

Progressive Architecture

February 1971, A Reinhold Publication

Schools

10/31/90





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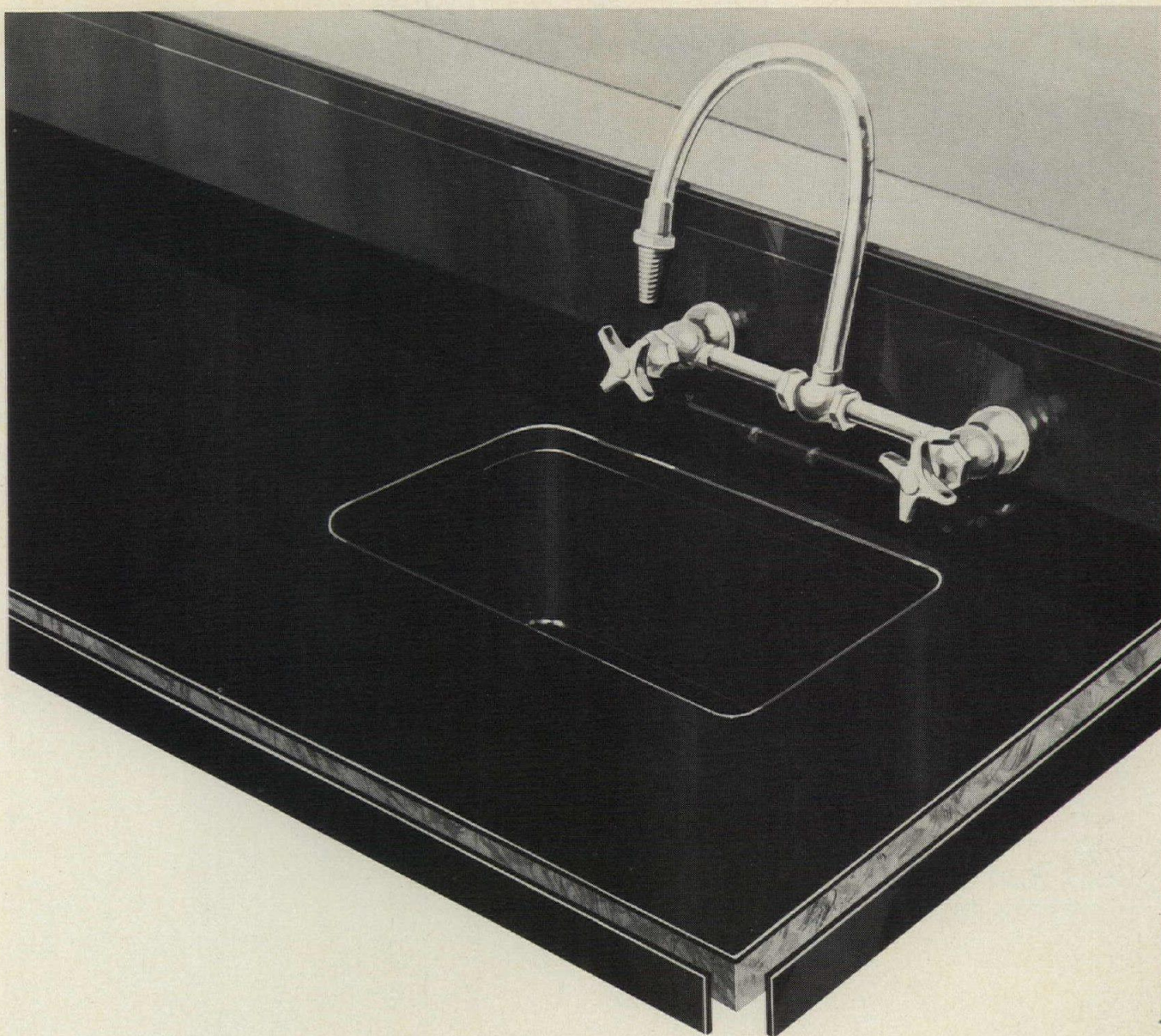
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"We've never had to replace one single faucet during the entire 8-year history of Marina City"

Robert R. Butler

Building Superintendent

And he's talking about more than 5000 faucets. Delta faucets.

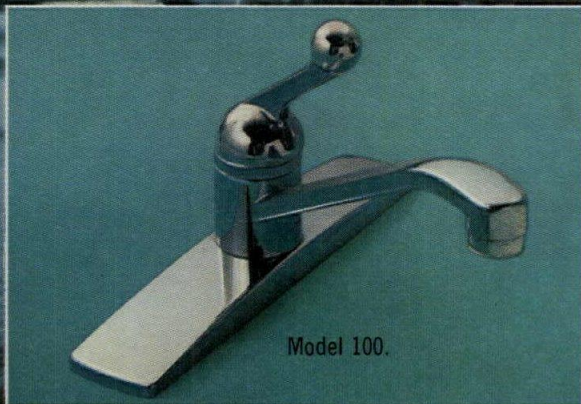
The success of Chicago's famous Marina City is no accident. It's the result of specifying Delta single-handle faucets exclusively in the building complex.

Mr. Butler, who's been at Marina City from its beginning, figures that in 8 years less than \$200 was spent to maintain over 5000 faucets. But low maintenance cost is just one of the advantages you get when you specify Delta single-handle faucets.

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Model 100.

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February 1971

Progressive Architecture

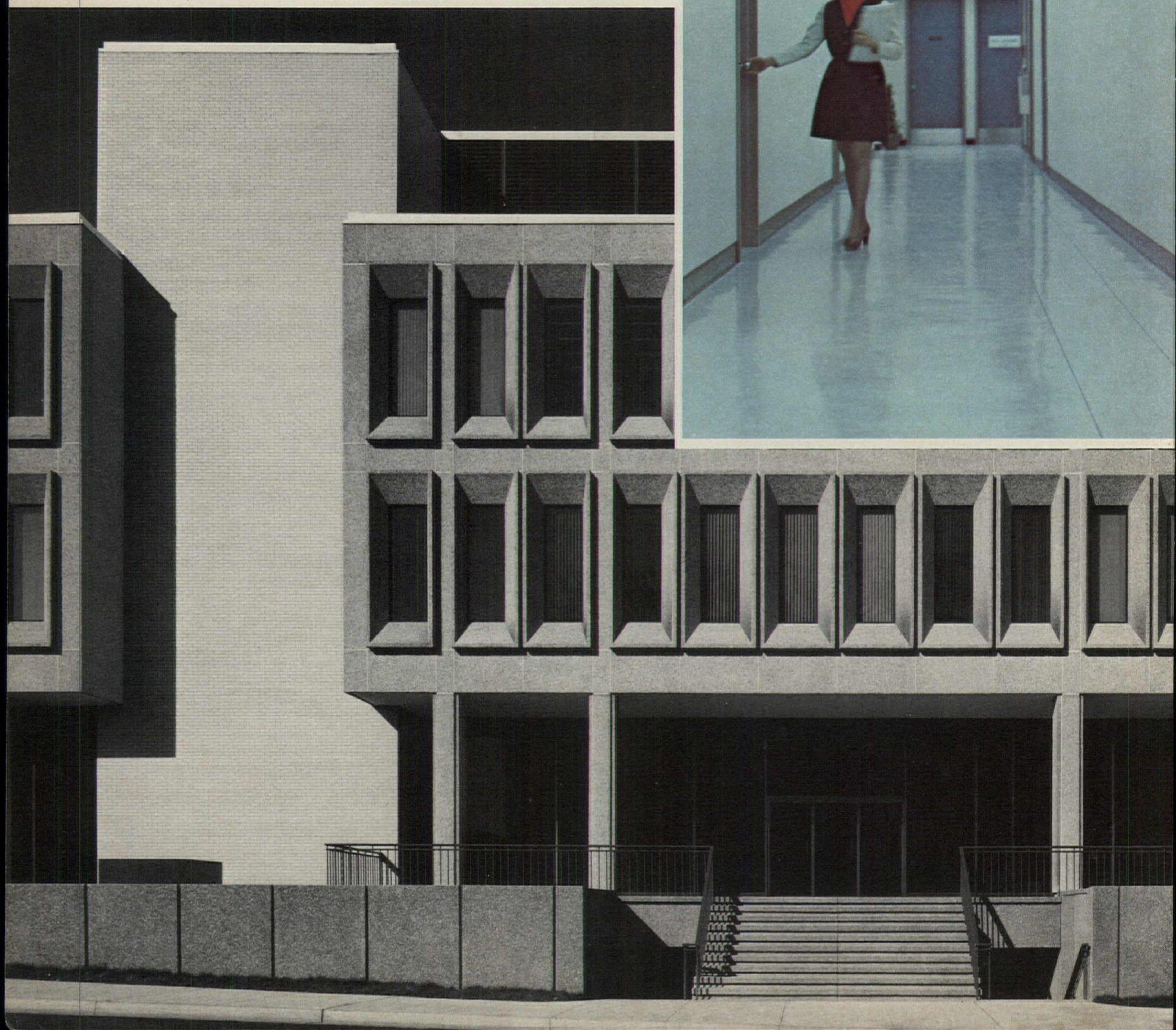
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To accommodate a fluid, open ended curriculum, new theories and practices in education are making traditional school furniture obsolete.
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Simple to erect, easy to relocate and efficient at enclosing space, domes and bubbles are more than just a fad in creating environments for learning.

Cover

Giddings Elementary School, Cleveland (p. 86) is one example of how architects are meeting today's educational programs. (Photo: Thom Abel.)



**What makes
this ceiling system
right for this job?**



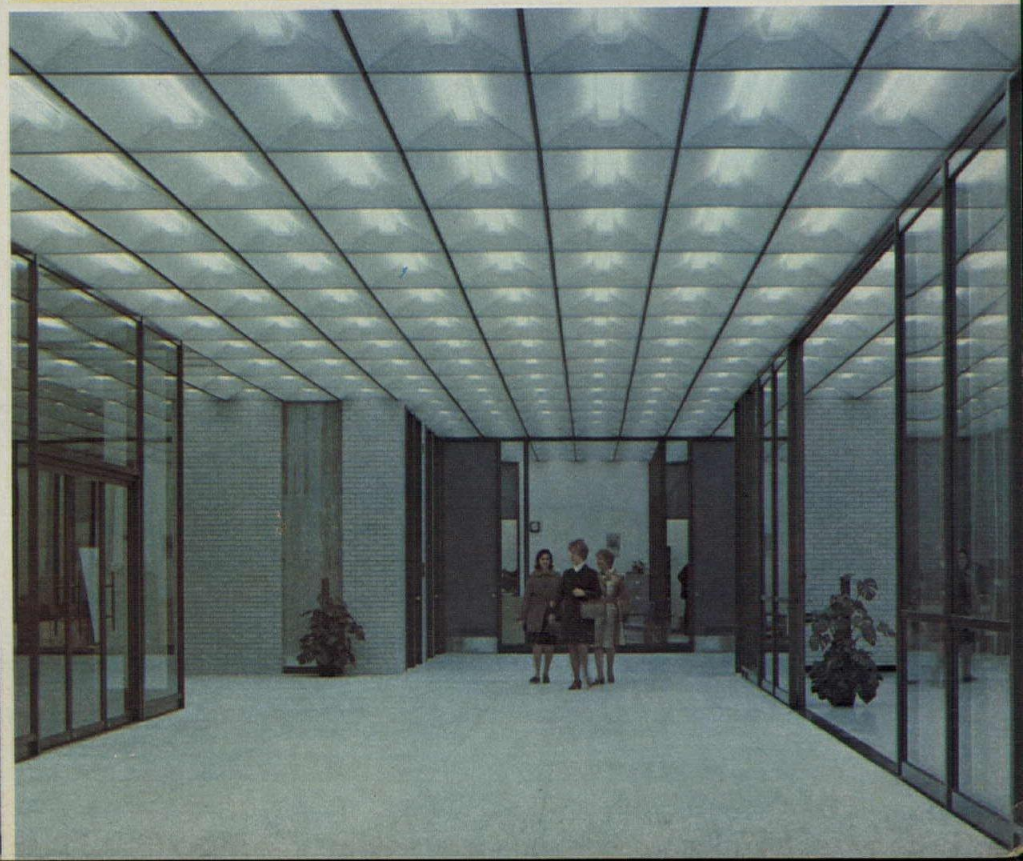
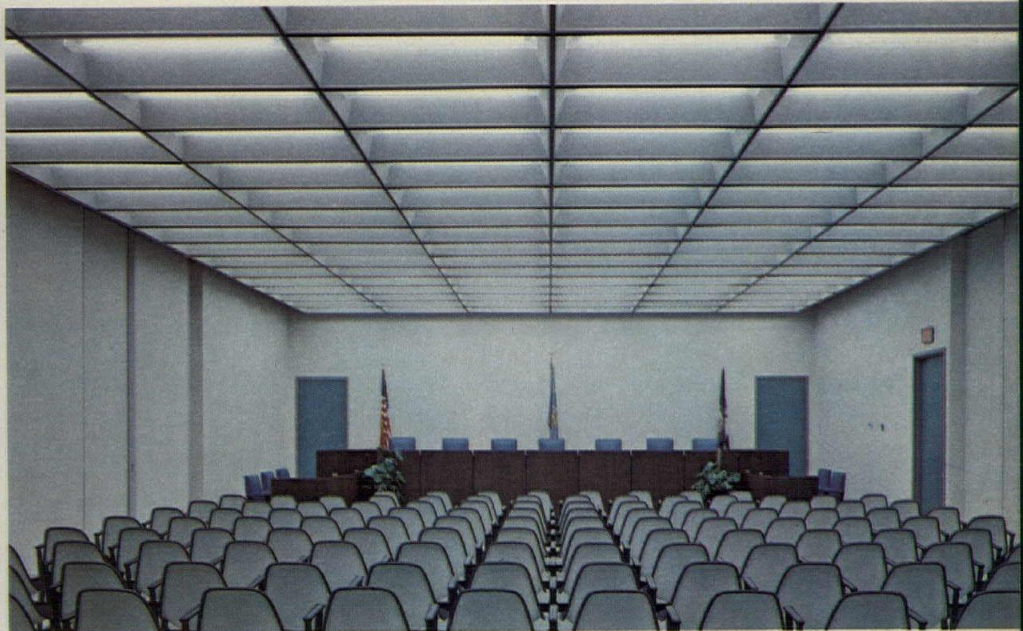
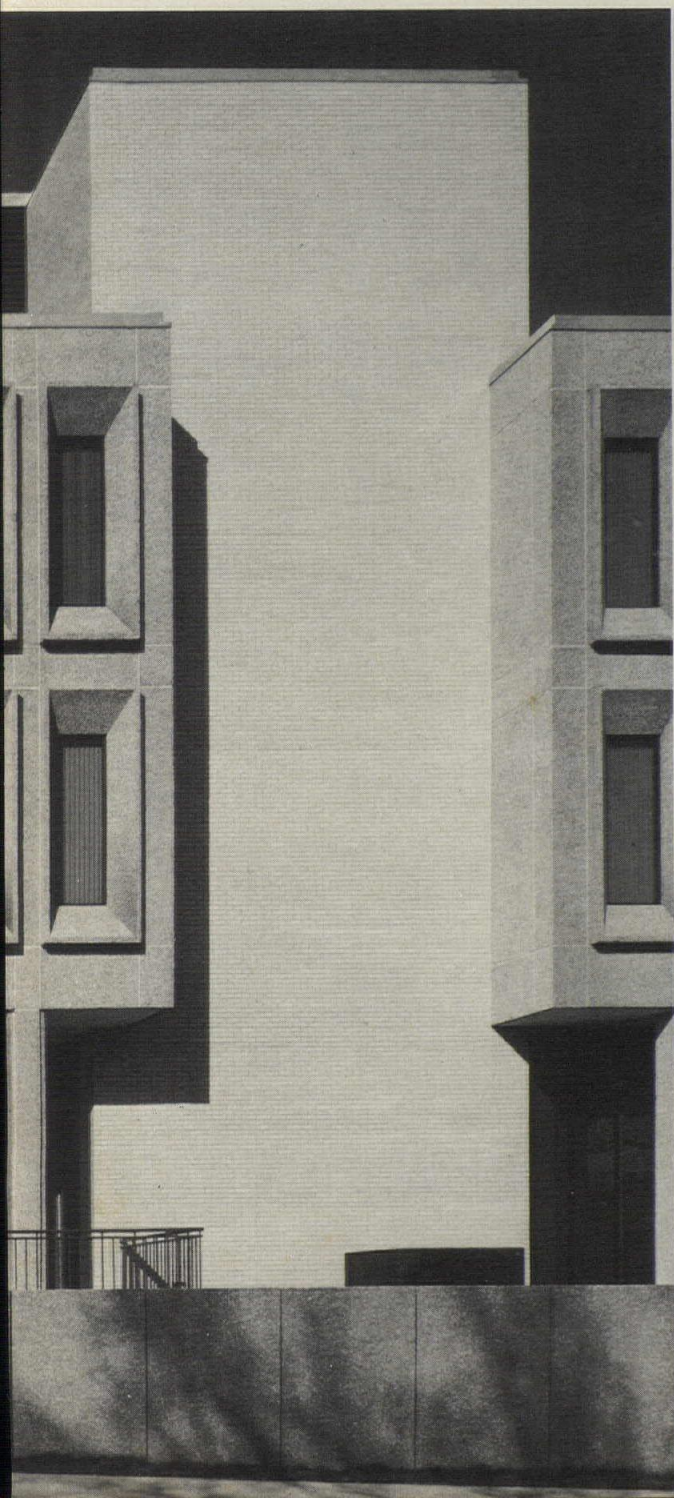
Roanoke Municipal Building ☐ **Architect-Engineer:** Hayes, Seay, Mattern & Mattern, Roanoke, Va. ☐ **General Contractor:** John W. Daniel & Company, Inc., Danville, Va.
☐ **Mechanical Contractor:** H. A. Gross, Inc., Roanoke, Va. ☐ **Electrical Contractor:** G. J. Hopkins, Inc., Roanoke, Va. ☐ **Ceiling Systems Contractor:** Shields, Inc., Roanoke, Va.

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Views

Status quo zoning for theaters

Dear Editor: You know what's wrong with your magazine? I'll tell you. There are only two critical opinions in it. The first is your own (which is usually excellent) and talks of the contents of the issue. The second are the letters from your readers which refer to prior magazine content and not the current issue.

For example, on "Zoning Rebuilds the Theater" (Dec. 1970, p. 76), I would have liked to have had a parallel critical commentary. If I had written a parallel critique on that article, I would have said this:

The theater district amendment has the same deleterious effect on the area it describes as does any other "status quo" zoning program. It may look different, it may sound different, but it acts the same.

Primarily the question is this. Should that area of the city continue to be the theater district? Theaters are extremely expensive. These particularly are repetitions of history in design and concept—they are of no interest to the builders except a way to get the carrot that was held out on the stick and that induced them to construct the theaters—and so they are not conceived with love and must of necessity be bastards.

I do not understand what is wrong with letting areas of the city die as the society and culture changes in its amoebic fashion. No one can afford a Broadway production in the depreciated buildings that already exist. How then can they afford to produce in theaters (this type) which are new and have the inflated costs of today?

The off-Broadway and the off-off-Broadway theaters are having much more impact than any theater in the area that is being protected. It is this writer's opinion

that one of the most deleterious programs was this effort to sustain a corpse in a new suit.

May I offer a suggestion to all city planners as well as to Mr. Weinstein and his group? Keep the efforts, intent and direction of the people of the city vital and let their old buildings die and be swept away.

Melvyn Kaufman
New York, N.Y.

Subscriber

Dear Editor: I enthusiastically add our firm's support to Mr. Hilberry's letter suggesting the taping of informational data from PROGRESSIVE ARCHITECTURE (Dec. 1970, p. 6).

Unlike Mr. Hilberry, it takes me only five minutes to get to work but a glance at the road map of the state of Montana will clearly indicate my other problem. Our practice encompasses the entire state and many hours are spent in the auto just getting to the client and project.

We would certainly subscribe to such a service.

R. Terry Johnson, AIA
Great Falls, Montana

Not the only leaders

Dear Editor: I must object to the incredible pretensions which possess architects like Mr. De Nigris and affect their view of their profession and of its role in shaping the environment (PA, Dec. 1970, p. 6).

I am not convinced that "the future quality of life in our communities will depend largely on the availability of qualified architects." Undoubtedly members of many other professions will play a role too, setting the stage for what architects

can, cannot, should, and should not do once they are asked to design a building project. Among these are landscape architects, ecologists, engineers, urban planners, city and county managers, tax assessors, attorneys, and the public, both as interested participants and through their elected representatives.

To suggest that "architects are perhaps the only leaders able to solve the problems now facing this nation" is to exhibit little awareness that the real problems facing this nation consist of weak and uninformed political leadership at all levels, taxation and revenue systems that encourage blight and inequities, racism, a lack of any semblance of social policies planning addressed to the needs of the poor, the aged, the young, and much of middle America, and abominable urban growth and land use policies.

All of these and other fundamental problems are documented at length in several Presidential commission reports (Kerner, Kaiser, Douglas, etc.). Architects who claim they know how to deal with these kinds of problems through the built form environment haven't done their homework and accordingly should not claim they are "unique" or "the only leaders. . . ." And, anyone representing any other profession who makes the same claims is equally guilty of self-delusions.

Warren W. Jones, AIP
Berkeley, Calif.

NCARB licensing

Dear Editor: I am deeply concerned with the possible results of liberalizing the architect's licensing exam (PA, Oct. 1970, p. 63). I feel that this liberalization will only increase the quantity and not the quality of the persons practicing architecture. To me, this would lower the standards and qualifications for the practice.

A college degree without a term of practical experience cannot produce more competent architects, nor can an abbreviated exam prove a person qualified to practice the complicated and ever expanding practice of architecture.

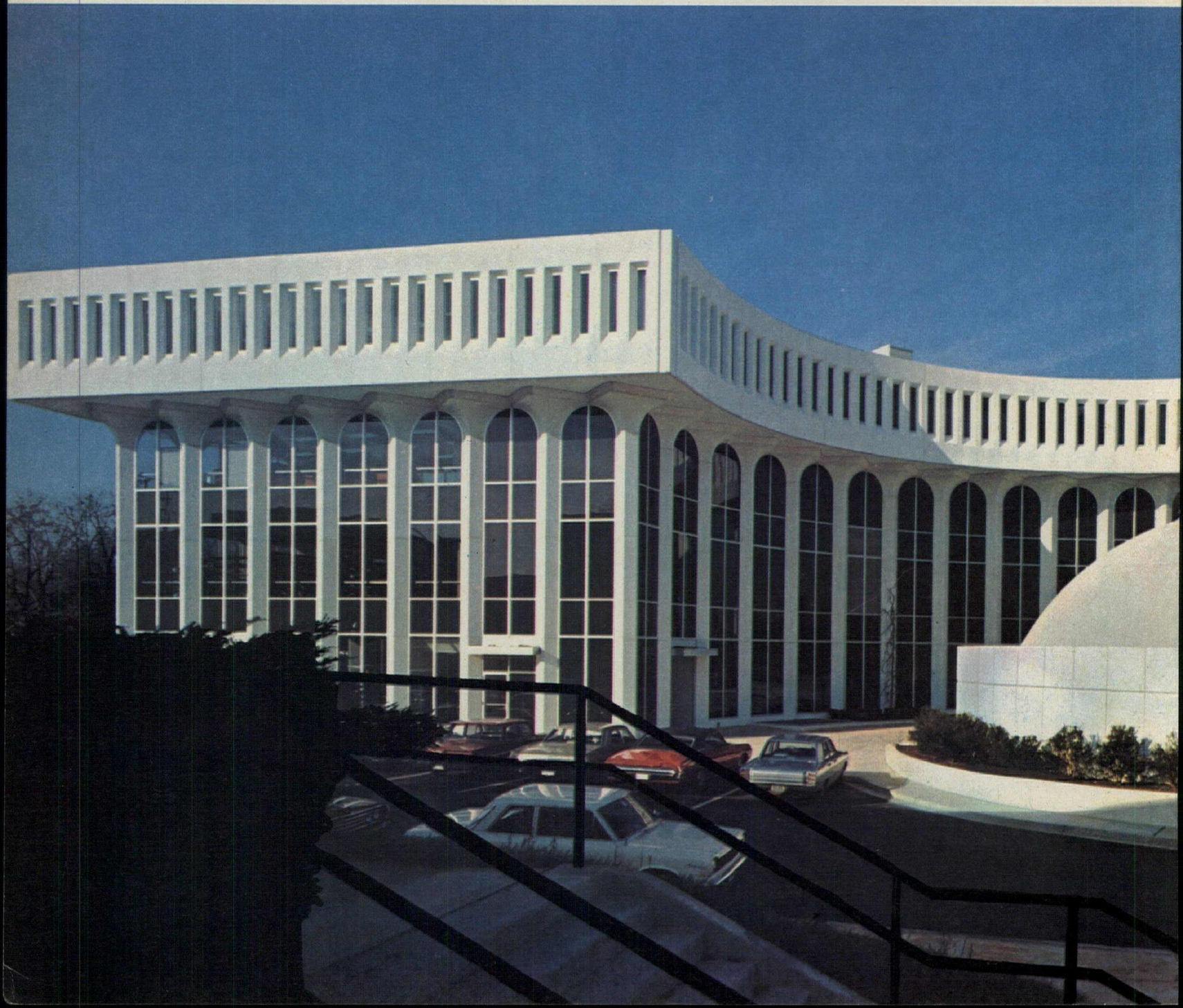
I urge my fellow practitioners to write the NCARB and the AIA to express their views and demand that any revisions in the NCARB licensing test content and procedure be voted on by all those whose qualifications are presently certified by the NCARB. Why should we allow so few to dictate policy which affects us so directly?

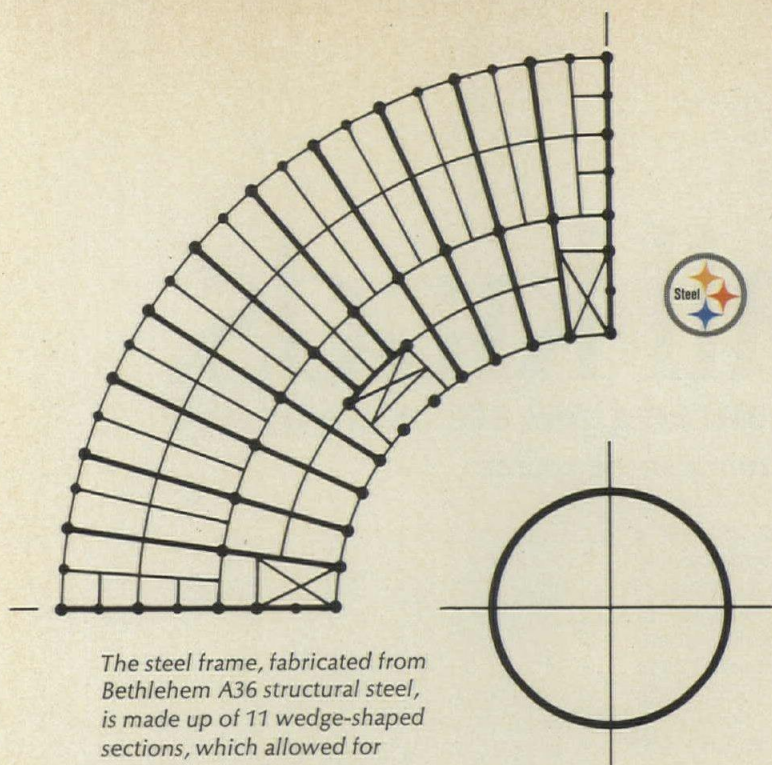
Glen H. Isaacs
Nashville, Tenn.

Cost of steel frame lowered

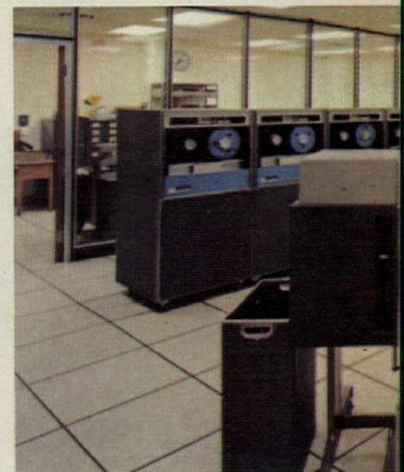
by designing 11 repetitive
wedge-shaped sections

Architects: Ward and Schneider, Cleveland, Ohio. Consulting engineers: Barber & Hoffman, Cleveland. General contractor: Hill and Kimmel, Inc., Silver Spring, Md. Steel fabricator: Arlington Iron Works, Arlington, Va.





