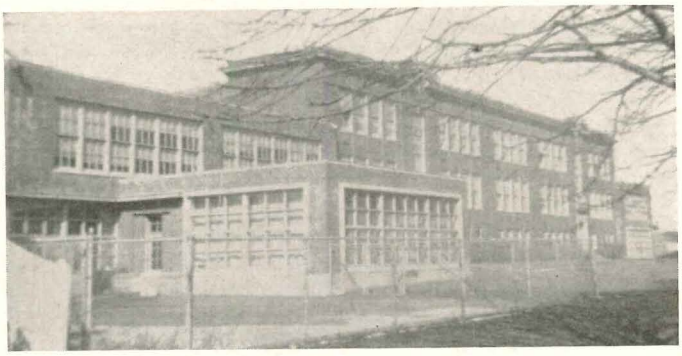
As of August, 1955, prior to the addition of Part B, Part A was rated: building .048, and contents .082.

As of May 1957, after erection of Part B, inspection revealed that the two parts were not properly separated. In Part A, the passageway to Part B is under a stair landing, and the space between the transom bar of the new doors and the stair landing had been left open. Also the doors leading into Part B had a sheet metal transom, which was not acceptable. The buildings were therefore rated as one risk, as follows:

PARTS A AND B RATED AS ONE RISK

ITEM No.				
1b	Basis Rate	(Key Rate .33)	.22	
2a	Walls	Less than 1/3 frame construction	.02	
3b	Area	26,478 sq ft (ground floor area)	.076	
7	Floor Openings	Non-standard	.007	
12d	Occupancy Hazards	Kitchen	.04	
			.363	
21c	Credit	Special credit, 10%	.036	
			.327	.327
23	Contents	Add		.06
				.387
24	Credit	Fire-resistive credit, building 48.7%	.159	
		Fire-resistive credit, contents 39.9%		.154
			.168	.233
24a	Credit	Special Educational Institute Credit, 15%	.025	.034
			.143	.199
			.14	.20
		Classified Experience Adjustment (Class 106-3), 8/55, plus 40%	.05	.08
			.19	.28
		Classified Experience Adjustment (Class 106-3), 5/57, plus 10%	.02	.02
		Final Net Published Rates Building	.21	
		Contents		.30

Comments: Rated as one risk, building was not only rated under the non-fire-resistive schedule but, because of inadequate fire-resistive area, it did not qualify for the fire-resistive coding. It was coded as of masonry construction (Class 105-3) and the classified experience adjustment was upwards. The work required to correct the conditions at the fire wall was executed at a cost of $600 and reinspection requested.



As of November 1957 the following revised rates were published:

RATE FOR PART A

ITEM No.				
1b	Basis Rate	(Key rate .33)	.06	
2a	Walls	Approximately 53% of roof of combustible construction (wood deck)	.021	
5a	Floor Openings	Non-standard, basement to second floor	.004	
6c	Occupancy Hazard	Kitchen	.002	
7a	Occupancy	School class	.01	
			.097	
15	Credit	Approved internal protection, 3%	.002	
			.095	
17a	Credit	Special Educational Institute Credit, 25%	.023	
			.072	.072
21	Contents	Add		.05
				.122
		Classified Experience Adjustment (Class 105-5), minus 49½%	.035	.06
		Final Net Published Rates Building	.037	
		Contents		.062

Comments: The current basis rate is .045 instead of .06. Item No. 7a, the charge of .01 for school class occupancy has since been eliminated from the schedule. Contents addition has been reduced from .05 to .04. It should be noted that there is no exposure charge as the unexposed rate of the frame addition before Classified Experience Adjustment was less than .255.

RATE FOR PART B

ITEM No.				
1b	Basis Rate	(Key rate .33)	.22	
2b	Walls	Frame construction	.10	
			.32	
18	Credit	No heating apparatus in building 10%		
19		Approved internal protection 7%		
21c		Special credit 10%		
		27%	.086	
			.234	
			.23	
24a	Credit	Special Education Institution Credit, 15%	.034	
			.196	
			.20	
		Classified Experience Adjustment (Class 105-1), plus 51%	.10	
		Final Net Published Rates, Building and Contents	.30	

The estimated annual saving in premium costs with each Part rated separately was $1349.62 (5-year policies), if insured for 80% of insurable value.

For each 8-in. solid masonry or 12-in. hollow masonry wall, dividing and strengthening the risk, provided it extends to the roof, 10% of the area charge may be deducted with a maximum deduction of 40%. Under the above-described conditions the saving for each division wall would be:

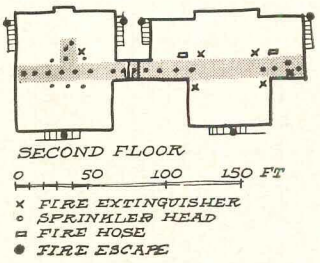
Annual insurance saving:	$ 42.40
In 30 years, insurance saving:	1272.00
In 50 years, insurance saving:	2120.00
In 50 years, max. ins. saving, 4 walls:	8480.00

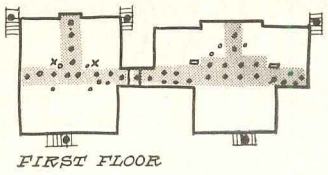
In 50 years, minimum net charge for an area in excess of 21,000 sq ft, divided by four walls,—$11,948.00.

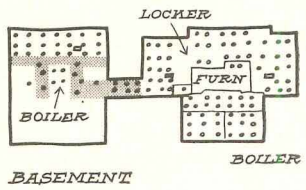
Obviously, there is no way to beat the area charge except to limit the area within exterior walls and fire walls to 10,000 sq ft or to build a fire-resistive construction.

Sprinklers. Installation of sprinklers in the basement of Example D resulted in a reduction in the insurance premium. The reduction, at the rate of 8 cents per hundred dollars, would have been subject to a Classified Experience Adjustment of plus 51%, resulting in a gross

EXAMPLE D: ELEMENTARY

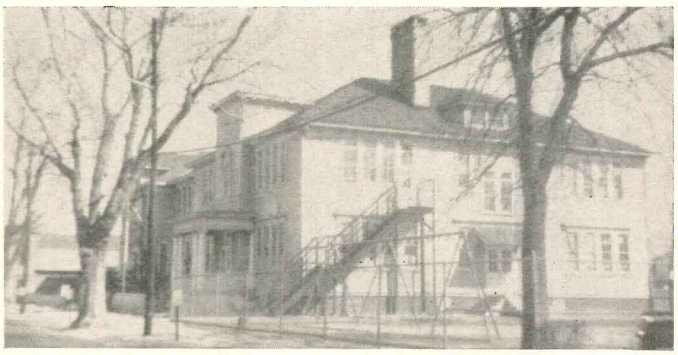






CONSTRUCTION	BUILDING VALUE	AREA, sq ft	VALUE/ sq ft	CONTENTS VALUE	ANNUAL INSURANCE
Frame	$408,900	25,580	$15.95	$24,800	$2272.59

This building is typical of many old-time frame schools, outmoded but retained in use because of peak enrollments. It will be retained until the peak passes, not more than 10 years. In the meantime, it has been made as safe for the children as practicable. Stairs have been enclosed with metal lathed and plastered partitions equipped with doors, an ample number of exterior fire escapes have been added, the basement, stairs and corridors



have been fully sprinklered and at least one sprinkler head has been placed in each classroom, closet, etc. The sprinklers have been connected so that when any head lets go an automatic alarm is sounded in the principal's office and transmitted to the fire department headquarters. A complete sprinkler system was deemed too expensive for the expected life of the building; the attic would have required an extensive, separate, dry-pipe system. The rates are as follows; as of September 18, 1957.

ITEM No.			
1b	Basis Rate	(Key rate .33)	.22
2b	Walls	Frame	.10
6	Floors	Third floor single 1-in. board flooring	.015
7	Floor Openings	Non-standard, basement to third floor	.045
8a	Heating	Hot air furnace in east building	.04
9c	Ventilation	Ventilating metal flues safely arranged	.01
9e	Ventilation	No automatic dampers in ventilating flues	.015
			.445
19	Credit	Approved internal protection, 7%	
21c	Credit	Special credit 10%	
		17%	.075
			.37
22	Exposures	From building to the east	.167
			.537
24a	Credit	Special Educational Institution credit 15% Approved sprinklers equipment in basement 15%	
		30%	.161
			.376
			.38
		Classified Experience Adjustment (Class 106-1) 8/55, plus 40%	.15
			.53
		Classified Experience Adjustment (Class 106-1) 5/57, plus 10%	.05
		Final Net Published Rates, Building and Contents	.58

Comments. Item No. 8a, the charge for the hot air furnace has since been eliminated from the schedule, when the furnace is thermostatically controlled. It should be noted that, for frame buildings, the contents rate is the same as the building rate.

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charge of 12.1 cents per hundred. The savings possible by installing sprinklers are:
Annual savings: $ 419.82
In 15 years, savings: 6297.30

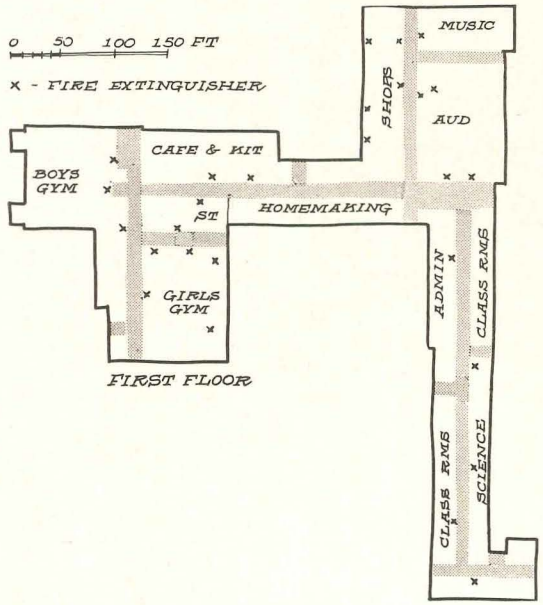
Exposure Charges. A good example of an exposure charge appears in Example D. It is an old wooden school which is now in the business section of the community. Because of the dire need for space, it cannot be abandoned for years to come. Adjoining it to the east is an old "Nickelodeon" converted to dress manufacturing. The space between the two buildings is approximately 25 ft. The insurance cost to the district, calculated as follows:

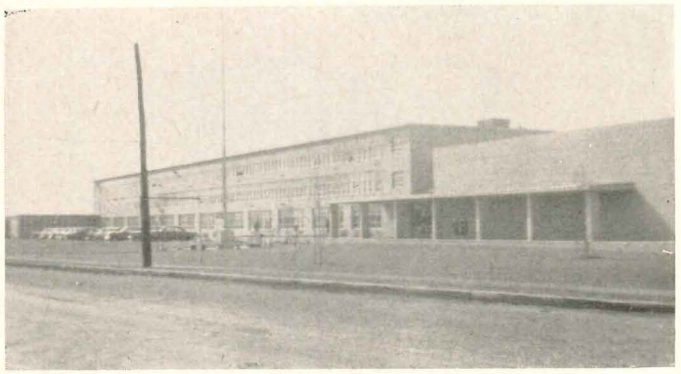
ITEM NO.	GROSS	NET
22 Exposure Charge	.167	
24a Special Credit, school buildings, 15%		.141
26 Classified Experience Adjustment, plus 51%		.214

The dollar cost to the school district is:
Annual insurance charge: $ 742.50
In 15 years, insurance costs: 11,137.50

Faults of Management. Conditions presenting serious hazards in the opinion of the rating bureau are subject to a special penalty charge. Among those specifically mentioned are "Unsafe or substandard flues, chimneys (metal or tile), and heating equipment," "Unsafe or sub-standard handling or storage of flammable oils or gases," "hazardous conditions due to accumulation of rubbish or waste, stock congestion, etc." In one school not shown here the asbestos flue installed was not suitable or approved for use with oil-burning equipment. A charge of 25 cents per hundred dollars was applied which, when reduced by the Classified Experience Adjustment, amounted to a net charge of 12.6 cents per hundred dollars. The substandard flue inadvertently installed was replaced before the charge became part of an insurance bill to the school district.

EXAMPLE E: HIGH SCHOOL





CONSTRUCTION	BUILDING VALUE	AREA, sq ft	VALUE/ sq ft	CONTENTS VALUE	ANNUAL INSURANCE
Fire-res.	$3,866,900	172,813	$22.32	$331,200	$1082.45

As of September 1957, the rates were as follows:

ITEM No.				
1b	Basis Rate	(Key rate .33)	.06	
4b	Structural Steel	Unprotected	.005	
5a	Floor Openings	Non-standard, basement to third floor	.006	
6a	Occupancy Hazard	Manual Training Shop	.002	
6b	Occupancy Hazard	Chemical laboratory	.002	
6d	Occupancy Hazard	Hall with scenery	.002	
7a	Occupancy	School class	.01	
			.087	
15	Credit	Approved internal protection, 3%	.002	
			.085	
17a	Credit	Special Educational Institution Credit, 25%	.021	
			.064	.064
21	Contents	Add		.05
				.114
Classified Experience Adjustment (Class 106-5), 8/55, minus 33⅓%			.021	.037
			.043	.077
Classified Experience Adjustment (Class 106-5), 5/57, Minus 25%			.01	.02
Final Net Published Rates		Building	.033	
		Contents		.057

Comments: The current basis rate is .045 instead of .06. Item No. 7a, the charge of .01 for school class occupancy, has since been eliminated from the schedule. Contents addition has been reduced from .05 to .04.

Key Rate and Basis Rates. The school examples in this article are in a community where the key rate is 33 cents. (The National Board of Fire Underwriters has rated the community as Class 6, with Class B protection.) At the time the quoted rates were established, the "basis rate" for fire-resistive buildings, as related to the key rate, was 6 cents per hundred; it is now 4½ cents. The "basis rate" for non-fire-resistive buildings was 22 cents per hundred and remains unchanged. As explained in the previous installment, the contents rate is the building rate plus the addition specified in the applicable rating schedule except that for frame buildings the contents rate is the same as the building rate. At the time the quoted rates were established, the addition for contents in fire-resistive buildings was 5 cents per hundred; it is now 4 cents.

Insurable Values. The building insurable values and the contents value included with the examples are as of May 1, 1958. The architect of the buildings was employed to translate the original building costs into present-day costs. In the process, the costs were separated into amounts included and amounts excluded. Ground improvements, septic disposal plants, and foundations below a floor on grade were excluded. Potential costs during reconstruction after a fire, including architects' and engineers' fees, legal fees, administrative costs, insurance during reconstruction and, for the larger buildings, the cost of a clerk of the works, were included. Actual inventories were taken to establish contents values.

Estimating Penalty Charges and Potential Savings. In estimating the penalty charges and potential savings, calculations are based on the following:

Masonry and frame buildings and contents are insured for 100% of insurable value.

Fire-resistive buildings and contents are insured for 80% of insurable value.

Annual premium costs are for five-year policies and are 4/5ths the premium charge for a one-year policy.

The published rates and penalty-charge rates apply to one-year policies. The estimated dollar costs apply to five-year policies.

Bond interest charges and potential interest earnings on savings have been disregarded.

The minimum insurance that must be carried to secure the published rates is 80% of the insurable value. The amount of insurance carried is, of course, determined by the local school board. It is a reasonable calculated risk to assume that no building of fire-resistive construction (except, perhaps, one with unprotected steel joists), could be fully destroyed. On the other hand, frame buildings, and brick buildings with wood joists, may be completely gutted and require complete reconstruction. At present, insurance schedules do not recognize protected combustible construction, and so architects generally do not attempt to build in fire protection for combustible elements in a manner which will earn specific fire-ratings.

When a number of school buildings of brick or frame construction in the same school district are included in group coverage, full coverage for each building may be secured at a group rate which may be 90% of the rates applicable to the buildings insured individually. As this saving is not universally applicable, it has not been considered in making the comparisons.

Building Costs per Sq Ft of Insurable Value. In order to compare the costs of different types of construction, the cost per square foot of insurable value is given for each example. It should be noted that these costs vary with each building; they should be utilized with the same caution as any other square-foot cost. Also to be noted is that contrary to usual practice the square foot areas have been calculatd *within* the enclosing walls to conform to the manner in which fire insurance area limitations are applied.

THE "REAL" COST OF EXTERIOR WALLS

Method worked out by engineers of the Structural Clay Products Institute suggests a way in which maintenance and operating costs attributable to the wall itself can be added directly to initial cost to give a basis for evaluating the economics of different wall types

Too frequently, the long-run cost of a building is lost sight of in the owner's (and consequently building designer's) concern with how much money has to be raised in the beginning. The temptation to worry about maintenance and operating costs until later may lead architect and owner to select a building component which may tally up considerable charges over the life of the building investment. This, essentially, is the message contained in a study issued a few months back called, "Ultimate Cost of Building Walls," written by Clayford T. Grimm, P. E., and James G. Gross of the Department of Engineering and Technology, Structural Clay Products Institute.

What the authors have done is to develop a system of cost analysis whereby all the costs attributable to the building wall can be translated into a "present value" figure so that future costs can be added directly to the initial cost, thus giving some equivalent means for the comparison of various types of exterior walls for buildings. In its simplest terms, "present value" or "present worth" as applied to building walls is that amount of money which the owner would have to invest at the time he occupies the building to be able to pay all future charges against the wall. In other words, if it costs $.03 per sq ft every four years for painting the interior of the wall, the owner would have to invest $.074 at 6 per cent interest for 50 years (assumed life of building) to equal the amount paid out for the interior painting.

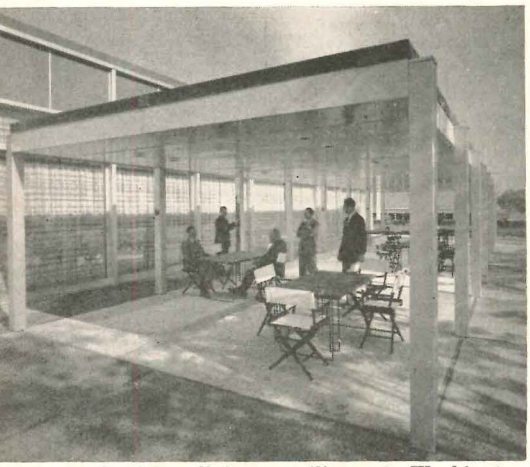
This, naturally, is not the way in which these charges actually get paid, and so the reader who has forgotten about interest tables may find the concept a bit puzzling at first. It is, however, a recognized system of cost analysis. A more familiar method would be to assume initial cost as being amortized over a period of time, and annual amortization payment added to the average annual costs of maintenance and operation to produce the total annual cost. The authors of this report chose the "present worth" method instead, "Because these annual payments are unequal, are off somewhere in the distant future and are a series of payments rather than a lump sum, they are vague and not so comprehensible as a demand for an immediate cash outlay." The present worth method has been used also by a task group of the Federal Construction Council, an association of United States government construction agencies.

Real economy, the authors say, is obtained by seeking the lowest ultimate cost which is determined by selecting components having the lowest combination of initial cost, maintenance and operating costs. The 15 cost factors they consider include:

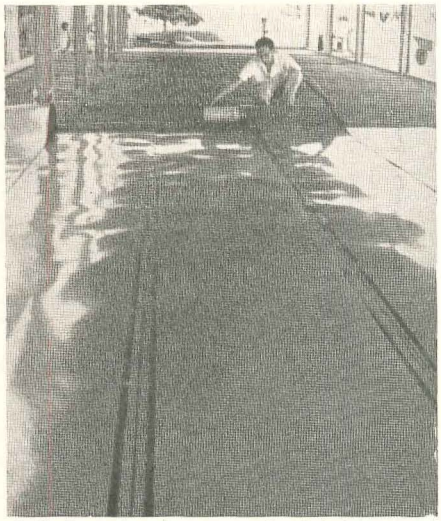
1. **Value of Money.** (Another way of saying interest rate.)
2. **Depreciation.**
3. **Price Increases.** (If a steady rate of price increases is assumed, the wall with less maintenance will have more in its favor.)
4. **Income Taxes.** (These can influence construction policies, since operating expenditures may be charged off for tax purposes. In a high tax period this gives some justification for using materials having lower first cost and higher operating cost.)
5. **Initial Construction Cost.**
6. **Cost of Supporting the Walls.** (Figures given in the report suggest that the effect of savings in spandrel weight on foundations may occasionally be overrated. For example, the authors say that reducing the weight of spandrel walls by 75 per cent on a typical 10-story rigid frame office building having 50 per cent glass area would reduce the load exterior foundations by only five per cent.)
7. **Space Occupied by the Walls.** (The report points out that this factor is only of consequence if the building must occupy the complete site, in which case the walls can infringe on usable area.)
8. **Speed of Erection.**
9. **Air Conditioning Costs.** (In this category, charges against the wall are assumed to be those of initial and operating costs of the air conditioning system required to compensate for heat gain).
10. **Heating Costs.** (Same type of charges as for air conditioning but due to heat loss. In the example given in the report, it is assumed that a masonry wall and a metal panel wall will have the same heat loss; but in the case of heat gain in summer, the masonry wall is assumed to have less heat gain per day because of its thermal capacity, and the fact that the temperature change from day to night is greater in summer than winter.)
11. **Maintenance Expenditures.** (One of the rather startling points brought out in the study on ultimate wall costs is the tremendous impact of the indirect costs chargeable to the wall. The report shows that the cost of washing windows every three months and caulking them every 16 years is a little over one-third the cost of double-glazed plate glass, assuming a 50-year life for the building. The heat gain in summer through this glass can cost in air conditioning charges more than the material itself.)
12. **Illumination.** (Here it has been assumed generously that a 50 per cent reduction in the number of hours that lights are burned is possible where windows are provided; thus this credit is given to clear glass over opaque wall areas.)
13. **Salvage Value.** (The various materials—masonry, metal panels, glass—are assumed to have a certain value when scrapped.)
14. **Insurance Rates.** (A typical National Board of Fire Underwriters Class A office building in the Philadelphia area, with 40 per cent window area, is used to demonstrate the effect of exterior wall materials on insurance premiums. Figures given in the report list the cost of insurance for this building with a masonry cavity wall as $.06 per $100.00 of insurance. For an incombustible metal panel wall without masonry backup, the insurance cost given is $.08 per $100.00.)
15. **Real Estate Taxes.** (This of course depends directly on the initial cost of the wall.)

The formulas pertaining to these various items, while looking a little forbidding, are quite straight-forward, and, in any case, these have been translated into easy-to-use graphs. The authors have assumed certain unit costs throughout. The reader may or may not agree with them. But these costs have no bearing on the method itself, since the units can be changed at will to suit current costs, geographical variations, etc.

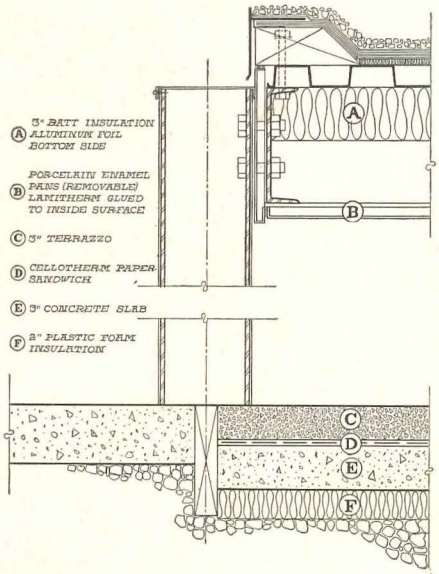
CONDUCTIVE PAPER HEATS AN OUTDOOR DINING ROOM



Outdoor dining pavilion at Washington Water Power Co., Spokane, Wash., is heated by conductive paper in floor and ceiling



Cellotherm heating paper in slab is mopped in between layers of waterproofing. Dark "stripes" at edges are copper foil busses



Section shows location of heating papers: *Lamitherm* is glued to inside of porcelain ceiling pans, *Cellotherm* embedded in floor

A (literally) paper-thin full-area heating element that can be applied to virtually any surface or laminated into virtually any material sounds like mere wishful thinking on the part of a designer. But an outdoor dining pavilion just outside the employe cafeteria at the recently completed Washington Water Power Company building in Spokane, Wash., is heated in part by radiation from an electrically conductive paper that meets those specifications. The paper is on the market—and, apparently, it works. In fact, architect Kenneth W. Brooks, who with Bruce M. Walker designed the installation for the Washington Water Power Co., comments, "This product—once the bugs are out of it—may be one of those classic ones which will lead us into the future."

This pioneer installation was designed primarily as a test facility. The company was interested in the new radiant heating element, and, with the enthusiastic approval of the architects, decided to make the outdoor dining room serve as an in-use laboratory for testing its effectiveness. To be on the safe side, the pavilion was conventionally heated with electric cables embedded in the concrete slab, and the heating paper installed as an "over-design."

In two of the end bays, the cables are supplemented by a layer of *Cellotherm* paper encased in a waterproof envelop and wired to operate on 208 volts (58 watts per square foot) or 120 volts (15 watts per square foot). The electrodes on each edge of the paper were connected in parallel to busway at the ends of the paper strips, with adjacent electrodes carrying a common charge. Although extreme care was taken in keeping the paper dry by cementing it between several layers of membrane dampcourse, flashing compound and coated felt, a new coated paper has now been developed that will make this precaution unnecessary for future installations.

The pavilion ceiling is heated with another variation of the product in which the heating element is laminated between thin sheets of phenolic paper. Two by four foot sheets of *Lamitherm* are centered on, and glued to, the inside surface of the removable porcelainized steel pans that form the finished ceiling. A paper honeycomb laminated to the top of the paper assures continuous tight adhesion, while a 3 in. batt of *Fiberglas* with a reflective foil surface on the underside insulates against heat loss through the ceiling. The *Lamitherm* panels, each approximately 800 watts at 208 volts, are alternately switched so that "Full Heat" or "Half Heat" can be obtained from the switching panel. There have been some instances of the ceiling panels shorting out due to faulty electrical connections, but the designers feel that this is a normal—and easily solved—problem arising from the experimental nature of the project.

Such problems seem slight when compared to those overcome during the development of the heating papers. To begin with, they were invented by accident. Robert Smith-Johannsen, a research chemist who is also a skier, was busily engaged in formulating the "perfect" ski wax when he came across one batch of ingredients that seemed to make the skis conductive. When he painted some of the mixture on a sheet of paper and ran a current through it, the paper gave off heat. And Smith-Johannsen was off on a long road of research and experimentation that left the "perfect" ski wax languishing in the test tubes.

The major problem initially was finding a suitable vehicle for the conductive compound. Used as a paint, it radiated heat all right, but even expert application gave very dubious quality control at a very unsatisfactory price. The big step forward came when Smith-Johannsen learned of a new process, developed by the Sun Chemical Co., which makes it possible to combine large amounts of additives (in most cases, resins) with wood pulp at the papermaker's beater so that paper can be modified in almost unlimited ways for use in everything from coffee cups to disposable raincoats. Negotiations with Sun gave Smith-Johannsen international rights to use of the process for electro-conductive applications; the process itself gave him the vehicle he was after. Finally a method of manufacturing the element on production papermaking equipment was found, and Smith-Johannsen's company, Chemelex, Inc., of Niskayuna, N. Y., began marketing the *Cellotherm* heater.

Basically the heater is simply a roll of "raw" paper with metal foil busses bonded along opposite edges. When these busses are energized, current travels from one to the other, across the paper, producing heat over the entire surface en route. The amount of heat radiated depends

upon the inherent resistance of the paper, which in turn depends upon its thickness and formulation.

The "beater" paper turned out to be sensitive to pressure, to moisture, and to other factors that could affect its latent conductivity and consequently the wattage it produced. However, this apparent drawback became an advantage when the paper was used as a core for laminates. The skins of course prevented the element's absorbing foreign substances, and by regulating the laminating pressure—and/or the number of layers of the paper—the resistance of the heater could be controlled with a great degree of accuracy. So Chemelex began making a basic *Lamitherm* element of the type used for the Washington Water Power Co. installation. The term *Lamitherm* now also includes heating elements made by laminating the beater paper into virtually any desired material—any, that is, which will take temperatures up to 250 degrees F., the maximum temperature produced by the *Cellotherm* paper. If higher temperatures are required, the conductive compound can be combined with asbestos fibers rather than with cellulose, forming an *Asbotherm* heater which can be heated to 600 degrees F. And for truly high temperature, glowing elements, quartz fibers might be used in the same way.

As mentioned previously, Chemelex has now developed a way of coating the conductive material on paper, as Smith-Johannsen originally tried to do. The new coated paper (It's still called *Cellotherm*) is particularly well-suited for use as a building paper cum heater because, unlike the beater paper first developed, it is unaffected by pressure and other extraneous factors. Its resistance depends solely on the thickness of the film.

As might be expected, manufacturers in many industries have received the new conductive material with open arms. Although the only product that now uses it is a portable electric radiator made by Rototiller, Inc., of Troy, N. Y., plans are afoot for incorporating the conductive element into ceiling panels, plastic floor and wall coverings, glass, gypsum board and plywood, to name a few. Farther in the future there is the possibility of using the papers for cooling as well as heating—or of combining them with electroluminescent panels. And in the meantime, the successful operation of the Washington Water Power Company installation indicates that the conductive papers may be used "as is" for many heating applications.

B.R.I. MEET EXPLORES PAINT PROGRESS—AND PAINT PROBLEMS

During the recent conference on "Field Applied Paints and Coatings," held by the Building Research Institute, it was stated that 85 per cent of all paint formulations have been modified within the past ten years, and that this is true of virtually *all* formulations for exterior paints. However, it was evident that in spite of (or perhaps because of) the tremendous strides made by the coatings industry, users are not wholly satisfied with present-day paints. What they want are durable, easily applied, one-coat finishes that will (1) decorate and protect the coated surface, (2) resist damage by sun, moisture, mildew and all other natural and man-made elements, and (3) perform the special functions of germicides, insecticides, fungicides, etc. Coatings that will meet all these requirements are not yet on the market.

Speaker after speaker outlined the advantages and limitations of available paints—paints for exterior and interior and industrial use, paints for walls and ceilings and floors and decks, paints for masonry and metal and wood. On the whole, they catalogued an impressive record of paint industry progress.

But through the discussions there ran a persistent thread of debate: users insisted that, while paints are undoubtedly better, they are still not good enough. They still fail, sometimes unaccountably. Industry spokesmen rebutted, in open discussions and in their prepared talks, by pointing out that most paint failures are not unaccountable at all, but can be traced to incorrect specifications, inadequate surface preparation or improper application. Users countered that the specifying information available to them is often inadequate, and that, in many cases, "perfect" substrate preparation and application are simply not possible under conditions existing on the job. And so it went.

Perhaps the most incontrovertible statement made at the meeting came at its end. In his summing up, architectural research consultant Leonard G. Haeger concluded: "Paints must be developed that are almost foolproof."

M.I.T. REPORTS ON STRUCTURAL SANDWICH PANEL STUDY

A three year study of plastic structural sandwich panels has culminated in the publication of a detailed report on their present status and future potential in the building field. Sponsored by the Plastics Division of Monsanto Chemical Company, the study was conducted by the departments of architecture and civil engineering at the Massachusetts Institute of Technology, under the direction of Marvin E. Goody, assistant professor of architecture. The report was edited by Bernard P. Spring, also an assistant professor of architecture at M.I.T.

Because mechanically fastened panels are subject to discontinuous interaction of the skins and core, the investigators believe that laminated constructions show greater promise in the development of lightweight panels capable of taking major building loads. Consequently, their study dealt exclusively with laminated panels consisting of three or more compositely-acting, adhesive-bonded layers. According to Goody, such panels offer architects the following advantages:

1) They can be formed into complex surfaces of double curvature.