The steel frame, fabricated from Bethlehem A36 structural steel, is made up of 11 wedge-shaped sections, which allowed for repetition—and cost-saving—in fabrication.



New headquarters building reflects Arlington County's pride in its educational system

The bond issue that authorized the Arlington County (Va.) Education Center called for a building that would "reflect the importance" of the 26,000-student school system. Steel helped the architects achieve a striking building, at a cost below the budget figure.

The basic shape of the Center is an arc. A circular, domed planetarium was used as a radius point, and grid lines extend from that point to form 11 equal wedge-shaped sections in the main building. Here is where steel came into its own. Because of the repetition of the wedge shapes, structural steel could be fabricated using the same shapes repetitiously, at a significant saving in cost. To form the curves of the building, the steel frame was cut and fit from short straight sections. Bethlehem A-36 structural steel was used, and all connections were bolted.

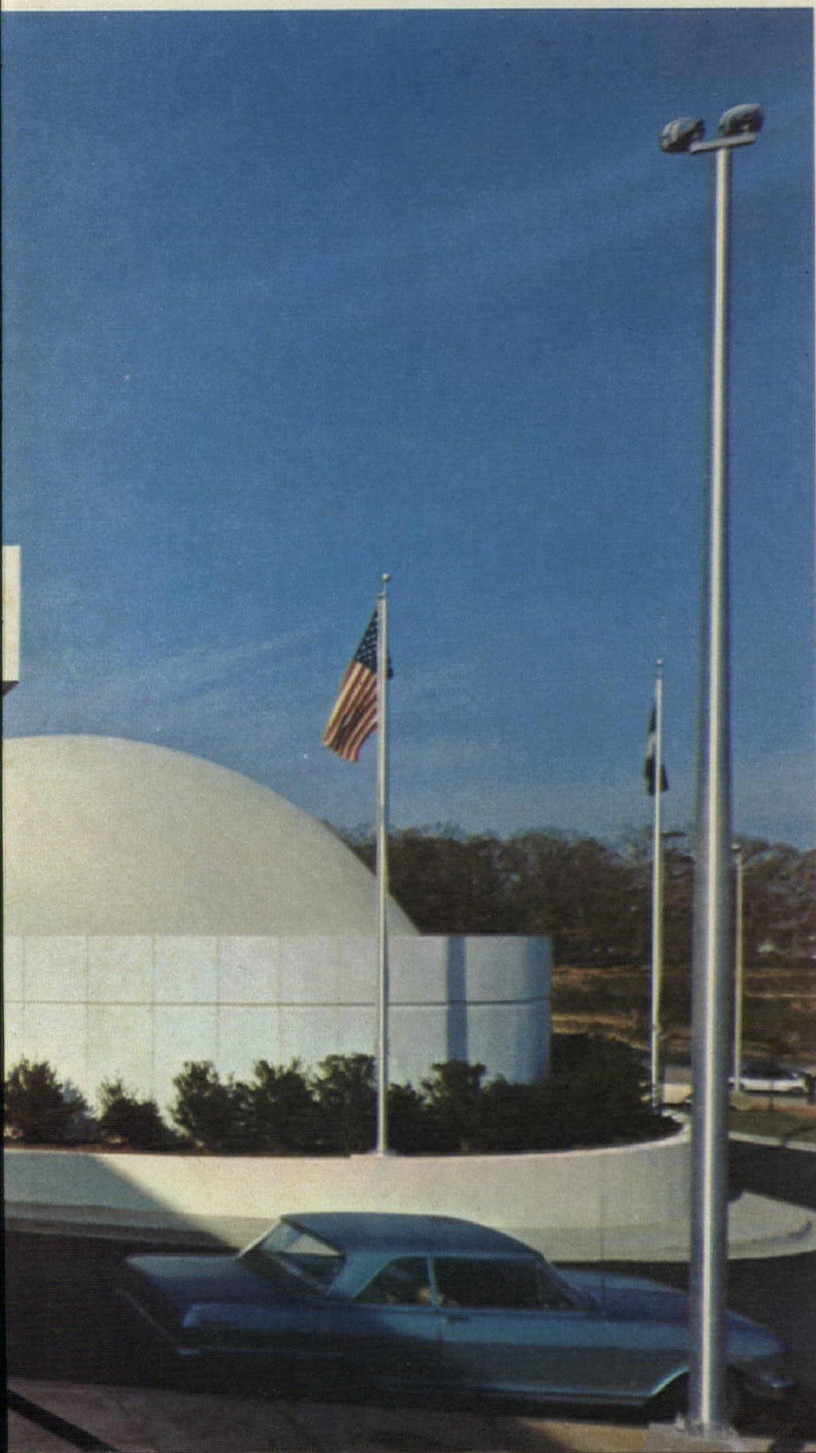
The building takes advantage of a naturally sloping site, allowing for five stories at the outward curve of the arc, four on the inner face. The lowest level contains the school system's data processing center, the ground floor has the rooms most often visited by the public, and the upper three floors house staff offices.

Steel is versatile, adaptable, economical. It can lighten a structure, give it shape, shorten construction time, provide more usable floor space. Want to discuss your next building? The Sales Engineer at the nearest Bethlehem office is available to you at any time.

BETHLEHEM STEEL



The Arlington County Education Center has 58,800 sq ft of floor space including the Planetarium building. The Center was built at a cost well below the budgeted figure.

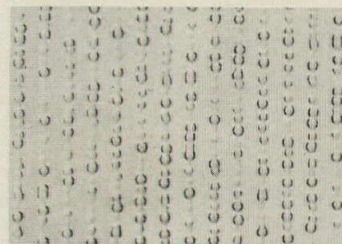


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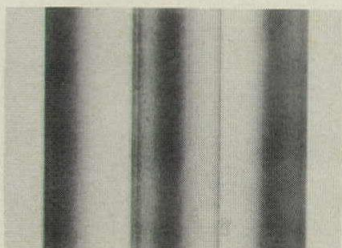
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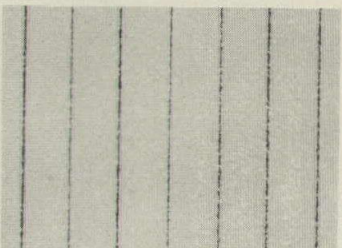
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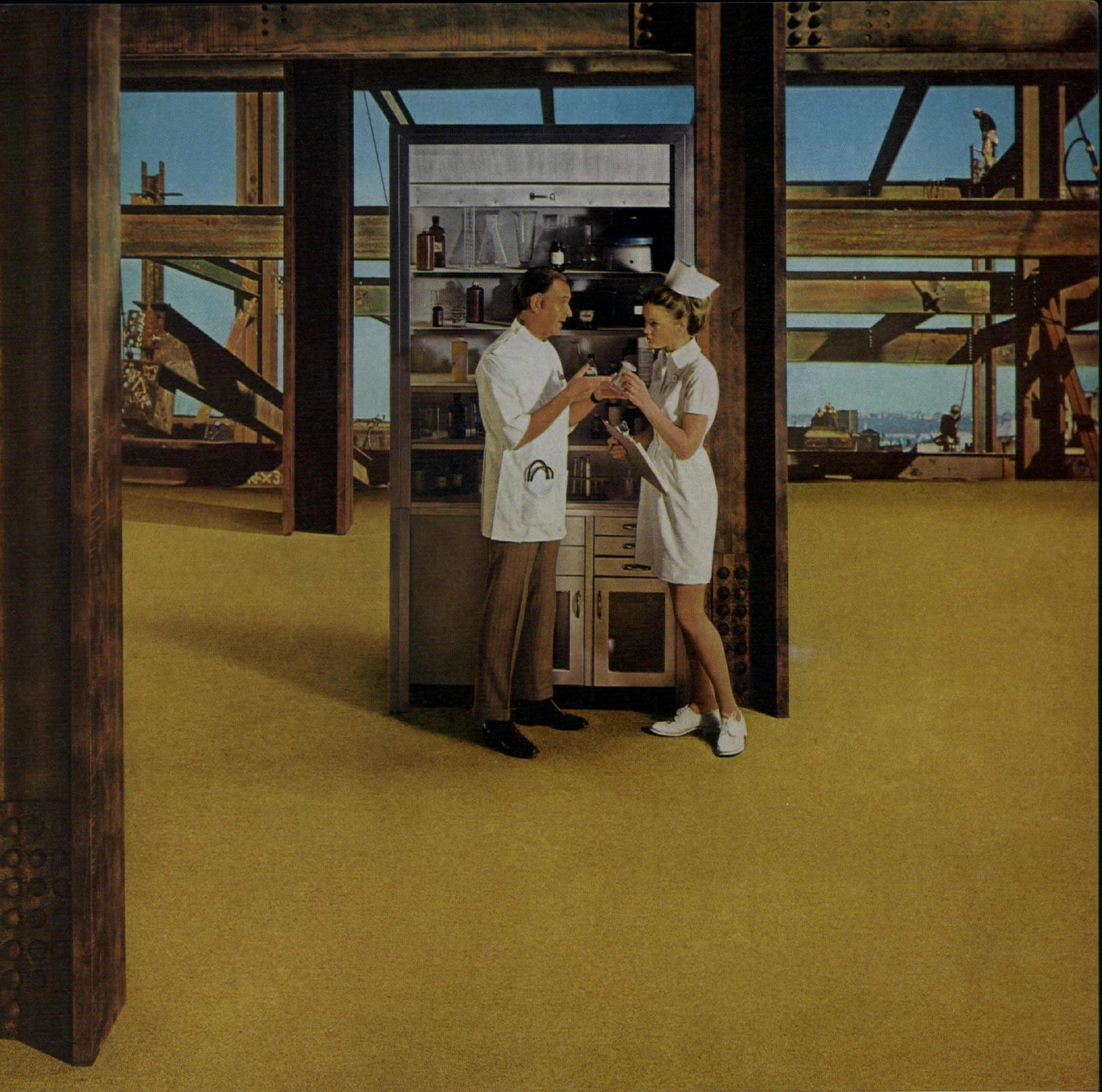
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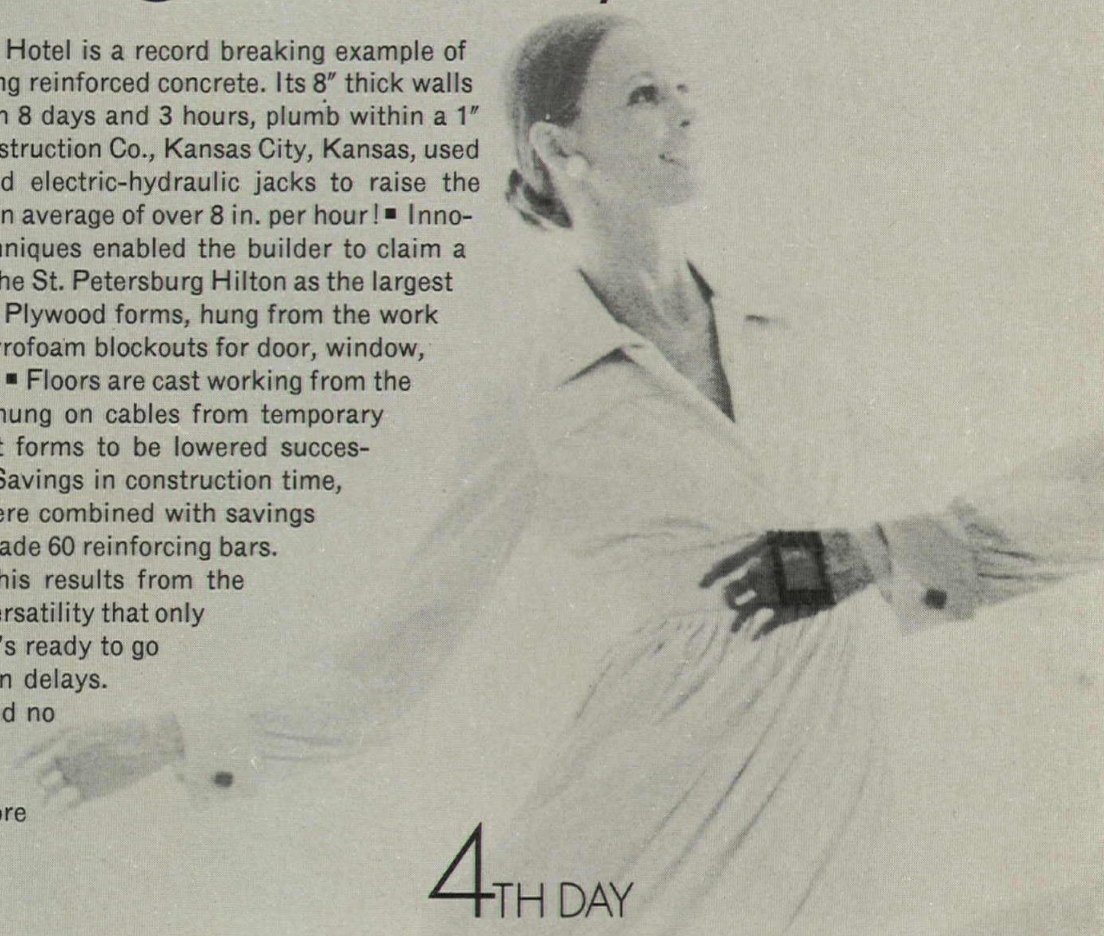
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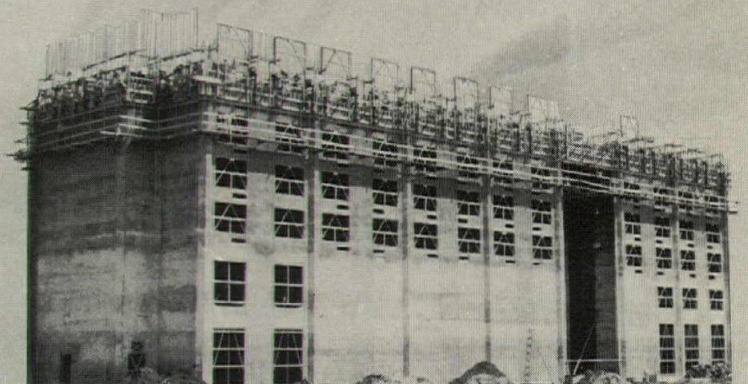
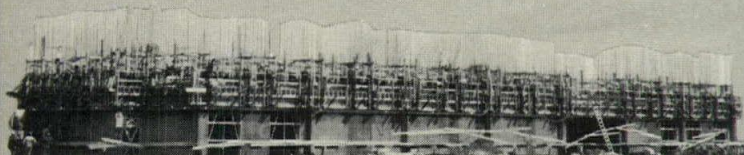
St. Petersburg's new Hilton Hotel is a record breaking example of quick construction speed using reinforced concrete. Its 8" thick walls were slip formed 136' high in 8 days and 3 hours, plumb within a 1" tolerance. R. D. Monroe Construction Co., Kansas City, Kansas, used more than 200 synchronized electric-hydraulic jacks to raise the 12,000 sq. ft. work platform an average of over 8 in. per hour! ■ Innovative systems-building techniques enabled the builder to claim a new construction record for the St. Petersburg Hilton as the largest slip formed building to date. Plywood forms, hung from the work platform, were fitted with styrofoam blockouts for door, window, and air conditioner openings. ■ Floors are cast working from the top down. Floor forms are hung on cables from temporary steel beams. Sleeves permit forms to be lowered successively as each floor is cast. Savings in construction time, formwork and scaffolding were combined with savings in material through use of Grade 60 reinforcing bars.

■ Construction speed like this results from the immediate availability and versatility that only reinforced concrete offers. It's ready to go when you are. No fabrication delays. No waiting for materials. And no limit to design possibilities. You'll find no other structural framing system has more to offer.



4TH DAY

2ND DAY



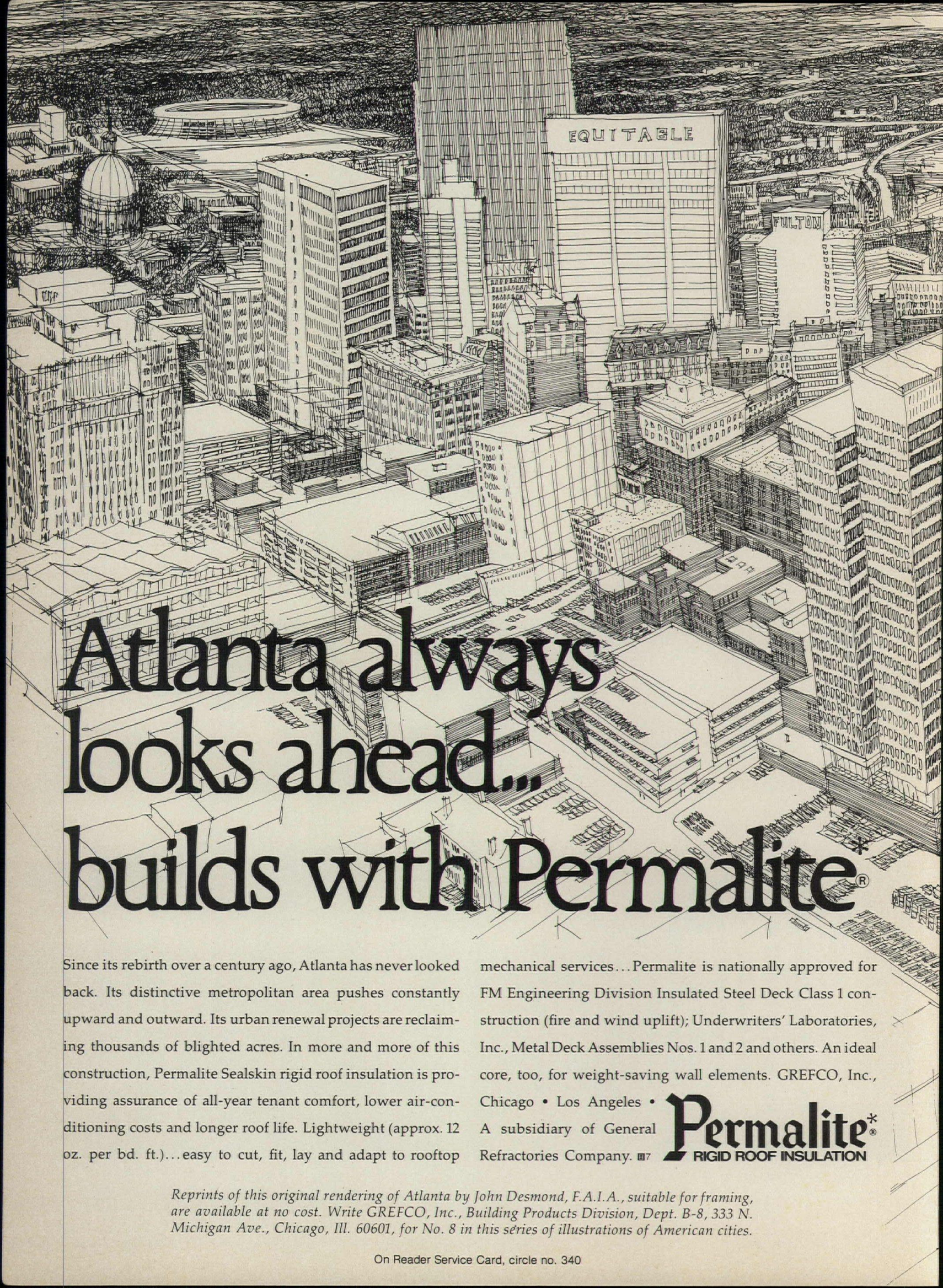


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8TH DAY

6TH DAY

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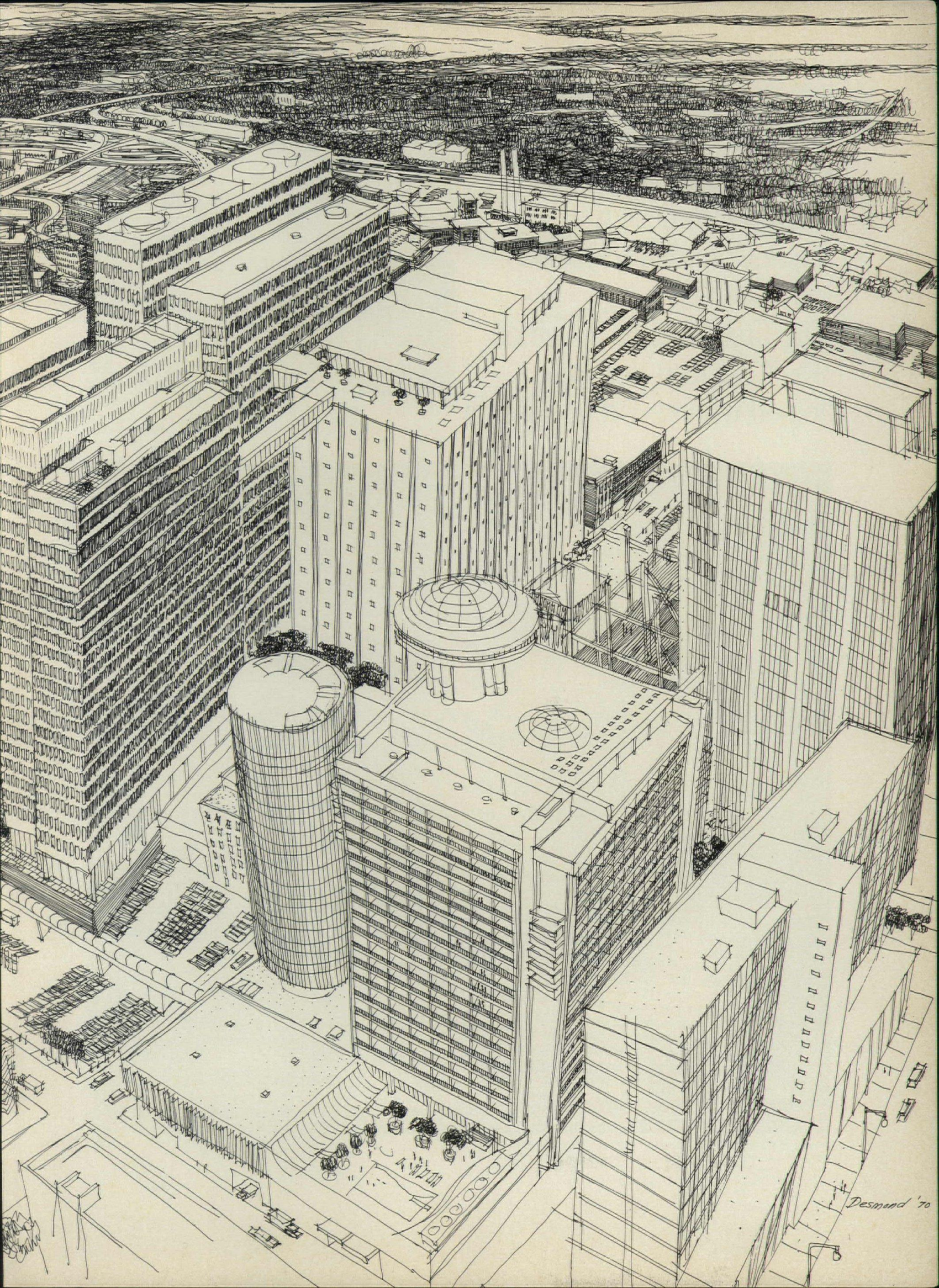
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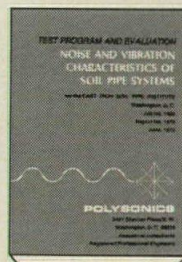
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**The first thing he specified
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The owners of this luxury high-rise cooperative wanted to make certain that tenants wouldn't be harassed by a noisy plumbing system. Wisely, they employed an acoustical engineer, and of course he specified permanent Cast Iron Soil Pipe—"the quiet pipe"—joined with gaskets of Du Pont neoprene. A two year research study proved it the quietest DWV system.



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Watergate Complex, Washington, D.C. Architects: Luigi Moretti—Elmore & Fischer. Owner-Developer: Watergate Improvement Associates. General Contractor: Watergate Construction Corporation. Acoustical Consultants: Polysonics Acoustical Engineers.

Making headlines

Direct Jute Glue-Down Carpet Used in New U.S. Steel Building



Double jute-backed carpet being installed directly on concrete sub-floor coated with adhesive.

The fast-growing concept of direct glue-down installation of double jute-backed carpets is being utilized in the new United States Steel Building in Pittsburgh. This is reported to be one of the largest single carpet installations on record, encompassing about 130,000 sq. yds. Occupancy of floors on an individual basis began in September.

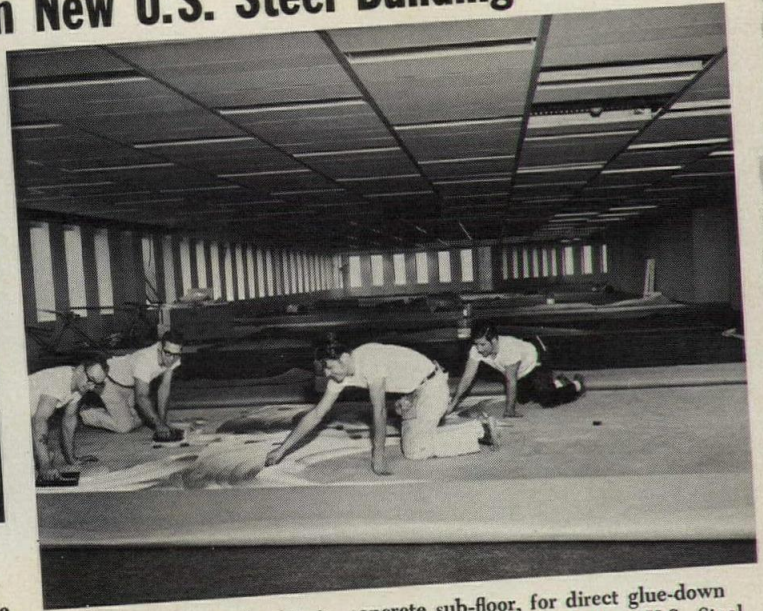
The floors to be occupied initially by U.S. Steel in the 64-floor structure are carpeted by the direct glue-down method, including elevator lobbies and 48 passenger elevators.

Maria Bergson Associates, New York, directing the buildings' interior design, and U.S. Steel officials investigated and tested the direct jute glue-down method in great depth before deciding on it

for a project of such magnitude. Based on their rigorous pre-testing, they are even utilizing it in high spillage risk locations such as "coffee break" areas, and anticipate no problems.

In addition to lower initial cost than other carpet systems and practically no strain on seams, one important benefit of this method is easy mobility for conventional wheels and casters and great pile resistance to them with carpet construction of the proper contract type. Hence U.S. Steel is able to place directly on the carpet, without underchair pads, thousands of secretarial chairs with standard casters now in service elsewhere.

Gaymar Co., Pittsburgh, is handling the installation, with the crews under the supervision of



Installers applying adhesive to concrete sub-floor, for direct glue-down installation of double jute-backed carpets in new 64-floor U.S. Steel Building, Pittsburgh.

Don McGinn. He reports: "Pre-cutting for the large floor expanses between trench headers, with separate carpet strips cut to fit the headers, is greatly increasing our productivity. We foresee no problems in pick-up with the jute when and if it becomes necessary to reach underfloor sections. The jute backing is providing a strong bond with minimum adhesive because it holds the compound and absorbs it thoroughly right on the surface. Carpet edges are consistent in height, so we can butt-seam fast, with the result practically invisible."

Architects: Harrison & Abramovitz and Abbe, New York. General contractors: Turner Construction Co., New York.