2) They have the ability to perform major structural jobs and yet remain transparent or translucent.

3) A durable wearing surface and integral color can be built right into the plastic component.

4) They can be textured by several available methods.

5) They have a high strength-to-weight ratio as compared with conventional structural materials.

6) Being at once structure, wearing surfaces and insulation, they eliminate the need for piling up several separate layers of materials.

After defining structural sandwich panels, the report traces their development since 1500 B.C., the ap-

continued on page 254

Reviewing the Technical Periodicals

Metal Finishes (Part I)

by John Sharp

Architectural Review, November 1958

In the first of two articles which will describe and appraise the various metal finishes now in commercial use, Mr. Sharp reviews the field, describing each process and the effects it produces. The processes (descaling and pickling, blast cleaning, pickling, degreasing and polishing) which are common to the finishing of several different metals and whose effects are primarily mechanical are discussed first, followed by a similar discussion of those processes that change the chemical composition of the surface layer of the metal. These additive processes include chemical finishes (phosphating and coloring), anodizing, plating, hot dipping and spraying. Organic coatings are also covered, with particular emphasis on the stoved (baked) enamels which are factory-applied and thus presumably less familiar to the architect than the air dried paints, varnishes and lacquers that are applied at the site. This discussion of organic coatings is further expanded to include plastic coatings, both strippable and permanent, and vitreous enamel.

In the next article, Mr. Sharp will consider the alternative finishes for each metal and the choice before the architect for a number of recurring problems of design.

Light Wood Trusses

by R. F. Luxford

Proc. Paper 1839, *JOURNAL OF THE STRUCTURAL DIVISION, Proceedings of the American Society of Civil Engineers*, November 1958

Because of the increasing importance of lightweight wood trusses for residential and other light frame construction, the author has undertaken, and here reports on, several series of tests on wood trusses of various spans, slopes and types. Special emphasis was placed on glued trusses, with one test series designed to determine the effects of high and low humidity cycles on glued joints in a completed truss under load. Mr. Luxford concludes that:

1) Well-designed and well-constructed nailed trusses with a slope of 4 in 12 or greater should give adequate service.

2) Glued trusses, because of their rigid joints, are much stiffer than nailed trusses.

3) Glued trusses show less increase in deflection at near-maximum loads than do nailed trusses.

4) Glued trusses show some loss in stiffness and considerable loss in maximum load from exposure to cycles of low and high relative humidity. Nailed trusses are less affected.

5) The high rigidity and strength obtainable in glued joints makes glued trusses particularly suitable for trusses with low slopes.

6) Only glues that will perform satisfactorily under adverse conditions are recommended for glued trusses.

Review of Limit Design for Structural Concrete

by C. W. Yu and Eivind Hognestad

Proc. Paper 1878, *JOURNAL OF THE STRUCTURAL DIVISION, Proceedings of the American Society of Civil Engineers*, December 1958

The authors, who believe that limit design is "a logical extension" of ultimate strength design principles, and that its introduction into practical design procedures must be expected to lead to better and more economical concrete structures, review the development of limit design to date. Various theoretical approaches and their relative merits are discussed in some detail; codes of practice of countries recommending limit design are quoted; and an approach to incorporating the method into future United States practice is suggested.

Research on Heating and Ventilating in Relation to Human Comfort

by Thomas Bedford

ASHAE JOURNAL SECTION, Heating, Piping & Air Conditioning, December 1958

A British researcher discusses investigations of the effects of the thermal environment on comfort and its corollary, efficiency. Comment is made on methods of measuring the more subtle qualities of the thermal environment, e.g. the use of an ionization anemometer to measure low air speeds and a globe thermometer to measure radiant heat; and indexes of warmth are compared, with a reference to the adjustment of effective temperature for radiation. Mr. Bedford expresses the view that thermal conditions should be controlled within fairly narrow limits, and that skin temperature, though widely used as an objective index of comfort, is of dubious value for that purpose: factors other than effective temperature (air movement and humidity, for example) also contribute to the pleasantness or otherwise of the environment.

A Study of Floor and Roof Systems

Building Construction Illustrated, December 1958

A pictorial roundup of products and methods currently used for floor and roof systems is supplemented by brief descriptive material and by tables comparing the insulating qualities, sound transmission loss, general properties and cost of the various systems.

What You Will Pay For What You Want in Your New Plant

Factory Management and Maintenance, December 1958

Though aimed at the men who "buy" manufacturing plants, this report on the cost of eight nearly-new ones may hold pointers for the men who design them as well. A basic description (number of employes, floor space, cubage, foundation, framing, roof, bay size, power rating) is followed by a detailed cost breakdown which shows how much money was spent for such items as land and improvements, building shell, plant service improvements, interior finishing, special facilities, furniture, and professional fees. Emphasis is placed on the fact that cost figures are of little value unless they permit this kind of item by item comparison of the many variables which affect the final price tag on a plant.

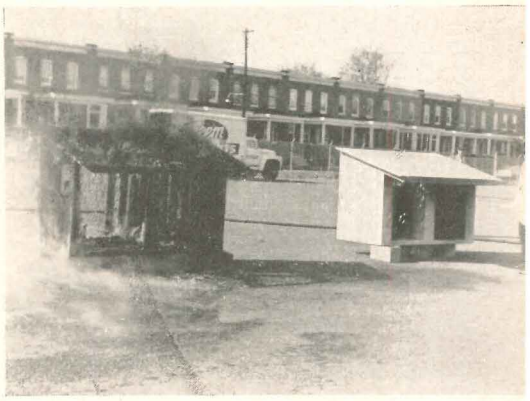
Composite Truss of a New Type

by Homer M. Hadley

Civil Engineering, November 1958

A "certain dissatisfaction" with two characteristics of prestressed concrete—its weight, and the tendency of members to tear themselves to pieces if they become unbalanced—led the writer to develop a composite truss with "marked advantages" over all-prestressed concrete or all-steel construction. Its bottom chord is a rectangle of prestressed concrete, and its webs and top chord of structural steel, a combination which greatly reduces weight and virtually eliminates instability hazards. The author here reports on the design and successful testing of a 70 ft specimen with its bottom chord pretensioned. (Pretensioning and post-tensioning are equally applicable in fabricating the truss.) He concludes that such prestressed composite structural shapes are completely practical, and may be particularly useful for spans beyond the range of wide-flange beams.

FIRE RETARDANT PAINT SHIELDS AGAINST HEAT AND FLAME



In a recent demonstration (photo right), a straw-filled model barn burned to the ground within fifteen minutes after its contents were ignited. An identical structure which had been painted with a new fire retardant paint passed through a similar "trial by fire" unscathed, while the straw inside it burned itself out. The paint has recently been tested by Underwriters' Laboratories. When applied in one coat, the *SAF* Type 303 Coating will have a flamespread classification rating of 15; when over-coated with Type 202 Gloss Finish, it will have a rating of 10. These ratings are comparable to those for a ¾- to 1-in. layer of sprayed-on asbestos fiber, and reflect the fact that the coating is of an intumescent type which, when exposed to fire or extreme heat, develops into an impervious foam-like mat that protects the coated surface. *Baltimore Paint and Chemical Corp., 2325 Annapolis Ave., Baltimore, Md.*

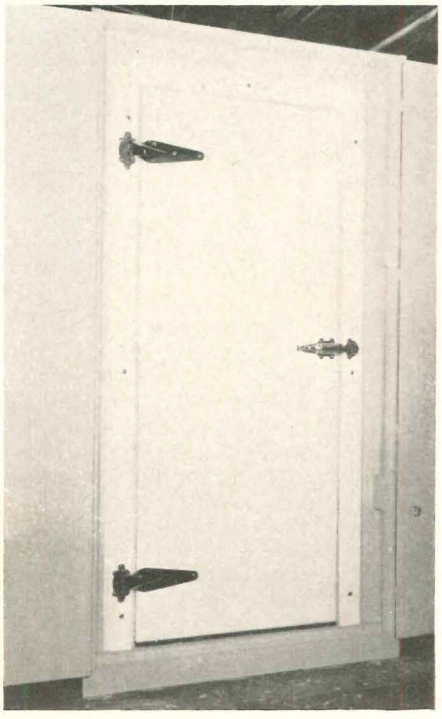
EPOXY-NYLON "ALLOY" FORMS WATERTIGHT WELD BETWEEN NEW CONCRETE AND OLD

Uniweld, a new structural welding agent, promises to help solve a major construction problem—that of bonding fresh wet concrete to cured concrete. An "alloy" of epoxy and nylon type synthetic resins, the material forms a permanent joint and water and vapor barrier, literally welding the entire contact area without any mechanical interlocking. Tension, compression, shear and impact tests show that the bond is stronger than the fully hardened concrete itself.

The coating comes in the form of a two part compound which is job-mixed to start the curing cycle, and applied to the surface by roller, brush or spray. Fresh concrete can be poured directly on the *Uniweld* about 15 minutes later. Because the material is thermosetting rather than thermoplastic, the curing process is irreversible. It does not depend on the evaporation of moisture or solvents, and is totally unaffected by water, alkalis, mild acids and many other reagents. In fact, the manufacturer warns that tools used in applying the coating should be cleaned with proper solvents *before* the compound sets.

Suggested uses for *Uniweld* include plastering directly to masonry walls; waterproofing and vaporproofing of concrete roofs; and field assembly of precast concrete components, as well as general repair and maintenance of concrete structures. *Permagile Corp. of America, Woodside, N. Y.*

PLASTIC COLD STORAGE DOOR OFFERS LIGHT WEIGHT, EFFICIENCY, EYE APPEAL



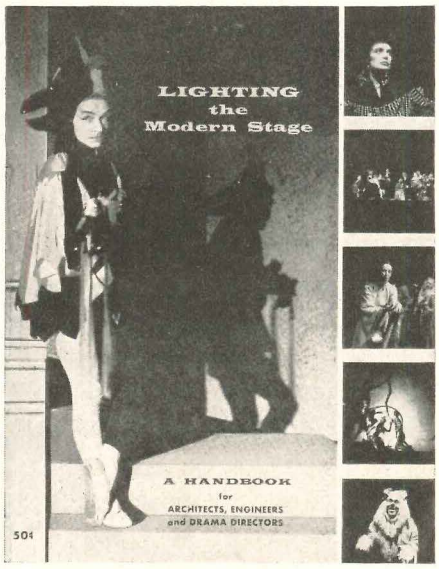
Manufacturers have long since conceded the influence of women's needs and tastes on the design of consumer products, but now the ladies—specifically those employed in such mass-feeding institutions as hospitals, schools, plant cafeterias, restaurants, etc.—are also being credited with a share in the development of an improved cold storage door. According to the Jamison Cold Storage Door Company, the postwar increase in the number of women who use commercial cold storage facilities created a demand for a lighter, more easily handled door, to which the company has responded with a new flush-fitting plastic door and frame that is not only lightweight, but also attractive, highly efficient and easily maintained—all at a cost less than that of metal-clad freezer doors of comparable insulating ability.

Of particular importance to architects are the flush design, which requires less aisle space for the door swing; the reduced weight, which permits the use of more attractive and less bulky hardware and makes it possible for one man to install the door and frame in a conventional supporting buck; and the range of colors, which includes ivory, light blue, green and reddish-brown.

The *Jamolite* doors are insulated by a foamed-in-place polyurethane plastic with a K-factor of 0.21 at 75 degrees F, an insulating quality that enables a 4-in. core to provide all the insulation necessary for cooler and most freezer applications. The frames, and the door surfaces, are of reinforced polyester whose smooth surface resists scratches and stains, is rugged and easily cleaned.

Reach-in and walk-in cooler and freezer doors are available in standard sizes, as are vertical-sliding package-passing doors and horizontal-sliding walk-in doors. *Jamison Cold Storage Door Co., Hagerstown, Md.*

more products on page 270



LIGHTING THE MODERN STAGE, *A Handbook for Architects, Engineers and Drama Directors*, is a guide to planning and designing modern stage lighting installations for theaters, hotels, schools and churches. The 28-page manual is divided into two sections: "Planning the Auditorium and Stage," and "Lighting the Stage." Subjects included in the first section range from "Acting Areas" to "Special Problems," while the second section covers such subjects as required circuits, stagelighting layout, power distribution systems and switchboard design. *Ariel Davis Mfg. Co., 3687 South State St., Salt Lake City 15, Utah*

Armco Steel Buildings
(A.I.A. 17-A) Discusses the Armco building method, and describes four types of steel buildings and three types of special steel covering materials. Accessories are detailed, specifications given, and typical uses shown. 16 pp. *Product Information Service, Armco Drainage & Metal Products, Inc., Middletown, Ohio**

Playground Equipment
Six-page brochure and data sheet describes and illustrates colorful playground structures executed in fiberglass and steel. *Creative Playstructures, Inc., 4925 N. 42nd St., Milwaukee 9, Wis.*

Reflective Insulation Data Book
Provides information on all aspects of home insulation, with sections on thermal control, heat transfer analysis, condensation and relative costs. Specific properties and installation of *Alfol* aluminum foil insulation are also covered. 24 pp. 10¢. *Reflectal Corp., 200 S. Michigan Ave., Chicago 4, Ill.**

Recessed Modular Fixtures
(A.I.A. 31-F-23) Brochure No. 25 details features of Lightolier's group of recessed modular troffers, with complete dimensional, photometric and installation data on *Optiplex, Domex,* and *Strialux* fixtures. 20 pp. *Lightolier, Jersey City 5, N. J.**

Language Laboratory Planning
Packet of five booklets provides information on the "what, why, how and how much" of language teaching facilities. Single copies, 25¢; packet of five, $1. *Magnetic Recording Industries, 126 Fifth Ave., New York 11, N. Y.*

Mearlcrete Foam Concrete
(A.I.A. 4-E-13, 37-B-2) Technical Bulletin R411 describes and illustrates, with the help of photos and charts, the advantages of *Mearlcrete* foam concrete for roof decks and roof insulation. 8 pp. *Mearl Chemical Corp., 220 Westfield Ave. West, Roselle Park, N. J.*

TECO Catalog File
Includes loose leaf catalog sheets on *Wedge-Fit* split rings, shear plates, *Trip-L-Grip* framing anchors, and two recently-introduced products—*Du-Al-Clip* framing anchors and *TECO-U-Grip* joist hangers. *Timber Engineering Co., 1319 Eighteenth St., N. W., Washington 6, D. C.**

Metal-Lathed Steel Studs
(A.I.A. 20) Contains basic data on Bostwick *Chan-L-Form* steel studs for hollow non-bearing partitions, including dimensions and properties, construction details, fire safety and sound isolation data, and architectural specifications. 8 pp. *The Bostwick Steel Lath Co., 20 Heaton Ave., Niles, Ohio*

School Planning Guide Book
Discusses advantages of *Vicrtex VEF* textured vinyl fabrics and illustrates their use in school wall-covering installations. 8 pp. *L. E. Carpenter & Co., Inc., Empire State Bldg., New York 1, N. Y.*

Grille Selection Guide
Presents detailed engineering and selection data on eight different types of *Airline* grilles. 6 pp. *Waterloo Register Co., Inc., Waterloo, Iowa*

Rulon Mastic
Describes, with typical specifications and cross sections, the full line of acid and chemical resistant and waterproof Rulon mastics. 8 pp. *Ralph V. Rulon, Inc., 3900 N. Second St., Philadelphia 40, Pa.*

Complete Structural Systems
Describes, illustrates and gives complete technical information on the Stran-Steel line of steel architectural products, including the newly-introduced load bearing punched channel studs, rigid frames, acoustical ceiling deck, and wide rib deck. 24 pp. *Stran-Steel Corp., Detroit 29, Mich.**

Rigid Plastic Pipe and Fittings
Gives advantages and properties, general characteristics and applications, installation instructions, flow rate charts and complete specifications for schedules 40 and 80 PVC (polyvinyl chloride) pipe and the entire line of PVC fittings. 12 pp. *Adv. Dept., Mueller Brass Co., Port Huron, Mich.**

New McKinley Designs
(A.I.A. 15-C) Depicts patterns in the McKinley line of decorative wrought metal (iron, steel, brass, bronze, aluminum, pewter), including two new designs. Installation photos are also included. 16 pp. *McKinley Designs, P. O. Box 790, Fort Worth, Texas**

Protected Metal Roofing
Illustrates and gives specifications, flashing details and erection methods for *Steelbestos* protected metal roofing and siding. 4 pp. *Bowman Steel Corp., Box 2129, Pittsburgh 30, Pa.**

**Additional product information in Sweet's Architectural File, 1958*

more literature on page 300

INSTALLATION AND MAINTENANCE OF RESILIENT SMOOTH SURFACE FLOORING

Chart Prepared for Building Research Institute Conference on Resilient Floors

General Description of Resilient Smooth-Surface Flooring

Asphalt Tile — Composed through full thickness of asphaltic or resinous binder with asbestos or other fibres, fillers and pigments pressure-formed while hot.

Vinyl-Asbestos Tile — Composed through full thickness of vinyl resins, plasticizers, pigments, fillers and asbestos fibres formed under pressure while hot.

Vinyl (Backed) Sheet and Tile — A wearing layer composed of vinyl resins, plasticizers, pigments and fillers overlaid on a backing of various regular or alkali resistant materials.

Vinyl (Homogeneous) Tile — Composed through full thickness of vinyl resin, plasticizers, pigments and fillers formed under pressure while hot.

Rubber Sheet and Tile — Composed through full thickness of vulcanized rubber compound binder with reinforcing fibres, pigments and fillers.

Linoleum Sheet and Tile — Composed of oxidized linseed oil, fossil and other resins or other oxidized oleo-resinous binder mixed with ground cork, wood flour, mineral fillers and pigment and pressed on burlap or saturated felt backing.

Cork Tile — Composed through full thickness of compressed granulated cork bonded with a heat-processed resinous binder.

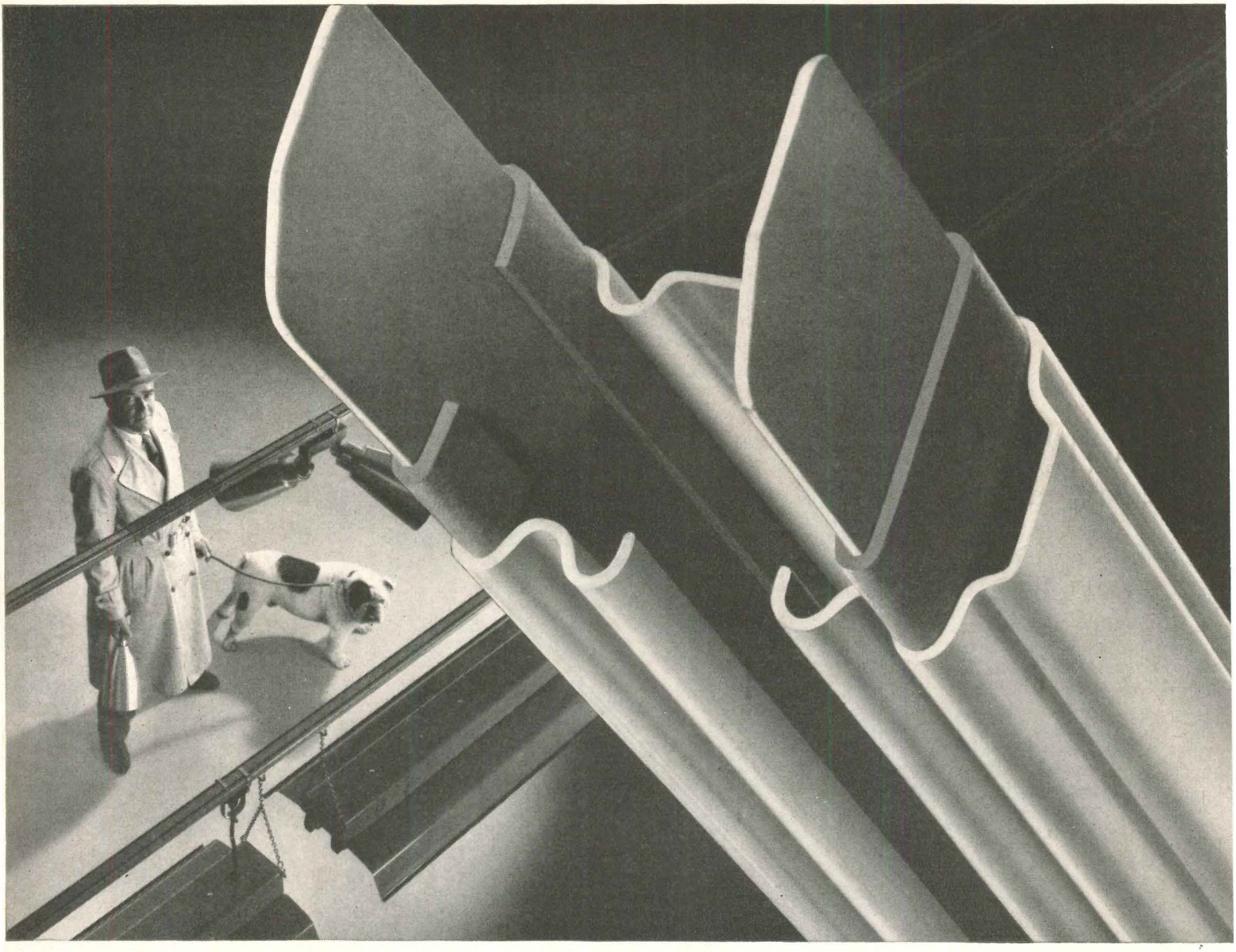
INFORMATION CHART

TYPE OF FLOORING	ASPHALT		SEMI-FLEXIBLE ASBESTOS	VINYL BACKED TYPES				FLEXIBLE HOMO-GENEOUS	RUBBER		LINOLEUM		CORK
				REGULAR		ALKALI RESISTANT							
FORM AVAILABLE	REGULAR TILE	GREASE-PROOF TILE	TILE	SHEET	TILE	SHEET	TILE	TILE	SHEET	TILE	SHEET	TILE	TILE
DIMENSIONS* Size or Width, Inches	9 x 9	9 x 9	9 x 9	72	9 x 9	45, 72	9 x 9	9 x 9	36	9 x 9	72	9 x 9	9 x 9
Thickness, Inches	0.125 0.1875	0.125 0.1875	0.0625 0.080 0.09375 0.125	0.0625 0.070	0.0625	0.0625 0.080	0.0625 0.080	0.080 0.09375 0.125	0.080 0.125 0.1875	0.080 0.125 0.1875	0.070 0.090 0.125	0.065 0.090 0.125	0.09375 0.125 0.1875 0.3125
COST Approximate Installed Cost Per Square Foot in Cents For Thickness Indicated	0.125" $.20–.45 0.1875" $.25–.50	0.125" $.25–.50 0.1875" $.30–.55	0.0625" $.25–.35 0.125" $.40–.60	0.0625" $.30–.40 0.070" $.45–.50	0.0625" $.30–.40	0.0625" $.50–.60 0.080" $.55–.70	0.0625" $.50–.60 0.080" $.55–.70	0.080" $.55–.80 0.09375" $.70–1.30 0.125" $.75–2.00	0.080" $.45–.55 0.125" $.55–.70 0.1875" $.70–.90	0.080" $.45–.55 0.125" $.55–.70 0.1875" $.70–.90	0.070" $.25–.35 0.090" $.30–.45 0.125" $.40–.60	0.065" $.25–.35 0.090" $.30–.45 0.125" $.50–.70	0.09375" $.35–.45 0.125" $.45–.55 0.1875" $.55–.65 0.3125" $.75–.90
USE LEVEL** Suspended	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
On Grade	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Below Grade	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	No	No	No
PHYSICAL CHARACTERISTICS Thermal Conductivity Btu/Hr./Sq. Ft./°F/In.	3.1	3.1	3.1	1.4	1.4	1.2–3.3	1.2–3.3	5.3	5.3	5.3	1.5	1.5	0.5
Relative Maximum Static Load Without Permanent Indentation Expressed in Lbs./Sq. In.	25 (Fair)	25 (Fair)	25 (Fair)	75 (Good)	75 (Good)	75 (Good)	75 (Good)	200 (Excellent)	200 (Excellent)	200 (Excellent)	75 (Good)	75 (Good)	75 (Good)
Under Foot Comfort	Fair	Fair	Good	Good	Good	Good	Good	Excellent	Excellent	Excellent	Good	Good	Excellent
Apparent Warmth to Touch	Fair	Fair	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Excellent
Quietness (Noise Level)	Fair	Fair	Good	Good	Good	Good	Good	Very Good	Very Good	Very Good	Good	Good	Excellent
Surface Alkali Resistance	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Good	Fair	Fair	Fair
Grease Resistance	Poor	Very Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Good	Excellent	Excellent	Fair
Ease of Maintenance	Fair	Good	Good	Very Good	Very Good	Very Good	Very Good	Very Good	Good	Good	Very Good	Very Good	Fair
Slipperiness	Varies with finish and waxing, normally all are slip-resistant when dry.												
Impact Resistance	All are resistant to shattering, splitting, cracking or other damage under normal impact conditions.												
Light Reflectivity	Varies from almost zero to 65% depending on color, surface texture and finish—consult manufacturer.												
Durability	All show excellent durability under use conditions for which they are individually suitable when installed and maintained as recommended by manufacturer.												

*Nominal commercial dimensions only are shown—other sizes, shapes, thicknesses and widths vary with manufacturer.
**When installed in accordance with the specific precautions and recommendations of the manufacturer.

FEDERAL SPECIFICATIONS COVERING RESILIENT SMOOTH-SURFACE FLOORING

SS-T-306b	Tile; Floor, Asphalt	ZZ-T-301a	Tile; Floor, Rubber
SS-T-307 (GSA-FSS)	Tile; Asphalt, Grease Resistant	LLL-L-351b	Linoleum; Battleship
L-T-751 (GSA-FSS) (Interim)	Tile; Floor, Vinyl Plastic Type I—Semi-Flexible Type II—Flexible	LLL-L-359	Linoleum; Inlaid and Molded
		LLL-L-367	Linoleum; Plain, Jaspe and Marbleized
		LLL-L-471	Floor Covering; Felt Backed
ZZ-F-461a	Floor Covering; Rubber, Sheet	LLL-T-431	Tile; Cork



NEW FREEDOM OF DESIGN WITH BULLDOG LIGHTING DUCT

Exclusive BullDog features provide complete flexibility in planning lighting layout . . . fixture placement

Modern BullDog 20-amp Universal Lighting Duct forms a continuous outlet which both *feeds* and *supports* lighting fixtures anywhere along its entire length. Exclusive twist-out plugs let you light any area . . . move fixtures or re-arrange layout without time-consuming rewiring and costly downtime.

And it's simple for you to allocate lighting costs with "ULD". You know in advance final material and labor costs. Even changes in lighting arrangements *during installation* present no problem since you can tap in anywhere . . . or relocate the duct quickly and easily.

"ULD" is actually less expensive than pipe and wire, too, because it offers so many time-saving installation features. Parts are standardized and prefabricated . . . sections join easily . . . and you have a choice of five simple installation methods.

Everyone benefits from Universal Lighting Duct! You have full freedom of design. Contractors can bid more accurately, complete installation without hitch . . . and your client gets a lighting system that will meet present and future needs. When you specify lighting material, specify BullDog Universal Lighting Duct. It is, *by far,* the most flexible and economical system ever devised.

BULLDOG

BullDog Electric Products Company, Division of I-T-E Circuit Breaker Company, Detroit 32, Mich. *BullDog Export Division:* 13 East 40th St., New York 16, N.Y. *In Canada:* BullDog Electric Products Co. (Canada) Ltd., 80 Clayson Rd., Toronto 15, Ont.

USEFUL CURVES AND CURVED SURFACES: 37—Hyperboloids

By SEYMOUR HOWARD, *Architect, Associate Professor, Pratt Institute*

Continued from January issue

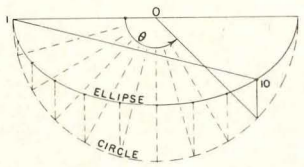
As in the case of the hyperbolic paraboloid, two straight lines, and only two, one from each family, pass through every point on the surface. These two define the tangent plane at that point.

The hyperboloid of one sheet is not a minimal surface. The minimal surface connecting two circular sections (corresponding to the top and bottom ellipses shown in drawing of the hyperboloid) is a catenoid; the edges which are hyperbolas for the hyperboloid are catenaries for the catenoid.

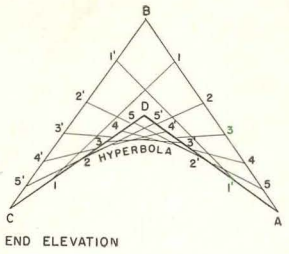
To Draw:

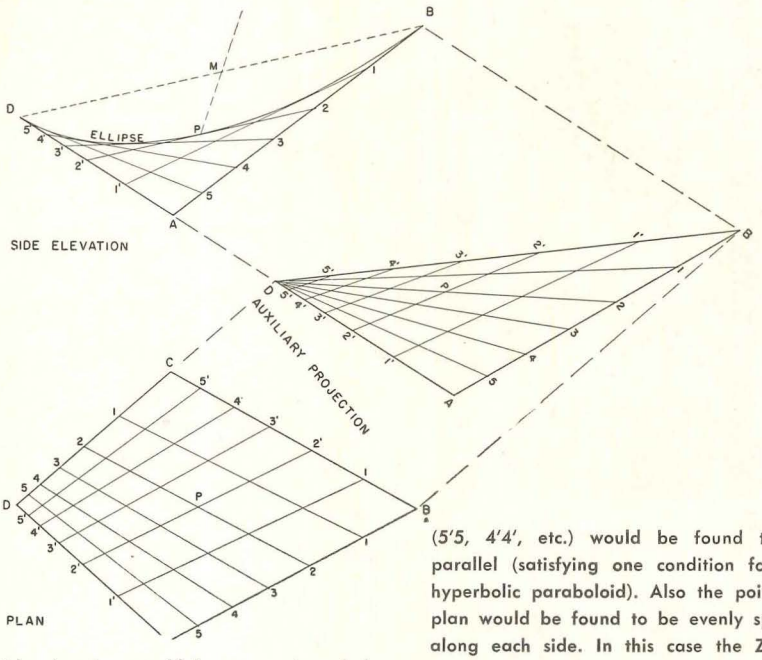
Given the two principal hyperbolas, draw them on the xz and yz planes. Draw the plan, showing the upper (and lower) and throat ellipses. In plan, from a point (such as 1') on the upper ellipse, draw the two tangents to the throat ellipse. These are the plan projections of the two straight lines, one from each family, passing through point 1'.

To find the angular distance (in plan) between this point 1' and the two points where the straight lines touch the lower ellipse (here numbered 10 and 16) we use the eccentric angle of points on the ellipse.



See diagram, where θ is the eccentric angle, in this case 135°. Dividing this into a convenient number of parts, here 9, we find the corresponding points on the ellipse whose eccentric angles all have a constant difference, (here 15°). It is then easy to draw the rulings on the surface, in elevation or projection.





The hyperboloid of one sheet as a warped quadrilateral

Given the quadrilateral in space ABCD, shown in plan, side and end elevations, to draw a hyperboloid of one sheet passing through these four lines and one point P. P has been chosen here on the plane of symmetry passing through BD and the midpoint of AC and also on a line between this midpoint and the midpoint M of BD, closer to M.