Write for
**Architectural
Guide Specification
by William E. Lunt, Jr., C.S.I.
Case Histories of
Installations**

Reprinted from Floor Covering Weekly

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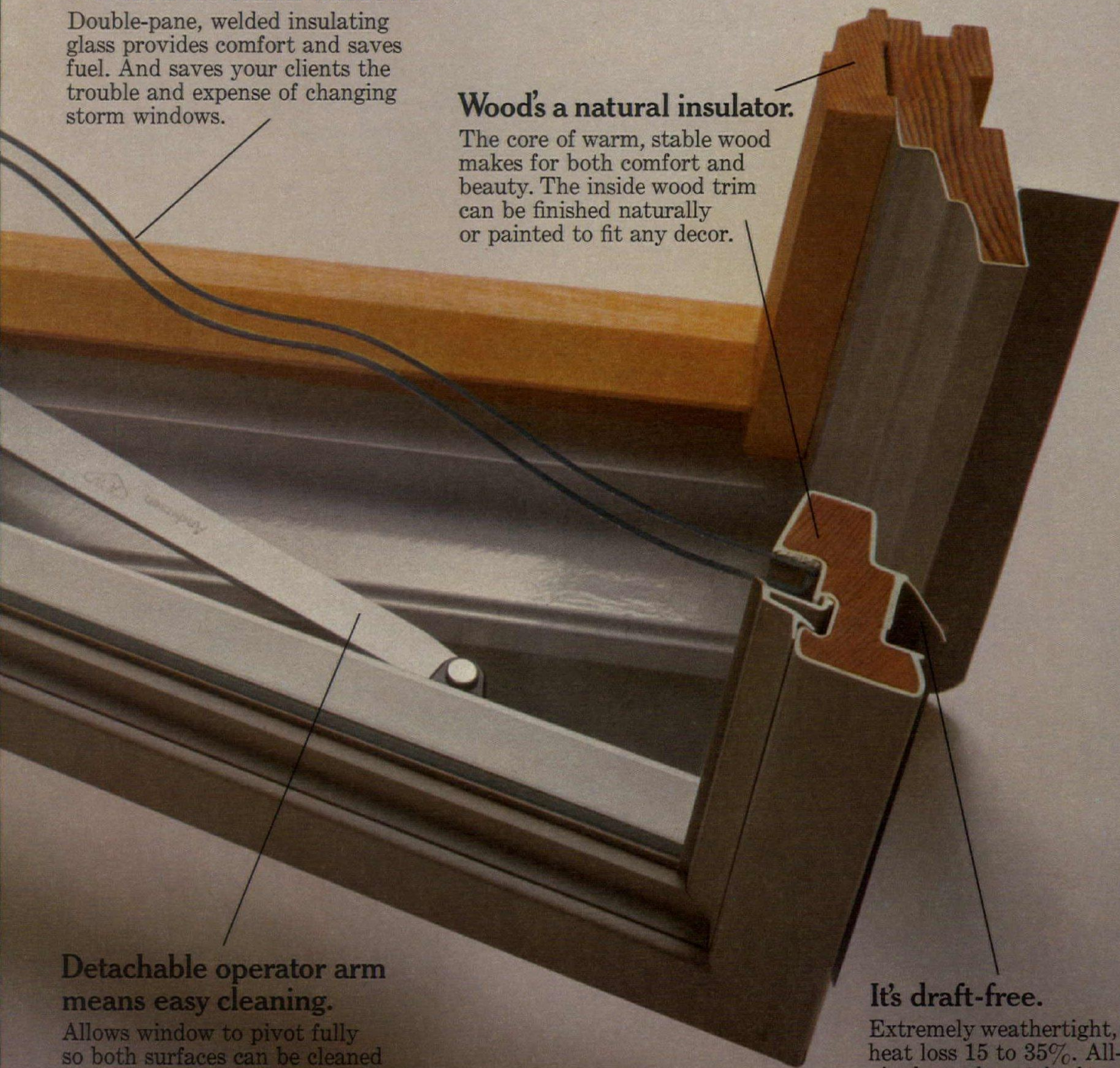
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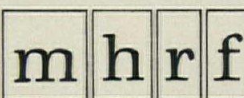
to \$3500 per site. Million-dollar projects are not uncommon.

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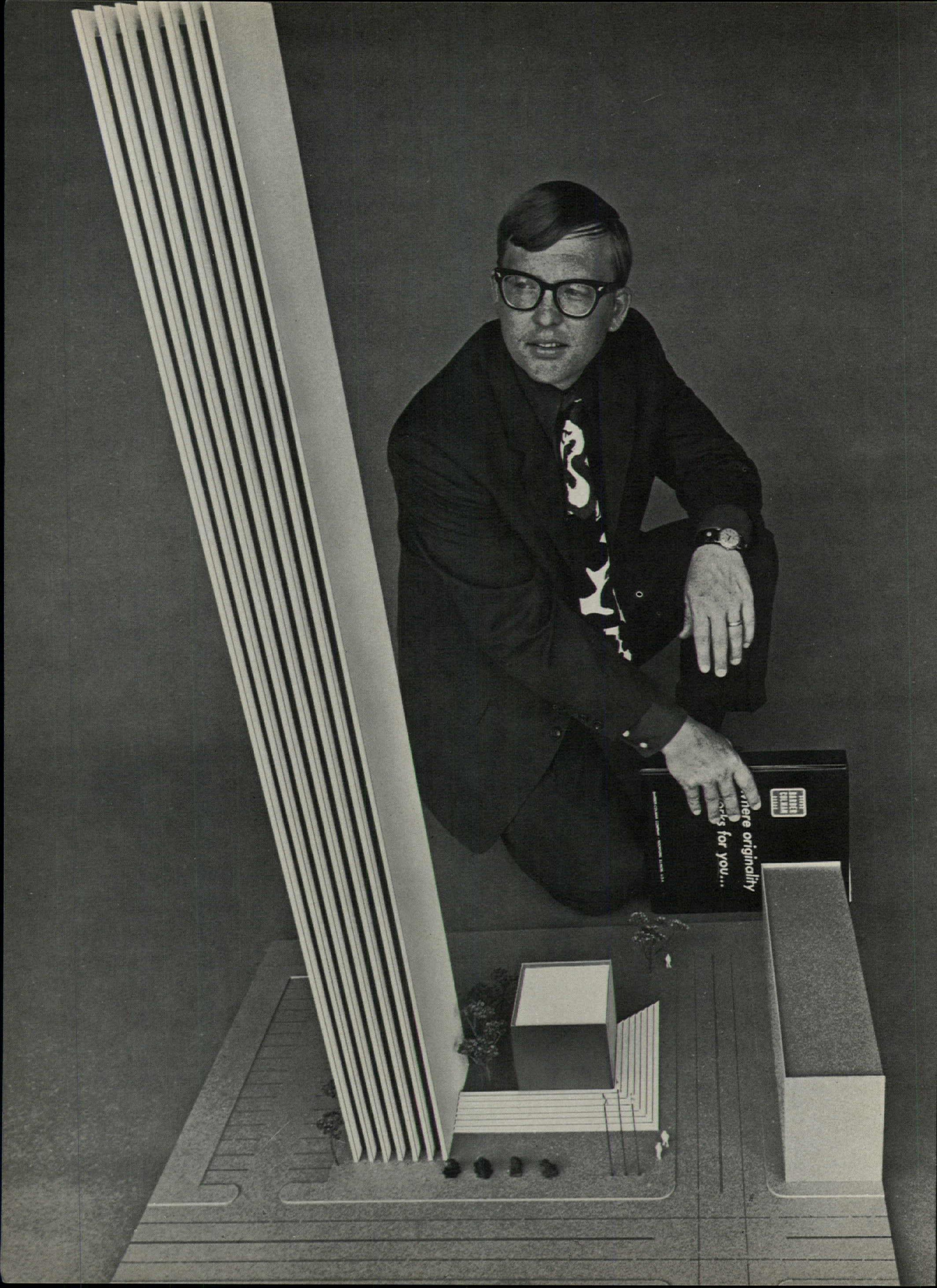


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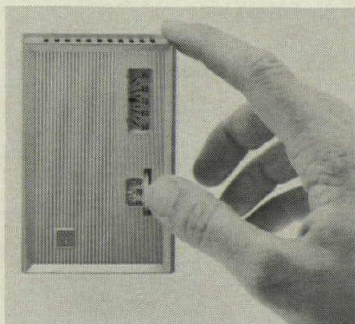
It's also a fact that Barber-Colman is thriving on
big jobs the giants won't take. The main reason is
we're the only control manufacturer that builds pneu-
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the landscaped office

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 - The Marriage of Man and Efficiency
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 - Landscaping—a Complex Factor
- Practical Details**
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Contents

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Progressive Architecture

News report

a Award-winning designer gives P/A new look

P/A has a new look this month. The page size and margins are larger, the type face is contemporary and the overall graphic approach is cleaner and clearer.

In designing the new P/A, Bradbury Thompson borrowed from two of the key elements of today's architectural scene — systems construction and computer technology. P/A's new design is based on a rigid framework that allows for a large number of variables; layouts are built within the framework by combining varying elements. The type is set by computer through a method known as Fototronic — an electronic photographic means of type composition that involves no metal type, hot or cold. The larger page size will enhance editorial material and allow a better display of photographs and graphics. It all adds up to better coverage of the expanding importance of architecture.

Our designer, who is also an art director, consultant and teacher, is visiting critic at the Yale University School of Art and Architecture. For more than 30 years Bradbury Thompson has been an influential graphic arts innovator and one of the most prolific designers of magazines and books. He has served on the Boards of the Philadelphia College of Art, the American Institute of Graphic Arts, the Art Directors Club and the Perrot Memorial Library. He is a member of the Citizen's Advisory Stamp Committee in Washington, D.C., and a Trustee of Washburn University in his native Topeka, which awarded him an honorary D.F.A. degree. His work has been honored with medals and shows of the national and international graphic arts communities.

b Underground garage gives Akron a park

Named for a waterfall which used to be on the site, Akron, Ohio's Cascade Plaza and Parking Deck provides downtown Akron with 2200 parking spaces as well as a pleasant oasis. There is a fountain, a skating rink, sculpture and two restaurants above the garage, and terraces and landscaping in which to rest and relax.

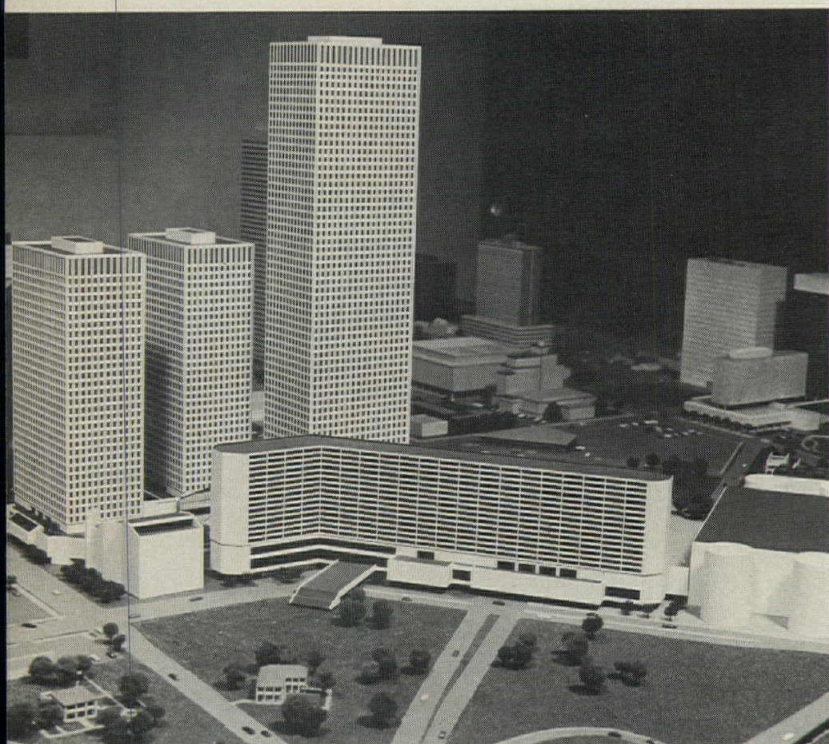
The project was designed by Knoerle-Gould and Associates, a joint venture of the Cleveland architectural firm of William A. Gould & Associates and Knoerle, Bender, Stone & Associates, a Baltimore engineering firm. The recently com-

[continued on page 30]



Buildings on the way up

1



2

1 Original planner of Houston and his brother provide name for Allen Center, 21-acre commercial center designed by Wilson, Morris, Crain and Anderson. Two 34-story office towers, one 50-story tower and an 18-story hotel will be erected above 4-story podium. Base will include shopping center, theater and covered mall. Allen brothers, Augustus C. and John K., laid out Houston's first plan in the 1830s.

2 Optical illusion makes General Telephone and Electronics Corp. headquarters look lower than it actually will be. Architect Victor H. Bisharat designed Stamford, Conn. building with ceiling of one floor incorporated in spandrel of floor above. Then by setting alternate floors back from face of floor-carrying spandrel below, he managed to reduce apparent height of 10-story building. Two-level plaza will provide base for tower, and seventh floor will have open landscaped court on its roof. \$20 million complex will include parking for up to 1600 cars.

3 Suburban urban renewal will put a \$50 million shopping office and motel complex on six acres in downtown White Plains, N.Y. John Carl Warnecke and Associates are consulting architects for entire development and will design interconnected plaza office buildings and store space. A 16-story office building will be the first construction phase, followed by motel (designed by Lundgren and Mauer), stores and a 25-story office tower. Sam Minskoff and Sons are developers.

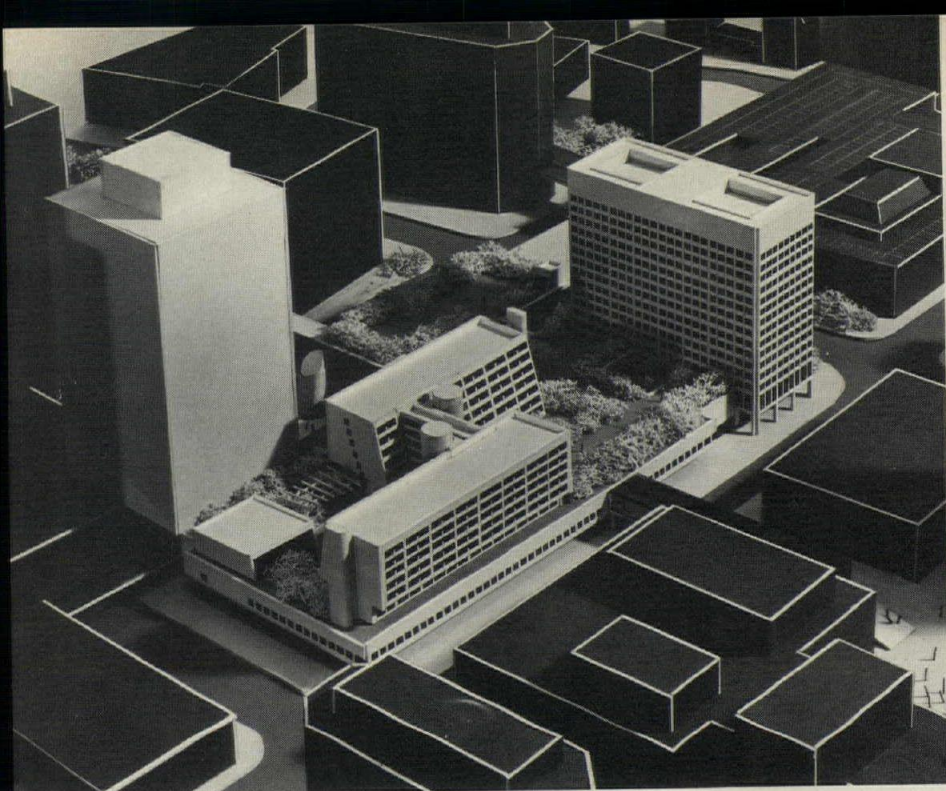
4 Smooth skin encloses power plant for University of Massachusetts Medical School. Dark gray anodized aluminum panels and gray tinted glass, with aluminum panels designed to be in same plane as glass, gives plant uniform continuous surface. Aluminum panels are mounted directly to steel structure. Plant will provide steam, chilled water and emergency power for school. Architects are Campbell, Aldrich and Nulty. Engineers: LeMessurier Associates (s), Francis Associates (m,e). (photo: Gorcher and Gorcher)

5 Embracing a courtyard facing a river walk, Florey Building for student housing at Queen's College, Oxford, England, is all glass on the court side, glass and tile on the outside. Main entrance is through projecting stair and elevator tower. James Stirling is architect. (photo: John Donat)

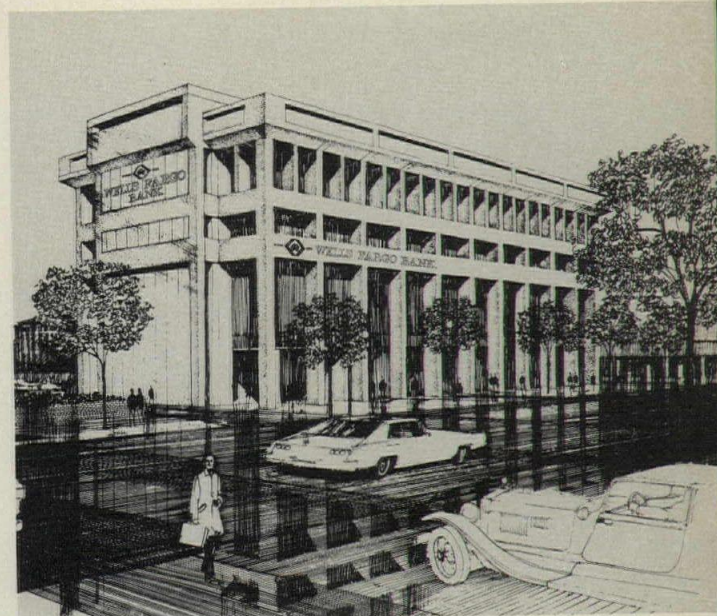
6 No more stage coaches — Wells Fargo is in the banking business; newest branch, in San Bernardino, Calif., was designed by Burke, Kober, Nicolais, Archuleta. The \$1 million building, four stories tall, will provide 39,400 sq. ft. of space. Exterior will be sand-blasted concrete and glazing will be bronze glass.

7 Night life for Toronto's Civic Square area will be provided by movie houses, lounges and restaurants associated with Four Seasons Sheraton Hotel, designed by Parkin Architects Engineers Planners. Other facilities include shopping promenade, health club, sculpture garden and underground parking. Bridge links Civic Square to hotel's lobbies and restaurants; underground parking is also linked to city hall. Structure for entire complex is reinforced concrete; exterior surfaces are lightly sand blasted off-white concrete, glazing is bronze glass in bronze aluminum frames.

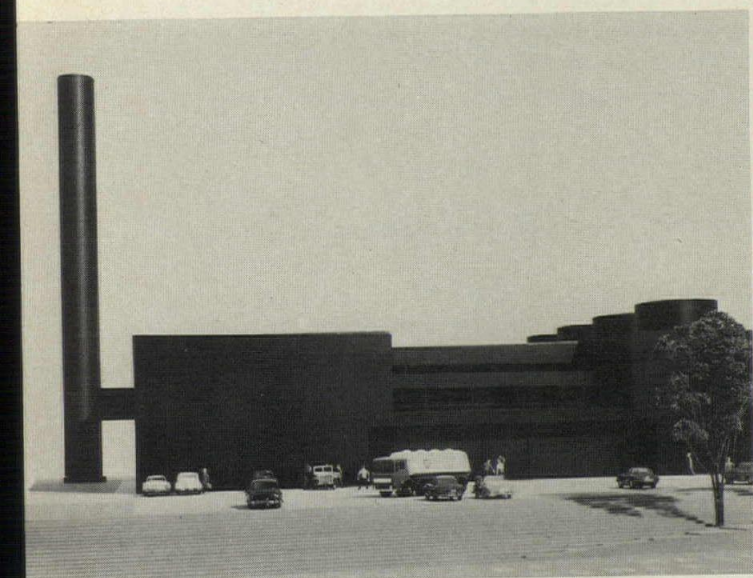
8 Car barns will become fun center for Salt Lake City with specialty shops, sidewalk cafe, farmers' market and other attractions as well as offices, galleries and boutiques. Block-square site, to be known as Trolley Square, was originally site of Utah State Fair; car barns were built in early 1900s. Existing buildings are to be renovated and cleaned up for use; new construction will be in keeping with turn of the century theme, developers say. Architects are Architects/Planners Alliance.



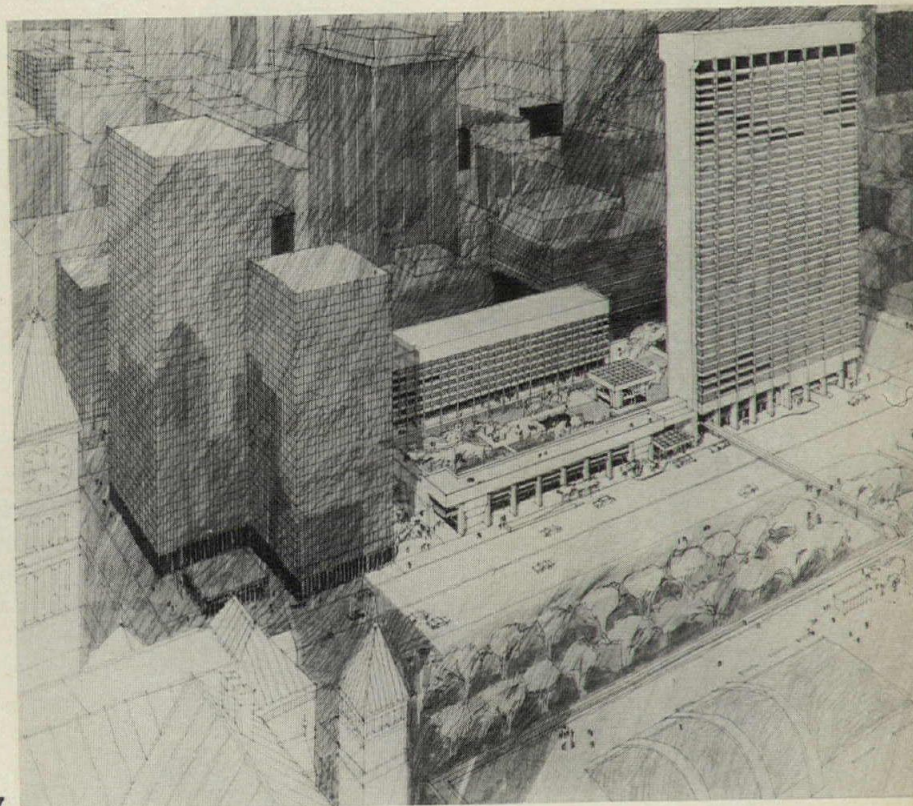
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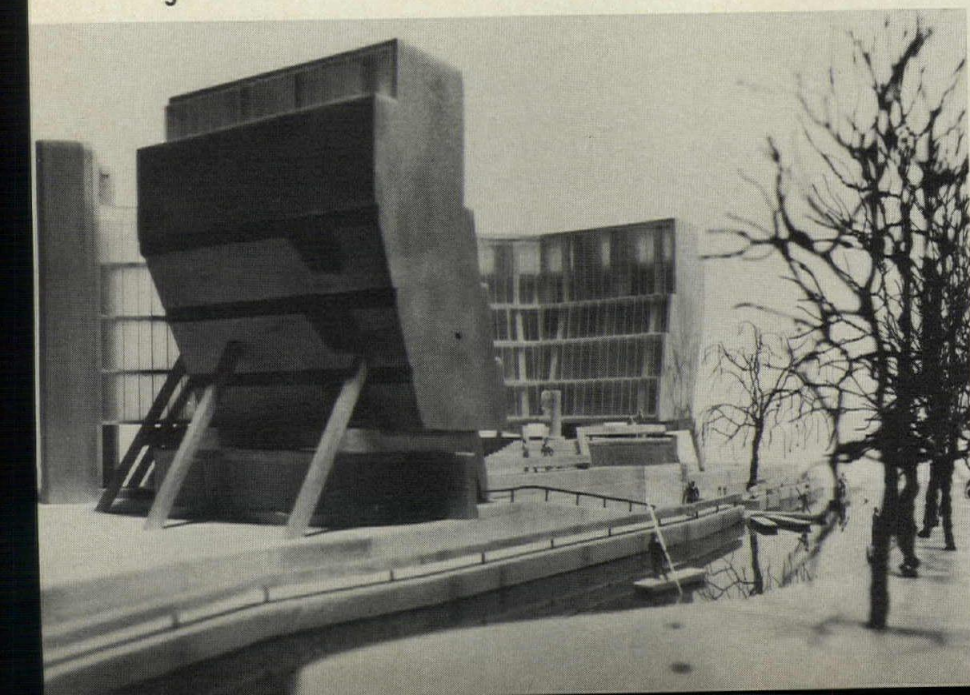
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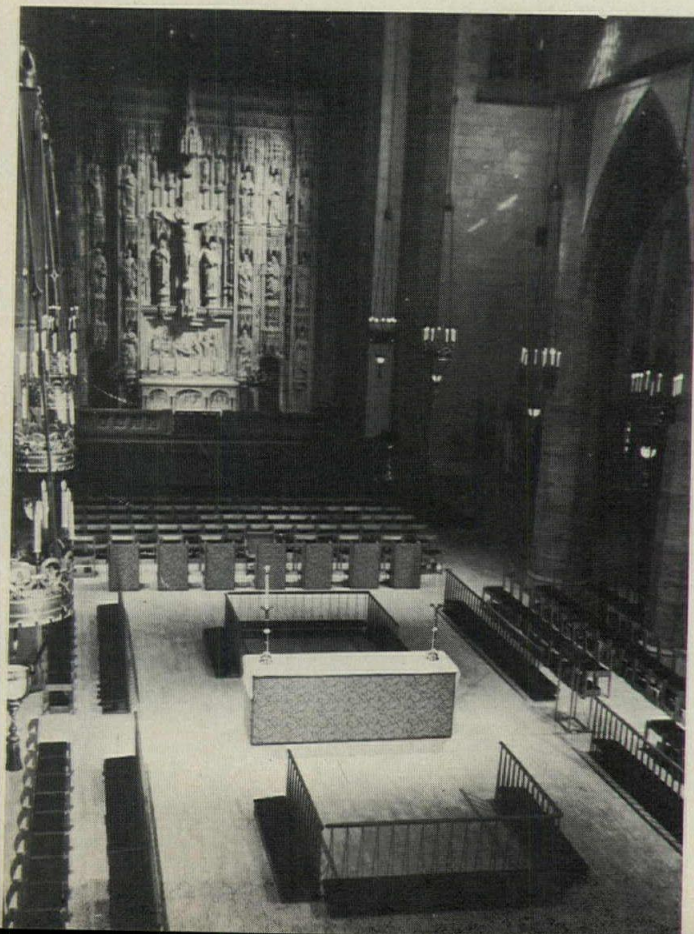
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c



pleted project includes a five-level, \$9.5 million underground garage topped by a 150,000 sq. ft., \$2.5 million landscaped plaza designed by Lawrence Halprin and Associates. Air rights above the plaza were leased to private developers; a 24-story office building and a 7-story building have been completed, and a 16-story hotel is under construction.

Part of the irregularly shaped 4.7-acre site was lower than the surrounding streets, and to complicate matters the site was crossed by a storm drainage and flood control canal. To fit the garage to the various street levels surrounding the site, a split level structure was designed. Entrances and exits are at various levels and there is a tunnel to the expressway; underground connections link the garage to surrounding buildings. The canal, still in use, is enclosed in a reinforced concrete box; garage and building columns are supported over the culvert by transfer beams.

Sybil Moholy-Nagy honored with AIA Critic's Medal

This year's Architectural Critic's Medal will be awarded to the late author, teacher and outspoken architectural critic Sybil Moholy-Nagy. A frequent contributor to *P/A*, as well as other magazines, she wrote extensively on Latin American and Far Eastern architecture while maintaining a steady commentary and criticism on work in Europe and the U.S. She came to this country in 1937 and has taught at Pratt Institute, University of California at Berkeley and Bradley University; before her death early last month, she was a visiting professor at Columbia University.

c Flexible interior gives landmark cathedral new life

What can you do with a cathedral that's over 100 years old and an architectural landmark? You can restore it as a museum or for use once a week, or you can do what architects Burks and Landberg did with the Christ Church (Episcopal) Cathedral in St. Louis — preserve it as a landmark and at the same time build in flexibility that will allow a variety of religious and community activities.

The architects gave the church a new interior without removing any of its historical and architectural assets. Interlocking stackable chairs were installed; they can be grouped in six different arrangements ranging from one for a church service for 600 people to a concert for 860. A specially designed altar platform with movable sections gives further flexibility to seating arrangements. Platform sections can be set up at either end of the church or in the middle, in a variety of shapes and sizes. The movable sections are 4' x 4' x 8'-9" high; with the aid of a hand operated pallet truck, one man can handle the rearranging.

Lighting, too, is flexible. Two narrow balconies along the sides of the naves and transepts carry a continuous light track. At any point along this track, which is 30 ft above the floor, any number of spotlights may be plugged in; a master dimming panel provides a central control for the lighting.