Draw the auxiliary projection which makes DC appear as a point, locate P and draw DP extended to intersect AB at 2. Project this point 2 back onto side elevation and plan. Draw 2'P 2' symmetrically on the plan, project the points 2' back onto the side elevation and onto the auxiliary projection. (If this is done correctly, the line 2' P 2 on the side elevation will be found to be parallel to BD).

On the auxiliary projection we now have three skew lines (CD, 2'P 2' and AB) of one family (N') and line AD and CB of the other family (N). To find other lines of N family, draw rays through D on the auxiliary projection to intersect lines 2'2' and AB at various points. Project these points back onto the side elevation and plan. The rulings on the surface can now be drawn and the end elevation completed.

The contour edge DPB in elevation must here be an ellipse, while the contour in end elevation is a hyperbola. Note that if P were chosen as closer to the midpoint of AC than to M, the contour edge DPB of the side elevation would become a hyperbola and the contour edge of the end variation would become an ellipse.

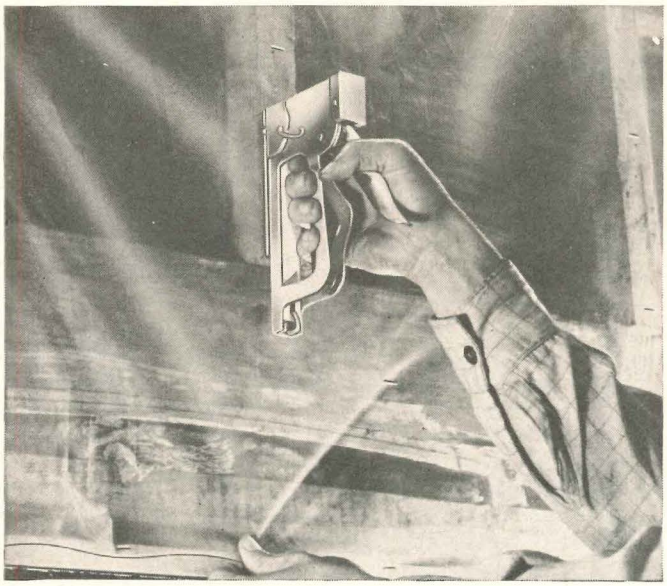
The warped quadrilateral as a hyperbolic paraboloid

If P is chosen at the midpoint between the midpoint of AC and M, the surface would be a hyperbolic paraboloid. This would be evident on the auxiliary projection, where all the lines of the N' family (5'5, 4'4', etc.) would be found to be parallel (satisfying one condition for the hyperbolic paraboloid). Also the points in plan would be found to be evenly spaced along each side. In this case the Z axis of the hyperbolic paraboloid would be parallel to the line PM; the xy plane can be found from the rulings which would appear normal to the line PM in side elevation.

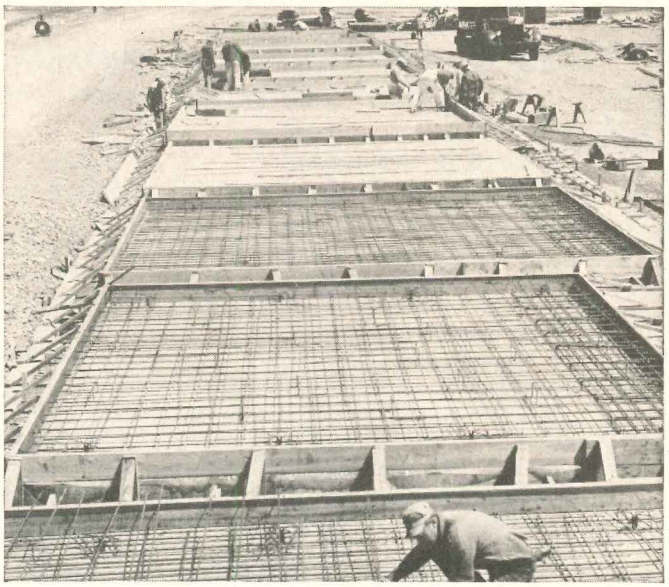
(Erratum. Note 1 on Sheet 32 about the hyperbolic paraboloid as a warped parallelogram should be crossed out. So long as the points along the edges are evenly spaced, the edges do not have to be parallel in plan.)

SUMMARY OF SYSTEMS OF DOUBLE RULINGS

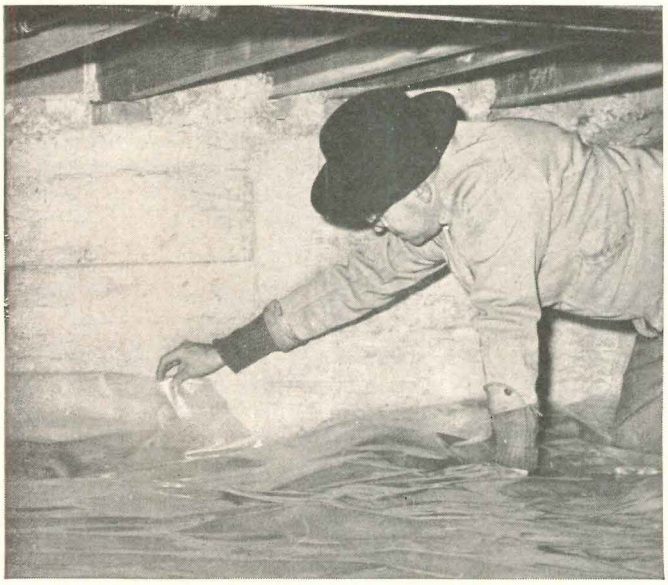
Given, in Space;	Two Families of Rulings Will Generate;
Two Parabolas or three Straight lines, non-intersecting but parallel to one plane	a Hyperbolic Paraboloid
Two Circles or two Ellipses or one Hyperbola and one Ellipse or three general Straight Lines	a Hyperboloid of One Sheet
Two Hyperbolas or one Hyperbola and one Parabola or two Straight Lines, non-intersecting or a general Quadralateral	a Hyperbolic Paraboloid or a Hyperboloid of One Sheet



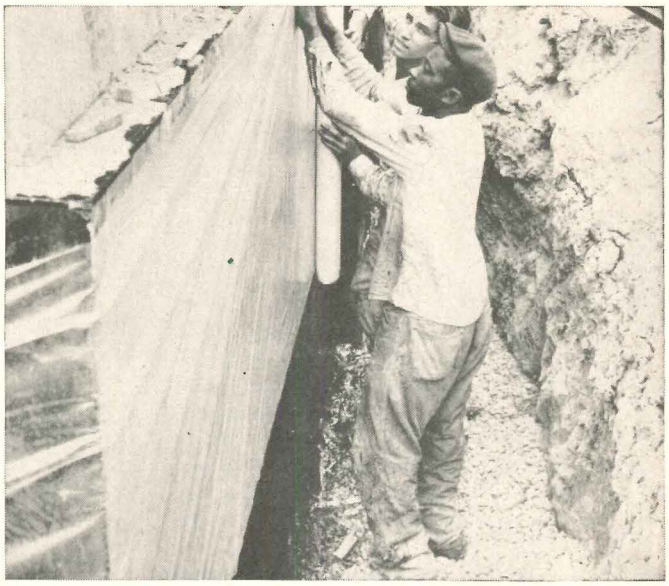
ON WARM SIDE of outside walls—VISQUEEN film protects stud walls from moisture, rot, paint peeling and checking.



UNDER SLABS—VISQUEEN film keeps moisture out—assures warm dry floors—for life of building!



IN CRAWL SPACES—VISQUEEN film banishes musty odors, keeps earth-born moisture away from floor joists.



ON OUTSIDE OF FOUNDATION—mop with tar, apply VISQUEEN film, backfill and say goodbye to moisture ills for life of building.

Lowest cost permanent solution for every moisture problem

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Only VISQUEEN film is made in Seamless Widths to 32 Feet. Many other uses in building, too. Write or use information Request Tag for use and application details.

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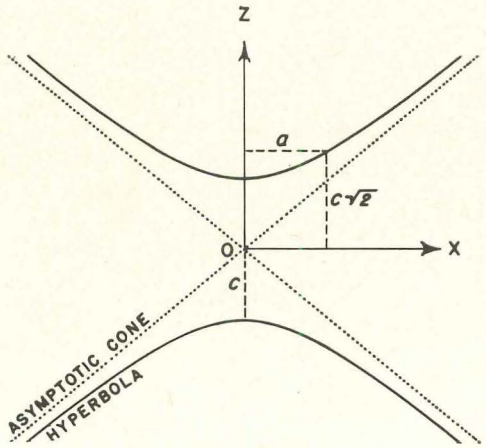
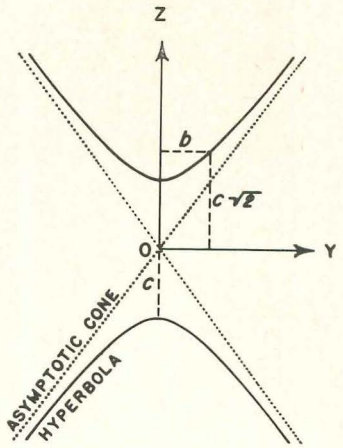
USEFUL CURVES AND CURVED SURFACES: 38-Hyperboloids

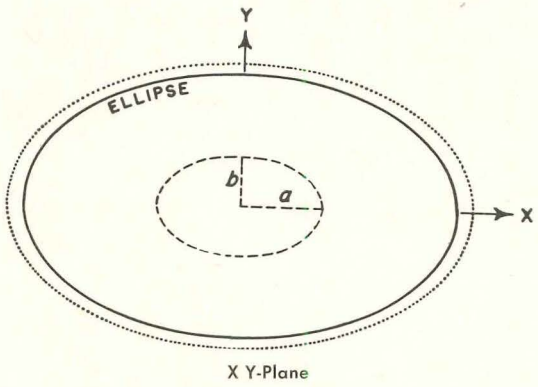
By **SEYMOUR HOWARD**, *Architect, Associate Professor, Pratt Institute*



X Z-Plane

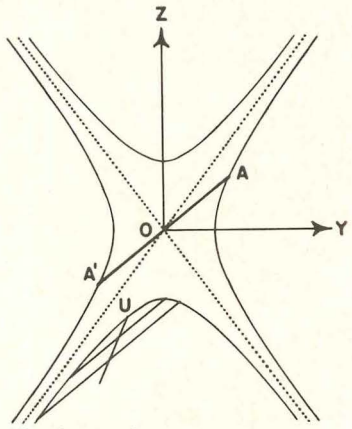


Y Z-Plane



X Y-Plane

Hyperboloid of Two Sheets



Circular Sections

One of the nine quadric surfaces, the hyperboloid of two sheets (or two nappes) is shown here in orthogonal projections. It consists of two cup-shaped surfaces facing each other across the xy plane, each extending into infinity on its own side. The curvature is always positive and there are no straight lines on the surface.

The equation: $\frac{z^2}{c^2} - \frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$

All sections parallel to the xy plane are similar ellipses (except for the region between z = c and z = — c). All sections parallel to any given plane containing the z axis are hyperbolas whose asymptotes are the projection on this section plane of the parallel section of the asymptotic cone containing the z axis. All other sections are also conics, in general of the same type as corresponding sections of the asymptotic cone.

Circular Sections of the Elliptic Cone and of the Hyperboloids of One and Two Sheets

As for the ellipsoid and the elliptic paraboloid, there exist circular sections of these three surfaces. (See sheet 34 on the ellipsoid for more discussion.)

To find the circular sections, we make use of the hyperboloid of one sheet. The equations of the three surfaces are as given above in describing each type.

Draw the section by the yz plane, showing all three surfaces. The section of the asymptotic cone is drawn as a dotted line, the other two by solid lines. Note that the z axis is the axis of the cone and of the hyperboloid of two sheets, but is the conjugate axis of the hyperbola which is the section of the hyperboloid of one sheet.

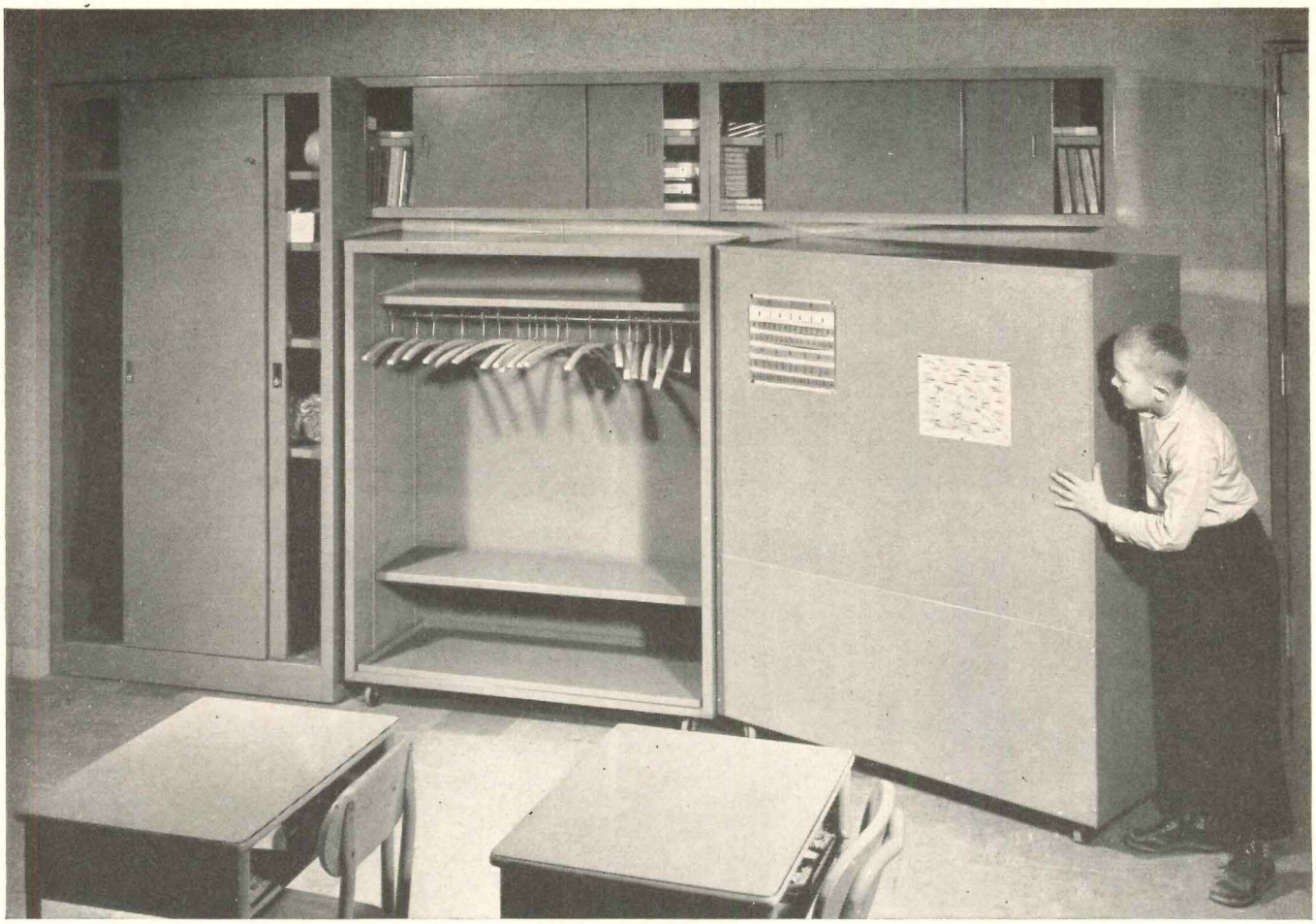
From O swing an arc of length equal to a, intersecting the hyperboloid of one sheet at A and A'. This line is in the plane of a circular section of the hyperboloid of one sheet. All planes parallel to this will cut all three surfaces in circles. There is also a symmetrical system of planes making the same angle with the xy plane, but tilted from upper left to lower right.

There are no umbilics on the cone or the hyperboloid of one sheet.

To find the umbilics on the hyperboloid of two sheets, draw on the yz section any two chords parallel to the plane of circular sections (as shown), to find their midpoints, join them by a line which cuts the hyperbola at U. The other three umbilics are symmetrically arranged about O.

Additional Bibliography (supplementing references on Sheet 18)

7. "Engineering Graphics" by John T. Rule and Earle F. Watts, McGraw-Hill 1951
8. "Technical Descriptive Geometry" by B. Leighton Williams, McGraw-Hill 1957
9. "What is Mathematics?" by Richard Courant and Herbert Robbins, Oxford University Press 1941
10. "Solid Analytical Geometry and Determinants" by Arnold Dresden, John Wiley & Sons 1930



"Package" classroom equipment is modular, mobile, made of sheet steel

Photographs through courtesy of Frederick C. Walker, Superintendent of Schools, Dover, N. H.; Architects and Engineers: Perlet F. Gilbert Associates, Inc., Lowell, Mass.; Project Architect: Herbert H. Glassman, A.I.A.

Here's an idea which simplifies the design of classroom interiors. These colorful school-room units are modular, mobile, and constructed entirely of durable steel—most of it strong sheet steel furnished by Bethlehem.

Known as the Grade-Aid line, this equipment includes sinks, wall cabinets, storage units, wardrobes, clay carts, plus carts for toys, books, and utility use. Doors for the various units can be furnished in colors to brighten the room and lend accent notes to the decorative scheme.

Made by Grade-Aid Corporation, Nashua, N. H., Grade-Aid equipment is built of steel so that it endures for the life of the school; all cabinets are built of 20-gage sheet, or heavier.

Sheet steel is the metal to keep in mind when you design heating and air-conditioning ductwork, roof decks, office partitioning, termite shields, and other building components. If you need technical help of any kind, just contact our nearest office, or write us direct.

BETHLEHEM STEEL COMPANY, Bethlehem, Pa.

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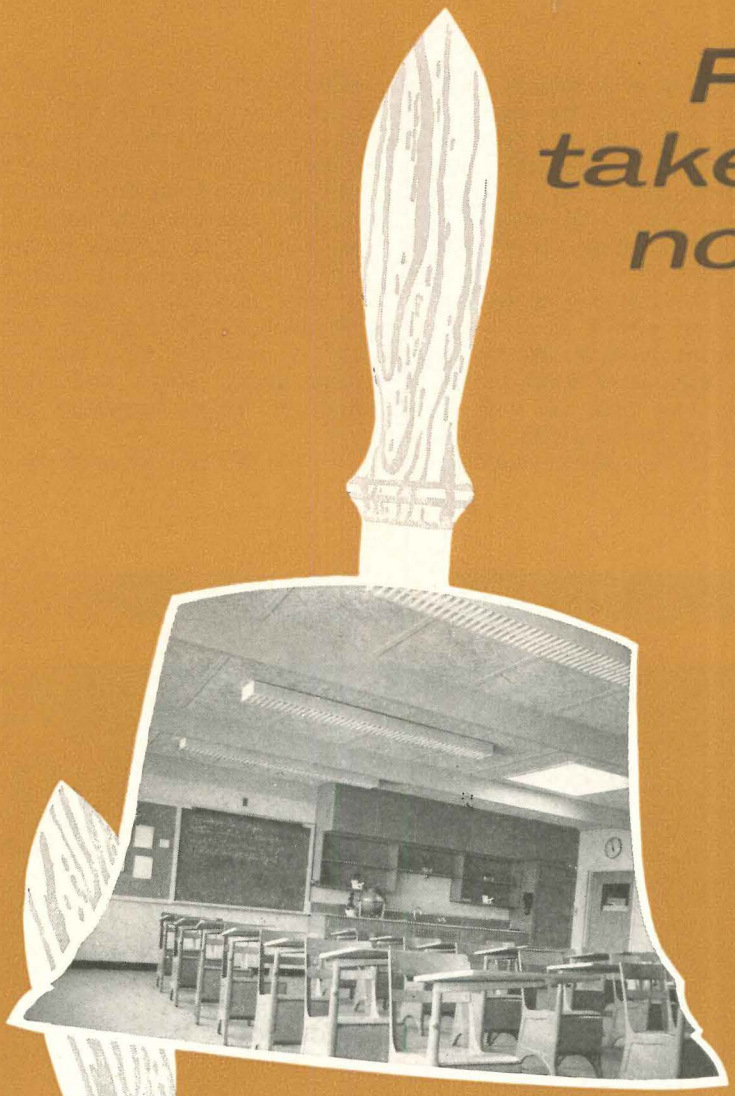
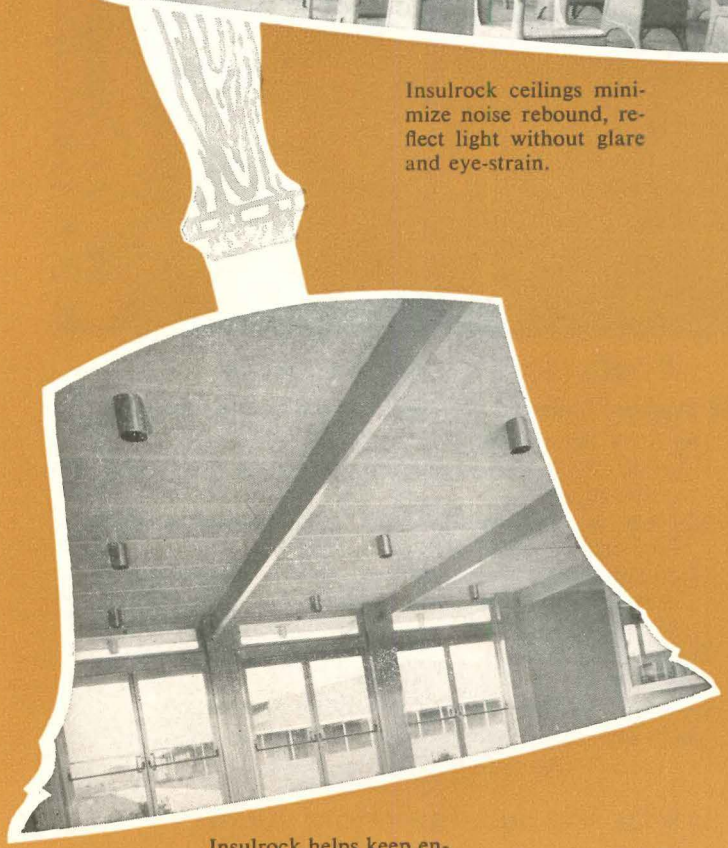
Protection takes no recess when INSULROCK goes to school



Insulrock ceilings minimize noise rebound, reflect light without glare and eye-strain.



Insulrock helps keep entry-ways and hallways heated and cooled more easily. It insulates!

You permanently protect school buildings by roof decking with Insulrock slabs. Insulrock resists the wear and tear of rain, snow, sleet, sun, ice, sudden temperature changes. Insulrock—*because it's the building slab uniquely bonded with Portland cement*—toughens up, gets strong enough to tackle any job, by exclusive "weather-curing": after being made, the Insulrock slabs are stacked and stored outside for months—in all seasons, all kinds of weather, before Insulrock is seasoned, right, and ready for you.

You save school boards the added cost of efficient acoustical ceilings, with Insulrock—because the handsome, off-white, exposed *underside* of the Insulrock roof decking makes a good-looking room ceiling without further finishing. The tiny air pockets honeycombing Insulrock trap classroom noises. This acoustically excellent ceiling is thus, you see, actually free of additional cost—the roof decking includes the ceiling!

You cut winter heat, summer cooling bills—Insulrock insulates. You reduce fire dangers, lower risk of losses—Insulrock, listed by UL, is incombustible.

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continued from page 237

proximate date of an Egyptian mural describing the manufacture of plywood; and discusses, in separate chapters, structural analysis, materials technology, fabrication methods, handling operations, erection techniques, environmental controls, distribution, and marketing and design. The design section discusses general design principles and proposes a number of structural sandwich systems "which deserve further study." Each system, is illustrated, and presented with a brief description and an evaluation of its strengths and weaknesses.

A three part appendix contains an annotated list of correspondents, an annotated bibliography and a list of manufacturers' literature.

Copies of the report, "Building With Plastic Structural Sandwich Panels," may be purchased at $3 each from Department SP, Monsanto Chemical Co., Springfield, Mass.

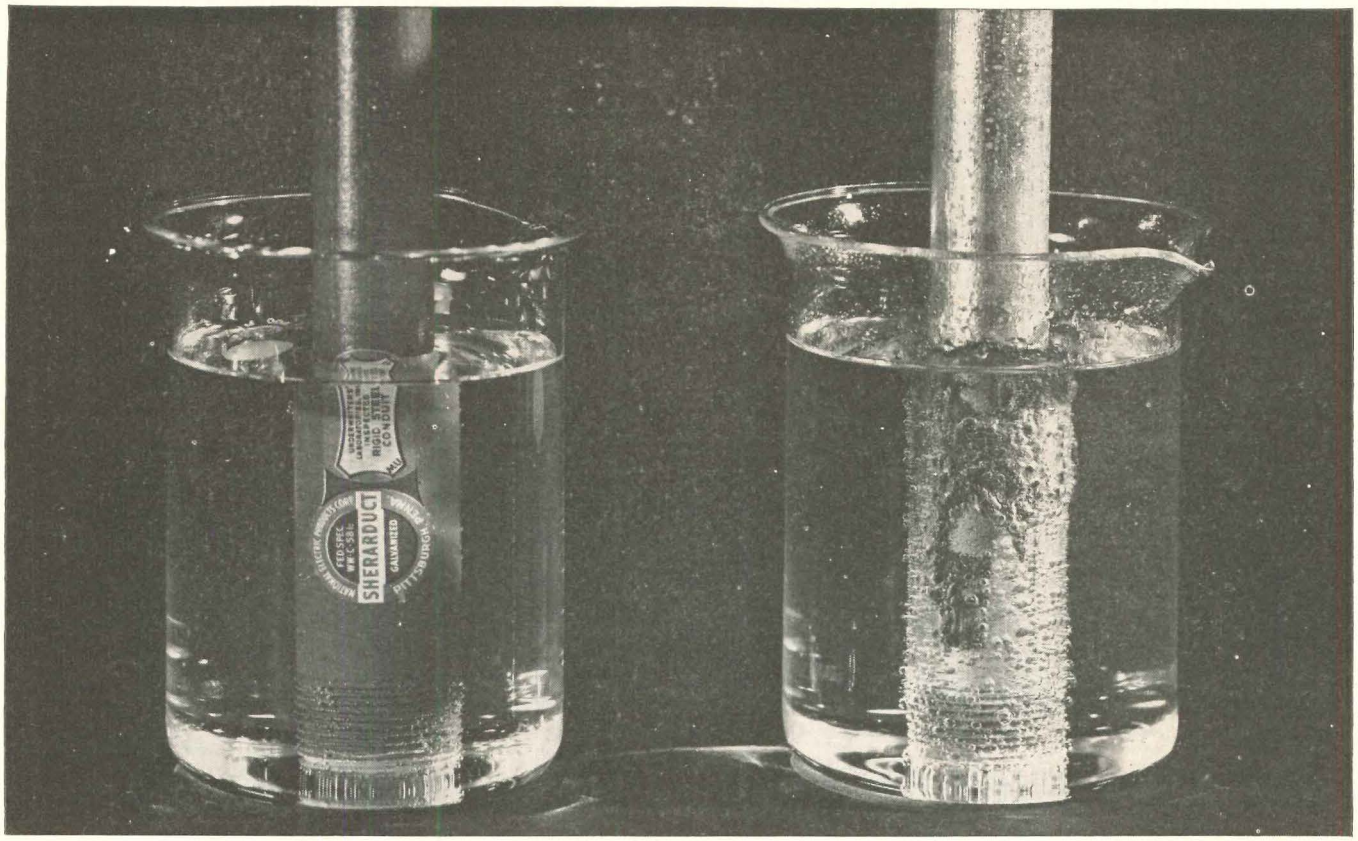
Closed-Circuit TV Program To Carry Clay Products Information

On Tuesday, February 24, architects in fourteen cities in the United States and Canada will have an opportunity to witness on closed-circuit television not a boxing match but a forum-type discussion of structural clay products. The program, sponsored by the Structural Clay Products Institute, will originate in New York City and be carried to architect groups hosted by regional SCPI organizations in a dozen cities across the country and two in Canada. Panelists booked for the hour-long show include Paul Rudolph, A.I.A., chairman of the school of architecture at Yale University; Otto L. Nelson, Jr., Vice President in Charge of Housing, New York Life Insurance Co.; Fred N. Severud, consulting engineer, Severud-Elstad-Krueger Associates; John B. Kelly, mason contractor, Philadelphia; and Harry C. Bates, president of the Bricklayers, Masons and Plasterers International Union. Mr. Rudolph will discuss "Esthetics in New Construction"; Mr. Nelson will discuss "Ultimate Building Costs"; Mr. Severud will speak on "The Importance of Structural Flexibility in New Construction"; and Mr. Kelly and Mr. Bates will discuss "Productivity and Workmanship."

New Materials Retard Fire

The recent Chicago school fire has brought on, among other things, what one well-known figure would call an "agonizing reappraisal" of the safety of schools built in the pre-fireproofing era. Although it is generally agreed that such schools must eventually be replaced, development engineers of the Flinkote Company suggest that the use of recently-developed combustible coatings for such areas as floors and stairways can make many of them serve more safely in the meantime. For example, latex concrete, a mixture of cement and aggregates with a resin latex instead of water, is as incombustible as concrete, and gives good resistance to wear and water as well. A similar mixture, called asphalt mastic, is composed of cement, sand or pebbles, and a special asphalt base clay emulsion binder. It will not support combustion even in the hottest fire, and is effective in covering wood as an underlayment for asphalt tile and other fire resistant floor coverings. A third innovation in fire resistant surfacings for trowel finish over wood is an epoxy resin mixture with mineral fillers which hardens with the addition of a catalyst or setting agent. Tough and crack-resistant, it can be spread as thin as $\frac{1}{8}$ in.

more roundup on page 258



Many tests are made to compare various conduits under different exposure conditions. One of the most severe is the sulfuric acid test. Immerged into a 7½% solution of sulfuric acid, the zinc protection on ordinary brands of conduit fails in less than 6 hours, while the MVC-1 coating on SHERARDUCT stands up for 72 hours and longer. Other accelerated tests—salt spray, caustic soda, etc.—do not affect the MVC-1 polyvinyl coating.

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SHERARDUCT with MVC-1
provides permanent protection of electrical wiring

Even under the most severe service conditions, hot zinc coated SHERARDUCT with MVC-1 gives lifetime protection of wiring. MVC-1—the baked-on polyvinyl chloride resin coating—is an exclusive National Electric development. It resists all types of corrosion. On top of the hot zinc coating of SHERARDUCT, MVC-1 adds years to the service life of your conduit system . . . even in extreme service exposure conditions.

In addition to its exceptionally high corrosion resistant properties, MVC-1 is exceptionally resistant to abrasion, and it is not adversely affected by high or low temperatures. Once installed, hot zinc coated SHERARDUCT with MVC-1 is there to stay.

SHERARDUCT also gives you time-saving and money-saving benefits on the job. The slow heating-cooling "normalizing" process gives SHERARDUCT easy-to-bend properties, easy to cut and re-thread in the field—no cracking, no flaking of the finish. Besides, the smooth inside surface of the polyvinyl coating makes fishing easier and faster . . . provides protection against corrosion for the interior of SHERARDUCT.

Added together, these benefits mean hot zinc coated SHERARDUCT with MVC-1 provides top money value . . . in ease of installation . . . in years of protection. Why take less, when with SHERARDUCT you get the best. VMA-6303

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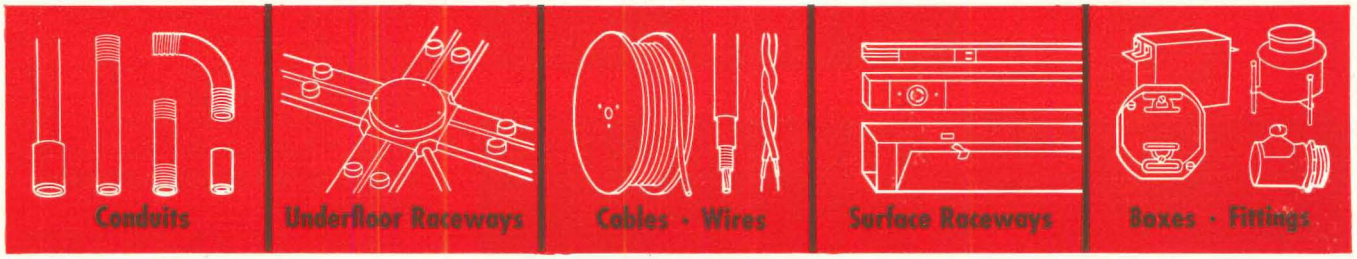
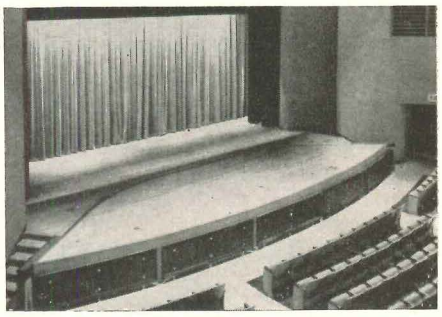
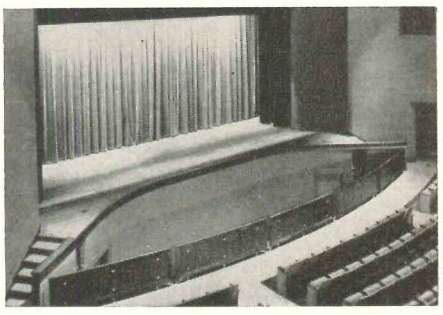


Technical Roundup

"Best-Equipped" Amateur Theater

The recently completed Phi Beta Kappa Memorial Hall and auditorium at William and Mary College, Williamsburg, Va., claims the distinction of being the "best-equipped non-professional theater in the world," and backs up its claim with an impressive list of mechanical and technological innovations. These include a 32-by-38-ft stage which is "trapped" to permit entrances from —or exits to—below stage level; a counter-weighted scene shifting mechanism that gives greater speed and flexibility in changing stage effects; an up-to-date lighting control system; and an elliptical stage apron that can be automatically shifted from basement to orchestra level to stage level and back, stopping at any desired point in between. The new theater, which provides facilities for television and radio productions as well as stage performances, was designed by Walford & Wright of Richmond, Va.





The Globe hydraulic stage lift used in William and Mary College's new auditorium permits hoisting an elliptical front platform to expand the stage, or lowering it to form a pit for the orchestra

Addendum

The paper, "Plastics Materials for Lighting," (ARCHITECTURAL RECORD, December 1958, p. 165) was prepared by Mr. Demarest for a two-day meeting on "Plastics in Building Illumination," held by the Plastics Study Group of the Building Research Institute.

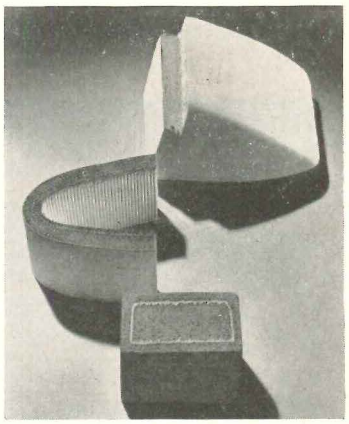
more roundup on page 264

Technical Roundup

Analysis of First Hyperbolic Paraboloid Structural Lattice

Two and a half years ago, students of architecture and architectural engineering at the University of Kansas constructed what is thought to be the first hyperbolic paraboloid designed as a structural lattice. A year later, the plywood structure was tested under both uniform and concentrated loads.

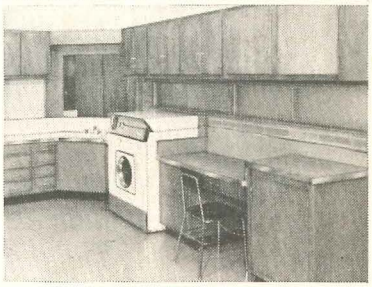
Now, the two associate professors under whose direction the work was carried out, Willard Strode of the Architectural Engineering faculty and Donald L. Dean of the Civil Engineering faculty, have prepared a report on the project. Their bulletin, which is available from the School of Engineering and Architecture, Kansas University, Lawrence, Kansas, presents the semi-empirical design method used and correlates it with the results of the structural tests; describes the construction and testing methods in some detail; and discusses the conclusions drawn. An appendix contains a note on the membrane analysis of a class of shapes of which the hyperbolic paraboloid is one.

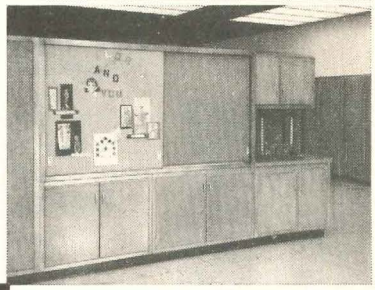


Honeycomb Ceramics Defy Heat

Pyroceram, the crystalline "structural glass" introduced by Corning Glass Works in 1957 (AR, Sept. '57, p. 266), is now being used as a base for a brand-new set of wonder materials. The end product of a newly-developed process for forming thin-walled ceramics into lightweight honeycomb structures capable of operating at extremely high temperatures, the new *Cercor* materials can be built from any of a large number of ceramic compositions, in a wide range of shapes and physical properties. Their most notable feature is a coefficient of expansion so low that expansion is almost nil at tempera-

continued on page 266





Photos shown are "Home Economics Education Studio" for instruction of teachers and graduate students at Michigan State University.

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Technical Roundup

continued from page 264

tures up to 1000 C. Commercial applications will probably be primarily industrial, but Corning spokesmen say that the *Cercor* structures could also be used architecturally where lightness, thermal shock resistance and high temperature strength are required.

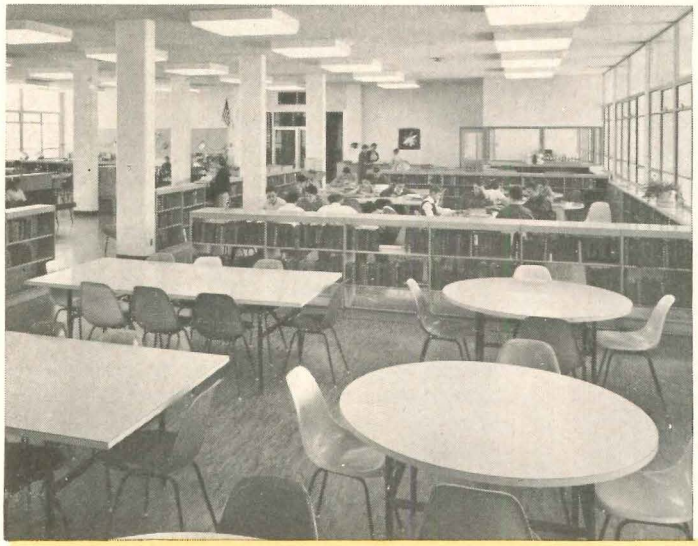
Steel Yield Point Can Be Increased

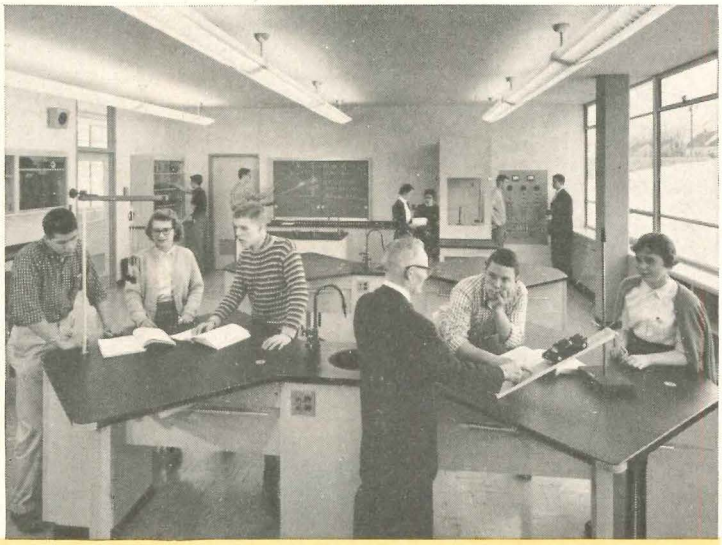
According to Earl R. Parker, professor of metallurgy at the University of California (Berkeley), the yield point of annealed or hot rolled structural steel can be raised significantly by means of a substructure introduced by cold working the steel and then re-annealing it at a temperature in the range of 900 to 1300 degrees F. The substructure seems to have an effect similar to that which would be produced by reduction of the ferrite grain size. In tests on a wide variety of structural steels, its introduction by the cold working and heating procedure increased the yield strength without deleteriously effecting the notch brittleness of the steel.

ASA Announces New Standards For Measuring Floor Areas

Two new standards developed by subcommittees of the American Standards Association's Sectional Committee Z65 on building areas provide a generally acceptable formula for measuring the floor areas of public buildings and school buildings. The gross area defined in American Standard Z65.2-1958 applies to all elementary, secondary and college school buildings, with supplementary classifications of interior areas applying primarily to elementary and secondary school buildings. American Standard Z65.3-1958 on public buildings includes all buildings owned or rented by a public body. The method of area measurement it recommends is similar to that outlined in an earlier standard on office buildings (Z65.1) so that operating costs for publicly- and commercially-owned buildings can be analyzed on the same basis.

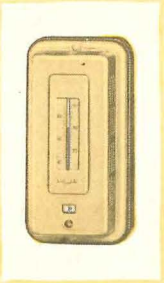
Two more standards for measuring floor areas are in preparation—one for hospitals and the other for industrial buildings. Copies of the three published standards can be obtained from the American Standards Assn., Dept. PR 35, 70 East 45th St., New York 17, N. Y., at the following prices: Z65.1, 35 cents; Z65.2, 75 cents; and Z65.3, 50 cents.





Above: Modern Library and Science laboratory.

Below: Three of the 12 booths in the Language Laboratory, one of the first of its kind in the United States. Earphones, microphones, tape recorders and phonographs play an important role in teaching foreign languages.



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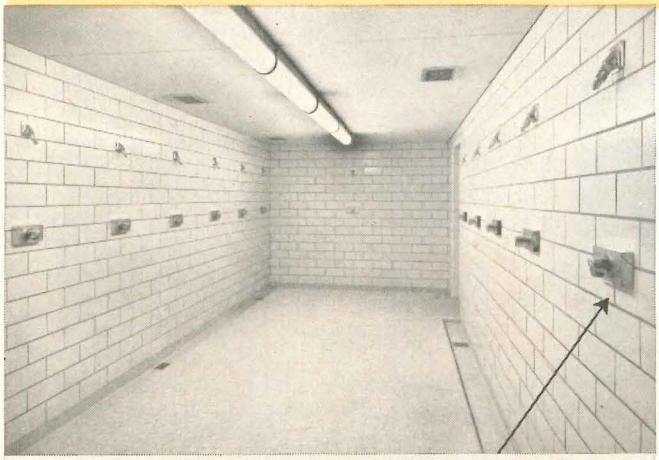
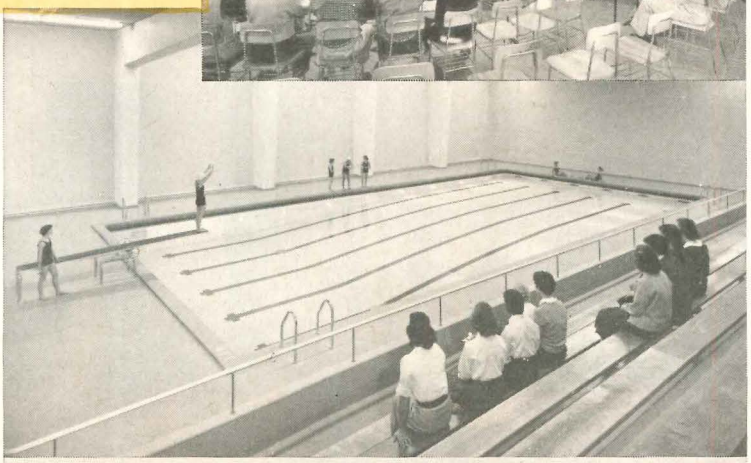
65 Years of Automatic Temperature and Humidity Control

Below: Band Practice Room.



Some of the modern SAFE SHOWERS with Powers HYDROGUARD thermostatic controls.



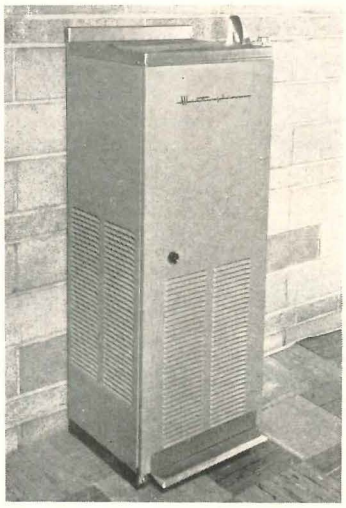
One of the two large swimming pools. (D-7)

Product Reports

continued from page 239

High-Speed Diazotype Printer

The Bruning *Copyflex* Model 675, a high-speed diazotype whiteprint machine, embodies several features designed to reduce operator fatigue and increase production. A split shade on the fast printing 7500 watt lamp (variable to 5000 watts) makes it possible for two operators to run different types of sensitized materials simultaneously; air vacuum ports on the feedboard secure large, difficult-to-handle sheets and roll stock; and a power driven height adjustment eliminates stretching to reach print trays, regardless of the operator's height and position. The result is faster, more economical whiteprinting of engineering and architectural prints. *Charles Bruning Co., Inc., Mount Prospect, Ill.*



Compact Cooler Conceals Plumbing

When a survey of architects and builders revealed a demand for a water cooler that would save space and hide plumbing, Westinghouse designers answered with a compact cooler, new this year, that uses interior fittings to eliminate unsightly exposed pipes. The *Wall-Line* cooler is said to require 26 per cent less floor area than the minimum for a standard cooler installation, and juts out only 12½ in. when installed flush against the wall. It can be used for island installations too, as plumbing is removed from sight by a design which allows for a standard trap with slip type fittings to be installed inside the cooler cabinet. Other features of the new unit include a straight-through drain, high back-splasher, and dual drink control that permits either finger-tip or toe-tip operation. *Westinghouse Electric Corp., Water Cooler Dept., Springfield 2, Mass.*

more products on page 274

Your Key to Faster, Easier Planning of Quality Entrances and Store Fronts in Distinctive Gold Lite* — Blue Lite — Black Lite and Clear Alumilite

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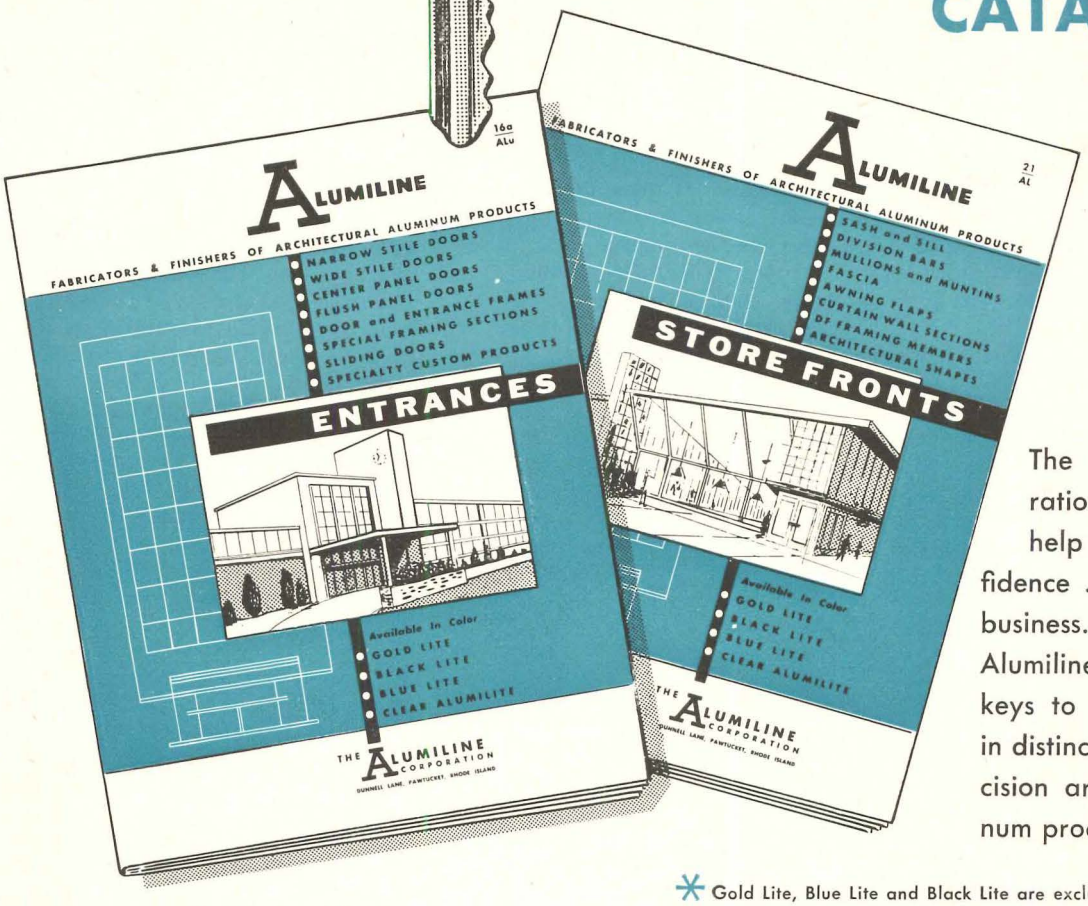

The Alumiline Corporation — at your call to help you plan with confidence . . . to help your business. These two new Alumiline catalogs are the keys to client satisfaction in distinctive, unusual, precision architectural aluminum products.

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Stock and Custom Frames	Curtain Wall Sections
Custom Specialties	DF Framing Members

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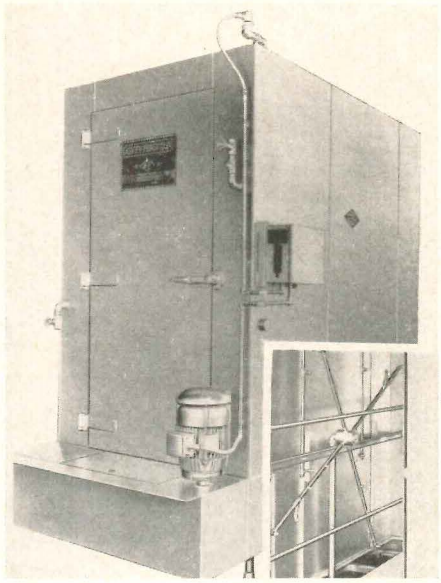
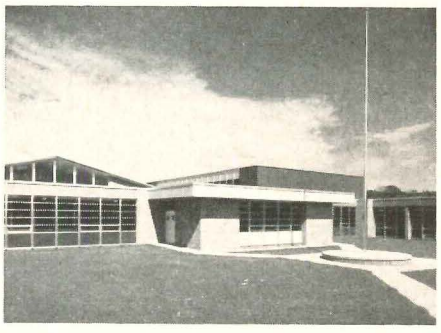
Product Reports



Rack and Cabinet Washer

The *Spin-Spray*, a new automatic rack and cabinet washer designed to provide efficient cleaning and sanitizing in a limited space, features two side-mounted spray arms which rotate in opposite directions at a controlled speed, driven by water pressure from the solution pump, through specially arranged nozzles. A second, stationery set of nozzles is used for the rinse. Occupying only 5 ft by 9 ft 4 in. of floor space, the washer is usually installed in a pit, but can also be supplied for special floor installation with a 6-in. ramp. *The Alvey-Ferguson Co., 24106 Disney St., Cincinnati 9, Ohio*

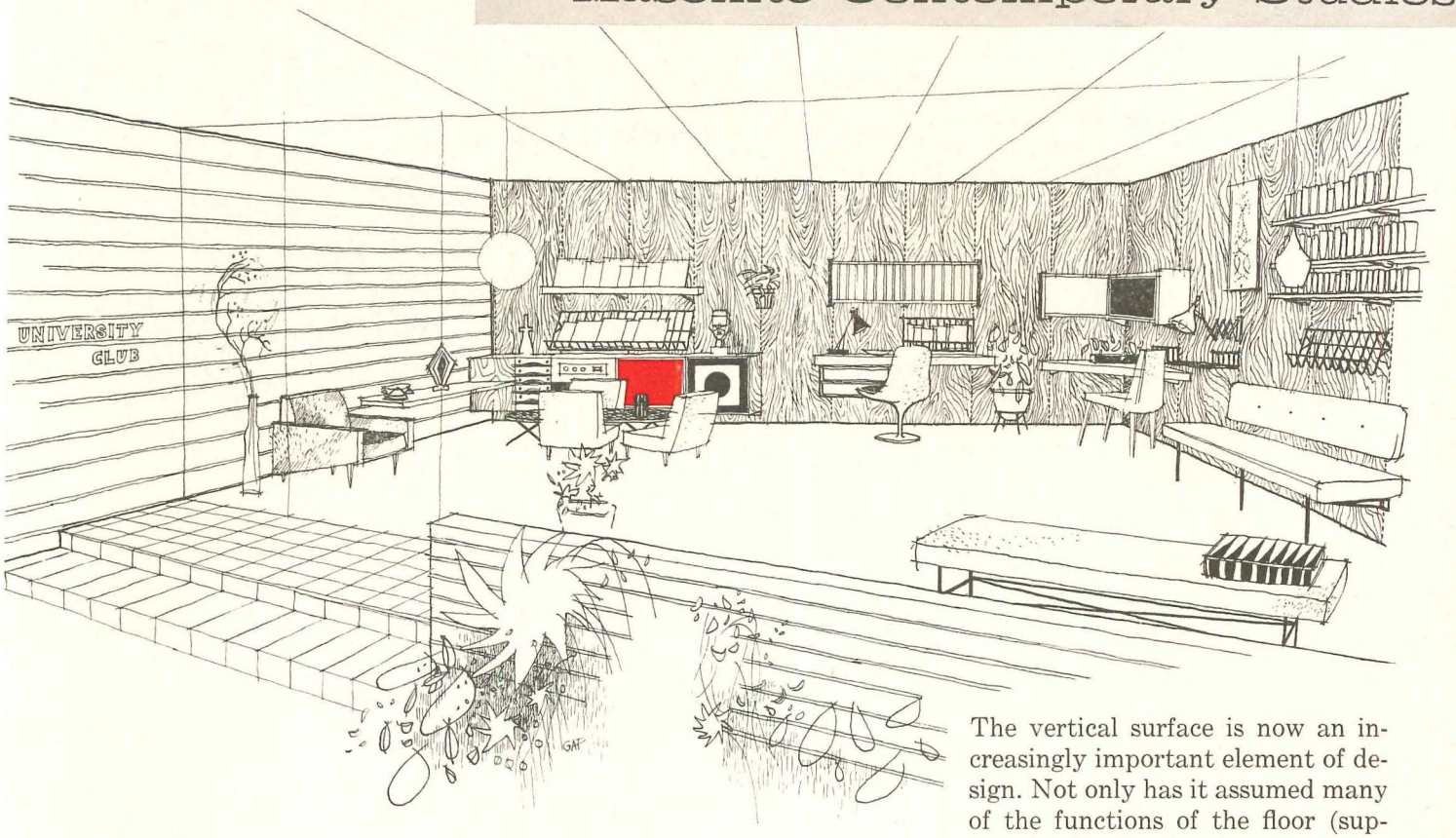


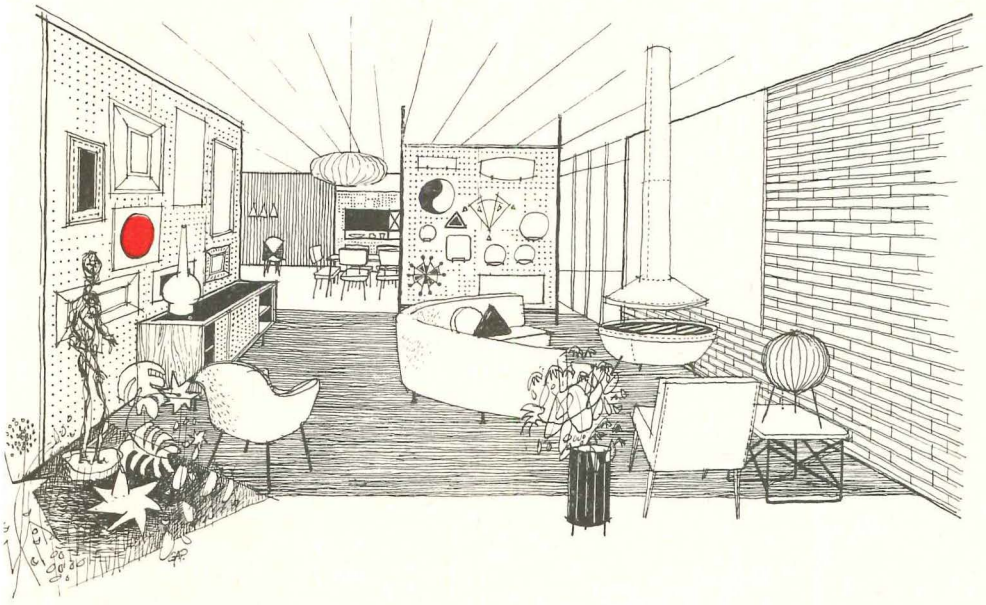
Aluminum Curtain Wall Units

The new *Modu-Wall* line of prefabricated modular units for curtain walls includes aluminum frames, windows and mullions, as well as necessary trim and accessories, for use in combination with a variety of "filler" panels. Special features are: welded construction and extra heavy sections for added structural strength, and a clear *Alumilite* factory-finish. *Modu-Wall, Inc., Dept. AR, Parchment, Mich.*

more products on page 278

Masonite Contemporary Studies





The vertical surface is now an increasingly important element of design. Not only has it assumed many of the functions of the floor (supporting books, tables, desks and such), but it has removed virtually all the old limitations to artistic expression. Furthermore, wall decor is no longer frozen; rearrangement of materials is quick and easy, with no damage to the wall.

One intriguing example is the Panelok-wall system Masonite will soon introduce. Supported by hidden metal lock-strips, a variety of sturdy fixtures are placed anywhere on the Royalcote® walnut-grained hardboard panels (in choice of four decorator colors). The familiar Masonite® Peg-Board® panels in the room at left permit refreshing renewal of background design.

May we explain further? Check Sweet's catalog or send the coupon.

om Design Series No. 101M—Functional Wall Systems

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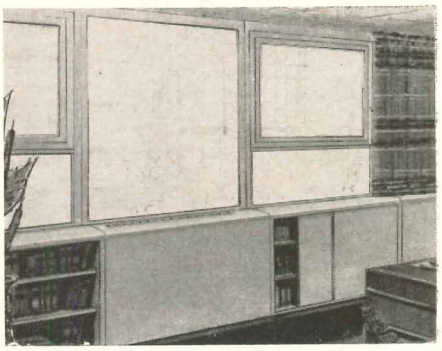
Reinforced Acrylic Panels

Laminated, glass fiber-reinforced plastic panels made from a new acrylic syrup rather than the usual polyester resin are said to exhibit superior weathering qualities which make them particularly suitable for outdoor applications and glazing. Made in sheet sizes up to 3½ by 8½ ft and thicknesses ranging from .060 to .100, the translucent *Tropiglas* panels will be available in unpigmented form or in 22 standard colors. *Naugatuck Chemical Div., United States Rubber Co., 1230 Ave. of the Americas, New York 20, N. Y.*

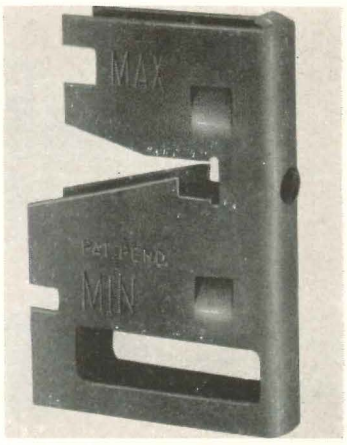
Compact Closet Carriers

The trend to wall-hung plumbing fixtures is being abetted by the new *Unitron* line of "close" carriers and fittings that require less pipe space than standard carriers for wall-hung closets. Double carriers for back-to-back closet installation can be easily installed in an 8 in. pipe space. *Josam Mfg. Co., Dept. X2, Michigan City, Ind.*



Air Conditioned Curtain Wall

A unique new *Lupton* curtain wall features individually controlled air conditioning units "built-in" as an integral part of the panels. Intended particularly for perimeter buildings (hotels, apartments, offices, etc.), the new panels are installed like conventional curtain walls and need only an electrical connection to operate the air conditioning unit. Cooling towers, ductwork and plumbing connections are unnecessary. Two interchangeable units, a heavy-duty conditioner for areas where several people will be located and a lighter unit for areas with only one or two occupants, will be available. *Michael Flynn Mfg. Co., 700 E. Godfrey Ave., Philadelphia 24, Pa.*



One-Piece Construction Hanger

The *GAT Rod Hanger* clamp, a one-piece pressed metal clamp developed for installing suspended ceilings, can also be used with straps or wires for hanging plumbing, heating and electrical equipment. When used with a hanger rod, the clamp is first driven onto one end of the rod and then hammered into place on the lower flange of the structural support. It is presently available to fit steel beams or joists with flange thicknesses of ⅛ to ⅜ inches, and is said to be less expensive than conventional clamps. *Geo. A. Tinnerman Corp., 19920 Ingersoll Dr., Cleveland 16, Ohio*

more products on page 282

Insurance Co.

counts on

REVERE SHEET COPPER

. . . to help protect its new architectural "dream" at Bloomfield, Conn.

Copper was used for flashing, louvers, gravel stops and edge strips

Rule-of-thumb and guesstimating were left outdoors when this building was being planned. There were more than 500 conferences with client, architects, builders and consultants over a planning period of 4½ years. For Frazar Wilde, President of Connecticut General, was building to last, with the nearest possible thing to "no maintenance costs for 50 years and preferably 75."

And the construction materials were chosen on this enduring basis. A mock-up was made and materials were tested under actual conditions to which they would be subjected . . . from exterior hurricane weather tests to the positioning of furniture. We welcome such painstaking testing of copper because man's oldest metal has a set of outstanding characteristics that no other material can match.

There were some 42,658 lbs. of Revere Sheet Copper, most of it being 20 oz. cold rolled, with the bulk being used for base flashing around the entire perimeter of the building under the granite (see photos opposite page). Revere Sheet Copper was also used for base flashing, gravel stops, edge strips and, in lead-coated form, as louvers around the pump house, and boiler rooms in combination with bronze screening.

119,000 LBS. OF REVERE COPPER WATER TUBE AND THREADLESS PIPE USED FOR AIR CONDITIONING AND PLUMBING LINES

In keeping with the owner's desire for enduring materials, Revere Copper Water Tube and Threadless Pipe were used throughout the building in sizes ranging from 3/32" to 4". Both KERBY SAUNDERS, INC., Mechanical Contractor and C. H. CRONIN, Plumbing Contractor, will tell you that by prefabricating sections in their shops and because of its fast, simple method of installation, copper water tube costs less to install than rustable material, while its non-corrosive qualities will result in a lifetime of performance.