AIA to raise funds for social programs

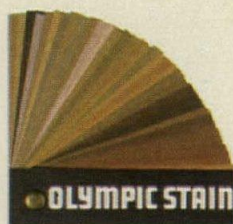
Pushed by the need to raise funds for its growing socially oriented programs, the AIA has set up a fund-raising body named the Human Resources Council. Nathaniel Owings [continued on page 34]


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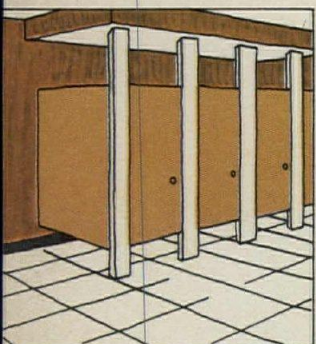
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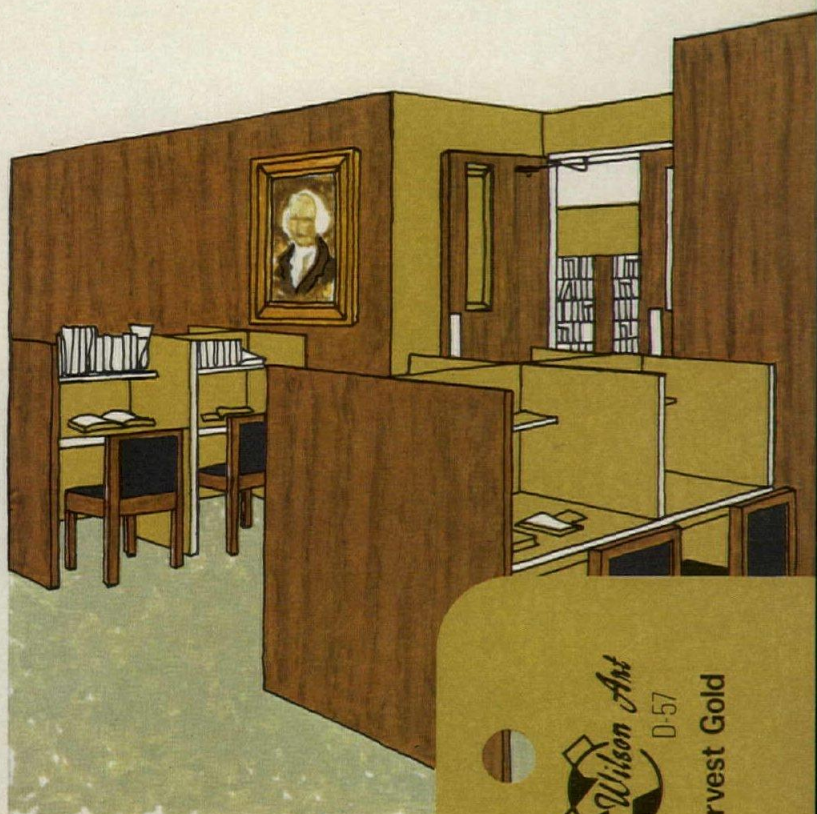


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Above: Authentic woodgrains, rich solids, Wilson Walls and Wilson-Art covered lead-core doors combine esthetic desirability with environmental function and low maintenance.

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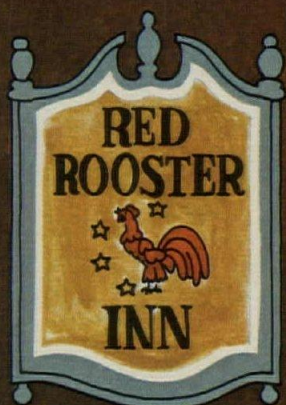


Harvest Gold



Native Pecan

Left: Design
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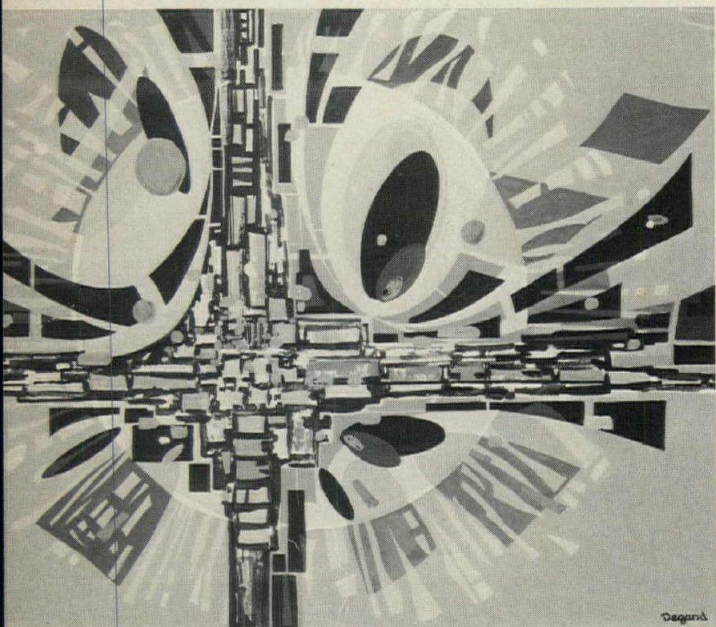


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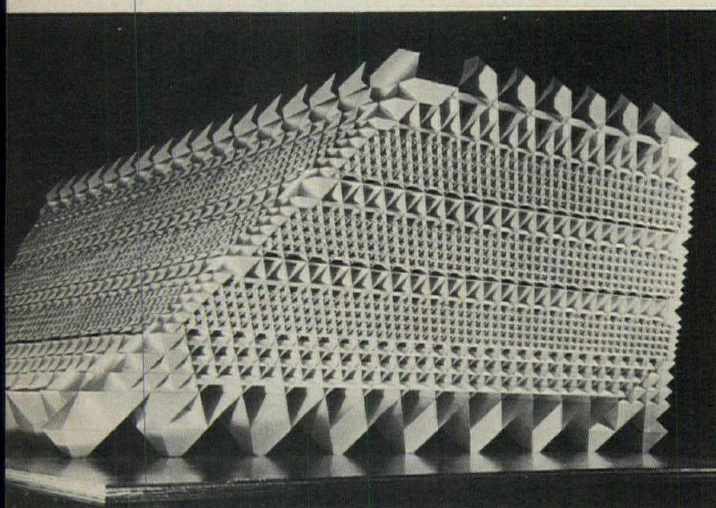
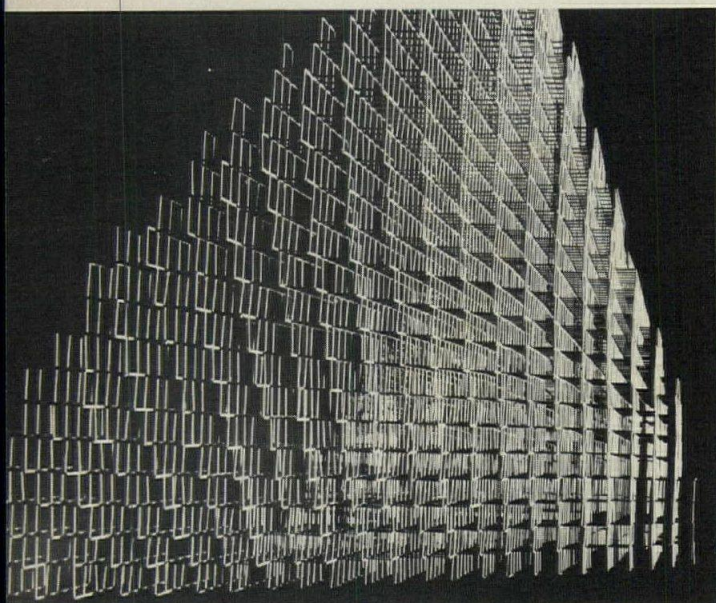
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e



and Robert J. Nash are co-chairmen of the council, which is distinct from, but within, AIA. Funds raised by the Council will be used specifically on AIA projects aimed at problems of the poor, the minorities and their environment.

The first goal is \$1 million, which AIA expects will be pledged by firms and individual architects; the money will be used to expand existing programs and start new ones. To raise the money, the council hopes to enlist one member from each of the Institute's 200 chapters. Members of the council, in addition to Owings and Nash, are: David Yerkes, Taylor Culver, Robert Alexander, McDonald Becket, Leo Daly, Jr. and Gene Lindman, an architecture student at the University of Illinois.

d **Houston hotel hangs Aubusson tapestry**

The Houston Oaks Hotel opens this month, and in its lobby hangs a spectacular Aubusson tapestry commissioned by interior designer Ellen Lehman McCluskey and designed by French artist Michel Degand. Hand woven (it took two weavers six months), the tapestry is 9 ft high and 12 ft wide; there are 46 different colors of yarn. Art Vivant, Inc. of New Rochelle, N.Y. were agents for Manufacture de Tapisseries d'Aubusson; the tapestry was woven by Pinton Freres of Felletin, France.

e **USC study matches buildings to nature**

A few years back, the University of Southern California revamped its graduate urban design program, taking a strong environmental tack. The relationship of building shapes and sizes to the natural environment was to be a key area of study, and part of the program has been a study of California's Owens Valley.

Through on-the-spot studies of heat, wind and water and through laboratory simulations using wind tunnels, heliodons and water tables, the study has set the ecological limits and internal structure of the valley. Based on these findings, the study has moved on to an investigation of the way building shapes, volumes, structure and site planning can be adapted to nature in a form-location match.

"In generating form," says Ralph Knowles, who directs the program, "man has not been as careful as nature. Man has been demanding that nature accommodate him; he has not fitted into the adaptive scheme. In nature, form-location mismatches will not go unresolved; the organism adapts or dies out." As an example, Knowles cites the rabbits that populate the valley. On the desert floor, they are slender with long ears and tails and spindly legs, a shape which helps them keep cool during summer heat; higher up the mountains, the rabbits are more compact and shorter-eared, giving them less surface area from which to lose valuable heat.

Form-location matches for buildings work the same way, and so do mismatches. An obvious mismatch, for example, would be a 40-story building in downtown Los Angeles with the same surface-to-volume ratio as one in New York City, when each handles environmental conditions exclusively by mechanical means. Models in photos are forms arrived at by study; top form absorbs more heat in winter than summer.

[continued on page 37]

results can be far reaching. Says Knowles, "Our continued dependence on mechanical devices to provide heating and cooling requires us to almost double energy production every seven years and thus continuing to increase air and thermal pollution. The premise of the Owens Valley study is that increasing rates of energy consumption are unnecessary if the tools of location and form are first employed to reduce the main body of environmental stress."

Currently the study is involved with the interaction among buildings and the seasonal and daily interaction of specific shapes and specific structures.

f Open-air tent is for the birds

An open-air structure of wire mesh supported by steel columns and cable keeps the birds in a Richmond, Va., wildlife exhibit from flying away. The aviary, designed by Rawlings, Wilson and Fraher, is an 85' x 65' rectangle; it is on a sloping site and is 35 ft high on the downhill side, 30 ft high on the uphill side. Green paint camouflages the structure, and natural vegetation and a small stream give the birds all the comforts of home.

The structural system, the work of structural engineers Torrence, Dreelin, Farthing and Buford, is steel pipe and wide-flange members, structural wire rope and wire mesh. Four tripod columns embedded in concrete caissons support the wire rope, which in turn supports the mesh. Inside the aviary is a V-shaped observation platform with a redwood walkway and sheathing; entry to the platform is through a curtain of hanging strings of beads.



f

g Concrete shelters protect zoo's sea otters

Sea otters are an endangered species, and to protect its sea otters, the Tacoma, Wash. zoo asked architect Alan Liddle to design a pair of enclosed salt water pools. The concrete enclosures wrap around the pools and are fitted with glazed openings for watching from above and below the water level. The open tops are screened to keep foreign objects out.

The viewing windows are partially enclosed by baffles for weather protection and to block reflection in the glass when the light outside is brighter than the interior. The pools have rocky shelves to make the otters feel at home; they come from the cold rocky Kamchatka, Alaska area.



g

h Power plant gives Toronto new landmark

Slim and graceful against the Toronto sky, the smokestack for a steam plant serving an assortment of hospital and university buildings is more a spire than a stack. In fact, it has been named the Medispire, and it is enough of a landmark that it is floodlighted at night. One set of lights plays on the base and fades toward the top, about 450 ft above ground. A second set of lights bathes the top 100 ft with light.

Both steam plant and smokestack were designed by architects Mathers and Haldenby, who gave the steam plant a colorful interior. Pipes for dangerous materials are yellow; those for safe materials are green; and those for protective [continued on page 38]



h

materials (such as sprinkler mains) are red. The three boilers got their own color treatment — one is red orange, one is bright yellow, and the other is cadmium yellow — and valves are magenta. Structural engineers for the plant and stack were C.D. Carruthers and Wallace Consultants Ltd.

j Mies van der Rohe's Farnsworth house up for sale

Finished in 1951, the house Mies van der Rohe designed as a country retreat for Dr. Edith Farnsworth was credited with a great influence on American architecture. It is now for sale, along with 60 acres of farmland on the Fox River in Plano, Ill. Price: \$235,000.

The house is contained by floor and ceiling planes 9 ft apart; between them is a glass enclosed living space and porch. In effect a single room, the interior is divided into sleeping, living, dining and service areas. The house itself is 4 ft above the ground and seems to float above the prairie. The Chicago real estate firm, Baird and Warner, Inc., is handling the sale.

k New airports spawn new towns

First you build an airport away from the city; then you build a city near the airport. That, at any rate, is the sequence in two planned cities proposed for areas near major airports now under construction. One is planned for a 320-acre site 10 miles south of the Dallas-Fort Worth Regional Airport, and the other is slated for 80 acres just 3 miles from Kansas City International.

Century 21, the Texas project, is being developed by Associated Developers of Kansas City, who are depending heavily on the airport. Without it, they admit, there would be no reason to plan the large hotel and convention facilities they plan to build. Besides the visitors' complex, Charles Luckman Associates' plan calls for a 2500-unit apartment park, a department store plaza, office buildings and auto sales facilities.

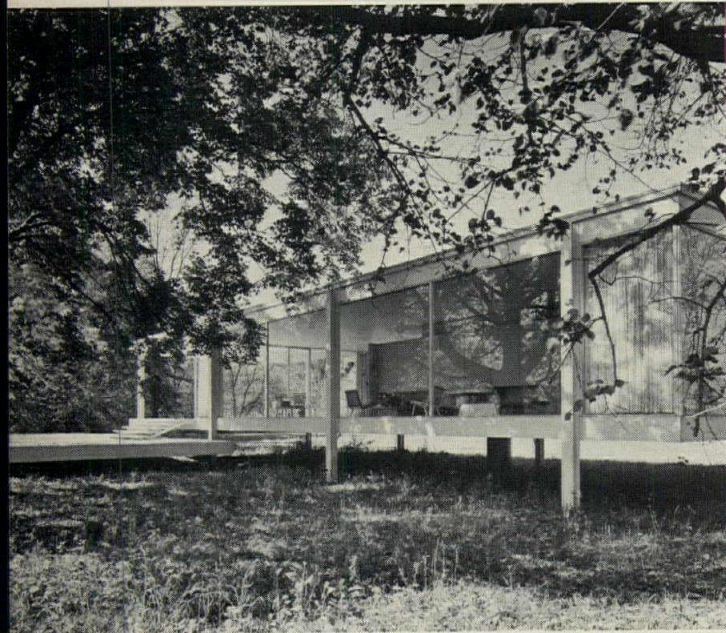
With Kansas City developers working in Texas on Century 21, it seems only fair that Texans be the force behind Tiffany Centro, an 80-acre city to be developed near Kansas City International. The Texans are the Shell Oil Co. and their architects are Marshall and Brown, Inc. of Kansas City who did the master plan. The plan calls for preserving existing woods and streams as part of a greenbelt and for the construction of motels, offices and other commercial facilities by private firms. FAA regulations will keep building heights at 150 ft; a project design control committee will review all projects.

Personalities

Herman D.J. Spiegel, Professor Adjunct of Architectural Engineering, will serve as acting dean of the Yale School of Architecture and City Planning, and as Director of Studies in Architecture for the spring semester.

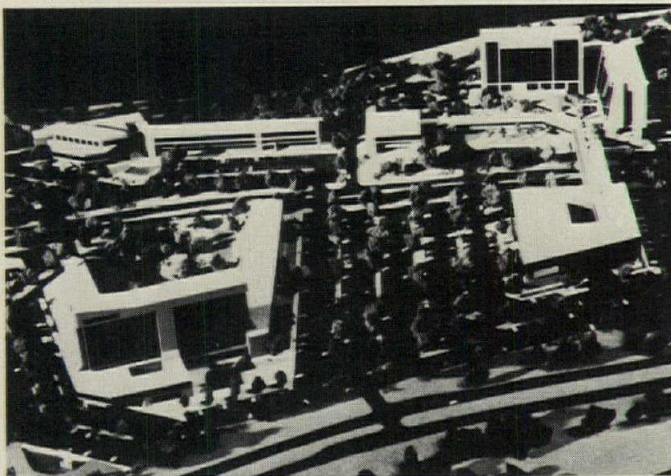
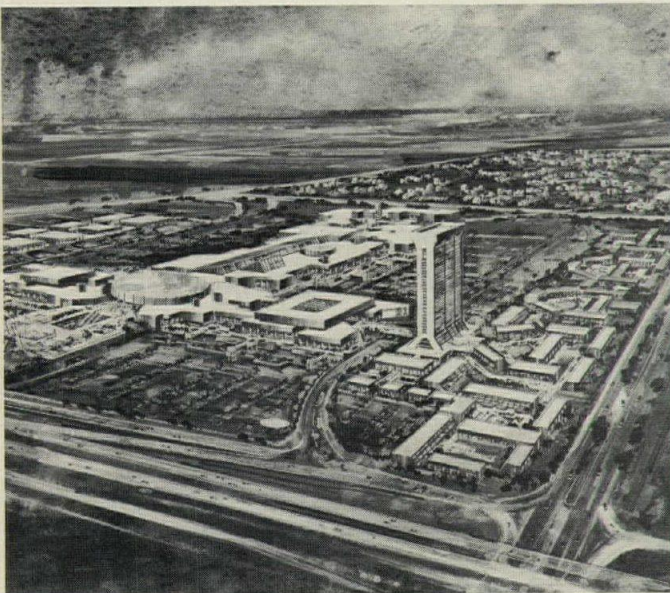
Rex Whitaker Allen, FAIA, immediate past president of the AIA, has been named chairman of the jury for the 1971 fifteenth annual R.S. Reynolds Memorial Award for "distinguished architecture with significant use of aluminum." Other jurors are: **Paul Depondt**; **Joseph D. Murphy, FAIA**; **Carl Koch, FAIA** and **Robert B. Marquis, FAIA**.

[continued on page 40]



j

k





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Officers of the Minnesota Society of Architects are: **Richard Whitemen**, president; **Bruce A. Abrahamson**, vice president; **William F. Ropp** has been elected 1971 president of the Structural Engineers Association of California.

Officers for 1971 Southern Oregon Chapter of the AIA are: **Donald P. Rounds**, president; **D. Lorin Jacobs**, vice president; **William H. Seibert**, secretary; **Donn Faulkner**, treasurer; **Robert F. Starbuck** and **Philip C. Patterson**, directors.

Newly elected officers of the Detroit chapter of the AIA are: **Richard K. Albyn, AIA**, president; **Mark T. Jaroszewicz, AIA**, vice president and president-designate for 1972.

Calendar

March 6-12. American Concrete Institute's 67th Annual Convention, Denver Hilton Hotel, Denver.

March 7-10. National Precast Concrete Association, Convention and Exposition, Columbus, Ohio.

April 5-7. The Portland Cement Association, Advanced Seminar on Lightweight Concrete, Skokie, Ill.

April 19-22. The Guild for Religious Architecture, an affiliate of the AIA, national conference, Los Angeles.

June 28-July 1. Eighth Annual Design Automation

Washington report

Congress adjourns, West Front revives

Finally staggering over the finish line, the 91st Congress did nothing unexpected, but did put some legislation on the books that is of interest to architects and the construction industry.

A thumbnail summary:

1. The Occupational Health & Safety law, aimed at manufacturers and contractors, will affect architects' offices as well, with requirements that a "safe and healthy" place of work (according to standards to be set at first by the Labor Department) must be maintained and provisions for heavy penalties for failure to comply. There's plenty of potential trouble in the legislation: It provides that workers can demand an inspection by Labor if they feel that safety rules are not being met by their employer; it means extra record keeping and certifications; it sets up an elaborate and time-consuming appeals machinery; it will flatly nullify existing construction safety laws (like Walsh-Healy) as soon as new standards are set. One sure result: Increased costs.

2. Federal-aid highway legislation, which notably sustained a tough House stand against any diversion of Trust Fund money for non-highway purposes (such as housing for displaced property owners); shifted beautification money to the general treasury (instead of the Trust Fund); extended the Interstate program to 1976; changed the apportionment formula for primary-secondary-rural roads (after 1974) to 70 percent federal, 30 percent state (instead of the present 50-50); set up a special "urban" section to separate out controversial highway segments.

3. A \$2.8 billion appropriation for Housing and Urban Development — scaled down from a \$4 billion measure vetoed

by the President — which simply continues most existing HUD programs, adds little except insurance for riot-prone areas, and breaks no other new ground.

4. A \$2 billion military construction bill — out of which nearly a third (\$716 million) will go for family housing, the rest for general military construction including the \$322 million "Safeguard" antiballistic missile system. Besides assuring continuing funds for this work, this bill prohibits any call for bidding for professional services — a major consolation to professionals who failed to get a general ban on price considerations through as separate legislation.

Beyond these, and the normal appropriations bills for federal departments, very little else could be chalked up as an accomplishment for the yearlong, acrimonious meeting of Congress. For the current session (officially the 92nd Congress), only one line of new legislation seems clear: Some sort of curb on construction labor, to hold down excessive wage demands.

Report favors restoring West Front

The nearly dormant dispute over the crumbling West Front of the U.S. Capitol (the side facing downtown Washington) suddenly revived when a House committee got an independent engineering report in favor of restoration. Cost of restoration might be \$15 million, according to the report (by the New York consulting firm of Praeger-Kavanagh-Waterbury), against the estimated \$63 million cost of rebuilding the long wall and extending the building to gain a total of nearly five acres of interior space.

Controversy has raged since the reconstruction proposal was first made in 1963 by the late Architect of the Capitol, J. George Stewart, AIA and individual architects opposed the idea as a monstrosity that would cover up the vestiges of the original building, to no really useful purpose.

Said Rep. Samuel S. Stratton (D, N.Y.), a leader in the battle against extension: "I am delighted . . . I trust that with the formal receipt of this report, the model which is now cluttering up the center of statuary hall will have vanished as an untimely and irrelevant anachronism by the time the 92nd Congress convenes."

Financial

Key reason for the continuing strength of housing (which ended 1970 with a strong showing at about 1.5 million units started) was clear in HUD reports: Enough mortgage money in most U.S. areas for more than four months, plus a slight drop (to 8.5 percent, from 8.55) in the national average interest rate on conventional first mortgages.

Construction in general bids fair to end 1970 (when all figures are in and totaled) at slightly over \$90 billion, according to the Census Bureau. Work under contract spurted a little in the late fall, to bring up lower averages recorded earlier.

But costs kept jumping: The Federal Highway Administration's road construction cost index rose an unprecedented 10.4 percent in the third quarter of 1970 (FHA blamed six "unusually costly" urban projects in part); FWQA's sewer construction index rose .62 percent in November — keeping up an unbroken five-year cost rise.

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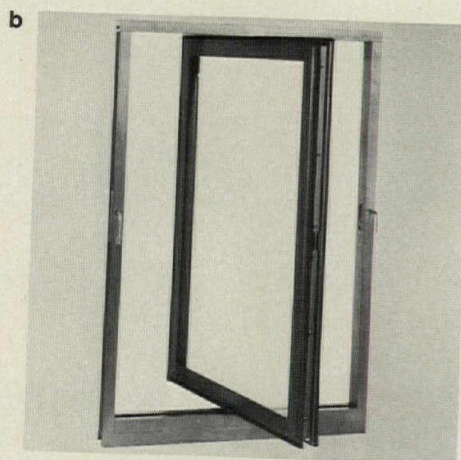
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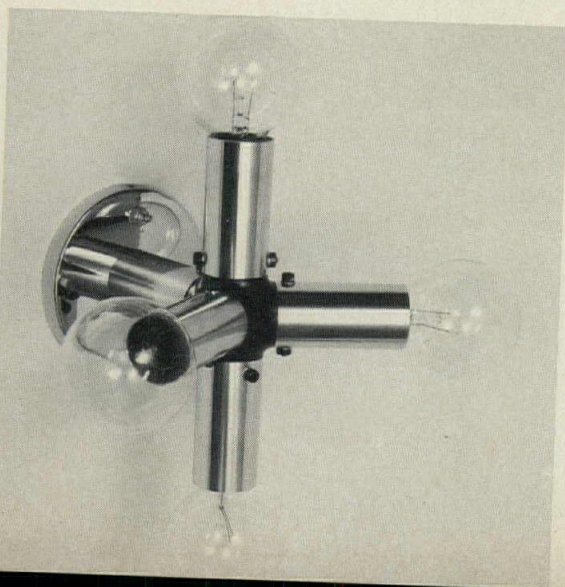
Products and literature



a



b



c

Carpet and rug finish protector. Scotchgard protection — the well-known soil-resistant chemical finish for fabrics — has been developed for carpets and rugs. According to the makers, tests show this treatment to be effective against general soiling as well as spots and spills, and still in effect after heavy traffic, shampoos, and frequent vacuumings. Applied to kitchen carpets, and available at an upcharge on residential and commercial carpeting. Wunda Weve and Dan River Carpets, and The 3M Co.

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[continued on page 52]



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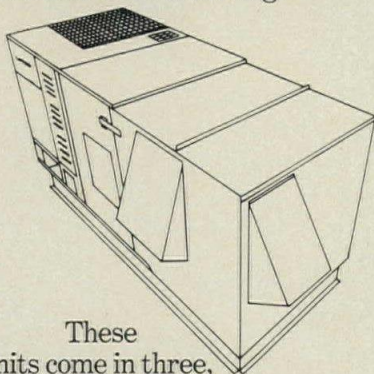
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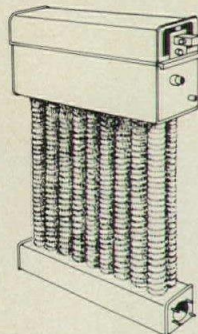
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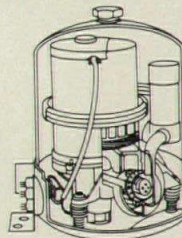


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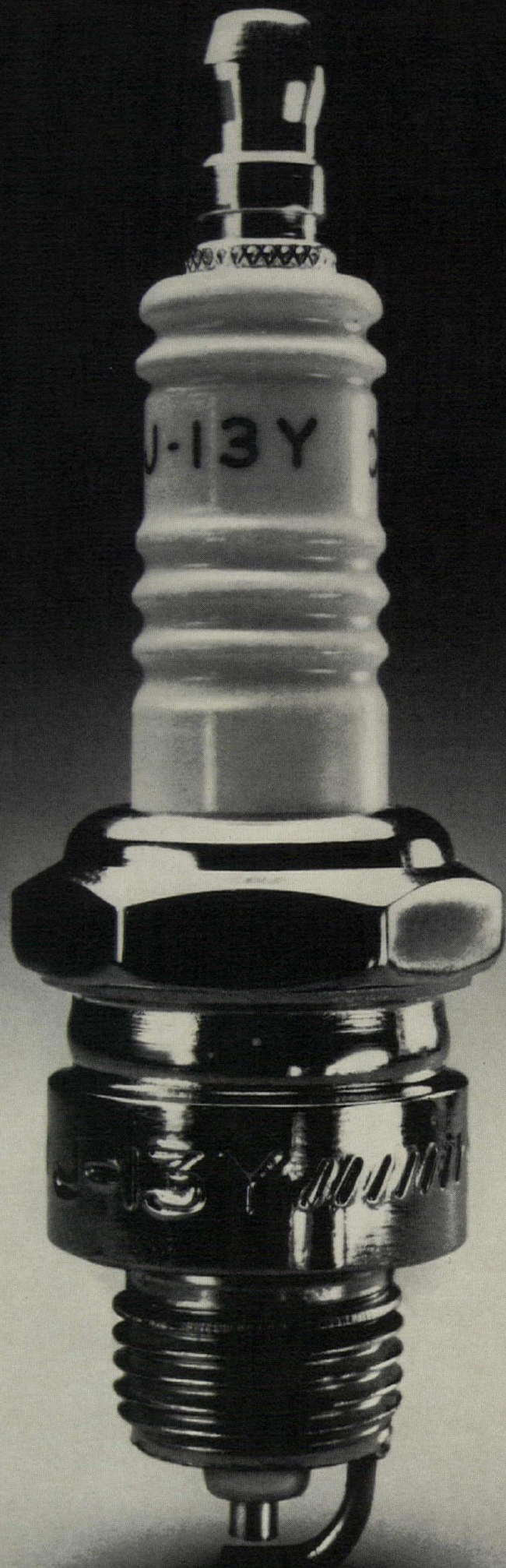
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Literature

Porcelain-on-steel chalkboards. These chalkboards are made of 24 or 28 gage steel to which glasslike porcelain enamel is fused. This porcelain coating is said to reduce chipping, makes the chalkboard tough and durable. Can also be used as bulletin boards. Brochure AllianceWall Corp. Circle 109 on Reader Service Card

Structural wood products. The 1971 Engineered Structural Wood Products brochure describes the advantages, uses and design opportunities of laminated decking, gives stress tables, load conversion charts and examples of color finishes. Potlatch Forests, Inc. Circle 110 on Reader Service Card


Flooring catalog. Illustrations of colors and patterns in vinyl asbestos and asphalt floor tile make up this 1971 catalog. Size, gage, use, installation and specifications are offered. Azrock Floor Products. Circle 111 on Reader Service Card

Handrail. This solid vinyl "Rucorail" handrail is available for varied design applications. May be used on long straight runs and on curves — booklet describes its use for flat and sweeping returns, 90° turns, and return-to-wall. Choice of permanent colors. Booklet from Vinyl Plastics Inc. Circle 112 on Reader Service Card

Skylights. A booklet on skylights made of Plexiglas acrylic plastic contains photographs, drawings and diagrams of skylights for residences. It points up the qualities of Plexiglas sheet for skylight use — rigidity, breakage resistance, weight and weatherability. Rohm and Haas. Circle 113 on Reader Service Card


Zilloy-20. A zinc-copper-titanium alloy for roofing, fascias and flashing, Zilloy-20 looks like zinc, weathers to a soft charcoal gray finish. Reported to possess high tensile strength, it is easily formed and soldered, is corrosion resistant and nonstaining. Bulletin: New Jersey Zinc Co. Circle 114 on Reader Service Card

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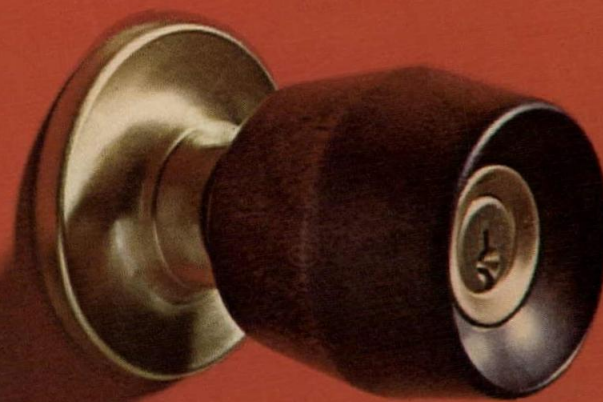
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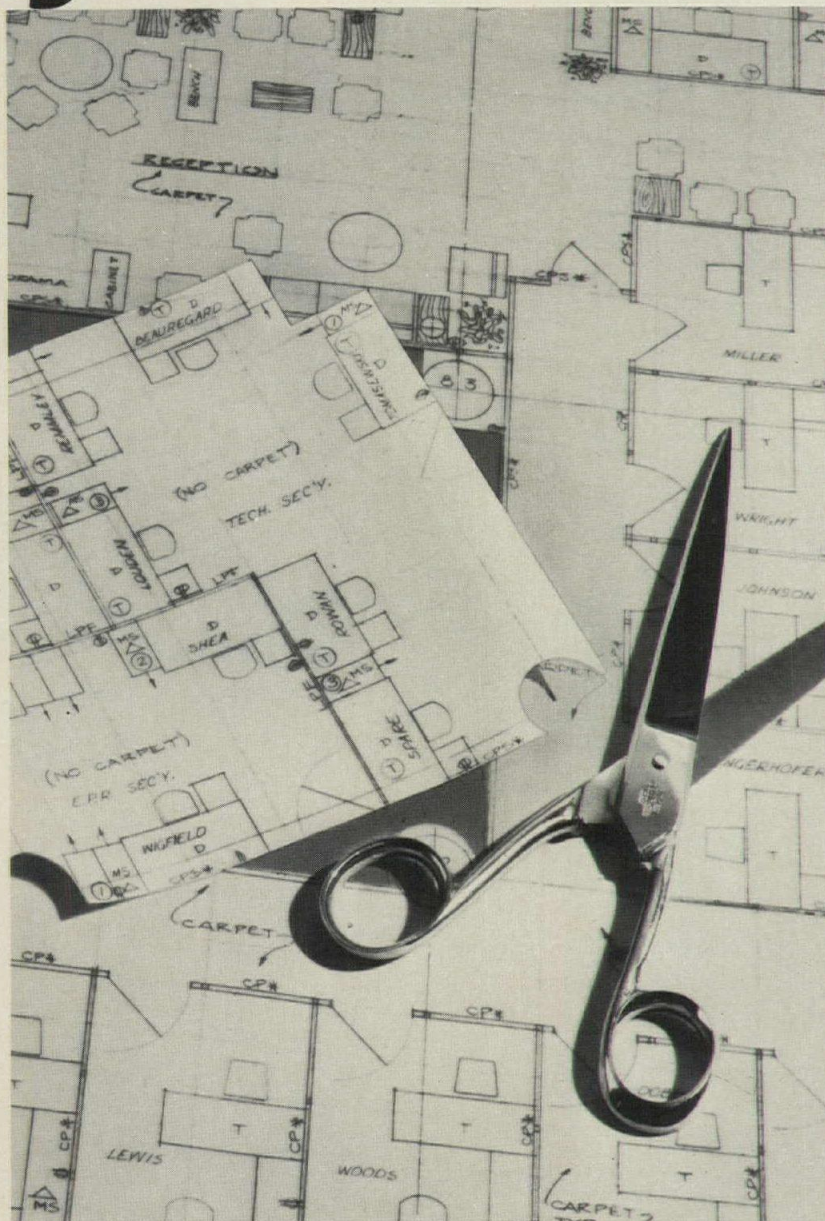
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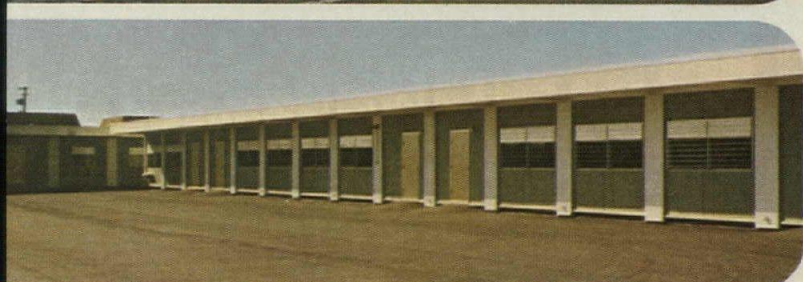
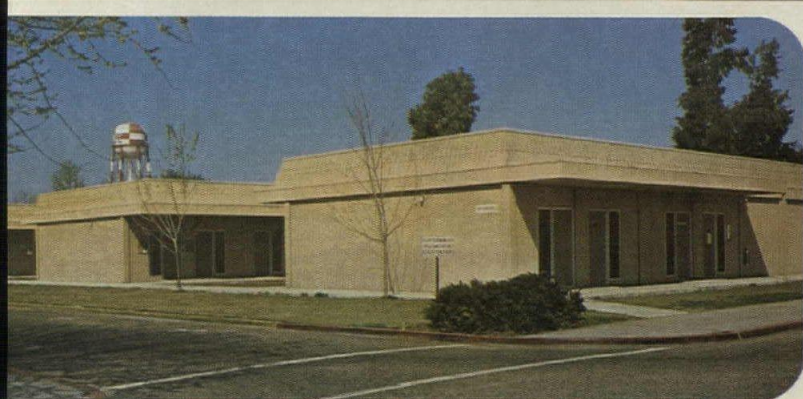
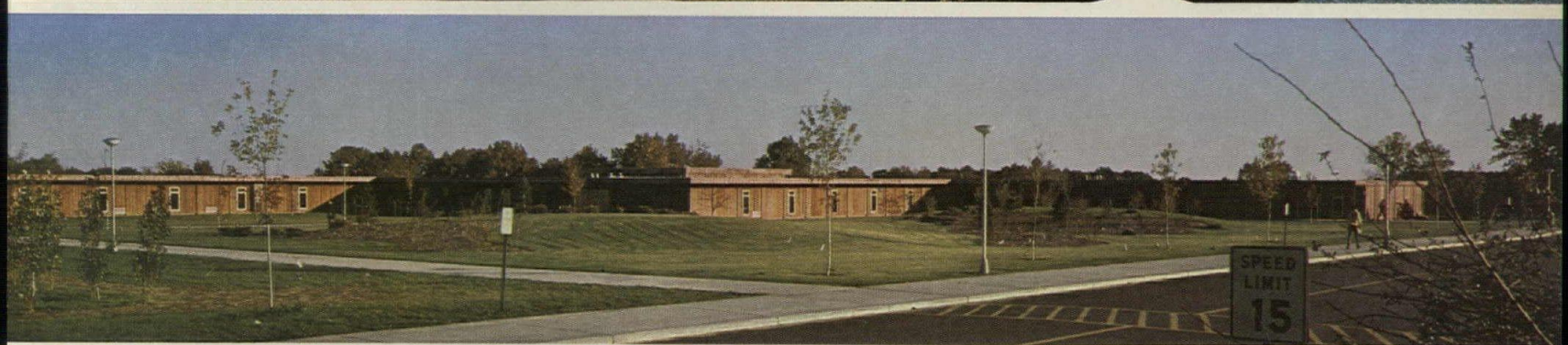
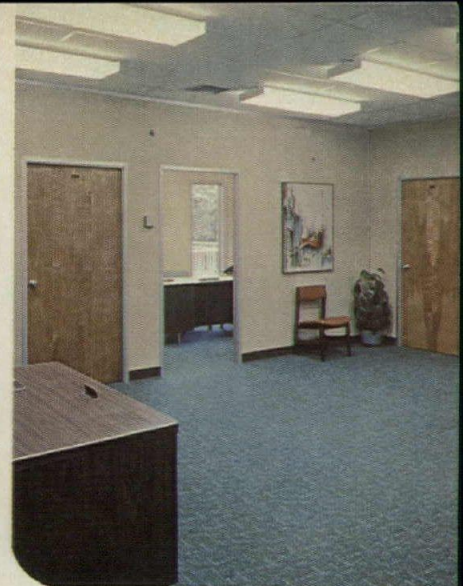
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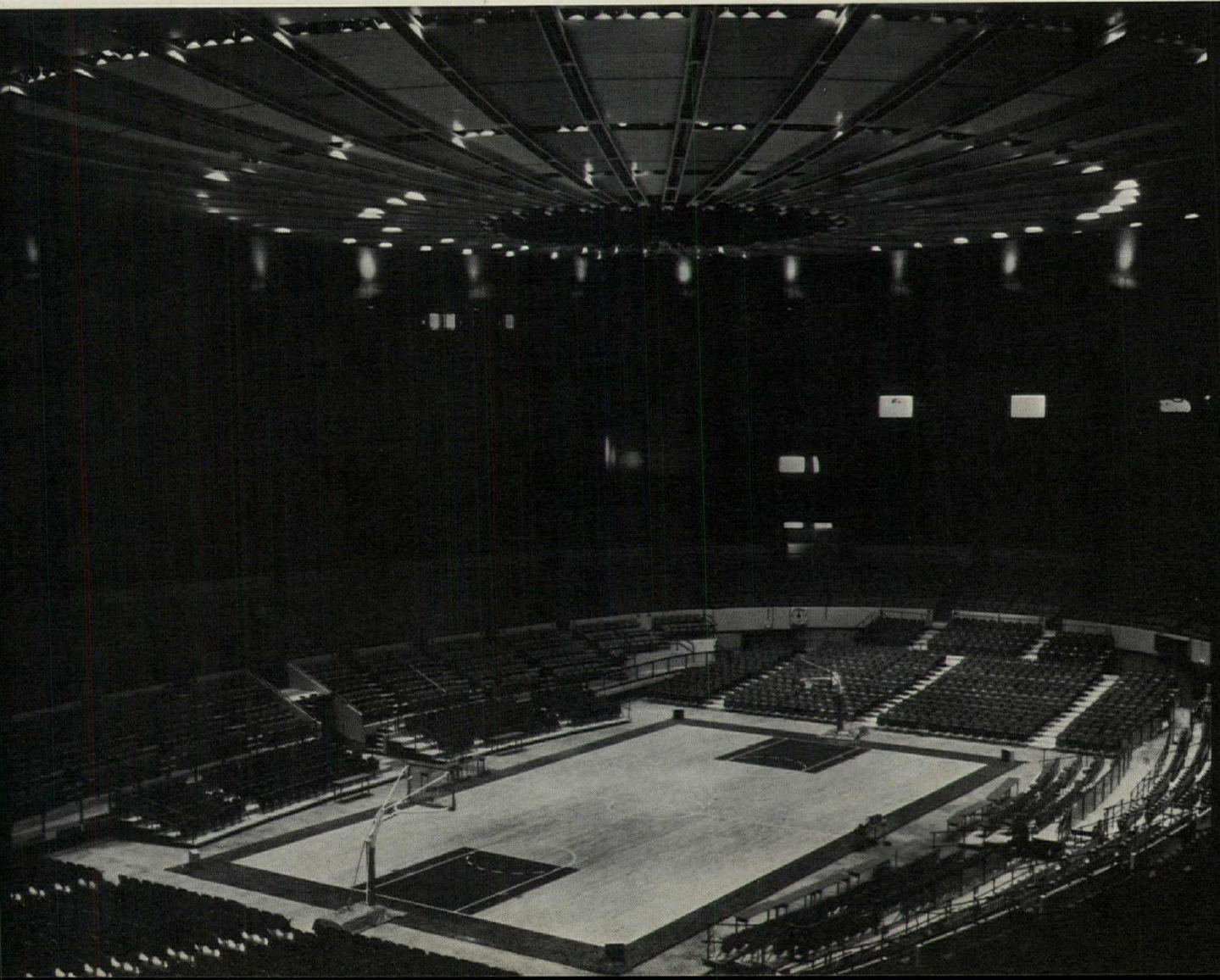
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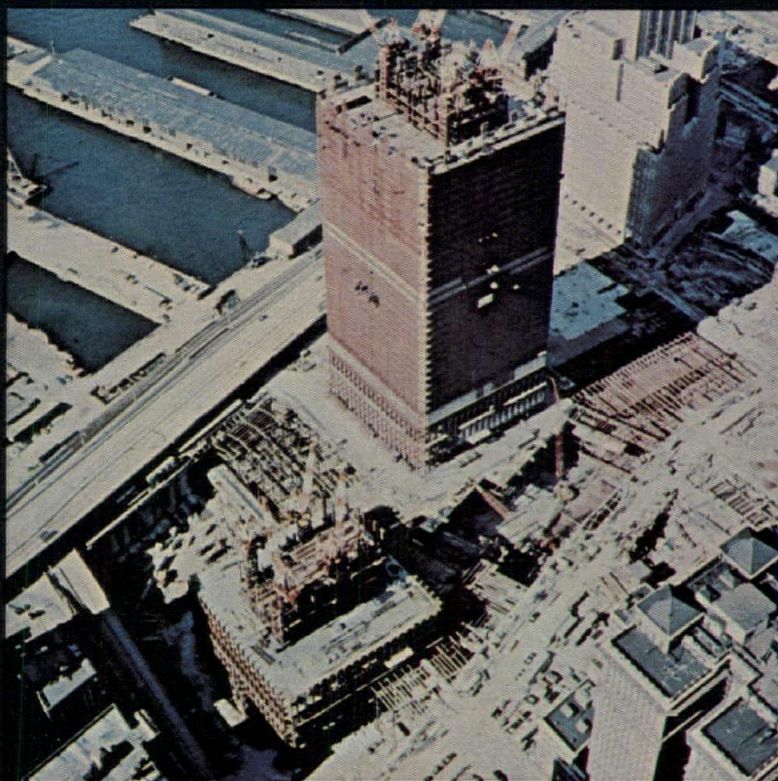


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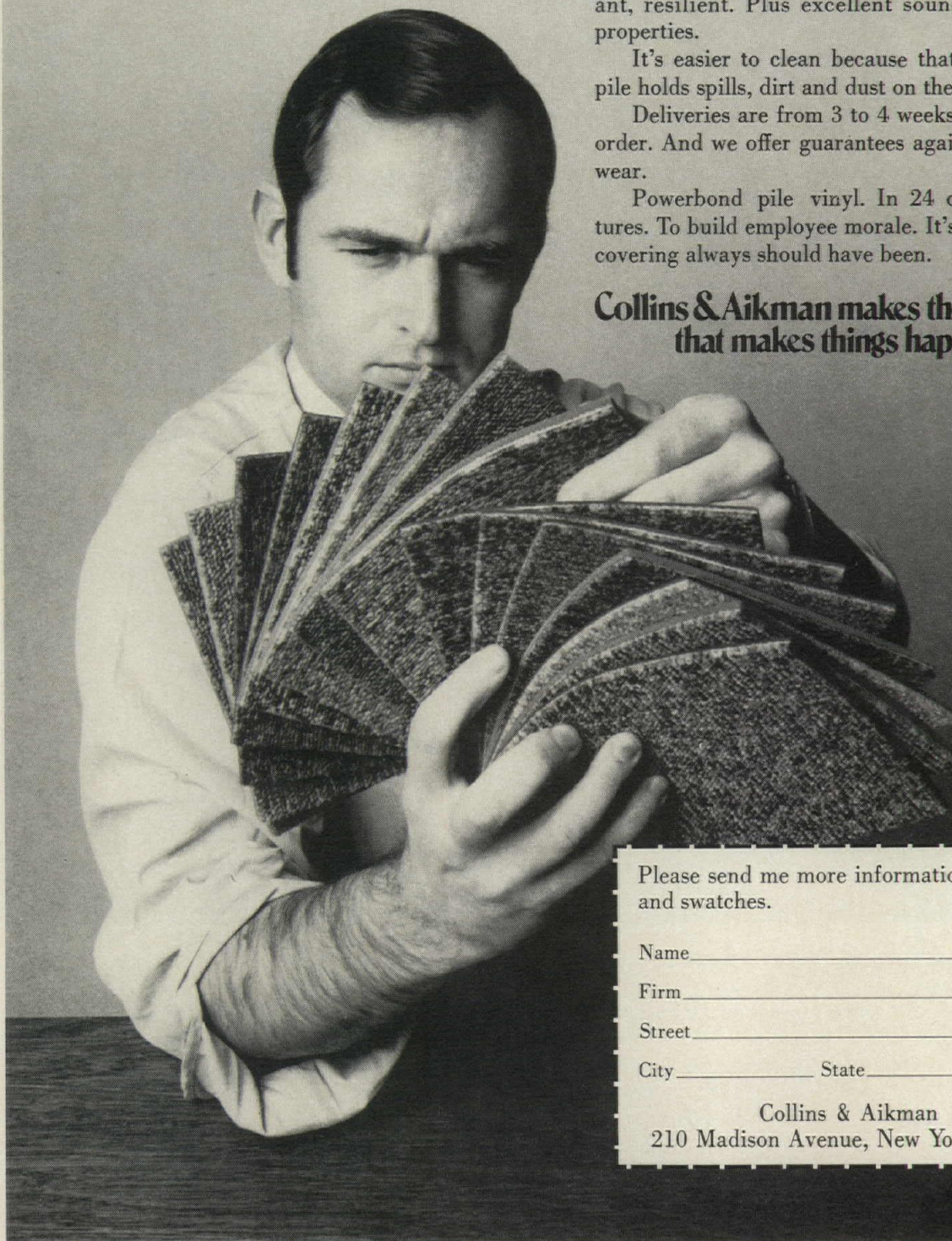
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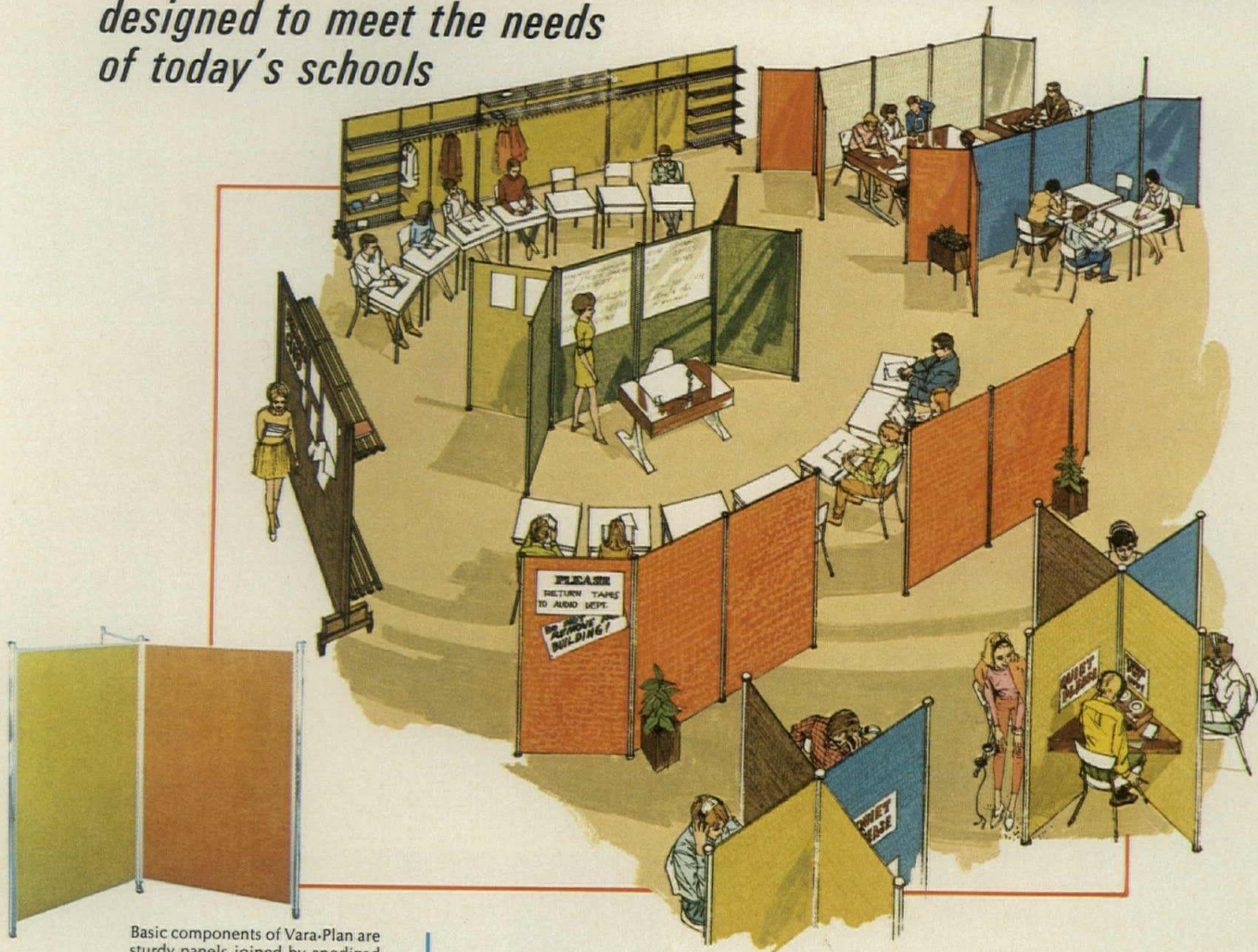
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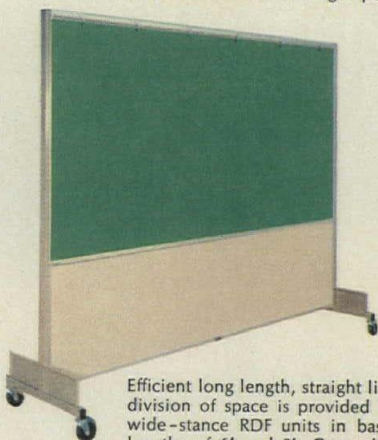
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"What passes for education today, even in our 'best' schools and colleges is a hopeless anachronism. Parents look to education to fit their children for life in the future, teachers warn that lack of education will cripple a child's chances in the world of tomorrow. Government ministries, churches, the mass media — all exhort young people to stay in school, insisting that now, as never before, one's future is almost wholly dependent upon education.

"Yet for all this rhetoric about the future, our schools face backward toward a dying system, rather than forward to the emerging new society," wrote Alvin Toffler in *Future Shock*.

Most architects, educators and school users are well aware that our educational systems are not equipped to cope with today's, much less tomorrow's, learning problems. This realization has shaken the substratal foundations of all educational philosophies. Architect, educator and user are now searching for underpinnings upon which to build the school forms demanded by new educational philosophies.

Schools, which until 30 years ago were not considered important enough to merit architectural attention, have become so vital to us that they cannot now be co-opted by formal prejudice. The client, be it educational bureaucracy, educator or community group, demands that the school's first task is to augment educational requirements. Whether it is an architectural monument or abandoned supermarket is secondary to the educational process. As a building type, the school has passed beyond the limits of architectural form.

"... logic would seem to require that we do not stop with an effort to improve schools; rather that we question the assumption on which the school system itself is based. We must not exclude the possibility that the emerging nations cannot be schooled, that schooling is not a viable answer to their need for universal education. Perhaps this type of insight is needed to clear the way for a futuristic scenario in which schools as we know them today would disappear," declares Ivan Illich.

The changing nature of educational philosophies gives no assurance that school education is the only road to learning. The traditional means of assessing education by degrees, and excluding those without them from the important business of the world is no longer tolerable.

It is not altogether a problem of schools. Schools conform to the arbitrary standards of the business world. When a college diploma is the equivalent of the union card for employment security and the doctorate an essential certificate of the teaching profession, the institutions that manufacture these credentials will be liable to political pressures and will exert an economic significance totally apart from their value as learning institutions.

We are moving toward looser building structure, but we have not yet found the means to build educational facilities that do not lock us into the future for 50 years. Schools today are destined to last longer than the educational ideas that generate them.

During the past few years architects have struggled intensively with the problems of architecture education. As a result, many of them are extraordinarily sensitive to the problems of learning. It is not coincidental that those who have challenged the validity of traditional architecture education are also the most deeply involved in giving form to new educational ideas.

It has been said that the future belongs to the prepared mind. The designer of schools must face the fact that there is no assurance that the minds of the future will be prepared in educational institutions as he has known them. The forms of the educational facilities presented in this issue of P/A by editors David Morton and Jim Murphy expose the seeds of new educational philosophies and the forms that architects have devised to assure their growth. But these are only temporary, for in school building, today's freedom is tomorrow's confinement. Bricks and mortar are more permanent than educational philosophies.

Forrest Wilson

P.S. 55, Staten Island, N.Y.; Richard G. Stein & Associates, Architects



Closing off the open plan

In breaking the rigid forms of the past, the concept of open planning may have gone too far. Some educators see a return to closed space, but not for the old reasons

America's schools are undergoing the most serious upheaval they have ever seen. They are under attack not only by educational critics, but also by students and parents and even by some administrators and teachers. P/A's last school issue (P/A, Apr. 1968) reported a growing discontent with an educational system that had become not only irrelevant but, according to some critics, destructive. Today the tempo of their attack has increased to a crescendo that demands the abolition of the school altogether in order to make way for new alternatives. A "horrendous, life-destroying mess [where] the schoolchild's chief expense of energy is self-defense against the environment" is how one critic, George Dennison, depicts the school in his recently published *The Lives of Children*.

Some educational historians have suggested that there is more than a casual relationship between the rise of industrialism in the 19th century, with its mass-production techniques of systematizing and standardizing, and the present educational system that grew up during the same period. In the name of efficiency, a system of education evolved through which a student became processed, or schooled, in much the same way that an automobile became tooled and produced. The thinking was that if the process was good in a manufacturing system it would be equally valid as a means of producing the kind of adult citizens a society would need to accommodate its growing industrialism. The end result was a standardized product, whether it was a car or a person, which was formed according to the rigid requirements of an assembly-line method of production.