Again and again you'll find copper in sheet and tube form being used in the buildings that are built to last. And that goes for the traditional or the most modern type of architecture. The designs made possible by sheet copper are legion. So you would do well to plan with copper when you plan for the future. Our Technical Advisory Service will be glad to help. LOOK FOR OUR CATALOG IN SWEET'S FILE

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COPPER * BRASS 18 01 * REVERE * ALUMINUM

Brightness Controls

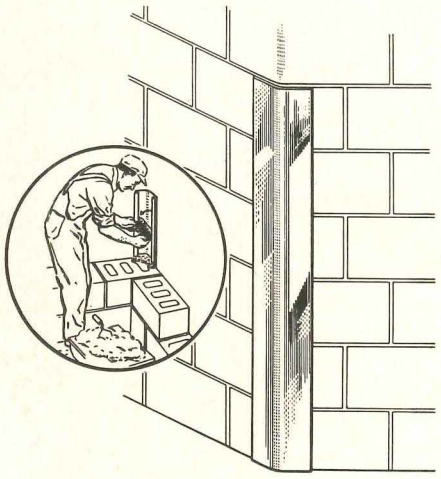
Luxtrol light controls purport to be able to control the level of brightness of up to 1800 watts of lighting. The controls come in three sizes: 450, 800, and 1800 watts, and they can be installed in a conventional 4-in. stud wall. *Superior Electric Company, Bristol, Conn.*

Insulating Tile Grout

Conductive Tile-Mate, an insulating grout designed for use in grouting conductive tile floors, features controlled conductivity, economy and ease of installation, and high mechanical strength. It also permits installation of conductive tile over existing floors. *Upco Company, 4805 Lexington Ave., Cleveland 3, Ohio*

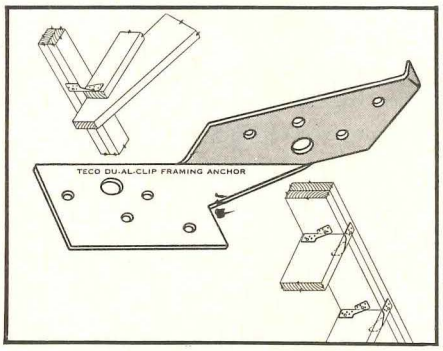
Multiple Switching System

Path of Light, a low-voltage multiple switching system for residences and commercial installations, provides remote control of electricity, with lighted switch buttons indicating whether a given circuit is on or off. *Touch-Plate Manufacturing Corporation, Long Beach, Cal.*



Masonry Corner Guard

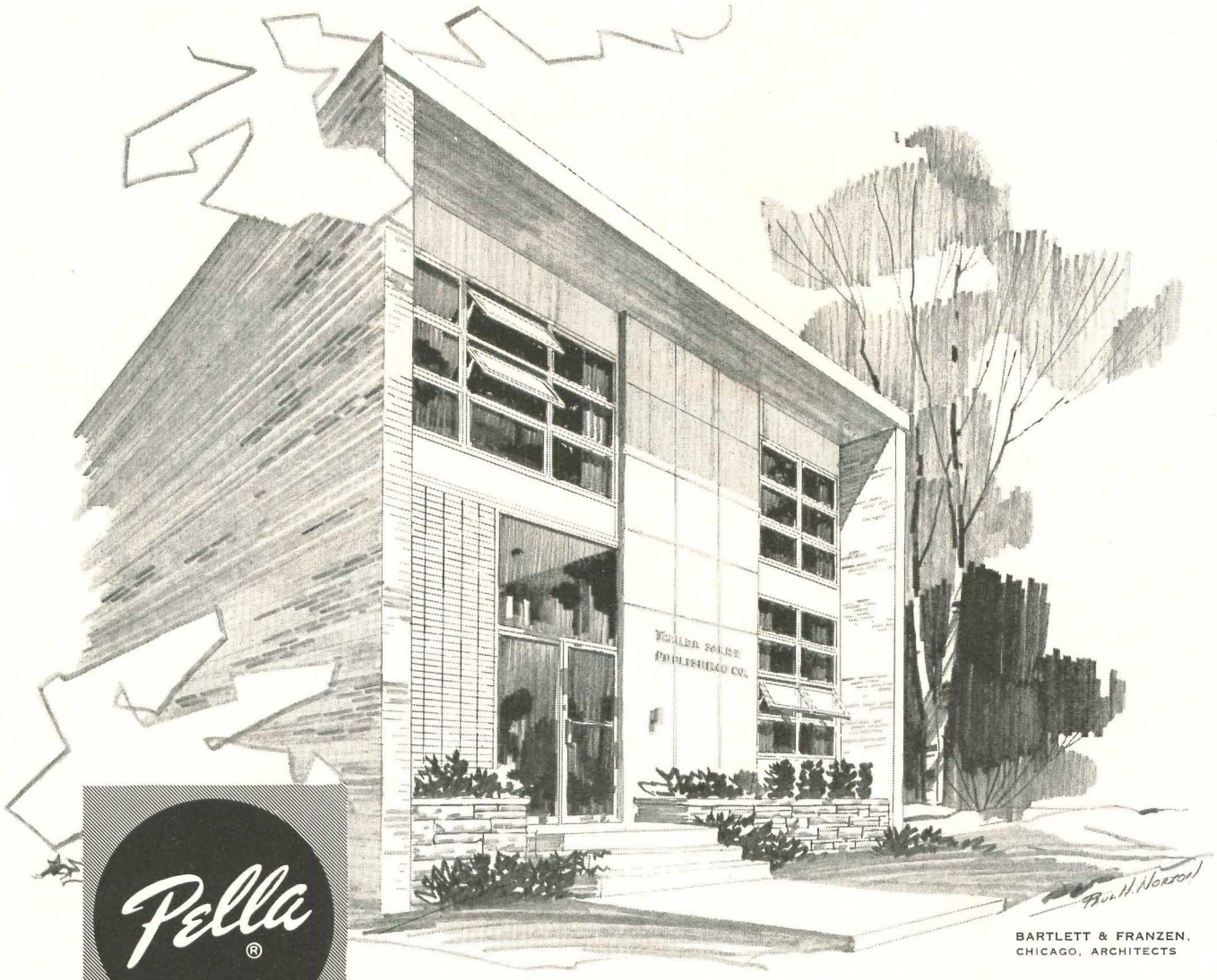
A new standard stainless steel corner guard for use with plaster, concrete block or tile walls eliminates spot weld marks or visible screw heads from the guard surface. Four adjustable anchors furnished with each guard are inserted by the bricklayer or mason at any desired height, and lowered into the mortar joint. This makes it unnecessary to work around anchors, thus lowering installation costs. Standard corner guards are 4 ft high, but any height can be supplied on request. *Wilkinson Chutes, Inc., 619 E. Tallmadge Ave., Akron 10, Ohio*



Framing Anchor

The *Du-Al-Clip* framing anchor is designed as an economically priced fastener for secondary structural framing. The anchor is manufactured of 18 gauge, zinc-coated, corrosion resistant sheet steel, and is said to achieve stronger nailed wood connections in 2-in. nominal-size lumber. According to the manufacturer, the anchor eliminates toe-nailing, strap hangers, notching and ledger stripping. They come complete with special nails and require no bending or twisting before use. *Timber Engineering Company, 1319 18 Street, N. W., Washington 6, D. C.*

more products on page 288



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PELLA WOOD MULTI-PURPOSE WINDOWS provide functional versatility without a "mechanical" look that disrupts the concept of your design.

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For the ultimate in all-weather service and efficiency, PELLA WOOD MULTI-PURPOSE WINDOWS are available with insulating glass.

On your next project, try working with PELLA MP WINDOWS. They are built with quality materials and craftsmanship to meet your most exacting professional standards.

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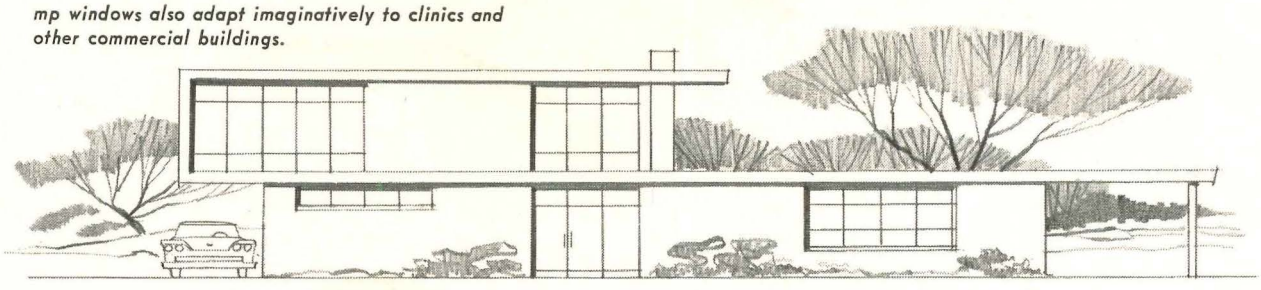
ROLSCREEN COMPANY, Pella, Iowa.

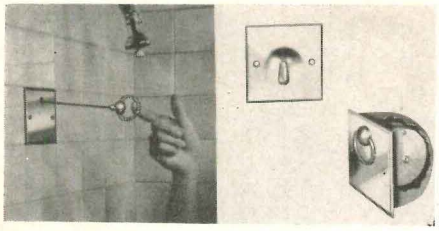
mp windows also adapt imaginatively to clinics and other commercial buildings.



Product Reports

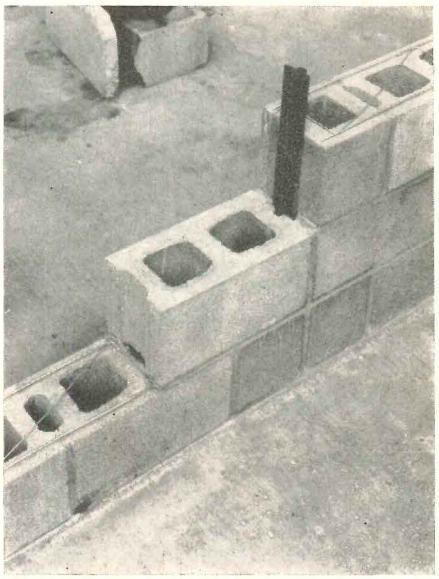
Cooler-Operating Ballasts

New ballasts for G-E *Power Groove, VHO* or *SHO* fluorescent lamps are said to operate at less than 90 degrees C, without heat radiators, in a surface mounted, slotted industrial fixture. *General Electric Company, Schenectady 5, N. Y.*



Built-in Clothesline

Lotta-Line, a spring-loaded clothesline reel, is designed to be used in bathrooms, kitchens, utility rooms and other places where lines are needed that will not be in the way when not in use. *Lotta Manufacturing Company, 714 Race Street, Rockford, Ill.*

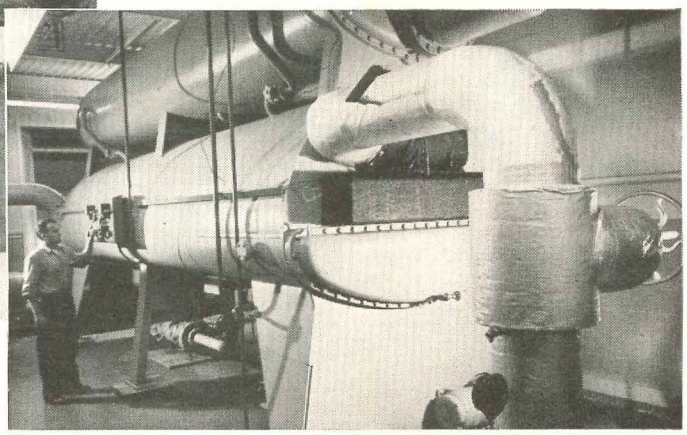


Control Joints and Reinforcing

Blok-Joint, a cross-shaped rubber extrusion designed for use with concrete-block walls to form a control joint, is available in 8-in., 24-in., and 48-in. lengths, and in rolls of 50 feet. According to the manufacturer it is easy to install.

Blok-Mesh reinforcing is available in either plain or galvanized wire. Its swedged deformations are said to provide extra gripping power with no increase in joint size. It is made in widths of 2½ in., 4½ in., 6 in., 8 in., and 10 in., to fit all standard thicknesses of masonry walls. *Carter-Waters Corporation, Kansas City, Mo.* *more products on page 292*

Pioneer producer of electric shavers, Schick Incorporated, occupies this modern, efficient, and completely air-conditioned building in Lancaster— heart of the Pennsylvania Dutch country.



year around... and with gas as the boiler fuel, operating costs are cut to a minimum. Low maintenance is another substantial savings, since there are no major moving parts to get out of order, need replacing or repair.

Because of low installation, operating and maintenance costs, the gas-operated Carrier Automatic Absorption units can be the source of important savings. For full details, call your local gas company, or write to the Carrier Corporation, Syracuse, New York. *American Gas Association.*

Gas-operated Carrier Automatic Absorption Refrigeration

- cuts operating expenses
- minimum maintenance required
- low installation cost
- adjusts automatically to cooling load
- compact and light weight

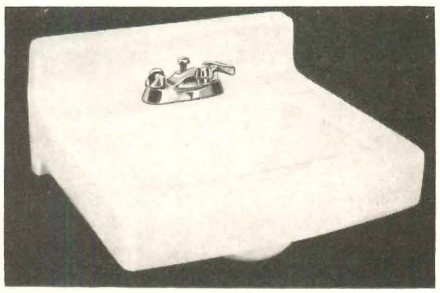
Product Reports

Vinyl-Covered Foam Weather Seal

Foamedge, a flexible sealing strip made up of a polyurethane foam core expanded within a vinyl tube, readily adapts itself to such uses as refrigeration sealing, weatherstripping, sound isolating, etc. Durable, resilient and insulating, it comes in several sizes and foam densities, and can be had with or without a self-adhesive edging. *Sterling Alderfer Co., 3850 Granger Rd., Akron 13, Ohio*

Glass Fiber Acoustical Panel

Acoustiglas, a new flexible, washable, lightweight glass fiber ceiling panel, is manufactured in a thickness of 1¼ in. and panel measurements of 2 by 2 ft and 2 by 4 ft with an overall density of 1½ lb per cu ft. The company states that the panel has a high thermal resistance, a noise reduction coefficient of 90 per cent, and light reflectivity of 89 per cent. It is provided with a base paint of vinyl on one side and, being light and stiff, is intended to be used in suspended T-bar grid systems without other support. One 2 by 4 ft section weighs 1.8 lb. *National Gypsum Company, Buffalo 2, New York.*



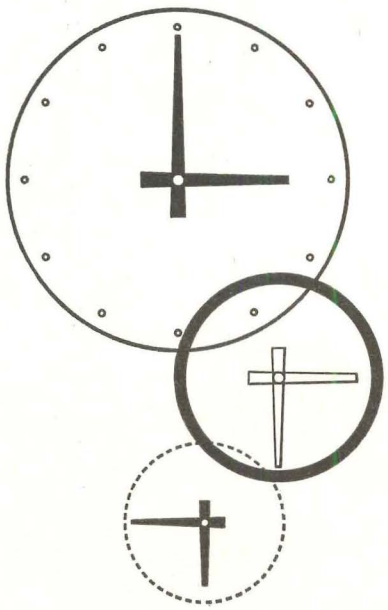
Wall-hung Lavatory

The *Trimline* is available in eight colors and three sizes: 18 by 15 in., 20 by 18 in., and 24 by 20 in. A center leg can be added to the two large sizes, and all top surfaces, including the built-in soapdish, are gently sloped for drainage into the bowl. *Richmond Plumbing Fixtures, 16 Pearl Street, Metuchen, N. J.*

more products on page 296

nationwide service up HONEYWELL'S CLOCKMASTER* SYSTEM

A Honeywell expert is always on hand, beginning with initial clock and programming planning . . . continuing through years of efficient, convenient service.



Honeywell sales engineers work closely with architects and engineers in planning a master time and programming system.

During installation, experienced Honeywell installation supervisors are present to answer any questions and check the finished job. Once the system is in operation, Honeywell's factory-trained men provide free service for one year. Then Honeywell offers a low-cost maintenance plan that includes regular inspections and prompt, efficient service by skilled men who are available immediately when needed from 112 Honeywell offices throughout the country. There is one in your area.

Handsomely-designed Honeywell clocks come in dial sizes of 9, 12, 15 or 18 inches. They may be flush or surface mounted. They're easy to install and have standard plug-and-socket connections.

For more information about Honeywell's Master Time and Programming Systems, call your nearest Honeywell office. Or write Minneapolis-Honeywell, Dept. AR-2-04, Minneapolis 8, Minnesota.

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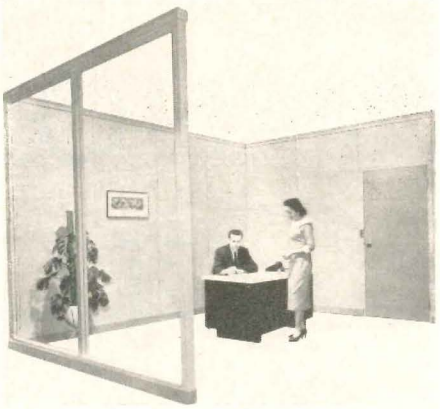
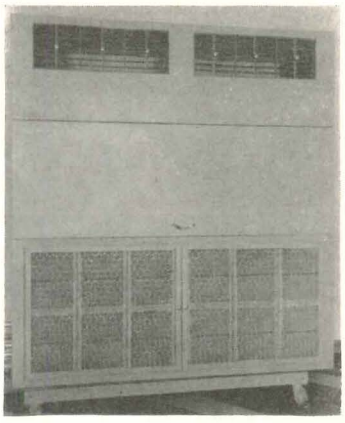
For specification details see Sweet's Architectural File 33b/Mi.

Product Reports



Low-Cost Movable Walls

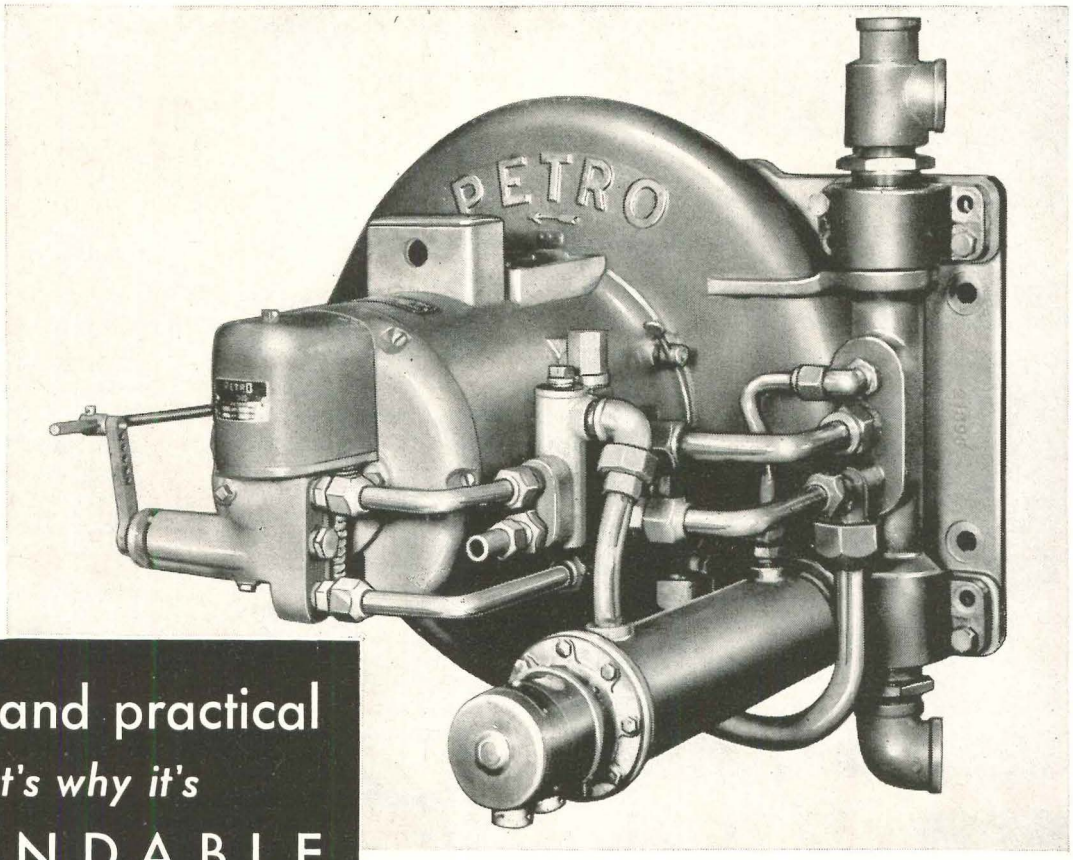
According to its manufacturer, the new *Singline* series of movable partitions can be installed at a cost comparable to plaster and similar conventional walls. The low-cost wall is said to incorporate many of the features usually found in higher priced metal partitions, e.g., reusable, interchangeable panels; built-in base and cornice wiring facilities; and full sound insulation. Other features include flush enameled metal panels, concealed posts or slender 2½-in. posts for steel and glass installations, self-seating integral glass molding, adjustable interlocking floor connections, and a full range of standard sizes. *The Mills Co., Wayside Rd., Cleveland 10, Ohio*



Commercial Air Conditioner

An improved 15 ton air conditioner is designed for commercial applications where high internal loads may require cooling even at low outside temperatures. Part of the *Champion* family of York commercial units, the new system will utilize new condensing units and evaporators to produce a full 180,000 Btu's. Advantages include cooling down to a 0 degree F ambient, twin refrigeration circuits, maximum evaporator flexibility, extra refrigerant capacity, and simplified wiring. *York Corp., York, Pa.*

Petro HEAVY OIL BURNER



Simple and practical *that's why it's* DEPENDABLE

Residual oils are low cost fuels. They have higher heat value than light oils, and usually cost less per gallon. But in spite of their economy they are often avoided because they are considered difficult to handle and burn. A moderate change in temperature can change them from a fluid to a sluggish semi-solid.

These heavy oils (Nos. 5 and 6) are easily controlled and burned by the Petro system which is remarkably free from mechanical complexities.

1. A simple oil heater automatically warms the oil to a point where a common viscosity is reached. (Fuel oils approach this at a temperature of about 160 degrees).

2. An automatic valve passes the oil to the nozzle only when it is warm enough for accurate metering and instant ignition.

This is the basis of the Petro "Thermal Viscosity Principle." The Petro burner isn't fancy; it isn't temperamental; but it *stays on the job.*

In spite of its ruggedness, the Petro heavy oil burner is precision equipment which will operate efficiently with any type of automatic control system.

Petro oil burners have been the steady, reliable work horses in heavy oil firing for over 50 years. They have saved their owners untold thousands of dollars in low fuel and maintenance costs.

For further information, please mail coupon.

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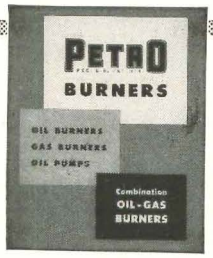
Over 50 years of leadership in automatic heating and power equipment



PETRO, 3312 W. 106th St., Cleveland 11, Ohio
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Company_____
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Office Literature

continued from page 240

Fir Plywood

. . . *for Today's Construction* (A.I.A. 19-F) includes data on the physical properties of fir plywood; a chart of the characteristics and proper use of each grade; a table of basic FHA requirements for plywood construction; gluing and nailing recommendations; and design and use data for various concrete forms. 12 pp. *Douglas Fir Plywood Assn., 1119 A St., Tacoma, Wash.**

Guth Wyteliner Industrials

(A.I.A. 31-F-2) Describes new series of Guth *Wyteliner* industrial lighting fixtures with *Kolorkoded* reflectors which can be used to identify special plant areas and features. 8 pp. *Edwin F. Guth Co., 2615 Washington Blvd., St. Louis 3, Mo.**

How to Select a Boiler

Twenty-page guide for architects covers boiler selection factors ranging from first costs through fuel consumption to service and maintenance. *Cleaver-Brooks Co., 326 Keefe Ave., Milwaukee 12, Wis.**

Operation "Better Light"

(A.I.A. 31-F-2) Catalog HL contains photos, cross sections, descriptions, specifications and lighting data on eighteen hospital lighting fixtures and systems. 8 pp. *Alkco Mfg. Co., 4242 N. Lincoln Ave., Chicago 18, Ill.*

Geyser Curtain Walls/Windows

(A.I.A. 17-A) Explains basic design and construction of Geyser aluminum windows and curtain walls; and includes photos, details, specifications, approximate prices and recommendations for designing economically with the Geyser system. Glazing procedure, acceptable panel styles and ventilators are also covered. 20 pp. *E. K. Geyser Co., 915 McArdle Roadway, Pittsburgh 3, Pa.**

Ualco Lifetime Aluminum Windows

Lists specifications and features, and shows sectional details, installation photos and standard and modular sizes for more than twenty types of windows in the *Ualco* line. 40 pp. *Southern Sash Sales & Supply Co., Inc., Sheffield, Ala.**

**Additional product information in Sweet's Architectural File, 1958*

more literature on page 304

Slabform Saves Time and Money

Rigid Bethlehem Slabform sheets hold deflections to a minimum under wet concrete and save up to 20 per cent of the concrete required when flexible types of centering are used.

Slabform can be used with lightweight insulating concrete roof fills at support spacings much greater than the economical use of flexible centerings will permit.

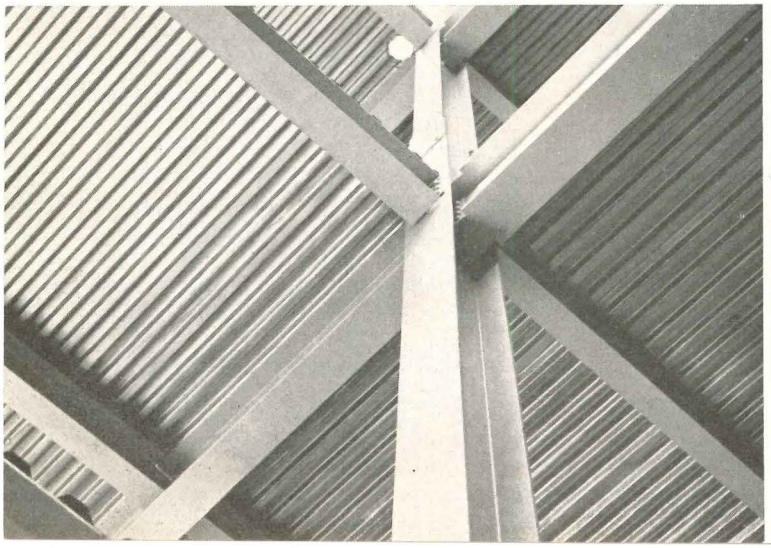
The nearest Bethlehem sales office will be glad to supply you with full details on Bethlehem Slabform. Design load capacities, suggested specifications and other data appear in our catalog in Sweet's Architectural File.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

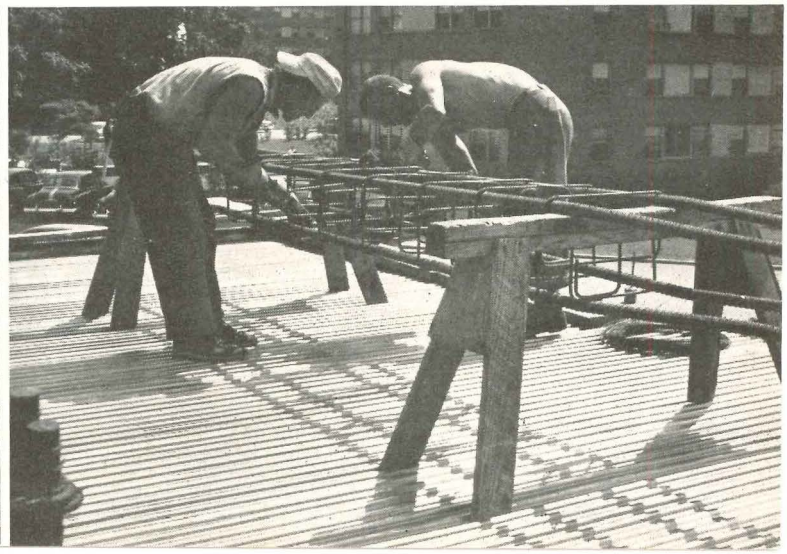
BETHLEHEM STEEL

BETHLEHEM STEEL

Because of the rigidity of Slabform sheets, the slab can be poured and finished in only one operation. Its appearance from below, after installation, is neat and clean.



Slabform is placed easily and quickly. When placed, it provides a solid, safe working platform for all trades. Slabform readily withstands normal construction abuse.



Office Literature

Autocall Fire Alarm System

. . . *For Better School Protection* covers advantages, features and components of the new *Type SA* fire-alarm system for schools, with special emphasis on a double supervision feature that automatically causes a bell to ring in event of failure in either the primary alarm or the supervision circuit. *The Autocall Co., Shelby, Ohio**

Seaporcel Architectural Porcelain

Eight-page catalog offers technical data and installation details on *Seaporcel* porcelain panels and *Seaporclad* curtain wall insulated, laminated and assembled panels. *Seaporcel Metals, Inc., 28-20 Borden Ave., Long Island City, N. Y.**

4-D Wrought Iron Pipe

. . . *for Building Drainage Systems* (A.I.A. 29-B-2) is a comprehensive discussion of piping for soil, waste, vent and downspout applications, based on the results of independent building piping surveys. 64 pp. *A. M. Byers Co., P. O. Box 1076, Pittsburgh 30, Pa.**

Natco Structural Clay Products

(A.I.A. 10A-B) Catalog S-59 contains detailed descriptive, specification and construction data for all major *Natco* structural clay products. Decorative tile and brick products are reproduced in full color. 24 pp. *Natco Corp., 327 Fifth Ave., Pittsburgh 22, Pa.**

Wiring Device Catalog

(A.I.A. 31-C-7) Catalog No. 100 provides a complete single-source reference manual on *Sierra* wiring devices and wall plates. 144 pp. *Sierra Electric Corp., 15100 South Figueroa St., Box 85, Gardena, Calif.**

Making Color Work For You

(A.I.A. 25-A), a "Functional Color Kit," shows how to use color scientifically to promote efficiency. The kit includes four brochures, each giving detailed color specifications for institutions in one of the following categories: motels, schools, hospitals, industrial plants. *Colorizer Associates, 345 North Western Ave., Chicago 12, Ill.*

**Additional product information in Sweet's Architectural File, 1958*

more literature on page 308

..come faster

when she's comfortable

You can see the difference in student response when classroom weather is kept at the correct comfort level. With a Nesbitt system, comfort is maintained automatically for each classroom, regardless of variations in outside conditions.