Although there is talk of individualizing, or humanizing, education today, patterns of teaching remain influenced by old forms of thinking entrapped within old buildings. Most schools are still of the eggcrate variety where a student passes through a series of predetermined stages similar to those of an assembly line. Academic disciplines are physically confined and intellectually defined by square rooms along straight corridors where the student receives, at precisely determined stages, elements of his education, without

regard to whether or not he might be ready, or perhaps beyond, that particular stage. If he has passed through a certain room for a requisite number of hours he is necessarily ready. If not, he will be put back through the process either until he is ready or until he absents himself from the system. It often happens that during the process he may never have learned to think; at best he might have memorized some facts and learned some skills, many of which will not be of particular relevance to his adult life, all of which he might have learned with less waste of time and effort through a more realistic process of education.

A growing reaction to the nonhuman, assembly-line method of education has been emerging within the past several years. It recognizes that the process of learning is best facilitated when the individual's own needs become the focal point of his education. Some of the roots of the new attitude can be found in the thinking of those who have become known as "The Third Force" psychologists, a group whose theories contrast sharply with the other major psychologies of behaviorism and Freudianism. A leader of the group, Abraham Maslow, is concerned with the growing and learning process of the healthy person, rather than the disturbed, in order to examine the psychological foundations that are essential to normal growth and learning. We do not grow because it is good for us or because someone has told us to, he observes in *Toward a Psychology of Being*. Growth occurs when the next step forward is more pleasing or more subjectively rewarding. It is a process that occurs naturally, without prodding or pushing, because every healthy child is intrinsically curious and wondering and possesses an insatiable desire to understand his world. If this is the case, then why does growth often stop, what prevents it, why is it often a difficult ordeal that is hated even by the healthy child of normal intelligence? The answer is to be found through an understanding of the dynamics of two powerful forces that Dr. Maslow believes are at work within all of us. They are the need for security and safety on one side, which protect against pain and fear, and the desire to grow, on the other side, which impels the child to reach out with the courage to realize his potentials and individuality through the full functioning of his capabilities. But, because the need for safety and the need for growth are both accompanied by anxiety and delight, the proper growth situation exists only



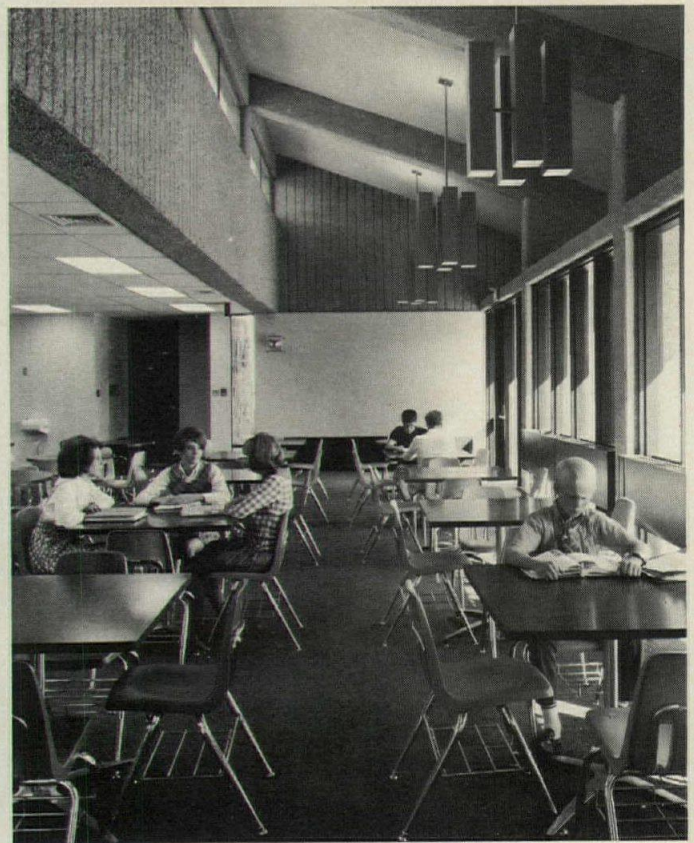
Cantilevered lecture room tops entrance of Evergreen (Colo.) Junior High School designed by Lamar Kelsey & Associates. (Rush S. McCoy photo.)

when the desire for safety is minimized and fear of it is maximized while, concurrently, the delights of growth are maximized and the fear of growth is minimized. If a conflict arises where one is forced to relinquish either safety or growth, he will usually deny growth in favor of the security of safety. If not, the unsatisfied need for safety will always be in the background demanding satisfaction, thus preventing growth. Only the child knows when he is ready to take the next step toward growth and learning. If, as in many of our schools today, his "chief expense of energy is self-defense against the environment," then growth, obviously, stops.

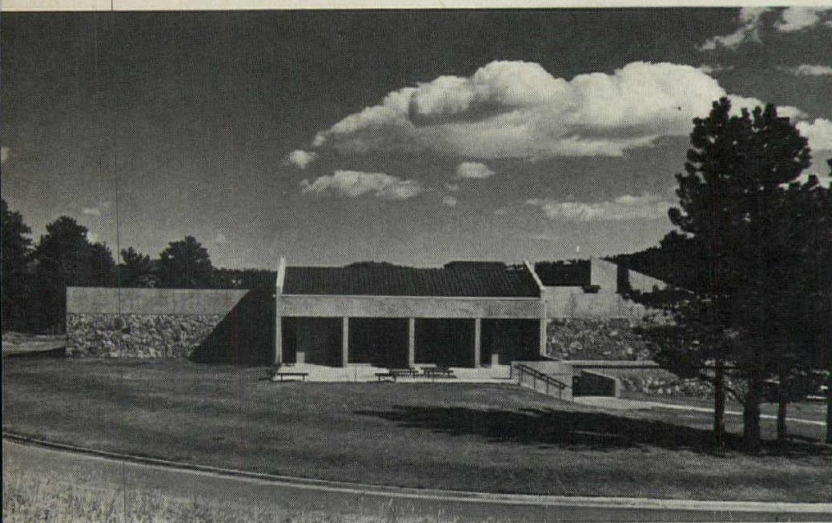
In the forefront of the movement to restructure learning through a recognition of the need to humanize education, to make it more relevant and more accessible to those whom it serves, new educational patterns are emerging that are altering the form of the school building. The open-plan school that appeared a few years ago seems to be undergoing a transformation that is leading it away from total openness toward an organization of space that understands there is also a need for some restricted, closed-off areas where a

child can go to be quiet and alone within a space that he can personalize as his own. The usual open-plan school, regardless of the degree of flexibility that has been designed into it, has not provided this. Dr. Harold B. Gores of the Educational Facilities Laboratories noted this recently when he said that "probably the best school right now is the open plan with some necessarily restricted space; people must not be deprived of a sense of place, of territoriality. Today the open plan is still controversial and there has been some over reaction to it, but that will settle down and ultimately it will be accepted. But in the end it is cheaper, and economics will determine what comes."

The schools shown on the following pages are all of the flexible, open-plan type, many of them with areas of restricted space. They are all designed to encourage and to accommodate more personalized, more humanistic, patterns of learning. But, finally, it is the education that counts, not the school. A continued adherence to the old, assembly-line methods of teaching is due more to the rigidity of the imagination than it is to the design of school buildings. **DM**



Both levels of Evergreen Junior High School have access to exterior. Open areas are on second level; specialized classrooms are below. (Photos: Guy Burgess, top; Rush J. McCoy, left.)



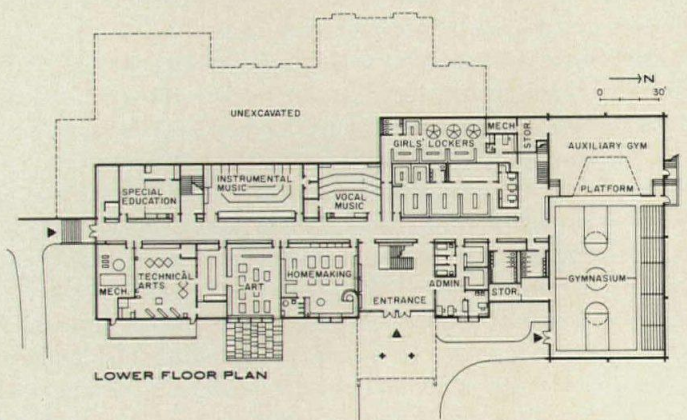
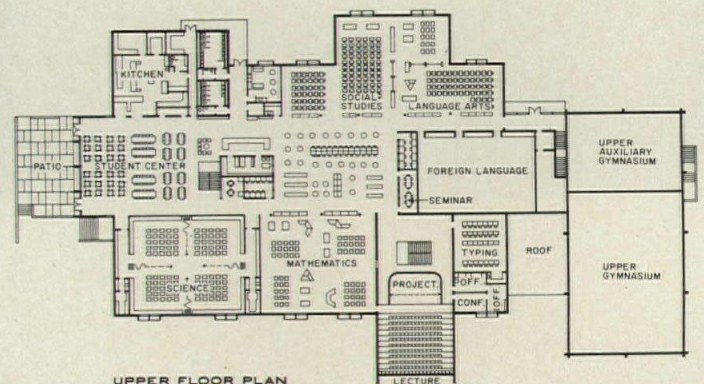
Open plan in a compact school

A compact junior high school at Evergreen, Colo. allows only 75 sq ft of gross area for each of its 800 pupils, yet also meets criteria for flexibility and open space teaching programs. Architects Lamar Kelsey & Associates placed the building on its saddle-shaped site so that both levels have outside access. Traditional rooms for specialized classes are on the lower level, together with administration, locker rooms and gymnasiums.

Above are large teaching areas grouped around an instructional materials center. A "student center" is the new designation for cafeteria space, which opens onto a patio.

A large lecture hall projects above the main entrance. The structure has reinforced concrete foundation walls and slab on grade, with steel frame above. Exterior walls are local stone chosen because it will weather well. Standing seam copper is used on sloping roof surfaces and skylights.

Interior partitions are demountable wall panels. Ceiling panels, lighting fixtures and mechanical diffusers are interchangeable within a grid of framework. To provide electrical service in the open teaching areas, floor outlets are placed on a grid 8 ft on center in each direction.

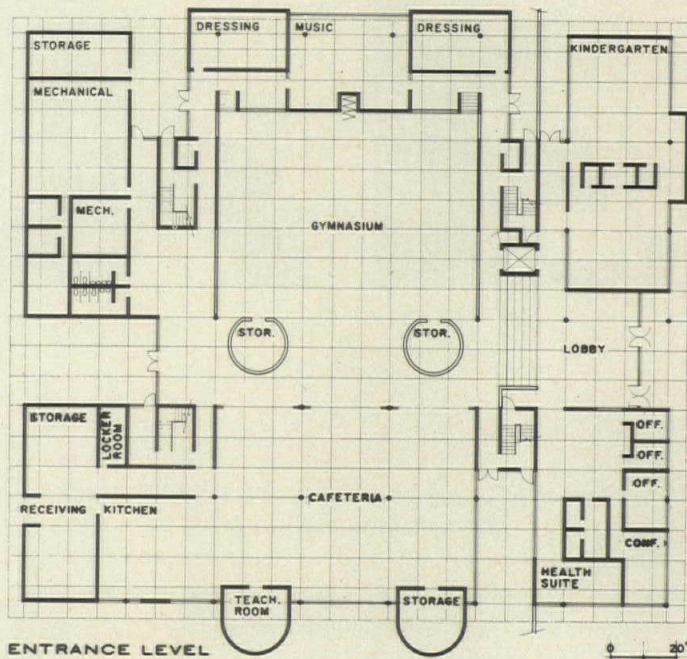
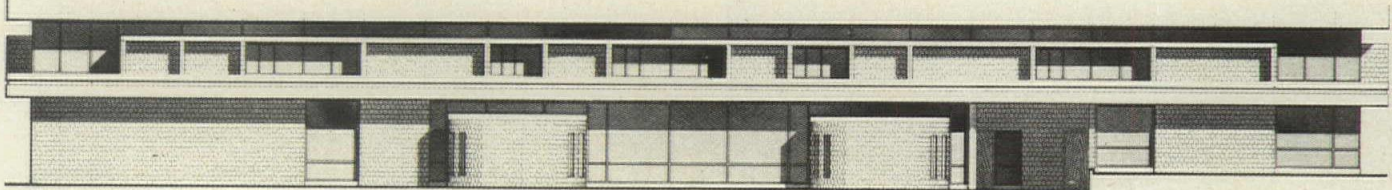


Stock furnishings replace walls

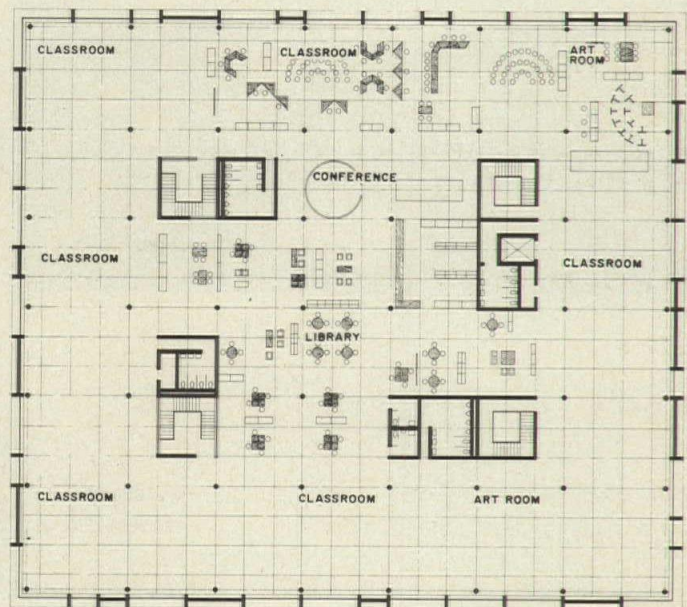
Movable furnishings form the only partitions on the classroom level of the Mt. Hope, N.J. Elementary School, designed by Perkins & Will. Class areas are grouped around an open library, and the circulation spaces can also be used for informal learning areas. Stock furniture and storage units, all movable, will permit class areas to be self-contained or combined with other areas for larger teaching spaces. The lower level is separated conventionally into offices, a gymnasium and a cafeteria, plus two kindergarten rooms.

The school, for 600 K-5 pupils, will be completed in time for the 1971-72 year. The structure is reinforced concrete with clay masonry walls backed by concrete block. Windows and mullions are steel. Class areas will be carpeted and corridors are to be vinyl asbestos tile. Total cost, including site, is \$1.875 million.

East elevation

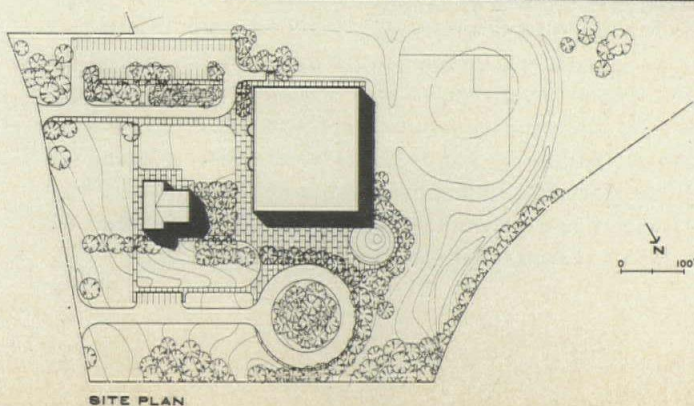
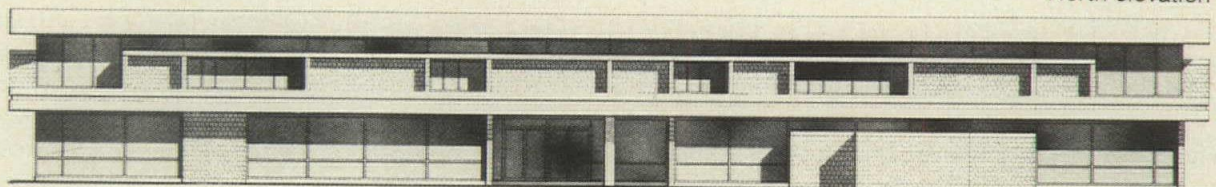


ENTRANCE LEVEL

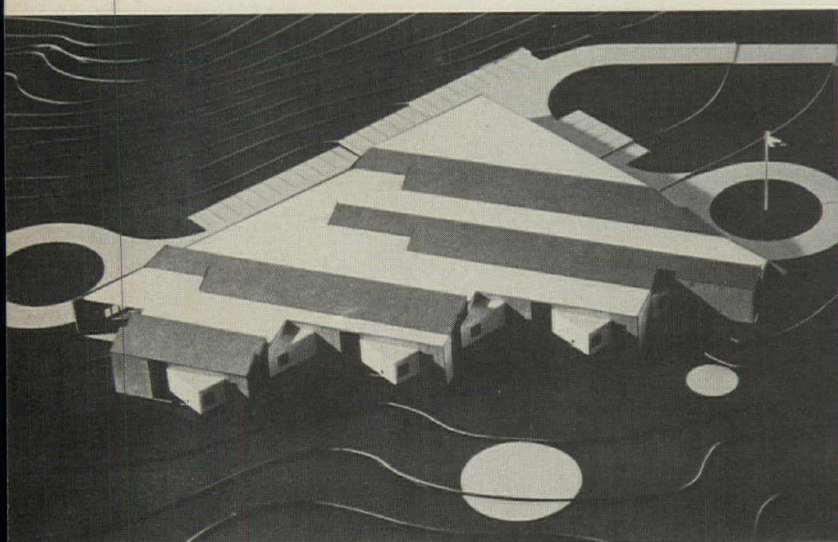
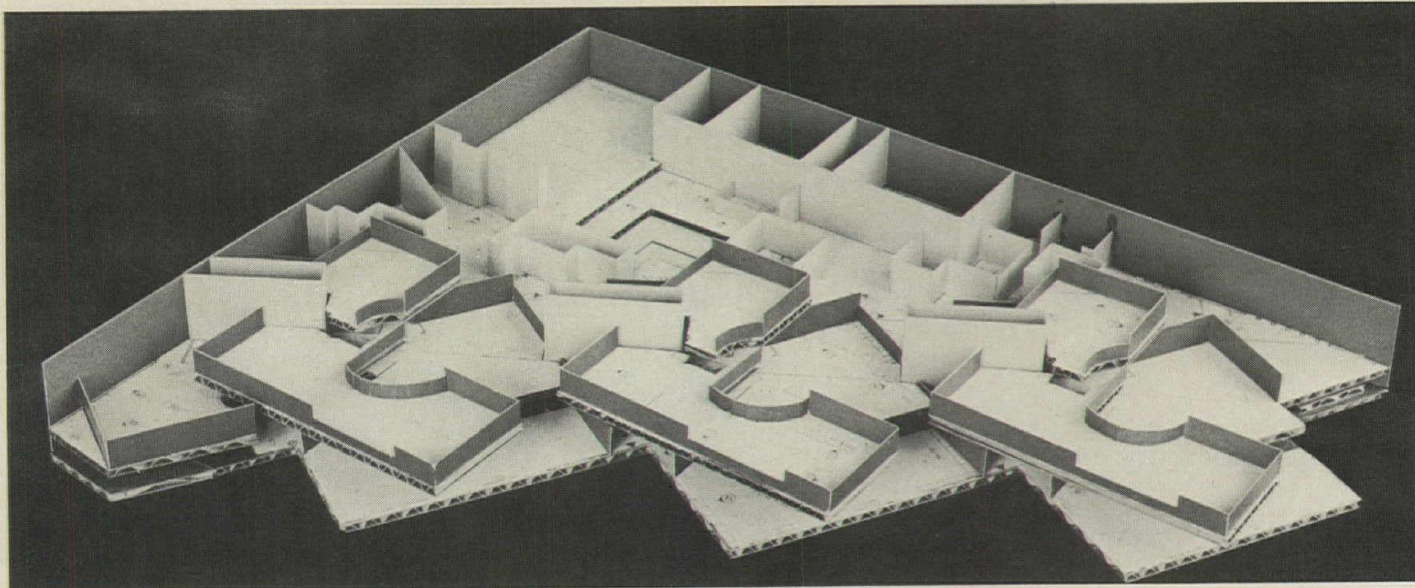


UPPER LEVEL

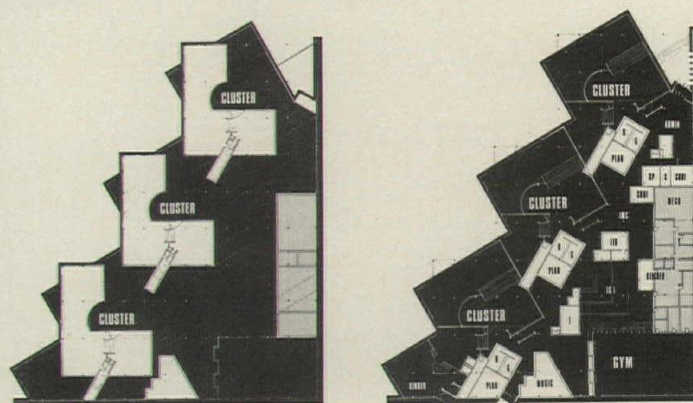
North elevation



SITE PLAN



Diagonal clerestory windows bring light to interior activity spaces of Southwest Elementary School, Columbus, Ind. designed by Hardy Holzman Pfeiffer Associates.



Open planning in Columbus

The latest contribution to the architectural renaissance in Columbus, Indiana comes in the form of Southwest Elementary School by Hardy Holzman Pfeiffer Associates. Occupying a pasture site outside the town, Southwest will be a departure, both in program and in configuration, from previous schools of the area. Although the Bartholomew (County) Consolidated School Corporation has been formulating a nongraded team teaching program for several years, Southwest will be the first school to fully embody the corporation's philosophy through open planning.

Southwest is based on the premise that a child's unique identity demands a learning pace and environment responsive to his needs. It is arranged in three clusters defining age groupings of lower, intermediate and upper primary levels. Teaching areas house small instructional materials centers within each cluster, as well as a teacher planning unit and toilets. Each cluster is scheduled to serve 180 students in three groups of 30 on each level. Spaces comprising each cluster are given different emphasis by floor level changes, variations of finishes and furniture arrangement, and a play between natural and artificial light. Cluster packages loosely

define one edge of an open access spine, the other side opening into music, gymnasium, large group instruction, main materials center, art, administration and service areas. Distinction between spine and teaching area is only implied by storage and support functions, making circulation space indefinable from educational space.

Natural light is brought through 1000 ft of clerestory windows carrying diagonally across interior activity spaces, and through large glass areas in exterior cluster walls. Fluorescent and incandescent lighting, used in various patterns and intensities, will add to the spatial experience.

In an effort to control costs, the architects chose materials commonly relegated to industrial structures. Simple masonry walls and industrial metal walls form the major exterior surfaces. Steel joists are exposed in most activity areas, supported by a deceptively regular system of steel columns. Interior partitioning, when used, is wood stud/gypsum board or concrete block, and depends on function for location, rather than column grid lines. Apparent bid figures indicate a building and sitework cost of \$23.68 per square foot, with completion scheduled for January 1972.

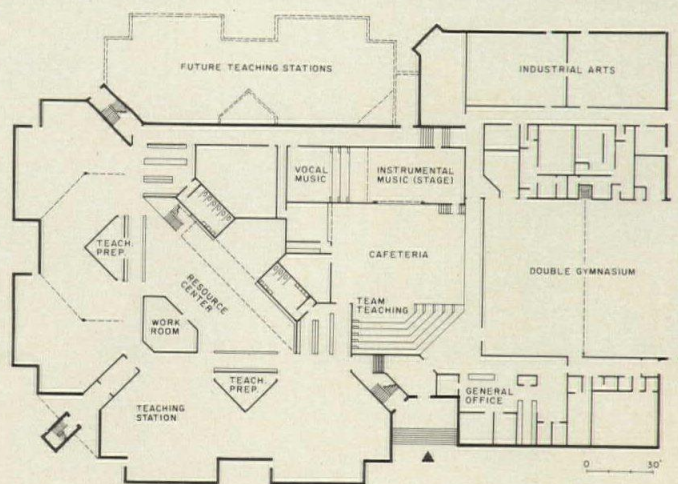


Irregular clusters

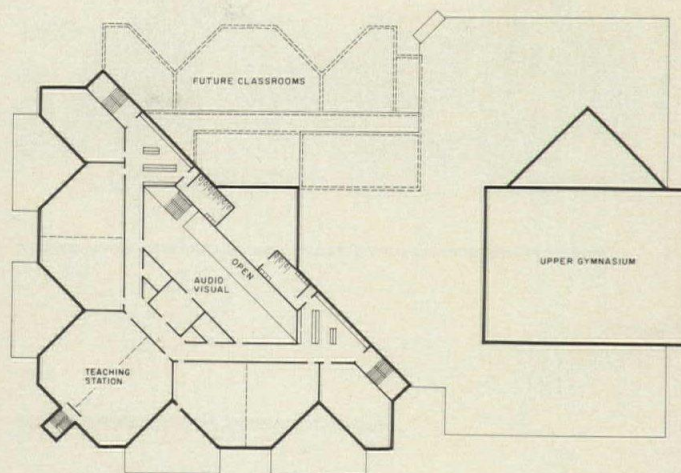
By opening up classrooms into clusters of three, shaping them irregularly and grouping them around a triangular library/resource center, the architects cut the cost of the 665-student Manse Road Senior Public School in Scarborough, Ontario, to \$18.75 per sq ft. Programming, planning and design decisions, however, were not made on the basis of cost. The three-classroom cluster was chosen because, even though open, it could be developed into a compact, intimate teaching unit. The cluster would also be a more "human and interesting environment for learning than a great room subdivided," according to Craig, Zeidler & Strong.

The lozenge-shaped classrooms permit a variety of seating arrangements that place the students' backs to the corridor. On the second floor, class areas are grouped by special subjects such as art, home economics and science. The cafeteria, team teaching area, instrumental and vocal music spaces flow together to provide an auditoriumlike area for performances and parent-teacher meetings. This eliminates the need to set up chairs and repair the floors where the gym is to be used for public functions. The boiler and industrial arts rooms are isolated because of noise.

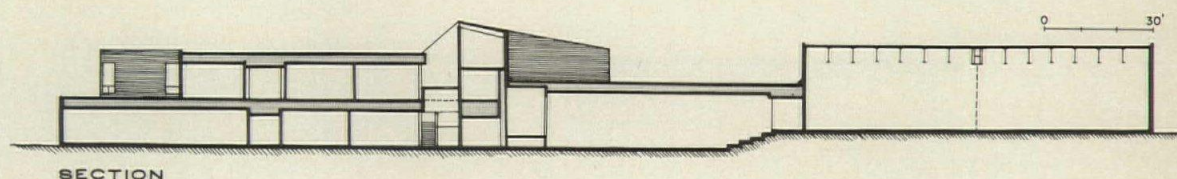
The structure is a steel frame of open web joists and long span joists supported on steel columns and spread footings. The gymnasium walls are load bearing. Exterior walls are brick; partitions are exposed painted block. Teaching and library areas are carpeted. The electric heating and cooling system uses radiant ceiling panels supplemented with convectors and booster coils in the air system.