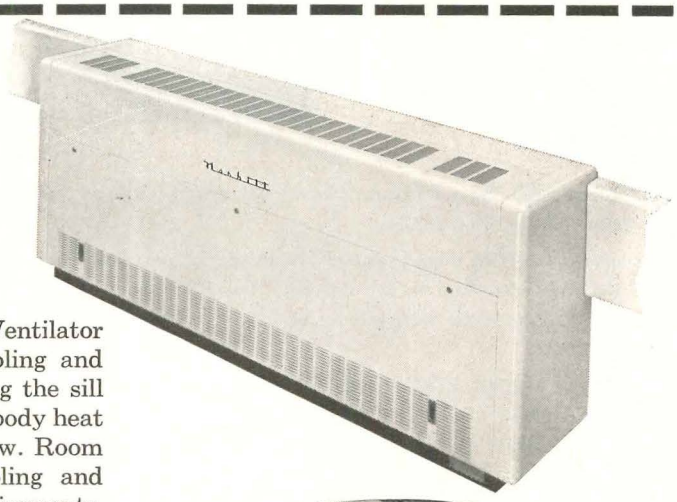
Familiar problems of too much or too little heat, cold walls, drafts, stuffy air, odors and noise are eliminated by the practical, economical Nesbitt system. Student efficiency is kept at peak level . . . the right answers do come faster.

Nesbitt Publication 101 will give you full information on how and why.

Nesbitt

COMFORT CONTROLLED CLASSROOMS

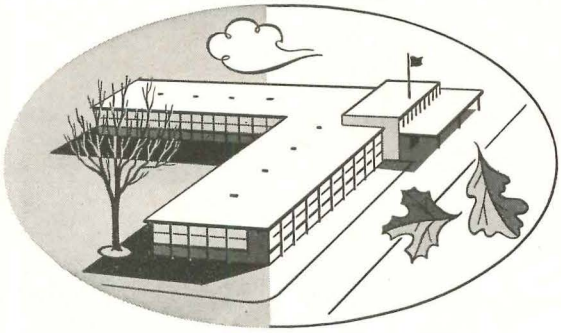
JOHN J. NESBITT, INC., Philadelphia 36, Pa.
Sold also by American-Standard, American Blower Division, and American-Standard Products (Canada) Ltd.



Nesbitt Assures Balanced Comfort in every room—regardless of outdoor conditions

In each classroom, the Nesbitt Syncretizer Unit Ventilator meets the general requirements for heating, cooling and ventilating. Wind-o-line Radiation installed along the sill provides protection against drafts and the loss of body heat to cold walls for students seated near the window. Room thermostats automatically adjust heating, cooling and ventilating to meet individual classroom requirements.

For example: One side of the building may be shaded, cool and windy. Classrooms on this side are kept at student comfort level with Nesbitt controlled heat and ventilation. On the lee side of the building, heat gains from direct sunlight, inside lighting and student occupancy are automatically compensated for, as Nesbitt units go on cooling cycle. In all classrooms, Wind-o-line protection continues only so long as the need exists.



Office Literature

Low Brightness Lens Panel

(A.I.A. 31-F-237) Bulletin L-110-Q includes suggested specifications, tables for calculating illumination levels and photometric data on *Crystopal* No. 71 low brightness lens panels for 2, 3 and 4 lamp troffers. 6 pp. *Lighting Sales Dept., Corning Glass Works, Corning, N. Y.**

Calcore Curtain Wall Panels

Forty-page set of specification sheets describes, and illustrates with detailed line drawings, *Calcore* porcelain enameled curtain wall panels. Emphasis is placed on the broad selection of core materials available. *Caloric Appliance Corp., Jenkintown, Pa.**

Sound Control in Bowling Alleys

Information packet on noise control treatment for bowling alleys contains architectural specifications, application data, blueprints and installation pictures of *Fiberglas* acoustical and roofing products. *Owens-Corning Fiberglas Corp., Toledo 1, Ohio**

Modern Fire Protection for Schools,

. . . *Churches, Hospitals and Other Institutions* points out hazardous spots in institutional buildings and shows the type and size of portable fire extinguisher recommended for best protection; and discusses the American LaFrance building and equipment fire protection survey service. *American LaFrance, Institutional Fire Safety Dept., Elmira, N. Y.*

Koolshade Sunscreen (A.I.A. 35-P-1)

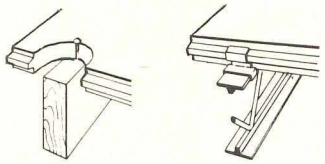
Covers methods of controlling solar heat and glare, and discusses features of *Koolshade* sunscreen, with brief case histories of its use. 8 pp. *Reflectal Corp., Borg-Warner Building, 200 S. Michigan Ave., Chicago, Ill.**

Contemporary Lighting

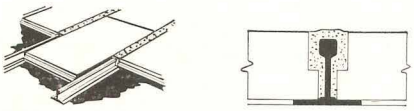
. . . *for Contemporary Living by EJS* catalogs full line of fixtures in four sections—residential, architectural and special design, bullets and portables. *EJS Lighting Corp., 921 East Pico Blvd., Los Angeles 21, Calif.**

**Additional product information in Sweet's Architectural File, 1958*

more literature on page 312



Two of the several methods of fastening Tectum plank. Nail and clip methods are illustrated



Grouting securely seals and fastens Tectum tile on bulb tee framing systems

NEW MATERIALS offering greater latitude for designers have led the trend toward functionalism in building construction. Tectum, for example, offers the inherent advantages of several materials. It is made of wood fibers yet is rated noncombustible through a unique manufacturing process. It is insulating, acoustical and structural . . . three qualities normally associated with two or more separate materials. It has a pleasing texture that combines naturally with other materials. It is dimensionally stable, resists insects and fungus growth and is as easily worked as wood. Its light weight reduces handling charges, makes erection less costly.

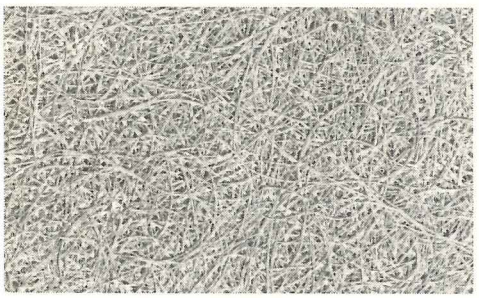
LABOR SAVINGS: Open construction is more than just a short cut to reduced costs. With Tectum you can use the functional advantages of the material for greatest benefit while effectively reducing the amount of time required to erect a comparable roof deck of other materials. Tectum goes down fast — down dry — ready for roofing immediately. When it's down the ceiling is finished. One labor operation provides a structural roof deck, finished interior ceiling, insulation and acoustical control for the entire area covered.

QUALITY CONSTRUCTION: Tectum meets and often exceeds conventional requirements for quality construction. Owners admire its appearance — a rich, deep fissured texture that adds beauty to any type of building when the material is exposed over beam or joist.

Tectum is represented in your area by a competent distributor or erector. Ask his recommendations on Tectum roof decks, sidewall materials, acoustical ceilings and formplank needs. Or write Tectum Corporation, Newark, Ohio. Plants in Newark, Ohio and Arkadelphia, Arkansas. Regional offices in Atlanta, Philadelphia, Columbus, Chicago, Dallas, Beverly Hills, Seattle and Toronto, Canada. Distributors in all leading areas.

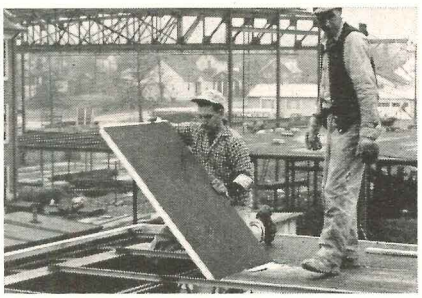
QUALITY · INTEGRITY · SERVICE

9-2

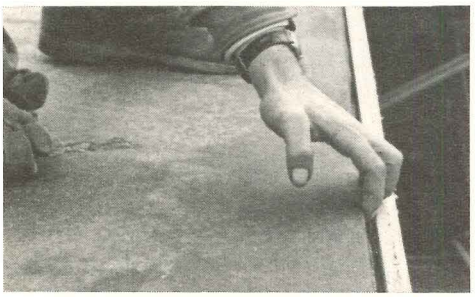


DIMENSIONALLY STABLE: Fibers of Tectum's composition lie in random patterns, resulting in excellent dimensional stability in all directions. Plank or tile may be laid with tight joints without fear of cracking or buckling.

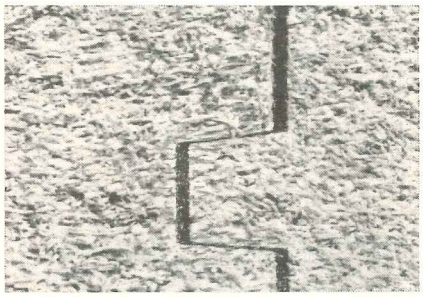
RESISTS TERMITES, FUNGUS, ROT: Tropical climates, with termite and fungus growth problems have no effect on Tectum. Tectum has proved to have toxic effects on termites — will not deteriorate in humid climates.



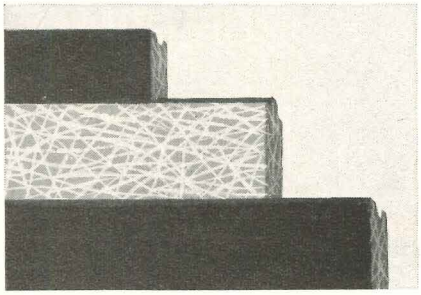
WEATHER PROTECTED SURFACE: A ply of asphalt saturated roofing felt, factory applied on the top side of Tectum, protects it during shipping and storage. Makes an ideal surface for built-up roofing. Stops sound transmission.



RABBETED EDGES: Tectum tile, normally laid on bulb-tee subpurlins, has a rabbeted edge on the long dimension. Provides adequate space around bulb-tee for grouting, adding stability and reducing heat loss around tee.



TONGUE AND GROOVE JOINTS: Tight joints are assured with Tectum plank with tongue and groove edges on the long, unsupported side. Adds to appearance, reduces heat loss and increases strength of the roof deck.



CUSTOM LENGTHS: Tectum may be ordered in standard sizes, as cataloged, or in custom lengths from 4′ to 10′. A continuous manufacturing process increases design flexibility for your advantage.

Office Literature

Let's Plan Your Laboratory

Catalog W-4 illustrates and describes the comprehensive *Steelab* line of interchangeable "package" units for laboratories, along with accessories and service fixtures. Also available is a Planning Kit of sealed cut-out templates and scaled planning paper for developing floor plans to fit every laboratory requirement. 24 pp. *Laboratory Furniture Co., Inc., Old County Rd., Mineola, L. I., N. Y.*

Moldcast Outdoor Lighting

(A.I.A. 31-F-22) Contains illustrations, descriptions and specifications for outdoor lighting fixtures. Light density tables, power and coverage graphs for each fixture, and illustrations of the fixtures in various combinations and installation arrangements are also included. 24 pp. *Moldcast Manufacturing Co., 236 South St., Newark 5, N. J.*

Testing Service Bulletin

Bulletin 5801 describes the complete line of laboratory and field testing facilities and services available from *United States Testing Co., Inc., 1415 Park Ave., Hoboken, N. J.*

Naylor Lightweight Pipe

Bulletin No. 59 gives selection and application data on Naylor line of lightweight pipe, fittings, flanges and connections. 8 pp. *Naylor Pipe Co., 1230 East 92nd St., Chicago 19, Ill.*

Kalwall Roofs, Skylights

Describes, and gives specifications, technical data and details on *Kalwall* line of translucent roofing panels. 4 pp. *Kalwall Corp., 43 Union St., Manchester, N. H.**

Laboratory Furniture

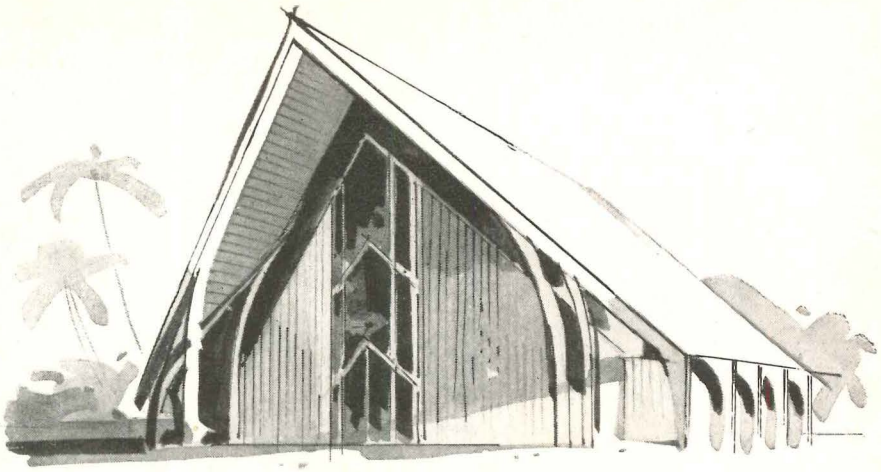
Catalog D-2 gives full information on complete line of laboratory furniture and equipment. *Duralab Equipment Corp., 988 Linwood St., Brooklyn 8, N. Y.*

Punched Channel Studs (A.I.A. 13-G)

Lists properties and engineering data for five sizes of load bearing punched channel studs, track and bridging. Loading tables and detail drawings are included. 6 pp. *Stran-Steel Corp., Detroit 29, Mich.*

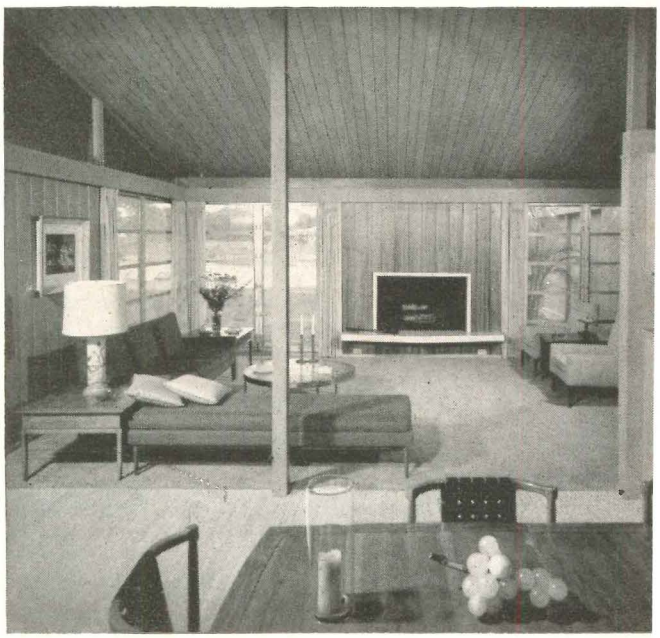
**Additional product information in Sweet's Architectural File, 1958*

For the architect



WOOD offers freedom of design

Table from Herman Miller Furniture Co., Zeeland, Mich.



Only wood permits a completely free interchange between imagination and practical considerations. To your planning, wood brings the charm and livability of deep-textured beauty. It offers a variety of species . . . infinite combinations of grains, tones, physical properties . . . to conform to the requirements of its many uses. Structural framing, doors and windows, siding, flooring, paneling, cabinetry . . . these uses range from simplest function to richest decoration.

Wood's inherent practicality is unquestioned. The acoustical and insulational qualities, the favorable strength-weight ratio of organic, cellular structure. The durability and economy of a natural, renewable resource. The ease with which wood can be shaped, fastened and finished.

In every idea, in every design, there's a contribution to be made by wood. And new technology is widening even further the scope of wood's role in every shelter where man lives and learns, works and worships.

For new information on wood's design possibilities, write to:

Wood Information Center
NATIONAL LUMBER MANUFACTURERS ASSOCIATION
1319 18th St., N.W., Washington 6, D.C.

Washington Topics

continued from page 48

As for planning, he indicated that evidence showed that building one general use area for a larger number of pupils, and planning multiple-use areas definitely effected savings in cost. Writing exact specifications for bidders to avoid doubt over the meaning of contract terms was cited as another method of whittling down cost.

The conference learned that some design economies in school construction come about through careful attention to the shape of the building to reduce its perimeter and corridor space, use of flat roof eliminating parapets and reducing cubage, use of modular measure, and installation of concrete floors over porous fill on earth to eliminate expensive flooring and floor joists.

From the standpoint of administration, economies were found to result from:

1. Choosing the best season of the year to advertise bids and to make contract awards.
2. Acquiring sites with soil conditions and topography needing little or no site preparation.
3. Allowing contractors sufficient time to obtain dependable bids from subcontractors and suppliers.
4. Stipulating a minimum number of alternates in bid documents.
5. Allowing a reasonable amount of time for contractors to contemplate the project to avoid "cushioning" of bids for the contractor's own protection.

Observed Mr. Finchum: "These methods of cutting costs in school plant construction are not all-inclusive, but they point out some of the ways by which good school building can be secured at a minimum cost."

Five Architects Appointed To Reynolds Award Jury

Five distinguished architects have been selected to serve on the jury for the 1959 R. S. Reynolds Memorial Award. The American Institute of Architects, administering nominations, jury selection and other aspects of the award, said these men would comprise the judging team this year:

John Noble Richards, Toledo, Ohio, president of the A.I.A.; Eero Saarinen, Bloomfield Hills, Mich.; Robert E. Alexander, Los Angeles, Cal.; William W. Caudill, Corning, N. Y., and Carlos Contreras, Mexico City.

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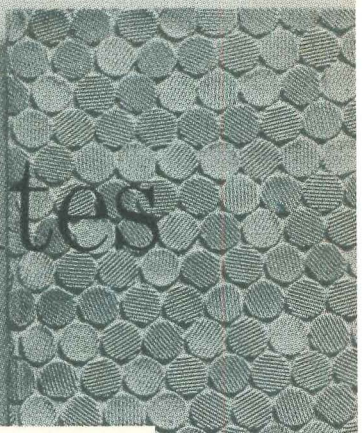

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Rafael Battista, A.

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EMPIRE STATE BUILDING, NEW YORK 1, N.Y. LONGACRE 4-0080 • MILLS: WHARTON, N.J.

The jury was scheduled to meet in Washington, D. C., May 11 and 12 to consider nominations. The chairman, who will be named by the jury itself, will announce the recipient within a week after judging has been completed.

The award consists of a $25,000 honorary payment plus an emblem. The competition is international in character.

The Reynolds Memorial Award is conferred annually on an architect who is judged to have designed a significant work in the creation of which aluminum has been an important contributing factor.

The first award winner, in 1957, was a firm in Madrid, Spain, honored for its design of a new factory and visitors' lounge center of an automobile plant in Barcelona. Last year the prize went to six Belgian architects who designed the transportation pavilion at the Brussels World Fair.

A.I.A. Handbook on Practice Issued in Eighth Edition

The eighth edition of the American Institute of Architects' *Handbook of Architectural Practice* is being distributed from the Octagon headquarters in Washington, D. C. This volume comprises a revision of previous publications comprehensive in nature and with some new material.

The official publication date is November 30, 1958, and the book sells for $8 per copy.

This completely revised standard work is considered by many architects to be the true "bible" of the profession. It is presented largely for the assistance of practitioners in mastering those aspects of architectural activity other than the creative. Its emphasis lies in the fields of business conduct, office practice, project preparation and allied efforts. Definitions are clear and concise.

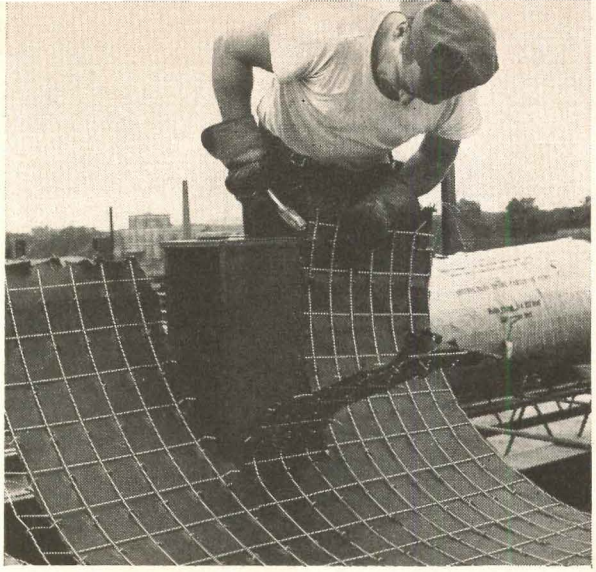
The introduction notes that while the volume is primarily for the less experienced practitioners and for those with small and medium-sized offices, it also is intended as a convenient reference for all others interested in building, and as a source of instruction for architectural students and architects-in-training.

"Some parts should be read by clients, prospective clients, and other laymen, and since any part may be read by laymen, the *Handbook* is one of the Institute's important public relations documents," the introduction states.

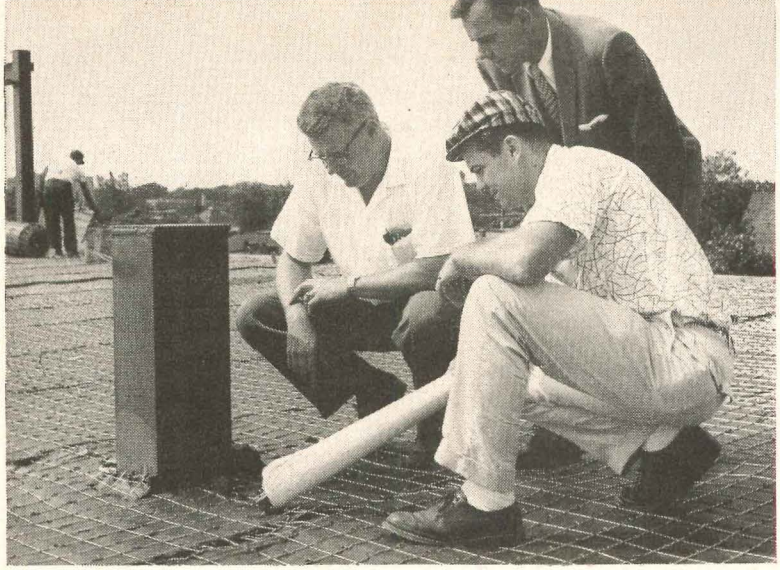
Book I takes a look at the building field and architectural practice, dealing with legal aspects as well as others. Book II is devoted to the organization and office procedures of architectural firms and in Book III the reader finds an explanation of the normal procedures of an architect with a building project.

All reference material is contained in a comprehensive appendix which comprises the latter half of the volume and is printed on blue paper to distinguish it from the preceding three books.

Editor C. H. Cowgill, F.A.I.A., who took over the important task of handbook revising from William Stanley Parker, F.A.I.A. and Institute life member of Boston, explained that the latest edition is larger than its 1953 predecessor by one-third to one-half. He has included for the first time a section on building finance, and because of intense interest on the part of architects has amplified the treatment of partnership agreements. Accounting activities of



Steeltex cuts easily and fits quickly around protruding steel column. Said James R. Huiras, field superintendent for subcontractor: "It took three men only three days to install 12,000 square feet of Steeltex on each floor. Sheet material would have taken twice as much time and required an extra man."



Ready for pouring, Steeltex placed snugly around column is examined by (kneeling) Leonard C. Tharnstrom, president of C. A. Tharnstrom & Co., general contractor; Architect Kenneth R. Woods of Thulin, Woods & Isensee, Inc., and (standing) Pittsburgh Steel Products Salesman William L. Dolan. Mr. Tharnstrom estimated his firm "saved about 10 cents a square foot by using Steeltex instead of other material."

"On top of that," Mr. Tharnstrom added, "Steeltex brought savings with a minimum loss of concrete because the paper reduces the amount of concrete drippage to the floor below."

Another built-in Steeltex advantage —ease of handling and installation— received enthusiastic approval from workmen who installed the Steeltex.

James R. Huiras, field superintendent for sub-contractor Bo-An Steel Erecting Co., Chicago, has used Steeltex many times on various types of construction.

• **Likes Steeltex' Speed**—Speed of installation rates number one on the list of advantages outlined by Mr. Huiras.

"It took three men only three days to install 12,000 square feet of Steeltex on each floor of this building," declared Mr. Huiras. "A sheet material would have taken twice as much time and required an extra man.

"What helped us make such a fast installation was Steeltex' light weight and easy handling. It's easily unrolled, cut to length, tightened and clipped. Men can walk on Steeltex while new sections are laid, too.

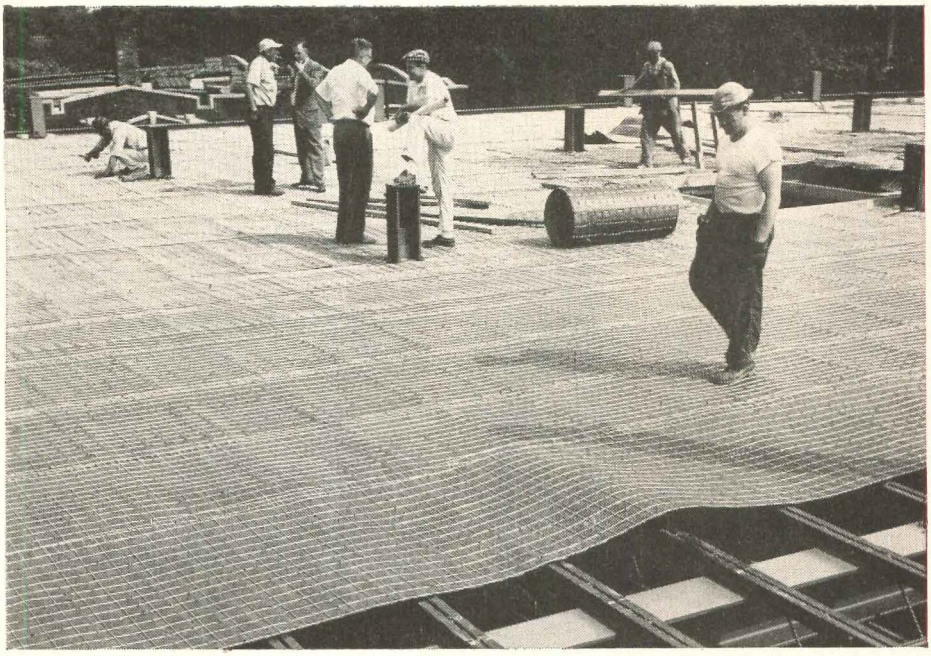
"Another good point is that Steeltex fits tightly around columns. It takes only a few minutes to cut Steeltex to fit. After that, you can pour right away."

All the built-in advantages of Steeltex and more—sales engineers to help solve your construction problems—can be put to work for you, too.

How? Just call the nearest Pittsburgh Steel Products district sales office.

See locations at right.

Let Steeltex help provide better construction at substantial savings for you. Call today . . . tomorrow you'll be glad you did.



Continuous reinforcing of Steeltex from section to section with a minimum of side lapping and end lapping cuts costs and speeds installation. Heavy waterproofed paper provides form, prevents drip-through. Wire mesh embedded in concrete gives uniform reinforcing.

▶ **See Sweets Catalog Section 2-B**

Steeltex®

Pittsburgh Steel Products

a division of Pittsburgh Steel Company

Grant Building • Pittsburgh 30, Pa.

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			Philadelphia	Warren, Ohio

the architect are covered more thoroughly than in any previous edition.

The *Handbook* first was published in 1920, edited by Mr. Parker, who guided subsequent revisions except for this last. He was an adviser on the eighth rewriting, however.

For the eighth edition, the material was revised more completely than for any previous book. Editor Cowgill worked with A.I.A.'s Office Practice Committee and Documents Review Committee in preparing new standards documents. Many of these appear for the first time in the latest edition.

Eighteen laymen in various non-architectural fields collaborated. Mr. Cowgill expressed the hope that in view of this cooperation the *Handbook* has become the official voice of the Institute in the areas covered.

Standards for Billboard Control Issued to Road-Building States

The Department of Commerce's Bureau of Public Roads has announced the new standards for state guidance in the regulation of outdoor advertising along the Interstate Highway System. These standards, so strongly urged by the American Institute of Architects, are not as strict in many instances as those originally proposed by the Department of Commerce after Congress provided for them in the highway act last year. The earlier, more stringent suggestions have been under consideration by industry for some months now, and have been revised according to its findings.

It is expected that as much as 25 per cent of the entire system will not fall under the incentive regulations. This is because segments located in incorporated municipalities or industrial and commercial areas, so designated, are excluded from control.

As the new program now operates, states agreeing to control advertising along the interstate route in accordance with the Commerce standards are eligible for a bonus payment of one per cent of the cost of their interstate projects.

On-premise signs and size of advertising signs were two of the applications where the final rules imposed were more liberal than those proposed earlier.

As now in effect, the standards permit only the following in all areas adjacent to and within 660 ft of the edge of the right-of-way of all controlled portions of the system—

Class I. Official signs: directional or other official signs or notices erected in accordance with state or Federal law.

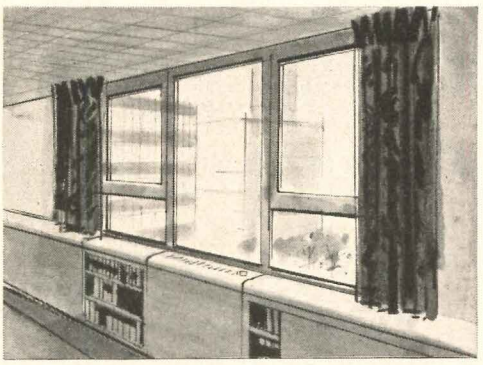
Class II. On-premise signs: signs advertising the sale or lease of, or activities conducted on, real property are permitted under this class and only one sign advertising activities conducted thereon if the sign is located more than 50 ft from the advertised activity.

Class III. Signs advertising activities being conducted within 12 air miles of such signs.

Class IV. Signs in the specific interest of the traveling public: only information about public places operated by Federal, state or local governments, natural phenomena, historic sites, areas of natural scenic beauty or outdoor recreation, camping, lodging, eating, and vehicle service and repair is deemed to be in the specific interest of the traveling public.

The new regulations also spell out conditions under which these signs may be erected, the frequency, and, in the case of classes III and IV, size of the signs.

LUPTON makes individually-regulated comfort conditioning an integral part of a curtain-wall system



On the inside, a sill of normal depth tops the compact comfort-conditioning unit as well as its adjacent cabinets—presenting an extremely attractive decor.

Reduces installation costs 40-60% from previous air-conditioning methods for all true "perimeter" buildings

Now that comfort conditioning has been combined with LUPTON curtain-wall systems, you can forget about unsightly, expensive cooling towers . . . bulky, space-eating ductwork and plumbing connections. The only apparatus necessary for LUPTON comfort conditioning is electrical connections.

Skilled LUPTON crews will assemble the units . . . giving you one-source responsibility for outside wall and inside cabinets, shelves, and comfort-conditioning equipment. This eliminates the problems of specifying and coordinating these various parts. The curtain wall and comfort-conditioning system are installed together to form a complete exterior-interior wall.

Two interchangeable units

LUPTON gives you two comfort-conditioning units to work with: heavy-duty for areas with a particularly heavy cooling load, and lighter-duty for average loads. Both units have the same dimensions, and can be interchanged as loads increase or decrease. All components are selected for low noise level and durability. They're precision-balanced for maximum over-all efficiency.

LUPTON comfort conditioning is designed and installed to give room-by-room control of air-conditioning, filtration, ventilation, and exhaust. These advantages, plus the space it saves, are among comfort conditioning's major rental features for building owners.

Another is lower air-conditioning costs. Because temperature is regulated from each unit by the occupant of each room, there's no costly over-air-conditioning. Individual comfort control allows complete variation from room to room.

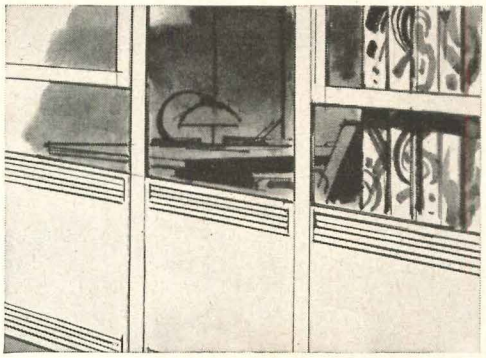
System widely flexible

With advance planning, your LUPTON comfort-conditioning system is simple to re-arrange. You can make changes in the number and location of comfort-conditioning units with ease and speed . . . at relatively small cost.