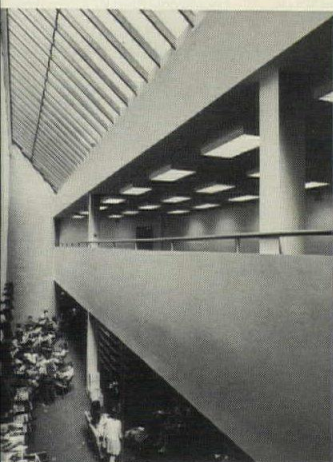
FIRST FLOOR PLAN



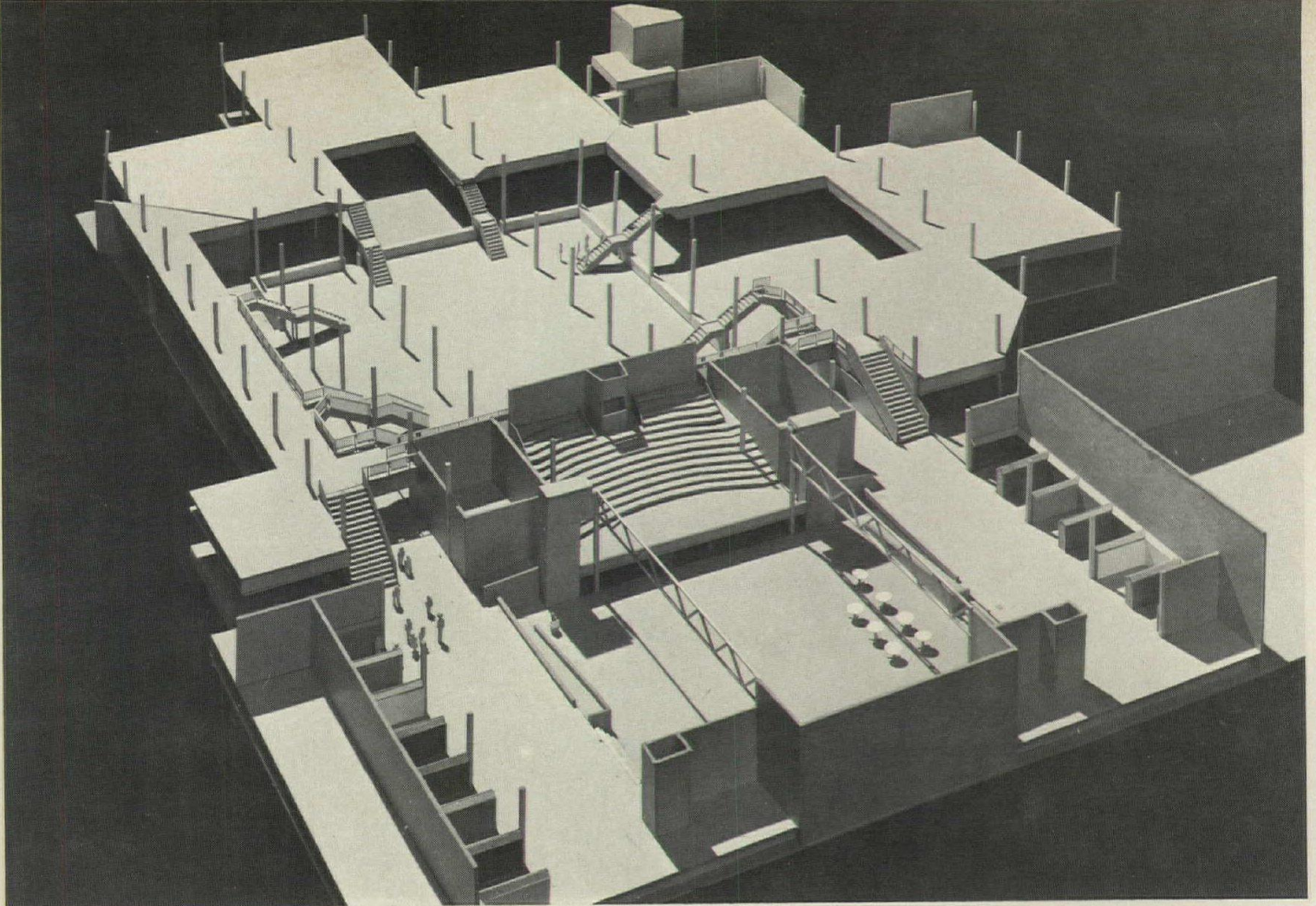
SECOND FLOOR PLAN



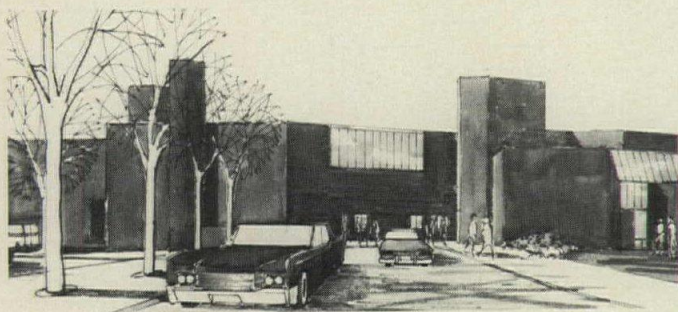
SECTION



Classrooms are clustered in groups of three at a Craig, Zeidler & Strong school in Scarborough, Ont. Cafeteria, music room and team teaching area create one large auditorium space. (Photos: Panda/Croyden Associates, top; Realisation, left.)



Patry/Carr

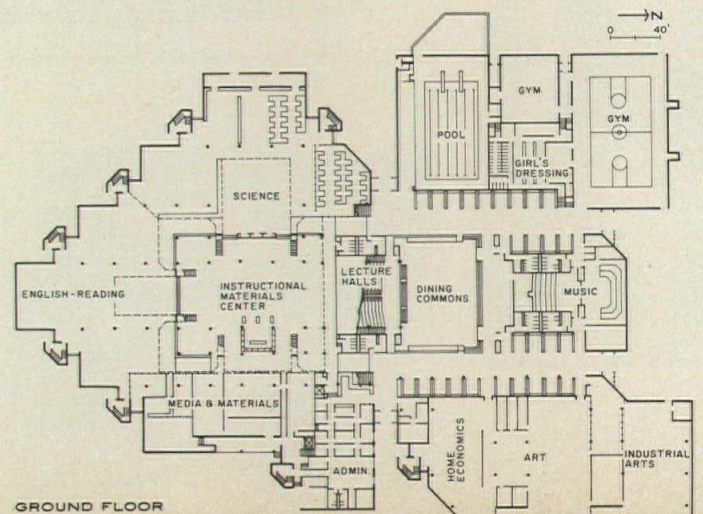
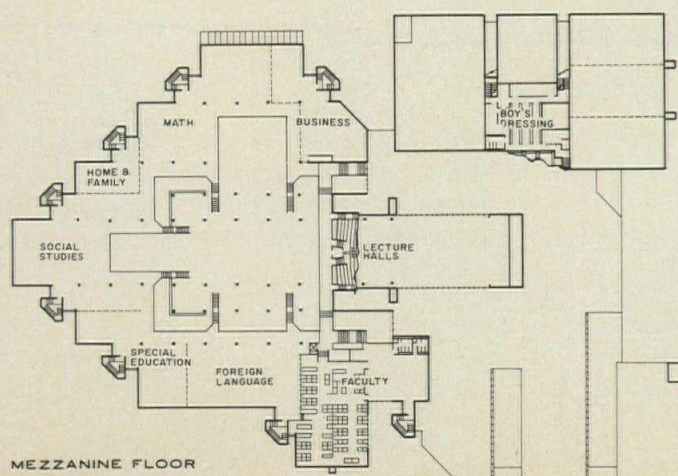
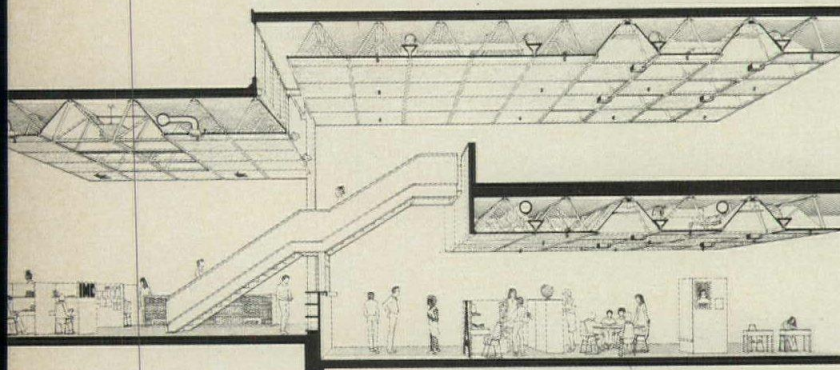


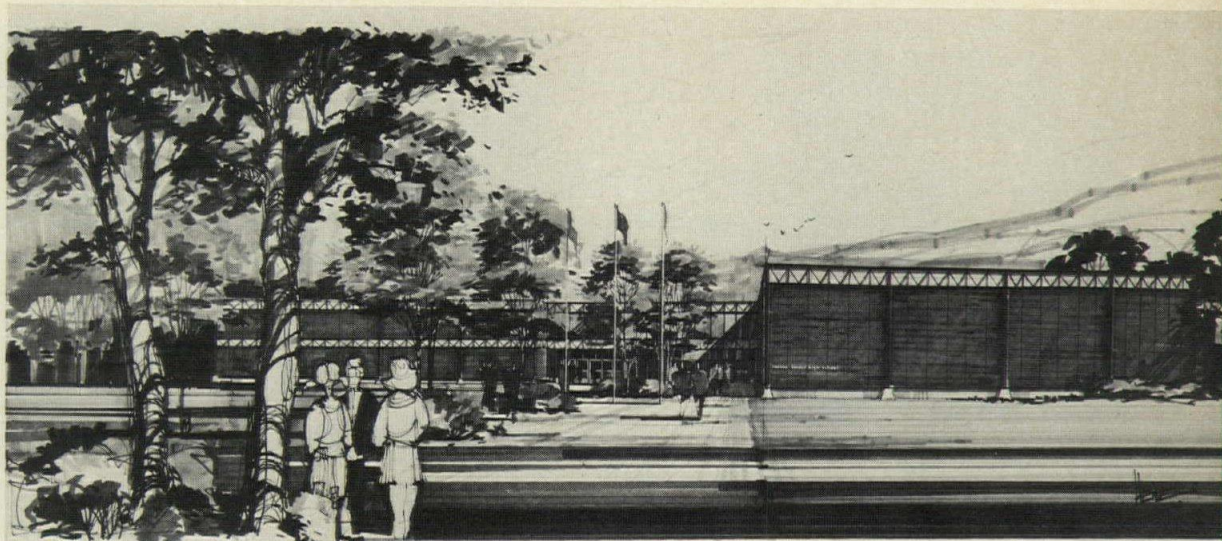
Form follows program

Three program requirements and swampy conditions at one end of the site contributed to the final form of Branford (Conn.) Intermediate School: its 1800 pupils in grades 6-9, an educational program that includes modular scheduling and team teaching, and extensive community use of the swimming pool, gyms, dining and auditorium spaces.

Architects Carlin, Pozzi & Associates placed the teaching, or "quiet" areas around a large instructional materials center on the south side; to the north are the "noisy" areas accessible to the public. A partial second floor contains more open class areas.

The structure is the Butler Space Grid system, with integrated air conditioning, heating and lighting systems. Partitions can be placed anywhere on a two-way 5 ft grid. Walls are exposed brick and concrete block; floors are carpeted throughout. The coffered ceiling is made up of acoustical panels in flat areas and gypsum board pyramid shaped light reflectors within the 5 ft module. Lighting and sound distribution are linked together to relate to teaching areas.





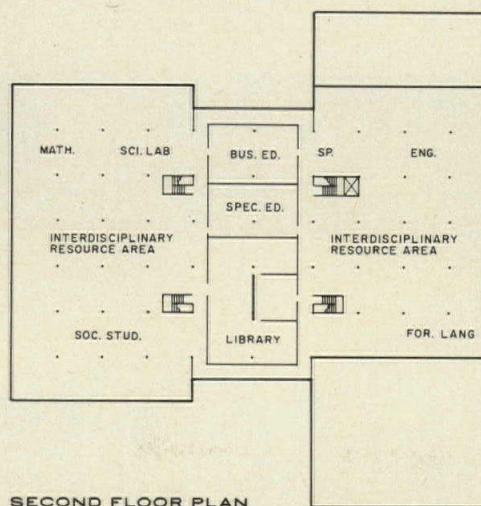
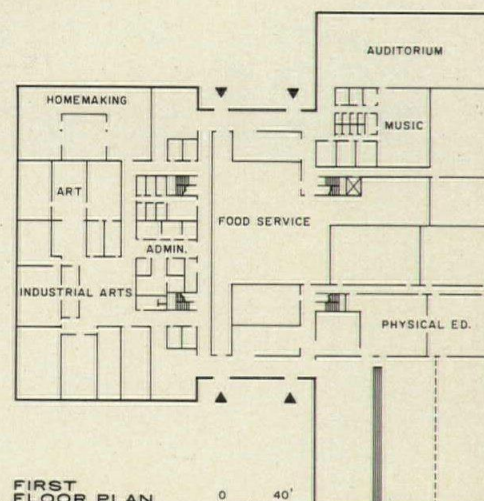
Toward an open system

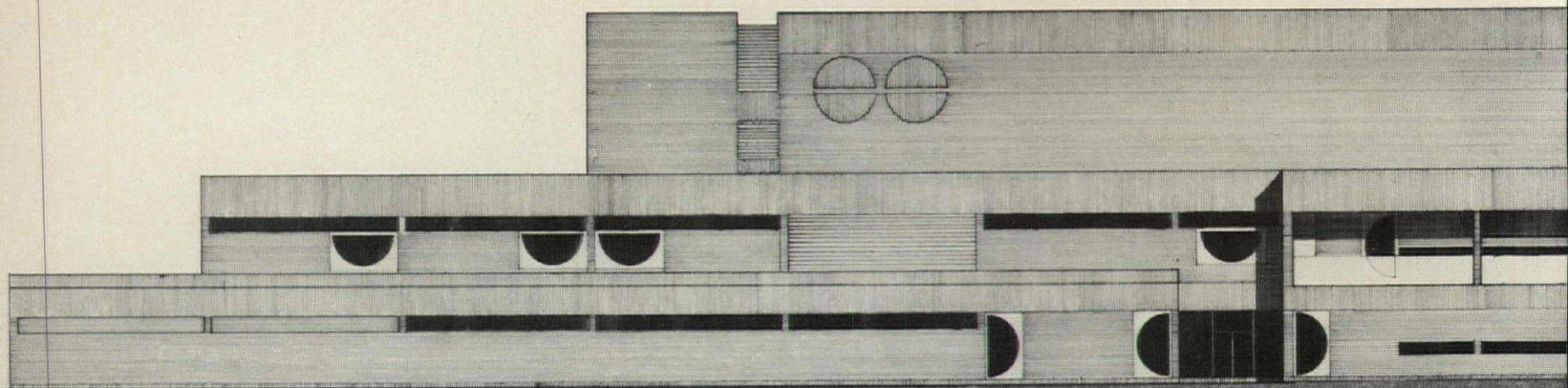
Having once built a closed-system school "which cost us quite a bit of money," the Racine, Wis. Unified School District is now developing its own open system in which management is more important than hardware. "We view ourselves as a corporation," says James Bomba, who handles technical production and cost analysis for the school board.

Dr. Vernon Pinkowski, the district's director of planning and development, and a team of educators worked on program needs at the same time that architects Brust & Brust conducted site analysis and engineering studies. Both the architects and the contractor, Nelson & Co., had been selected by competition and worked on "good will" letters of intent.

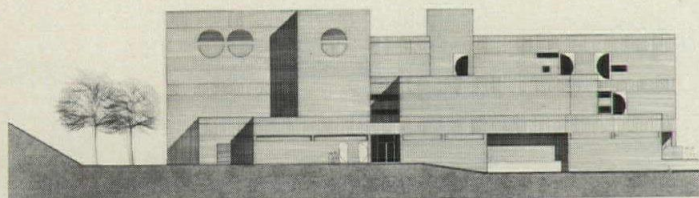
Open shelf subsystems, which Bomba says are "plentiful," will be procured by the contractor under his own sub-contractor arrangements. These will provide the steel structure, HVAC, ceiling/lighting, flexible partitions and the exterior skin. Engineering drawings have been accepted at the foundation stage, with only a "general idea of what's above," according to Bomba. "We want to take advantage of certain subsystems that have been developed, like the ceiling/lighting modules, but they must interface with ducts and other things we can buy off the shelf."

First to be built under the systems approach will be two junior high schools (if a special school bond issue gets through the polls). They are essentially the same: second levels are open plan, first levels are divided into administration, homemaking, art, industrial art, music, auditorium, physical education and food service areas. Teaching areas are 30'x30' modules with flexible partitions. Instead of a library, the schools will have different resource areas for math, science and social studies.

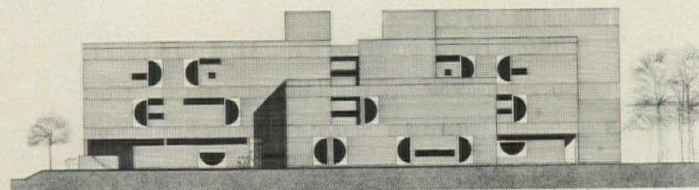




West elevation



North elevation



South elevation

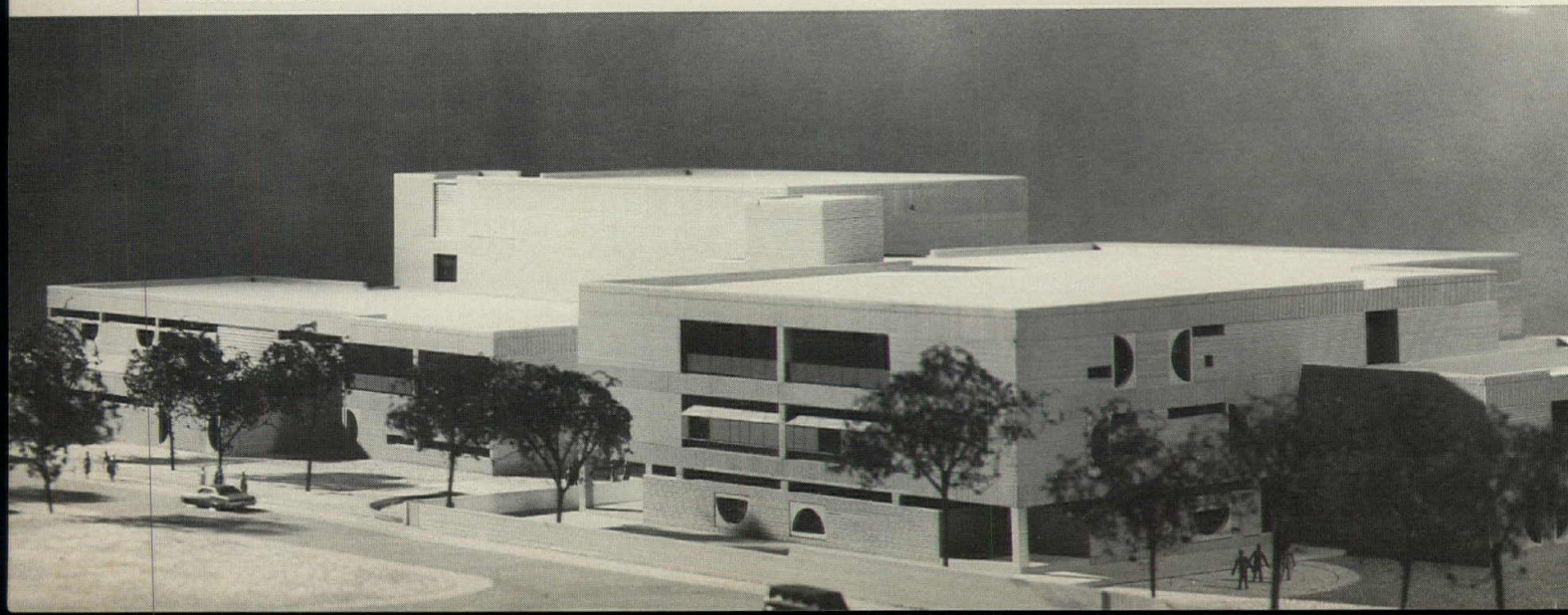
House plan grade school

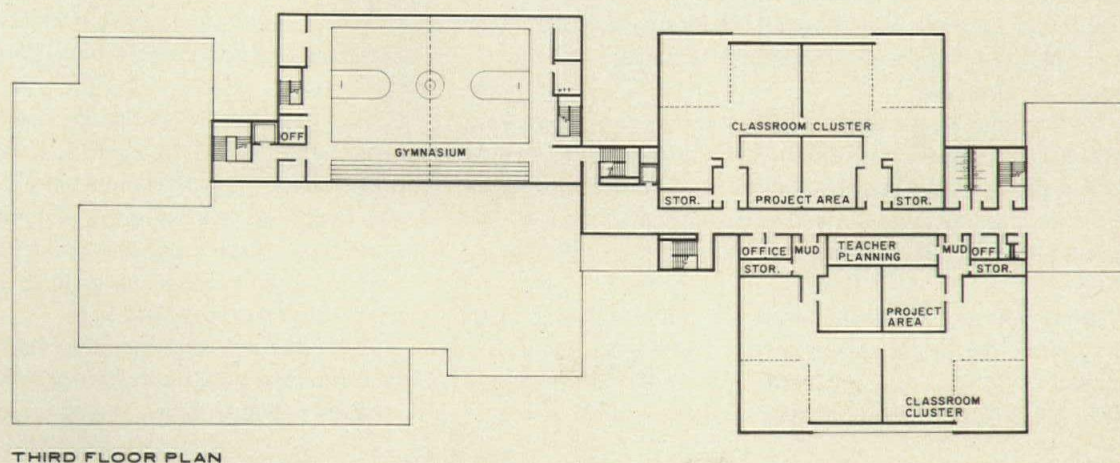
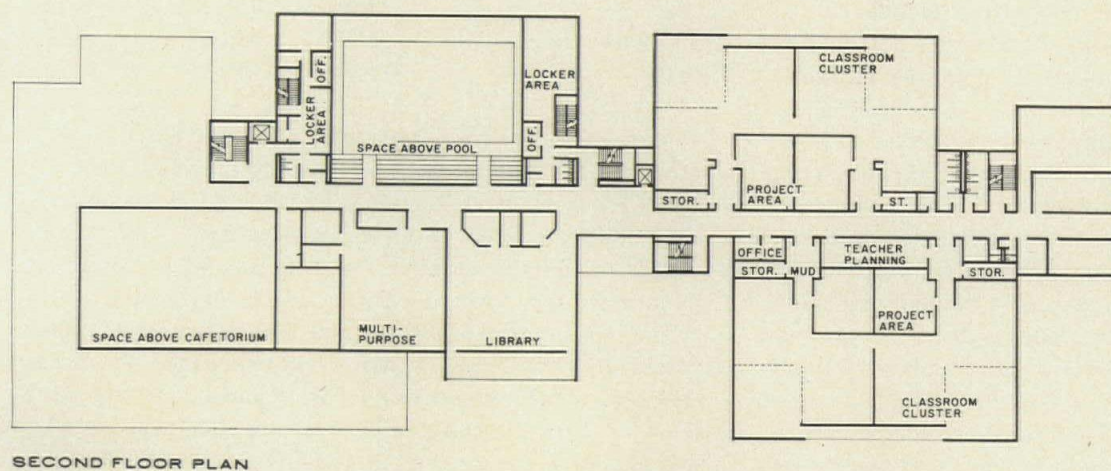
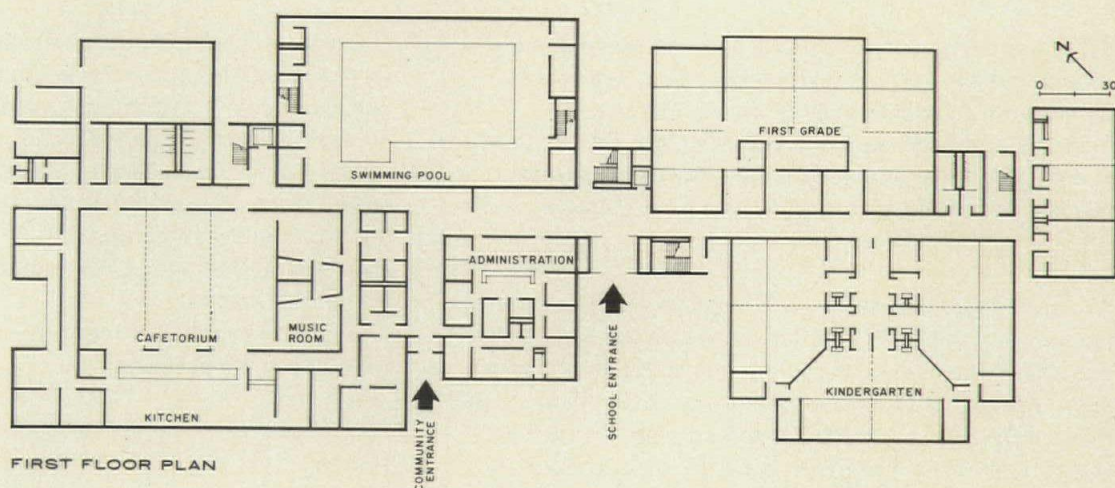
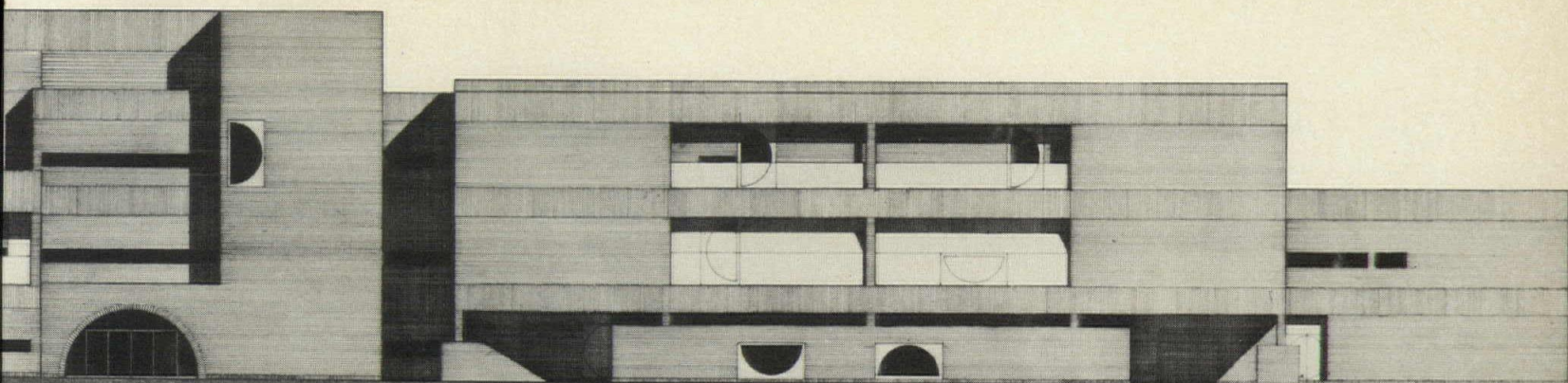
A house plan elementary school in Boston will separate its 1000 pupils into Early Childhood (kindergarten and first grade), Primary (second and third grades) and Elementary (fourth and fifth) units. Each of the upper houses is subdivided into two team centers of 150 children each and, within these centers, to clusters of three classes focused around a project area. The Early Childhood house is divided into clusters of two classes of 25 pupils each. A separate wing is reserved for retarded children.

Because the Minot-Hemenway Replacement School is to be used extensively by the community, the academic areas can be closed off from the gym, pool, cafeteria and library. In the class areas, movable walls are made up of individual panels which the teachers can arrange at will. The project area walls are glass. Architects Samuel Glaser & Partners designed the semicircular windows in response to Boston's limit of 6 percent exterior glass.

Near the ocean, the site has a high water table which dictated pile foundations and a first floor slab raised 3 ft above grade. To keep loads low, the structure is steel frame with lightweight concrete block walls faced with gray brick. Upper slabs are composite concrete and steel on steel beams, and the gymnasium floor, directly over the pool, is lightweight concrete on steel deck supported by steel beams and 60-in.-deep plate girders.

Edward Saxe Studio, Inc.





Schools in a hurry

Charles B. Thomsen, AIA

School building technology and systems techniques now on the shelf permit fast design and construction. A partner in Caudill Rowlett Scott, Architects, Planners and Engineers, the author details the process of providing three additions to one town's elementary schools on a hurry-up schedule and within budget

The commission, to design and build additions to three elementary schools in 10 months, could only be done with available systems and a program that included prebidding of subsystems and use of performance specifications. Caudill Rowlett Scott received the commission from Union Free School District No. 25, Merrick, Long Island, on Oct. 31, 1969. Two strikes, one against a manufacturer and one affecting steel delivery, stretched the 10 months to a little more than a year. Pupils moved into the first addition in November and into the other two shortly after they returned from Christmas vacation.

Three days after formal appointment, a three-man CRS project team arrived in Merrick, moved into the boardroom and spent four 16-hour days hammering out the program. School officials and board members joined the architects, and because of their involvement, formal approval was automatic. The program involved 25,600 sq ft, open-plan multi-instructional areas plus multipurpose spaces. Construction costs were estimated at \$1.1 million for the three additions.

The following week the project went to the public for referendum. Since state laws require that the public be given a month to deliberate any new bond issues, it would be mid-December before it was known if the money would be available. Work on the project continued, however, in order to make the deadline.

Rather than waste time designing and doing the working drawings on pre-engineered building systems, CRS decided to use performance specifications. These identify only what a building system is supposed to do and allow the manufacturers to select the most economical means of meeting them.