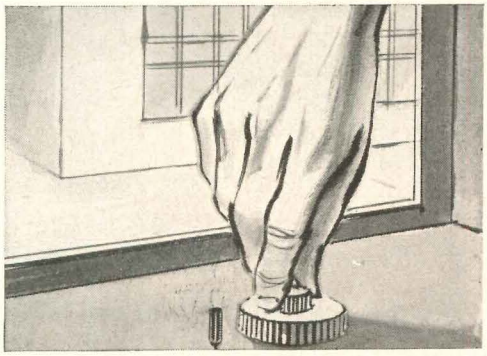
Just treat all exterior panels in a uniform manner to provide for comfort conditioning. Install as many LUPTON Comfort-Conditioning Units as you need at first. Combine them in each office with shelving, bookcases, or storage cabinets. Then, you can replace these latter units, when required, with additional LUPTON comfort conditioners.

You can also conceal or expose the air-circulating function of the panels. This feature allows you endless opportunities for variations in spandrel proportions and surface treatment.

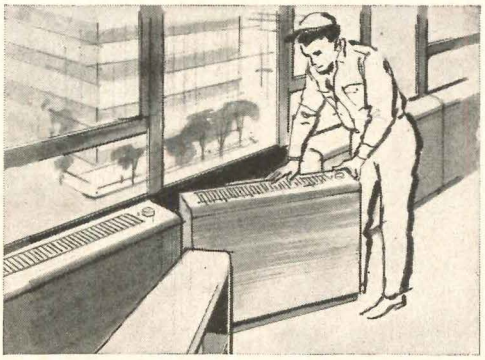
Write today for more information about Comfort Conditioning. Explore the almost unlimited possibilities of LUPTON's newest advance in aluminum curtain-wall design and function.



On the outside, nothing protrudes. Wide separation between air intake and discharge gives faster, more efficient dissipation of heated air, prevents it from re-circulating.



One panel controls temperature, fan, and exhaust for smoke or odor removal . . . allows each occupant individually to regulate comfort conditioning for his office.



Through advance planning, you can readily expand or decrease comfort-conditioning capacity, interchange units quickly, easily, and at small cost.

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MICHAEL FLYNN MANUFACTURING COMPANY

Main Office and Plant: 700 E. Godfrey Ave., Philadelphia 24, Pa. New York, N. Y.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Los Angeles, Calif.; Stockton, Calif.; Dallas, Texas. Representatives in other principal cities.

On the Calendar

February

4-6 Home Improvement Products Show—The Coliseum, New York

8-12 National Convention (first of three in 1959), American Society of Civil Engineers—Los Angeles

11ff "Architecture and Imagery: Four New Buildings" exhibition; through Apr. 19—Museum of Modern Art, New York

15-18 Ninth Annual Convention and 1959 Show, Mason Contractors Association of America—Chase-Park Plaza Hotels, St. Louis

17-20 Annual Conference on Church Architecture, sponsored by Church Architectural Guild of America and Dept. of Church Building of National Council of Churches of Christ—Statler Hilton Hotel, Los Angeles

19-20 First Annual Construction Industry Seminar, sponsored by Northern Illinois Chapter, A.I.A., assisted by Building Contractors Assn. of Rockford—Faust Hotel, Rockford, Ill.

23-26 Annual Convention, American Concrete Institute—Statler Hilton Hotel, Los Angeles

24-28 Annual Convention, Building Stone Institute, Atlanta

March

1-4 Second National Lighting Exposition, sponsored by Lighting, Lamps and Electrical Manufacturers' Salesmen's Assn., Inc.—The Coliseum, New York

1ff University of Illinois Biennial Festival of Contemporary Arts; through Apr. 5—University of Illinois, Urbana

11-12 Ninth Annual Iron and Steel Conference, sponsored by Pittsburgh Section, Instrument Society of America—Pittsburgh

11-13 45th Annual Convention, Michigan Society of Architects—Statler-Hilton Hotel, Detroit

13-14 Middle Atlantic Regional Conference, A.I.A., sponsored jointly by Virginia and West Virginia Chapters—White Sulphur Springs, W. Va.

18-24 New England Home Show, sponsored by Home Builders Assn. of Greater Boston—Commonwealth Armory, Boston

April

5-10 Fifth Nuclear Congress—Public Auditorium, Cleveland

6-10 Atomic Industrial Forum Atom Fair—Cleveland

7-8 Building Research Institute Eighth Annual Meeting—Penn-Sheraton Hotel, Pittsburgh

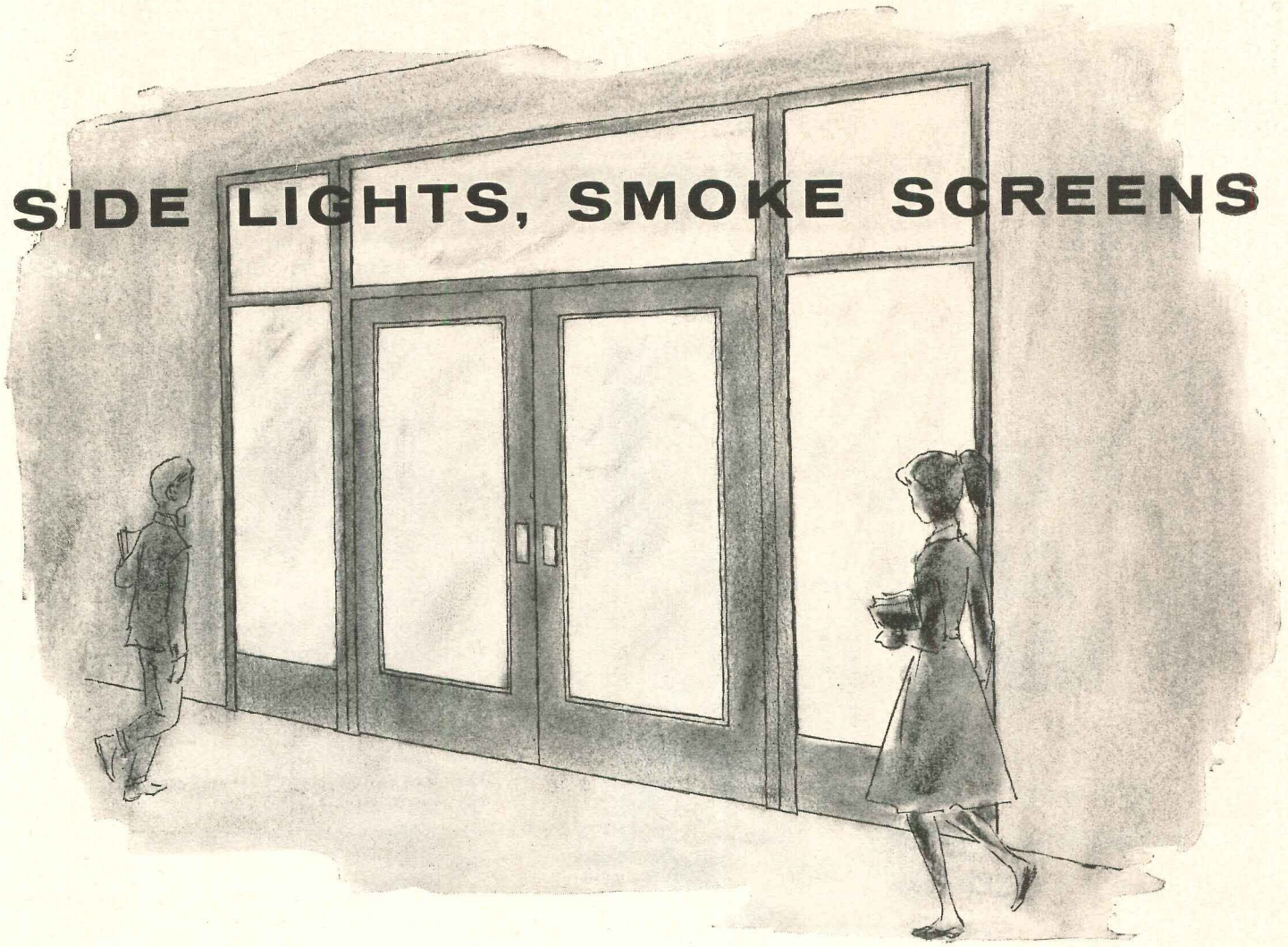
12-17 21st Annual Convention, National Association of Architectural Metal Manufacturers—Monteleone Hotel, New Orleans

25ff 22nd Annual Maryland House and Garden Pilgrimage, sponsored by Federated Garden Clubs of Maryland, Society for the Preservation of Maryland Antiquities, Maryland Historical Society, Baltimore Museum of Art; through May 10—Information: Pilgrimage Headquarters, Room 217, Sheraton-Belvedere Hotel, Baltimore 2

26-30 28th Annual Conference, American Institute of Decorators—Plaza Hotel, New York

continued on page 334

SIDE LIGHTS, SMOKE SCREENS



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City .....State .....

continued from page 330

Office Notes

Offices Opened

William M. Gillis, A.I.A., and Nicholas F. Forell, structural engineer, announce the formation of a partnership for the general practice of architecture and structural engineering with offices at 680 Beach St., San Francisco.

Cecil H. Wells, Jr., consulting structural engineer, has opened an office at 2006 Pioneer Court, San Mateo, Cal.

Firm Changes

Battey & Childs, engineering-architectural firm, has changed from a partnership to a corporation. Leonard C. Childs is president and Robert J. Wier is vice president; Paul L. Battey, former partner, is consultant. Offices are at 231 S. La Salle St., Chicago 4.

Holabird & Root is now the name of the firm formerly known as Holabird & Root & Burgee. The partners of the firm, at 180 N. Wabash Ave., Chicago 1, are John W. Root, William Holabird, Helmuth Bartsch, Harry F. Manning, Bernard H. Bradley.

The consulting engineering firm of Ketchum & Konkel, 730 Kalamath St., Denver 4, announces that James M. Hastings has been named a partner and that the company name has been changed to Ketchum, Konkel & Hastings.

John Kuykendall Monroe, architect, announces the partnership of John Kuykendall Monroe, Sr., Robert Grandy Irwin, and Robert Gordon Dunham. The firm, at 416 Security Life Bldg., Denver 2, is now known as Monroe, Irwin & Dunham, Architects.

Park & Yee, Engineers and Architects, 1507 S. King St., Honolulu, announces that Wayne F. Owens, A.I.A., has joined the staff as director of the architectural division. Mr. Owens formerly was an associate of Vladimir N. Ossipoff, F.A.I.A.

The firm of Pereira & Luckman has been dissolved. Two firms have been formed: William L. Pereira & Associates, 1231 W. 5th St., Los Angeles 17; and Charles Luckman Associates, 9220 Sunset Blvd., Los Angeles 46, and 24 E. 51st St., New York 22.

Sherwood, Mills and Smith, Architects, 65 Broad St., Stamford, Conn., announces that the following associates have been admitted as partners: A. Raymond von Brock, A.I.A., Thomas A. Norton, Carrell S. McNulty, Jr., A.I.A., and Gray Taylor, A.I.A.

Voorhees Walker Smith Smith & Haines, 101 Park Ave., New York 17 (AR, Dec. '58, p. 240), announces that Perry Coke Smith, Benjamin Lane Smith, and Charles Haines are now the partners. Stephen F. Voorhees and Ralph Walker have withdrawn from the firm and are continuing as consultants.

New Addresses

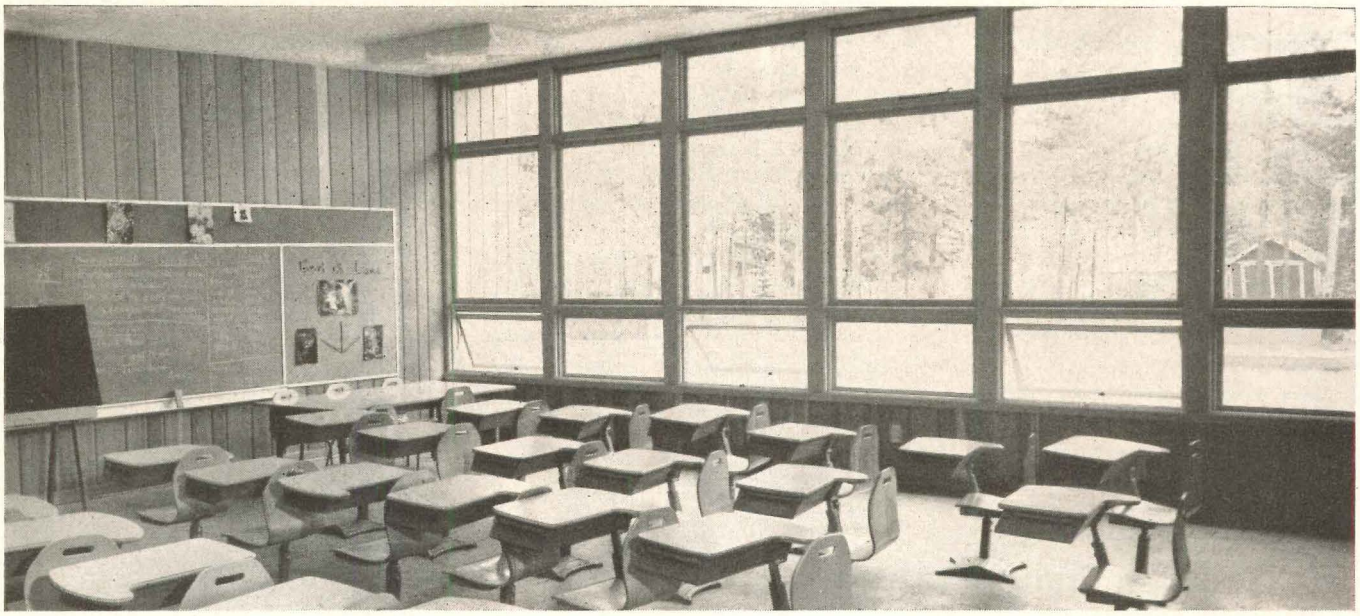
John Badgley, A.I.A., 1101 Marsh St., San Luis Obispo, Cal.

James M. Hunt, A.I.A., P. O. Box 710, Elberton, Ga.

National Council of Architectural Registration Boards, 418 Commerce Exchange Bldg., Oklahoma City.

Samuel I. Oshiver and Associates, Architects and Engineers, 1425 Walnut St., Philadelphia.

Urbahn, Brayton & Burrows, Architects, 635 Madison Ave., New York 22.



Natural light and controlled ventilation are provided for classrooms in Libby, Montana, school with BILT-WELL picture windows and BILT-WELL multiple-use awning windows.

Mr. Ahlskog is just one of many school building officials throughout the country who, working with the architect, found BILT-WELL Windows "right" in every respect for their requirements. Look into BILT-WELL's complete line of windows for *your* next school job.

BILT-WELL Multiple-use Cabinets, long recognized as one of the finest lines for residential kitchen and general storage use, are perfect for Home Economics classrooms, cafeteria kitchens and for every other school storage application.

The BILT-WELL Line—WINDOW UNITS, Double-hung, Awning, Casement, Basement, Storm and Screen. **CABINETS,** Kitchen, Multiple-use, Wardrobe, Storage, Vanity-Lavatory. **DOORS,** Exterior, Interior, Screen and Combination.

For complete technical information on BILT-WELL Products refer to the following sections in Sweet's Catalogs:

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Windows.....17c/Car
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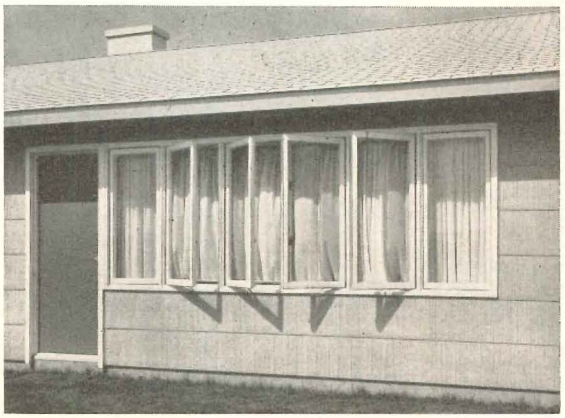
Build Well with BILT WELL WOOD WORK



Unique unitized sill offers unlimited possibilities for creative window arrangements in the structures you design. Units can be joined in any number of combinations without the necessity of installing long, cumbersome sills. New concealed hinges provide sleek, uncluttered appearance.

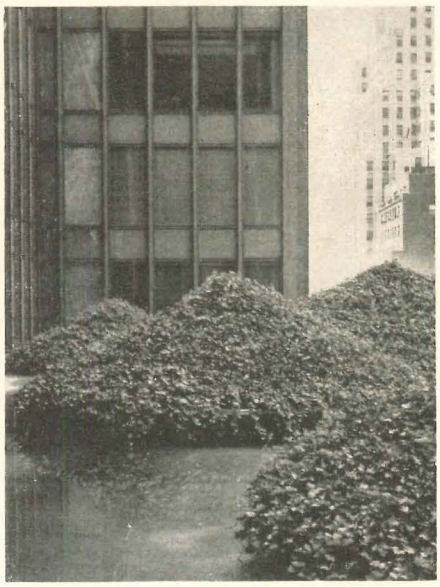
For Design Flexibility specify the all new
BILT-WELL Casement Window

Seagram's Terrace Gardens Sport Ivy Planted in a Light Mix

The fifth-floor north and south terraces of the Seagram Building in New York (AR, July '58) are now embellished with gardens conceived by the architects to give people looking down from higher floors a restful, pleasant view.

Karl Linn, landscape architect, was asked to plan ivy gardens on both terraces that would require only minimum maintenance and would not add much weight to the load already carried by the structural frame. Ivy was selected for its evergreen appearance and its hardy nature, tolerant of air pollution.

The architects decided that the view from above would make necessary articulated forms which would stand out sharply and not merge into the background. They therefore thought of conical frames to hold planting boxes of various sizes. Mr. Linn evolved light wooden structures with tiers of aluminum; five of these frames, with diameters ranging from 12 to 28 ft, were spaced on each terrace.



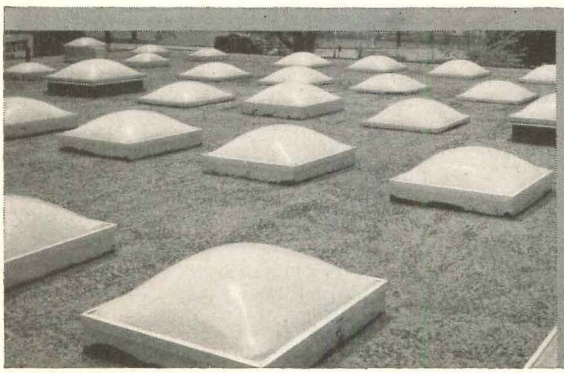
Finished garden on a fifth-floor terrace of Seagram Building gives a pleasant downview from windows above

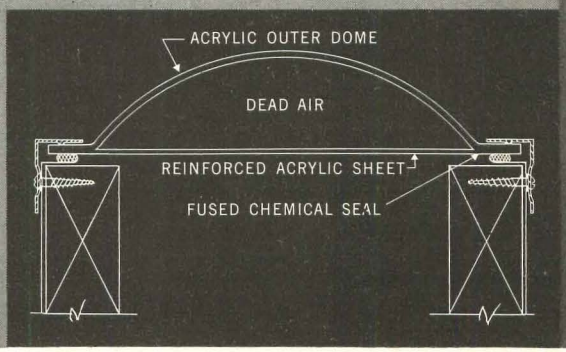
The soil mixture had to be very light in weight but hold moisture well, have good aeration and good insulation qualities for weather extremes and last a long time. With the assistance of the department of horticulture of Rutgers University, Mr. Linn developed a planting formula whose key ingredient was a horticultural perlite—a white, very light volcanic material that has been expanded under heat to form tiny particles. The formula was mixed by Meadowbrook Nurseries, Englewood, N. J., the company that installed the ivy plants. According to Mr. Linn, this perlite mixture weighs only 40 lbs per cu ft, compared to the 125 lbs per cu ft of the usual soil and peat moss mixes.

Two layers of filtering barrier material were placed at the bottom of each planting bin, then the mix, which was tamped down.

Workman spreading ivy runners out conically between planting boxes to give an immediate finished effect. Next, ivy was attached to wire mesh to prevent it from being blown out of position

GOOD DAYLIGHTING DESIGN STARTS HERE...





The NEW Wascolite Sealed Double Dome provides dead air insulation that eliminates condensation and drops heat loss to the minimum. Latest development of Wasco research, the Sealed Double Dome combines the superior weathering properties of an acrylic Skydome with a stable, strong base sheet of fiber-glass reinforced acrylic — the two chemically fused into one unit. Available for curb mounting or as a self-flashing unit. See Sweet's Architectural File 20a/Wa

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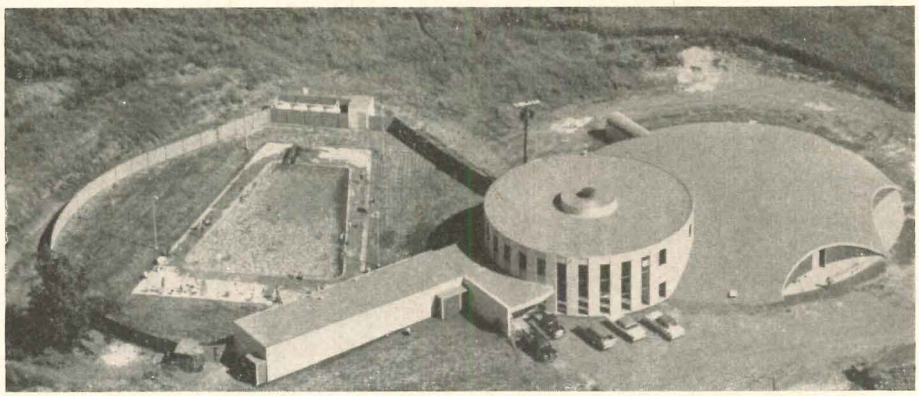
Intersecting Circular Buildings Main Feature of Elks Lodge

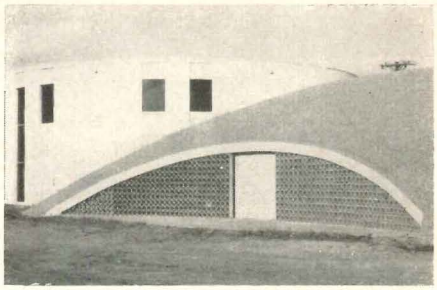
Two intersecting circular buildings form the new Elks Lodge No. 946 in Tulsa, Okla. Ryan and Roark & Associates were the architects and engineers and the Dyer Construction Company the general contractor.

The aerial view shows the pool and dressing-room building connected with the center structure containing lobby, offices, lounges, kitchen, snack bar, toilet facilities. The thin-shell concrete dome at right houses the 10,000-sq-ft lodge-ballroom.



The architects were given a budget of $250,000 and requirements that added up to 24,000 sq ft. They decided on circular buildings to eliminate long corridors. Lodge members were dubious at first, but voted unanimously to accept the circular plans after they had seen a model. Incidentally, from commissioning of the architects until completion club membership jumped from 570 to 1306.

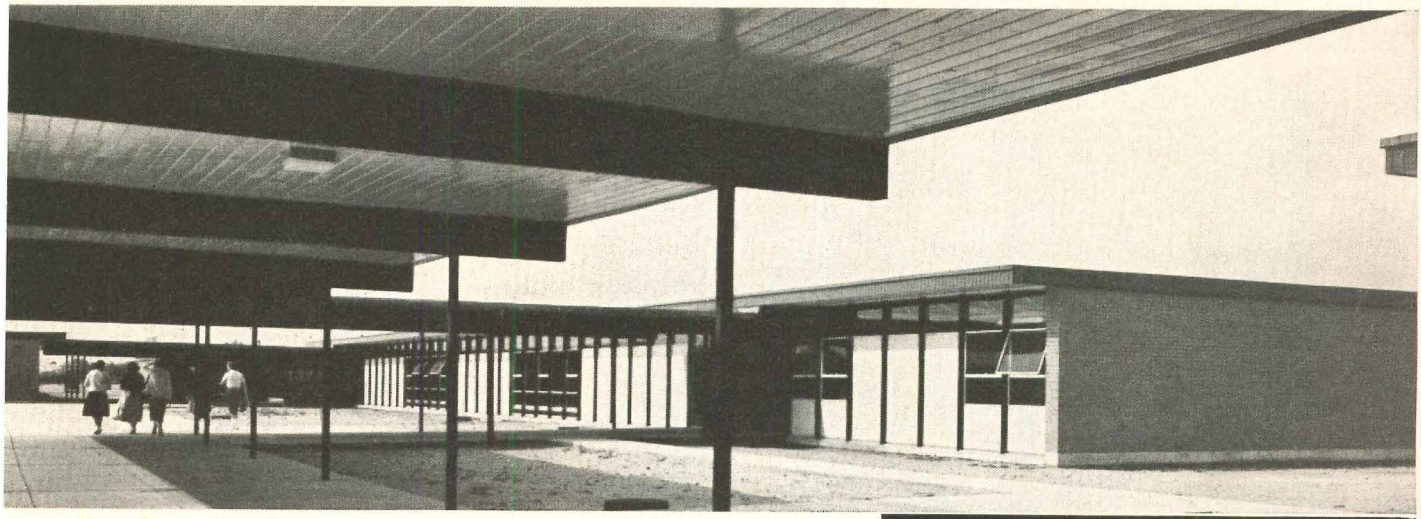
The walls of the lodge-ballroom are 12 ins. thick at ground level and 4 ins. thick at the 20-ft-high center.



The dome's outside diameter is 130 ft. Prestressed steel bars projecting from a central concrete mass underground and fanning out to perimeter points restrain the thrust of the dome. Each of the three openings has a double door with glass shaded by hexagonal tiles on either side.

The two-story center structure, 75 ft in diameter, intersects 38 ft into the dome. The walls are lightweight concrete masonry; a core, 20 ft in diameter, houses heating and cooling equipment.

Chosen for 176 new school buildings by 102 well-known architects — CURTIS New Londoner Doors

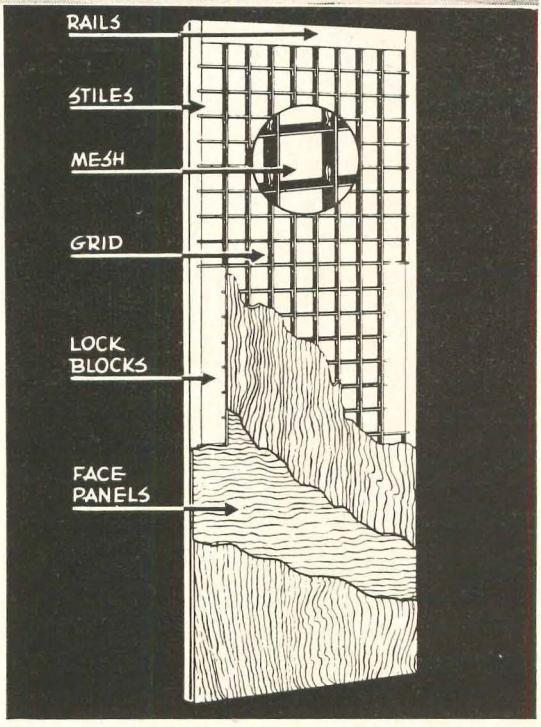


Exterior view—Forest Hills High School, Grand Rapids, Michigan

For their exceptional beauty—and their *guaranteed quality*—Curtis New Londoner hollow-core flush doors are a favorite with architects who design schools, churches, hospitals and other public buildings.

New Londoner beauty comes from carefully selected face panels of native woods, matched with craftsmanlike care to create a harmonious grain pattern. New Londoner endurance is the result of the locked-in, all-wood interior core, made in the form of a grid for maximum structural strength. New Londoner doors thus do not warp or sag...are unaffected by heat, cold or humidity.

In addition, all Curtis New Londoner hollow-core flush doors and Curtis American solid-core flush doors are now available with Super Satin Surface® prefinish which permits finishing with stain or wax without use of prime coat.



Note this special all-wood core and grid.

SEND FOR THIS REVEALING LIST

This list of schools, hospitals, churches and other public buildings shows the widespread popularity of Curtis flush doors with architects all over the country. See, also, the Curtis section in SWEET'S ARCHITECTURAL CATALOG. Mail the coupon for your list today.

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Please send me your list of buildings for which Curtis New Londoner hollow-core doors are currently specified. Also please send information about Curtis New Londoner and Curtis American flush doors.

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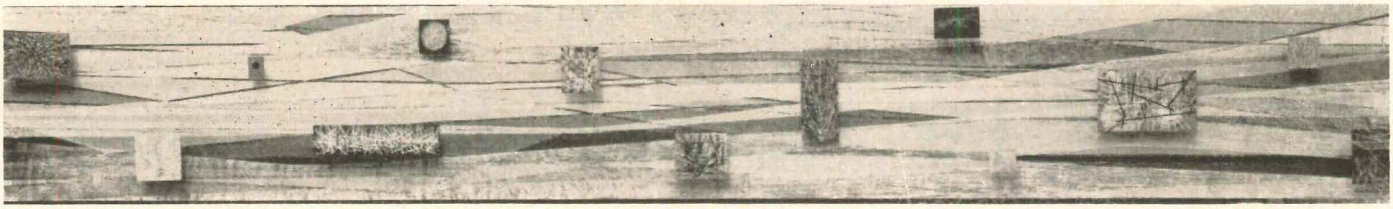
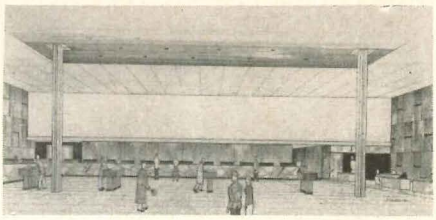
Individuality and Quality in doors, windows and FashionWood kitchens

Bank Mural Judged Best for Art, Integration With Interior

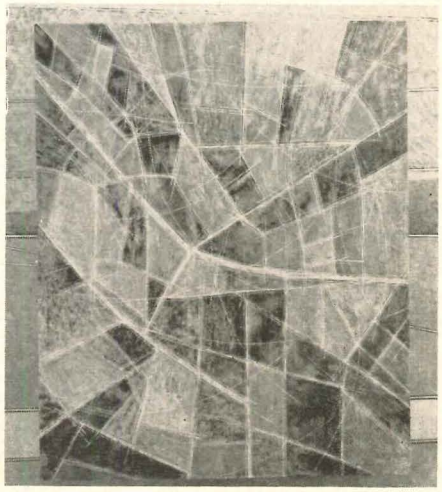
"The Riches of Nebraska" is the theme of what is believed to be the largest interior mural in the United States. It is to cover the 96-by-12-ft south wall, shown below, of the Continental National Bank, Lincoln, Neb. (architects: Davis & Wilson).

Jimmy Ernst, professor of design at Brooklyn College, is the artist whose mural was picked from six finalist entries which had been selected from a total of 157. Three of the jurors voted for Mr. Ernst's design; they were Richard J. Neutra, F.A.I.A.; John Entenza, editor, *Arts and Architecture;* Perry Rathbone, director, Boston Museum of Fine Arts. The two other votes, for other entries, were the public one, cast by Governor Victor Anderson of Nebraska, and the vote of the bank's mural committee. Each finalist received $2500 for two sketches; Mr. Ernst will be paid an additional $25,000 for the completed mural.





The entire mural is shown above and a 35-sq-ft detail (sixth panel from left) below. The three jurors who voted for this design complimented the "freshness and originality of the conception and the technique of focusing details on floating panels in several planes." They added that "the receding character of the painting will lend an effect of great space to the room. Moreover, the color composition enhances the effect of expansion into depth as well as being in harmony with the colors and materials of the interior structure."

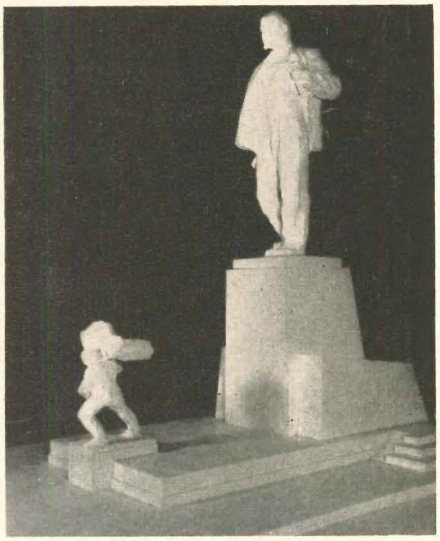


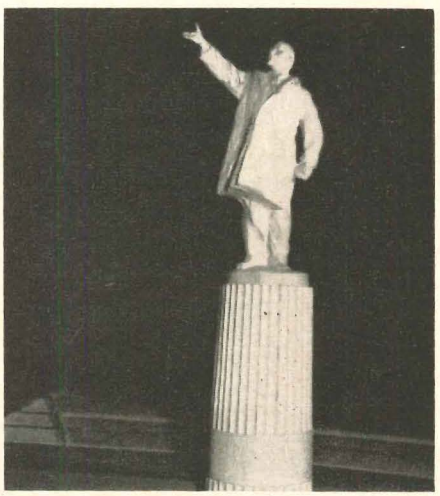
Soviet Announces Winners in Lenin Memorial Competition

The Soviet Union has announced its plans to construct another of its giant-scale monuments—this one a memorial to Lenin, to be built in Moscow on the Lenin Hills. The structure, to be sited on the banks of the Moskva River, will, by virtue of the height of the land and the size of the memorial, be readily visible from many parts of the city.

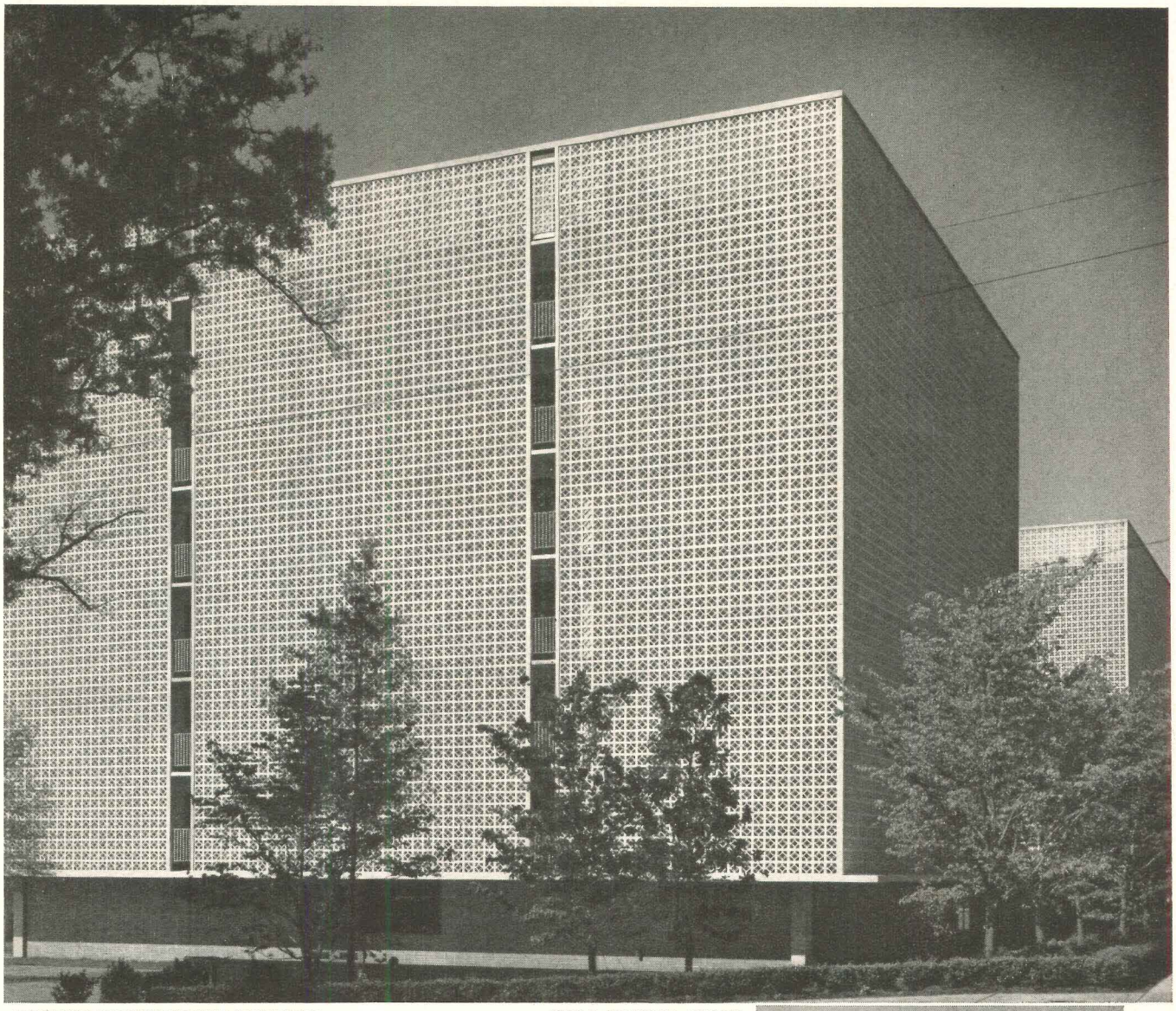
Although held in connection with the competition for a Palace of the Soviets, the memorial is an independent project, and will not be built on the same site as the Palace. (Pre-war plans put the monument on top of the Palace.) Entries were requested, however, from those teams which had participated in the Palace competition.

The winning projects, shown at the right, were chosen from a field of 120 entries.





Above: first prize in the All-Union competition for a Soviet Memorial to Lenin went to a project with the motto "Light," entered by sculptors N. P. Kibalnikov and P. I. Bondarenko. *Below, top:* second-prize winner "Unity," entered by architects R. A. Begunts, N. P. Grishin, N. A. Kovalchuk and V. G. Makarevich. *Below, bottom:* third-prize winner "Peace," by a team of sculptors and architects



UNIVERSITY OF SOUTH CAROLINA DORMITORIES
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EDWARD D. STONE, ASSOCIATE ARCHITECT

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weather stripping for
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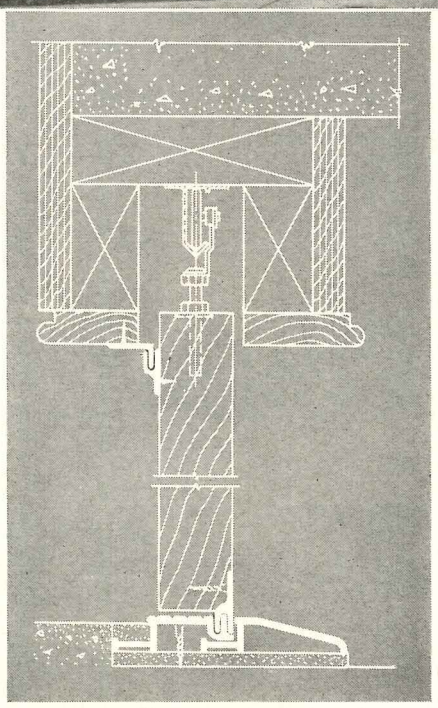
With the increased use of sliding doors, ZERO has devised Series #54 sliding door weather stripping which is effective, versatile and simple. This equipment provides positive interlocking weather stripping which allows easy operation of the sliding doors.

The detail at the right shows how this equipment was installed on 240 pairs of sliding doors in dormitories at the University of South Carolina. With overhead hangers the door hangs free and the weather stripping equipment guides, rather than supports the sliding doors.



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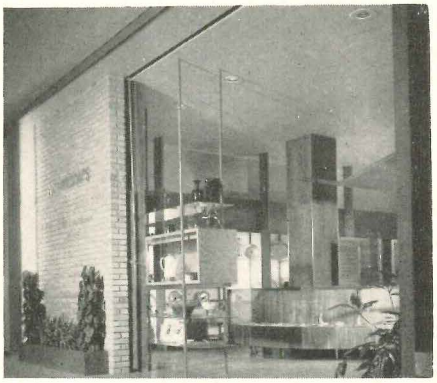
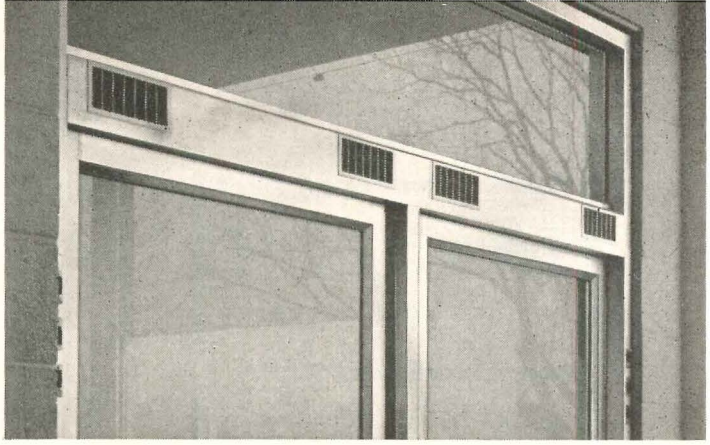


Shop for a Shopping Center: Designed to Invite

The Anderson Shop, one of some 70 stores under a single roof, was designed "to take full advantage of climate stability and a busy, high-traffic location." The china, glassware, furniture, and gift store, designed by David J. Griswold and Associates, Architects, is in the air conditioned Southdale Regional Shopping Center near Minneapolis (Victor Gruen Associates, architects).

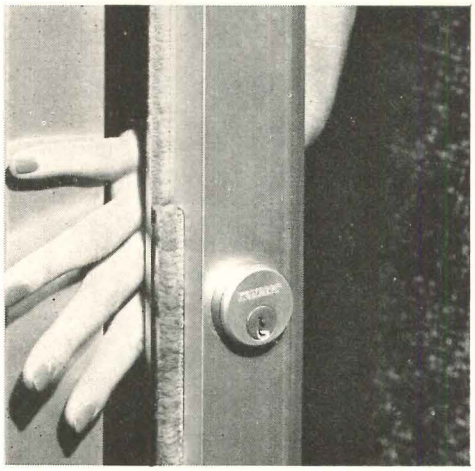
The architects took into account two special factors: the completely air conditioned surroundings and the high volume of pedestrian traffic through the center. Thus they dispensed with doors, providing only mesh screens to close the entrances at night; one slot shows at left in the illustration (above) of the main approach. Another doorless entrance (below) opens onto a passageway leading from a lower parking lot to the center court. Also shown below are the vertical display ports (see floor plan, next page) that are intended further to attract passers-by.

Walnut is a major part of the decorating scheme. Interior columns, fixtures, and wall areas are paneled in it, and the specially designed display shelves (see next page) are supported by walnut uprights. Also, the V-shaped dropped ceiling baffle near the front (see photo above) is of walnut. The "period" furniture room is an exception

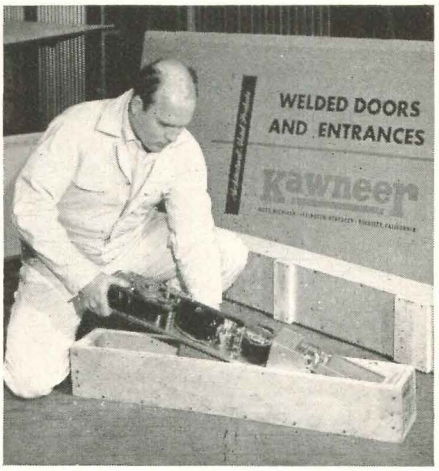


AND INSTALLATION

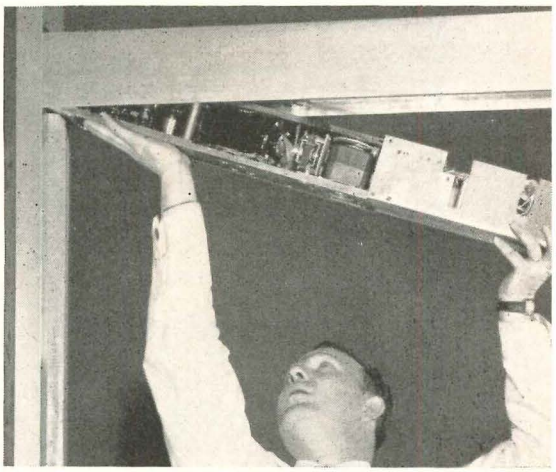
The clean look! Nothing projects out or down—no unsightly surface-mounted boxes, no air or hydraulic lines—to detract from the clean, uncluttered appearance of the modern, "narrow-stile" construction.



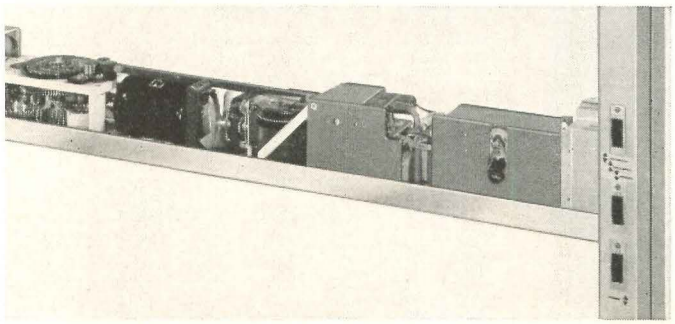
It's completely safe! It won't hit anyone . . . it won't hurt fingers—on either the "lock side," as shown, or the "pivot side." Safety mat stops door when someone has stepped on mat in direction of swing. Panic Break-A-Way lets persons go through entrance the "wrong way" in emergency. Door operates manually, should power fail.



No installation problems! No holes to dig (nothing to bury in floor). No remote operating mechanisms to provide for. No plumbing. Goes up as easily as a standard "narrow-stile" entrance. Plugs into any available 110-volt electrical outlet.



No service problems, either, because there is no "problem-solving," no field repairs. In less than 10 minutes the entire automatic operating mechanism can be removed, replaced with another, and be on its way to the shop for service.



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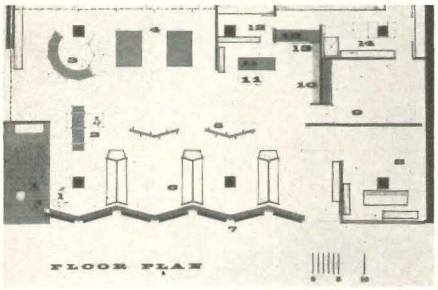
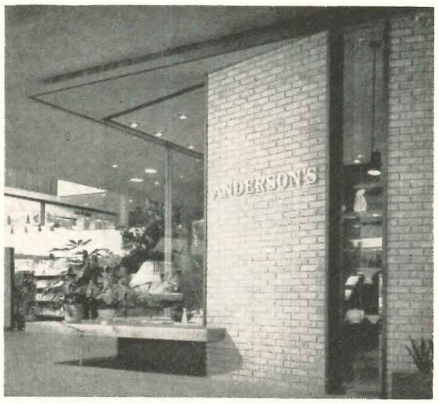
in that it is paneled in pine. Brass trim on the shelves and brass lighting fixtures add another note. Soft blue and sharp green and textured fabric wall covering are also used. Ceilings are of acoustic tile. The exterior walls are of pink brick.

Three large display "islands" seen endwise through the corridor ports give some seclusion for the selection of china and glass.

The president of the store, Alan Anderson, reports that its appearance does seem to invite people inside. Also, last year the shop was voted one of the three annual award winners in store design by *Gift and Art Buyer,* a trade publication.

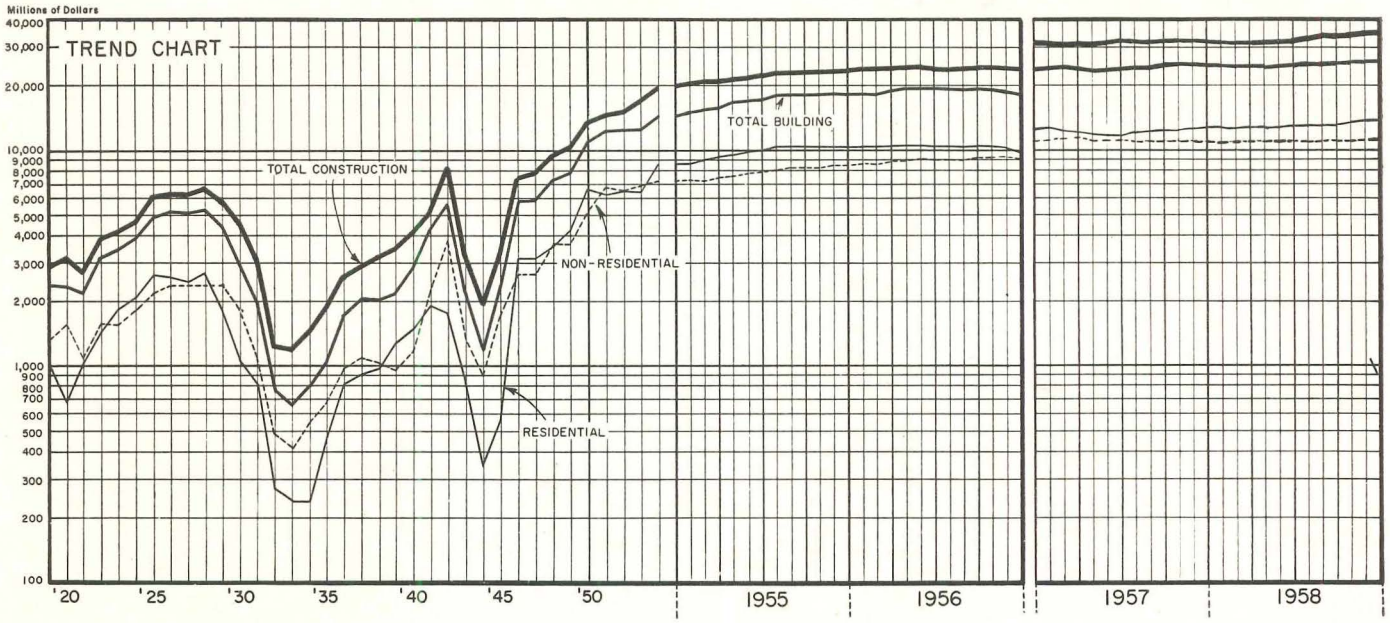


1. Feature display deck; 2. Gifts; 3. Jewelry; 4. Gifts; 5. Stemware; 6. China; 7. Corridor display ports; 8. Contemporary furniture; 9. Period furniture; 10. Cards; 11. Linens; 12. Office; 13. Wrapping station; 14. Stock



Current Trends in Construction

As Reflected in Contracts for Future Construction in the U.S. Reported and Tabulated by F. W. Dodge Corporation



1958 WAS ELEVENTH CONSECUTIVE RECORD YEAR

Contracts for future construction in 1958 came to the all-time high of $35,089,703,000, making the year the 11th consecutive record one, F. W. Dodge Corporation reported.

According to George Cline Smith, Dodge vice president and economist, the most remarkable feature of the 1958 contracts was the sharp rebound that began in April after a poor first quarter. "Despite a substantial decline in the early part of the year," Dr. Smith commented, "contracts for future construction in the later months not only recovered the ground that was lost but also set new all-time highs on several occasions and wound up with an annual total a full nine per cent greater than the previous record set in 1957. These gains in the country's largest fabricating industry played an important role in reversing the nationwide recession and supporting the current recovery."

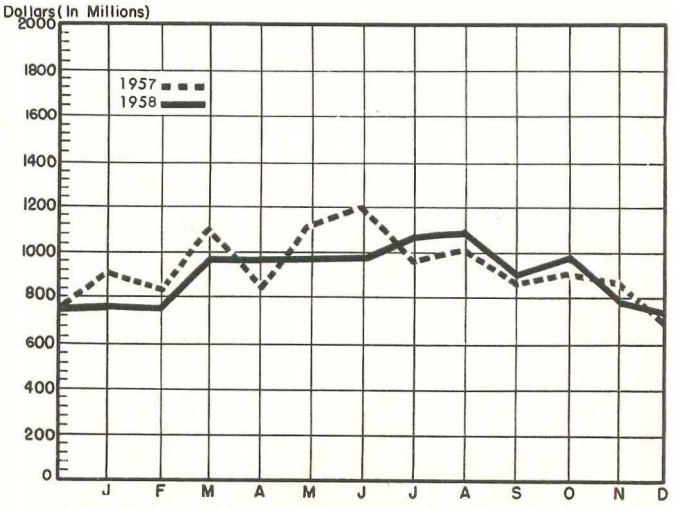
December's construction-contract total was $2,281,881,000, or 15 per cent more than the same month in 1957. All the major categories gained in December, but, as in other recent months, residential contracts were responsible for much of the increase. They totaled $981,012,000 in the month—29 per cent over December 1957. The number of dwelling units represented by these contracts came to 79,263—36 per cent over the month a year earlier. One- and two-family houses gained, as well as apartments.

Nonresidential December contracts amounted to $747,555,000, a gain of seven per cent over the same month in 1957. Commercial buildings, schools, and public buildings showed the largest increases, but manufacturing buildings continued well below the levels of a year earlier.

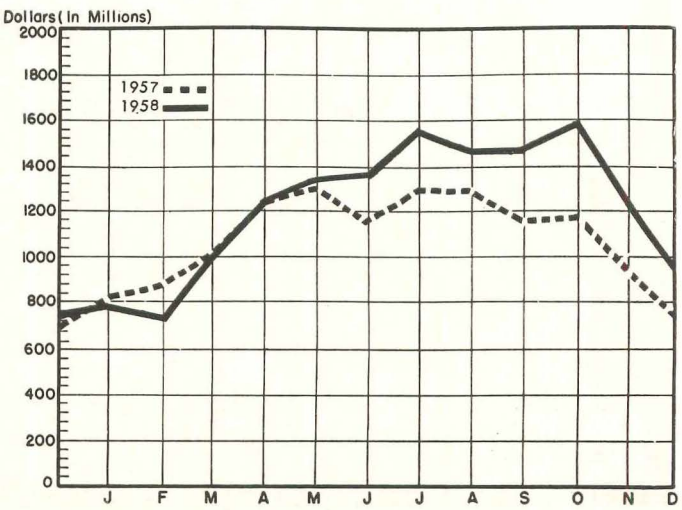
December's heavy engineering contracts came to $553,314,000, up five per cent from December 1957. Contracts for utilities dropped sharply, but this decrease was more than offset by substantial increases in public works, particularly highways.

For the year 1958 as a whole, totals, by categories, were: nonresidential, $10,948,334,000 (down three per cent from 1957); residential, $14,695,531,000 (up 13 per cent); heavy engineering, $9,445,838,000 (up 20 per cent).

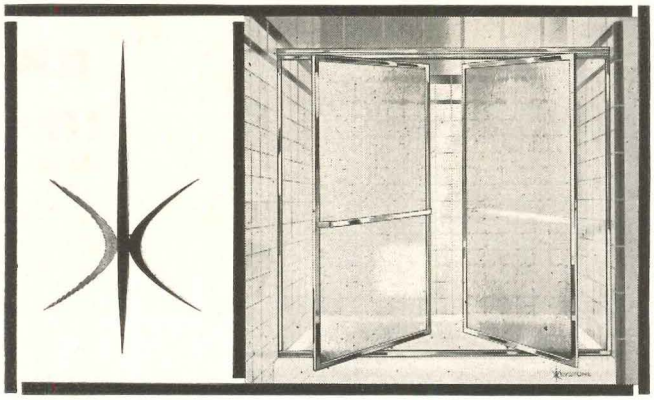
NONRESIDENTIAL BUILDING



RESIDENTIAL BUILDING



KEYSTONE PIVOT-DOR TUB ENCLOSURE



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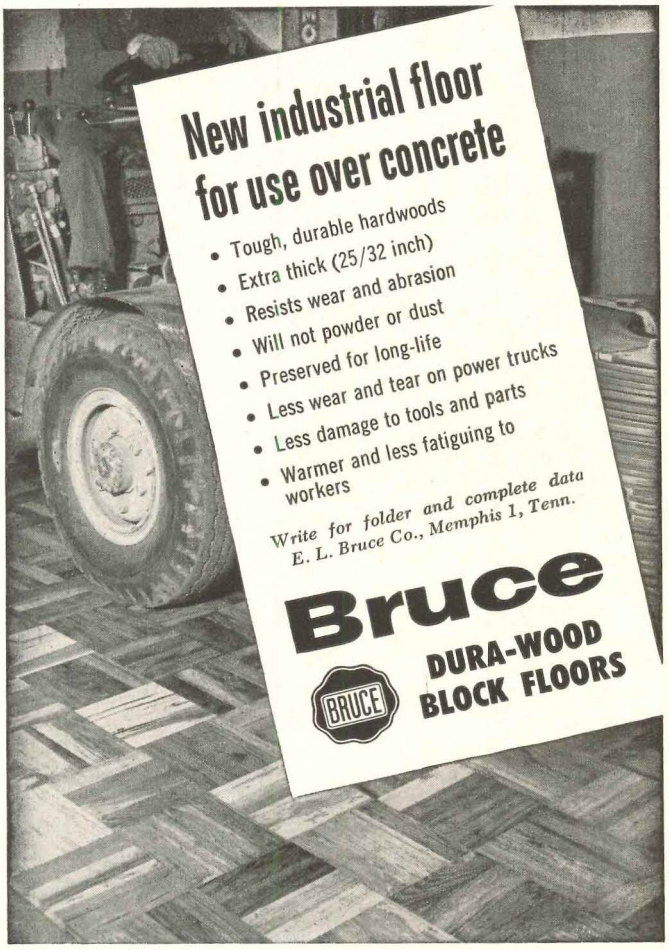
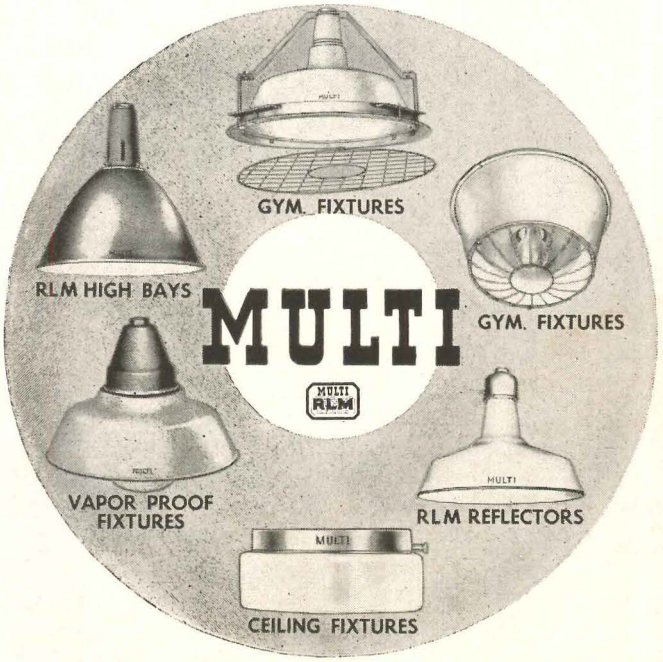


LIGHTING EQUIPMENT FOR SCHOOLS



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Required Reading

Paris . . . *cont. from page 64*

vision of a whole city. They appear instead as a kind of emergency surgery, a series of operations that were, even at their most brilliant, no substitute for attention to lasting good health. —CHARLES W. MOORE

Metropolitan Housing Problems

GOVERNMENT AND HOUSING IN METROPOLITAN AREAS. *By Edward C. Banfield and Morton Grodzins. McGraw-Hill Book Co., 330 W. 42nd St., New York 36. 177 pp. $6.50.*

This book is one in the noteworthy ACTION series in housing and community development. The authors analyze the problems of metropolitan areas, review the impediments to their solution, and suggest corrective measures.

The most important conclusion is: "Those who whistle up schemes for the integration of metropolitan governments whistle up the wrong tree. Changes in governmental policies—laws to subsidize the building of homes in central cities, for example—would do more to change the housing situation than any conceivable structural change at the metropolitan level." The authors also conclude that "the political impediments to large-scale renewal and housing programs are greater than the economic ones. There is no question that city dwellers could afford to put an end to slums and blight."

Racial and class segregation is revealed as creating a chasm between the central cities and their suburbs—a trend which, unless checked by drastic action, may make our cities into lower-class ethnic islands. A "model for action" is suggested, in which politics is not to be excluded, local governments are to strengthen their housing policies and collaborate with one another, and heavy emphasis is given to the role of the mayors of the central cities. It is also urged that federal responsibility must increase.

The book is must reading for all those interested in the problems of our cities. —ARTHUR FISHER

Cities Can Be Saved

THE EXPLODING METROPOLIS. *By the Editors of Fortune. Doubleday & Co., 575 Madison Ave., New York 22. 193 pp., illus. $3.95 (also paperbound Doubleday Anchor Book; 177 pp., illus., 95 cents).*

This book, "by people who like cities," gives in its six chapters (originally *Fortune* articles) an interesting and stimulating picture of city problems. An important chapter emphasizes that political reorganization is necessary before real improvement can come.

The Record Reports

Recreation and Its Facilities Explored by Leaders

The 40th National Recreation Congress, held in Atlantic City last fall, brought together experts in all aspects of the field and produced many ideas and facts of interest to architects and engineers. The meeting was sponsored by the National Recreation Association.

Leonard W. Mayo, executive director of the Association for the Aid of Crippled Children, advocated a broader view of the uses of recreational facilities in our troubled times. Recreation leaders, he said, can no longer think merely in terms of preventing delinquency.

Robert W. Crawford, recreation commissioner of the City of Philadelphia, spelled out some of the constructive aims. Saying that "unfortunately, many architects have had little or no experience in recreational planning and, as a result, we have stereotyped facilities," he listed some areas needing more thinking by both recreation directors and architects. These included: the need for more creative playground apparatus and the need not only for more playgrounds and parks, but also specialized facilities, such as overnight and day camps, swimming pools, ice rinks, stadiums, tennis courts, golf courses, outdoor civic auditoriums, community centers, zoos, aquariums, marinas, theaters, museums.

The specialized panels considered these matters in detail. For instance, some of the recreation leaders emphasized that a modern playground should include areas zoned for different ages; also, both athletic fields for active sports and quiet areas for older children are necessary.

At another panel, factors that should be considered in designing new playground equipment were listed: a sense of adventure, imaginative appeal, attractiveness, safety (no sharp edges, ample rails, proper surfacing), physical fitness, cost. The new kinds of equipment include: jet planes, railroad ties, tracks and pipes, an old fire truck, dragons, turtles. (But children's wants must be anticipated: a $4000 giraffe installed in one city has hardly been used.)

One of the most stormy panels was on planning areas and facilities for joint school and community use. A main conclusion was that the whole problem must be solved on the community level in each place, with complete cooperation from the beginning between school board and recreation department.

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