While the public was deliberating whether or not to pass the bonds, performance specifications were written for four building systems: heating, ventilating and air conditioning; ceiling/lighting, roofing and structure. Essential require-

ments were a 5-ft module, an ability to put a partition anywhere on that module, a long-span structural system, a flexible heating and ventilating system that would allow partition changes, and a good acoustical/lighting system.

On Dec. 17 the citizens of Merrick voted "Yes" by 32 votes. Three days later four key subsystems went out to bids and working drawings were begun on the rest of the construction. At that point CRS had been Merrick's architects for only six weeks.

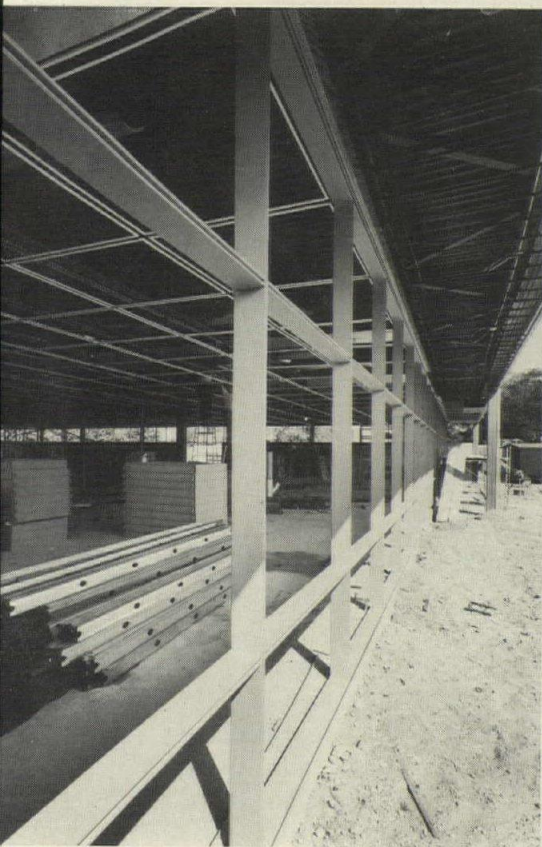
On Jan. 12 bids were received on the subsystems. All were under the estimate:

	Estimate	Bid	Cost/sq ft
Roofing	\$ 28,640	\$ 27,365	\$1.06
Ceiling/lighting	57,632	50,750	1.96
HVAC	88,841	87,989	3.40
Structure	96,032	48,687	1.88
Total	271,145	214,781	8.30

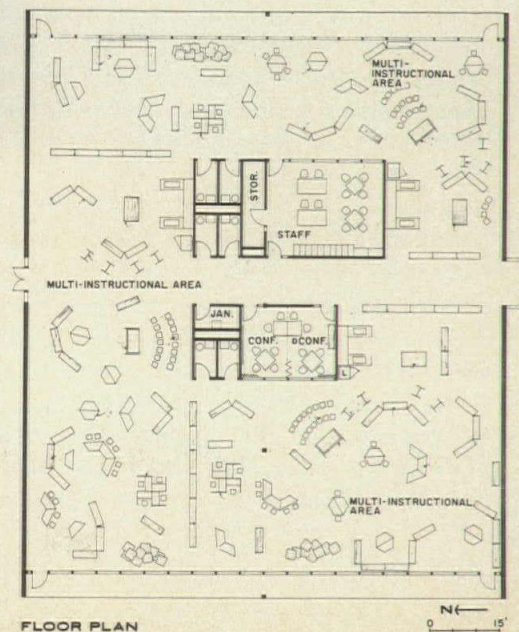
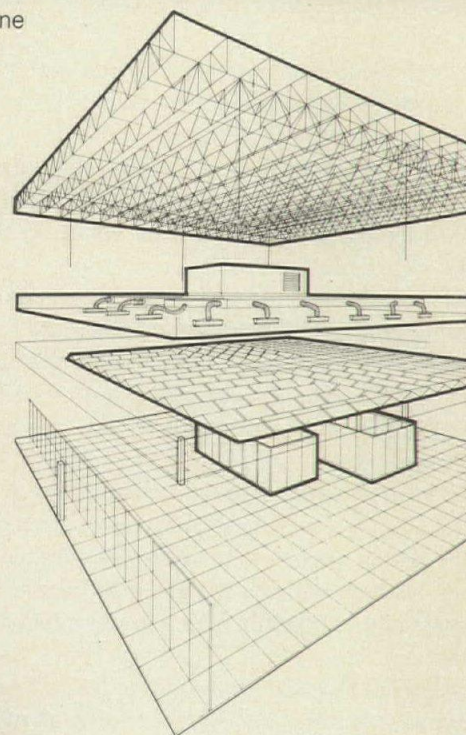
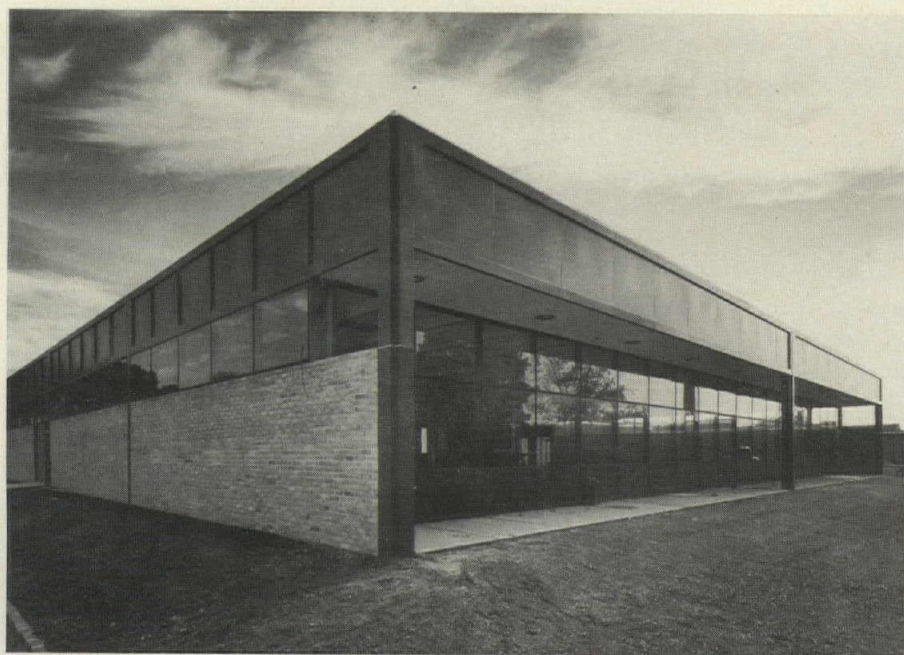
Winning bidders were L. Martone & Sons, bidding a convention roof; Gilbert Phillips Inc. bidding a Hackett Ceiling Dynamics product; H. Klein & Sons bidding Lennox equipment; MaComber Inc. structural steel system.

Even though the 10-month deadline was not met, many of the procedures used proved their validity. In particular:

1. The building is extremely flexible. This takes some of the pressure off the design phase. It is not necessary to consider every last detail of the floor plan arrangement because if it does not work out as expected, it will be quite easy to change. Since the partition arrangement does not affect the structure, mechanical and ceiling systems, the final partition modifications can be determined almost anytime before move-in.
2. The manufacturers of major building subsystems were approached directly and asked to give cost information on those building systems best suited to the stated objectives. The result was a wide range of competition and some very good bids. Since these manufacturers will use their standard components, there will be a big savings in construction time — and material costs.
3. Prebidding these systems saves time because the manufacturers can gear up to produce their products and avoid material delivery delays. It also gives an early indication



Systems school addition at Merrick, L.I. is one of three designed by Caudill Rowlett Scott. (James Brett photos.)



FLOOR PLAN

whether or not the budget will cover the building as originally designed.

4. It is not necessary to do working drawings for these sub-systems. The manufacturers will supply their own standard shop drawings. This saves time and architect's fees.
5. CRS is allowing industry to use its own mass production facilities to build components for the job, rather than forcing them to comply with custom designed products.
6. Through use of standard products and time savings, total costs are slightly less and the quality is greater.

Education: more or less?

Is schooling, or the school building, essential to learning? Pros and cons are presented by two educators, each from uniquely different environments and viewpoints

The following two interviews point up the clash between two opposing views of education which will have revolutionary consequences for school design.

One champions education, the other condemns it as useless in its present form. Mary Willis, director of the Springfield Avenue Community School in Newark, New Jersey, points out the driving urge for education among the blacks. Ivan Illich is co-founder of *Centro Intercultural de Documentación* (CIDOC), an "antischool" in Cuernavaca, Mexico. He claims that education as it is now institutionalized can never supply the needs of the majority of our people and therefore alternative learning means must be devised.

Both views converge on the importance of self learning. Mrs. Willis in her education of parents, students and community people gets them together with the best minds she can find; Illich champions the ability of people to teach themselves and condemns educators certifying another's right to learn.

Designed by Ron Bedford, the Newark school occupies former loft space and can be converted at will as educational needs dictate. Illich, a director of CIDOC in Cuernavaca, predicts the elimination of schools altogether in a year and a half. CIDOC, designed by Sascha Illich, is planned to self-destruct into learning spaces to accommodate whatever uses the new directions of education demand.

Both interviews were taped by P/A editor Forrest Wilson.

Ivan Illich:

We will find that learning is built on the assumption that it is a consequence of teaching, and that learning is either a product of teaching or is identical with the process of teaching. But common sense tells us that learning is something we do without need of a preplanned process.

The school teaches us that schooling is essential to learning. We are taught that the preplanning of learning by someone else makes learning valuable and that learning only happens as a consequence of teaching. If we are self-taught we

are told that there is something wrong with our learning. If we accept this, we accept that the most intimate activity, that of learning, depends on somebody else and can let ourselves be sold anything.

Once we give up the right of independent learning and believe that we need a special place, a special set of hours, an advisor to teach us in order to learn, we have transformed ourselves in the realm of personal relations and need everything from sensitivity training to sex instruction.

Alienation of man does not happen at the workplace; he comes to the workplace pre-alienated. The knowledge industry is an alienating industry because it teaches man to view his own learning as a product. It is built on the idea that one man's decisions set the conditions under which another man learns.

Students have always known that the teacher was not teaching them anything. We don't need teaching in a modern society. In a year and a half from now, people will take for granted that we don't need schools. The schools we build today are group prisons. I told them in the early sixties not to build convents because they could not be sold. If they insisted, I advised to build them in such a way that in 10 years they could be sold as minimum security prisons, or as hospitals for the mentally insane.

Do not build schools unless you plan for their conversion. The architect who builds a school so that it can be used for something else builds a successful school.

The longer a man is schooled, the more promotions he gets and the more money he earns, but it cannot be proven that his efficiency improves because of his schooling. You can further prove that for every added year a man stays in school it costs more than it did the year before. A man who gets over 12 years of school involves an expenditure of not twice as much money but five times as much. It can further be proven that the upper 10 percent succeed in obtaining 10 times as much public money per child than the lowest 10 percent. At the same time it can be shown that the child in the upper 10 percent gets about 30 times as much money spent on his education than does a child of the lowest 10 percent.

We can arrange institutions on a scale. At one extreme are those that spend more money on the demand for their products than the making of those products. At the other are

those that spend nothing on promoting demand for their services. Coca-Cola, cigarettes and the like, that for every 10 cents, one cent is invested on the thing itself, two or three cents on the delivery to you and the remaining on creating a demand for the product are at one pole; at the other are such things as sidewalks, which do not advertise at all.

On the one side are institutions which precipitate doing of things while on the other you have institutions that sell something that will be done to you. Therefore, the delivery of the goods costs enormously more than the goods delivered. The same phenomenon exists in all service industries including education.

It can easily be proven that the institutions that promote need, produce goods or services for consumption which come in quanta, and the minimum cost of each quantum is totally beyond the reach of most human beings of the underdeveloped nations who will not be able to buy a car, a tape recorder or a four-year package of schooling. Therefore, institutions such as schools and the institutions that create school buildings, accessible to a few but obligatory for everybody, are basically discriminatory and produce a pollution, a distraction of the political, psychological and physical environment.

Learning, which is the result of a process, at a cost beyond the reach of the majority, produces alienation and social polarization at the cost of the majority. If we look for alternatives for the future, we must look for the development of as many institutions as possible of the kind that are accessible to all.

The damage done is in believing that labor intensive activities are only on the manufacturing end. They are on the man-tooling side. We should protect them, the people, from being schooled, from being manipulated.

Mary Willis:

We know that learning goes on all the time. Our children learn because they need to learn. Nobody's quite figured out what it is, how sequential it is, or whether it is as sequential as we think it is. But it is obvious that a kind of intellectual gut-sharing is going on that keeps that kid moving and acting and responding and utilizing all the time.

If you are a competent teaching adult and somebody says to you, what do you do about this kid that's not learning. If somebody asks me that question, my first assignment is who is the child? Tell me something about him. What are his parents like? What are their expectations? Then I can tell you what we need to share for both of us to learn. Learning is a funny thing. If your kid learns, you learn.

We said let's look at that process and make an assignment. Let's just suppose that that's lifestyle education. Let's turn that into an examining assignment and see if that teaches us anything. That's what we did and it did. It taught us that kids are going to learn in spite of you. That it is the institutions that stop the process.

I don't care how bad their home environment is. The lousiest home in the world is most important to that child. That's where he's nurtured. That's the womb that formed him, and that's the place in spite of himself that he's going to return to. So your best bet, Jack, is don't put a negative assignment on him. Don't try to make any kind of judgment about it. Just take a good look at it and say, well, that's where that kid is. That's his home. It has to be important to

him. If it's important to him then there are things of value to him that he's relating to.

We haven't met anybody who doesn't shed tears when their children don't meet the expectations of this society. The people who are most maligned by society are the ones who are most willing to support it if it means something to their child.

People need to know that the people this society has kicked the most are this society's most latent supporters. They would like to make some kind of contribution to insure a place for their kid. They want to go to bed and imagine that 20 years from now how successful that boy will be. He may be an addict, but don't kid yourself, Jack, they go to bed and have the same kind of dreams.

We also discovered that the ability to relate to a highly intellectual educational facility belongs to everybody. We ran workshops with very talented specialists. The community people handled it better than college people. And one of the reasons is that they are so starved for information. So great is the desire and the wish to know, that they would subject themselves to almost anything. We found that parents in our community had a compelling drive to know and I can't explain it because I don't much believe in research.

We took the best professionals we could find and ran seminars, workshops, whatever you want to call it, for parents in the community. What we had left over we let the teachers have. If you work the educational system and decide what is the one factor that if you took it away would destroy the system, it would be children, right? If you don't have children, you don't have a system.

Whose children are they? The parents'. You better take your energy and your resources and put it where it needs to be put. We don't have to argue about community control or anything. All we have to do is deal with what is in fact the fact. And if you know that's your priority, that's where you put your stuff.

We decided when we looked at this building and looked around us, what right have we to run a building here when we have kids out in the street who have no place to learn? You are only strong to the degree to which you can share. There's a hidden reason in sharing, you broaden your base. The danger of new institutions is if you're not careful they quickly begin to look like old institutions and the one way to keep that from happening is to keep all kinds of folks coming in.

All the parents and the community who are working in the school share a little bit of it. They've fought and they've cried over it and they've worked so hard. You know, it's like a new baby. When the child begins to grow and move out, it's hard to give up. You get concerned by too many people coming in. But you come to a realization that it is a beautiful, humane thing that there is some place where somebody can go. We're not going to let anybody tear this building up. We're going to let people, young children, old children come. That's what happens to the kids that are out there burning. What they're saying is "there isn't any institution or society that wants me." You think about that. How does that make a person feel down in their stomach? It's a terrible thing to realize that there's no place for you.

Maybe all you can do is mess in the milieu, the environment, and leave it there and then have the sense to get out and let people do what they want to do.

Up from institutionalism

"Because adults take the schools so much for granted they fail to appreciate what grim joyless places most American schools are, how oppressive and petty are the rules by which they are governed, how intellectually sterile and aesthetically barren the atmosphere."

Charles E. Silberman, *Crisis in the Classroom*

Only recently have educators stopped blaming the unproductive student for not learning and have begun to analyze the institution of learning itself for its failure to educate. This is particularly true in the inner-city schools where the students do not have the whole matrix of reinforcing social institutions that promise middle-class children if you tolerate a little torture now, you will have success later. Two reinforcing social institutions that do exist in the inner city now are stratification (by class) and segregation (by color), points out educator Daniel U. Levine. They work to take away any hope of attaining the American Dream, knowledge of any who have attained it or, for that matter, knowledge of any alternative lifestyles save for the bums on the doorstep.

The inner-city school program

How does the school fit into this social picture? As Mario Fantini and Milton Young pointed out in *Designing Education for Tomorrow's Cities*, "The general belief exists in this country that education is the means by which many social wrongs could be righted [but], the present educational system is more a creature of historical accident than it is of sound educative planning. Students and staff members are prisoners of . . . an irrelevant close-ended system still permeated by the concepts of thirteenth-century scholasticism."

For these and other reasons, schools are viewed as institutions alien to the community which they serve. Problems of alienation are compounded by lack of participation of the community and inefficient use of school resources (schools are closed after classes so they cannot become a part of community activities). In *The Open Classroom*, Herbert Kohl cites the concept intrinsic to the school that can speak to the community, where learning is an automatic part of the experience of growing up: "The whole community ought to be the school and the classroom a home base for the teachers and kids, a place where they can talk and rest and learn

together, but not the sole place of learning. The classroom ought to be a communal center, a comfortable environment in which plans can be made and experiences assessed. However one can open up the classroom as much by moving out of it as by changing the life within it."

Towards an anti-institutional form

Mr. Kohl's idea has implications not only for the educational program but also for architectural design. Already there has been much exploration in achieving parent-, community- and child-oriented programs as seen by the community school control measures within the system, and the so-called "free school" movement operating outside the system. Community participation in school board decisions at the local level often takes the form of decentralization of the school board, in which a district is reorganized into a federated system of semi-autonomous units, but it might take the form of total community control where communities seek to be totally independent and responsible only to the state.

The free schools are supported by grants and particularly stress the importance of children's interests. While they teach the three R's, Jean Piaget's dictum "play is the serious business of childhood" (which is gaining wide acceptance





Intimate, informal learning areas for small group instruction and play contribute to the educational design at the Newark Day Care Council's Community School. (Reginald Leo Jackson photo.)

generally) has high priority. Blacks often bring their children to free schools such as the well known Children's Community Workshop School in New York City, not so much because they believe in permissive ideas, but because the children are not learning in the public schools.

There is naturally much exploration in the design of the inner-city school, most of which includes enlisting parental participation in planning the physical program. The U.S. Office of Education has been sponsoring charettes for several years, where architects, educational consultants, community representatives and politicians come together to establish a physical program.

One thing that is apparent, as William McCoy of Perkins & Will has pointed out, is that "flexible spaces mean flexible people." Complete openness tends to disorganize teachers as well as students. There is the growing realization that many different kinds of spaces are needed with the open plan retained but subdivided into a variety of areas. There is

also the realization that children, especially from crowded inner-city dwellings, have their own needs for spaces: spaces to hide, to retreat, as well as to mingle.

Generally the two-fold problem that faces architects and community alike is how to design a building that opens itself to the community, that relates to it, but will not be vulnerable to vandalism and poor maintenance. Past solutions to vandalism resulted in a fortresslike image for the school that usually increased antipathy toward the institution (P/A Apr. 1968, pp. 147-161). Thus a growing predilection for the anti-institutional image is now expressing itself. As shown in the following pages, schools are being located in warehouses, abandoned supermarkets and basements of churches, in portable street units or on scattered sites. The initial reasons are often for economy and expediency; but many are finding that these "found spaces" and dispersed classrooms answer their needs better than yesteryear's (or last year's) school building. **Suzanne Stephens**

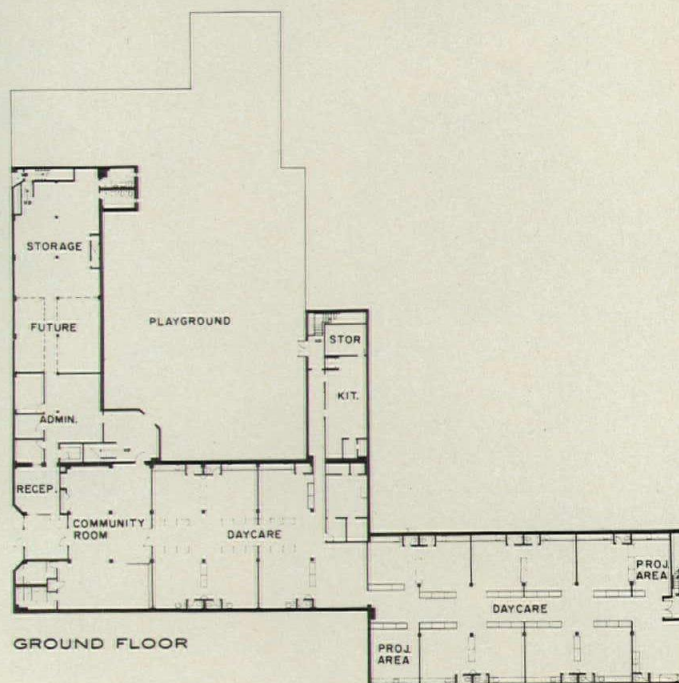


Brightly colored movable partitions help make up for lack of windows in the Newark Day Care Council Community School. Structure was originally a store and warehouse. (Reginald Leo Jackson photos.)

Lifestyle education

In an area hardest hit by the black uprising of 1967 in Newark, a two-story furniture store and warehouse has recently been turned into a successful community school for children of ages 3 to 8. The community group, the Newark Day Care Council, was formed and funded following the 1967 riots as an agency to meet child care needs for people being enlisted in the massive manpower training programs. In the early stages a dynamic woman, Mary Willis (see p. 81), was called in to structure the program; she turned the NDCC from the Establishment's expected old guard social service agency that was supposed to provide baby-sitting care into an advocacy community group with a unique educational program. The group wanted to start the learning process at an early age, combining it with a school program to provide a continuum of education. The Labor Department was willing to help them establish a day care center, and the NDCC convinced the Board of Education to join in the project so that a joint day care and kindergarten through second grade school could be formed.

The Board of Education gave Mary Willis and her associate, Edna Thomas, permission to find the architect; and Ron Bedford and Bart Kaltenbach designed a school in the 30,000 sq ft warehouse in less than a week. In association with Newark architects Brown & Hale, they designed an open-plan facility subdivided by brightly colored movable partitions to also function as storage and play units. A green carpet covers the floor, and bright colors are used everywhere, to counterbalance the lack of windows. Responding



to the community's desire for school interaction with parents, the architects placed a large lounge at the entrance. Lounge furniture was selected to coincide with furniture the parents are likely to have in their own homes. Children eat their lunches, not in a cafeteria, but right at their study tables (there are no desks) in the class areas.

The educational program is geared to what Mary Willis calls "lifestyle education." The children's backgrounds and homelife are analyzed to discover what is important to the child, to whom he relates. Schools often process children with survival goals that are not relevant to their existence, Mrs. Willis contends. This school's program is not geared to "motivate and manipulate," but to enable the child to think critically.

The remodeling cost came in at \$329,000 (\$14 per sq ft), and necessitated sacrificing a lot of small things that Bedford still hopes to include. Much of the existing floor, ceiling, tiles, lighting, sprinklers had to be kept because of budget. The Board of Education now owns the building and Ron Bedford contemplates "redesigning" the school with the help of colleague Richard Dozier who has been bringing students down from Yale to see how the children use the school.

Community response to the school has been overwhelming; it is used around the clock for various activities, including parents' meetings, and the fathers of the children take an active role in protecting the school from vandals and other dangers.

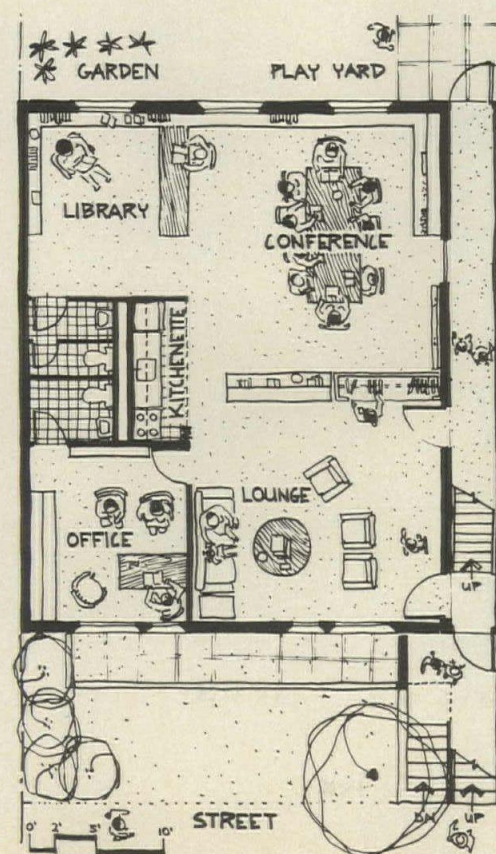
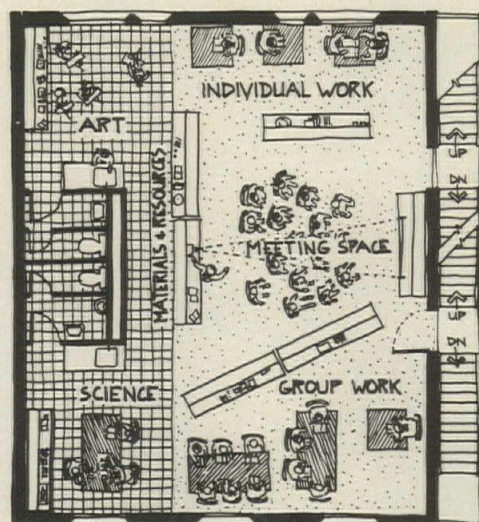
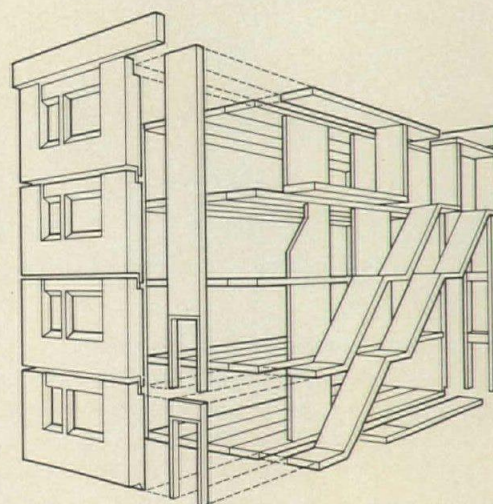


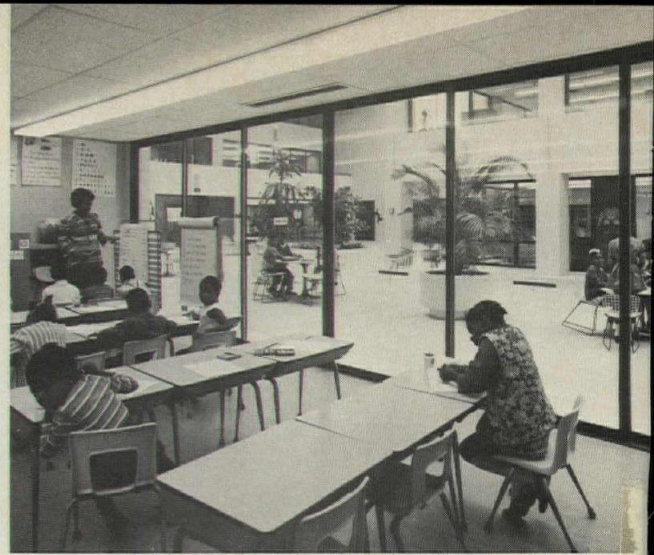
Atlantic Photo Service, Inc.

Dispersed classrooms

One way of getting away from an imposing institutional school building, proposes architect Don Stull from Boston, is by an infill school program. Infill or small neighborhood schools are built in a community and linked to a central resource center. The expensive school resources such as gymnasium, auditorium, language labs, media centers, and administrative offices can be concentrated in the resource center. The infill schools, built on scattered, unused and easily acquired sites, would provide generalized teaching classrooms, suited especially to younger children. No child would necessarily spend all his time at the infill school but would attend the resource center on a regular basis. A programmed transportation would be provided to allow a wide and diverse range of students to come to the center. According to Stull, the "local dispersed classroom cluster would offer an excellent vehicle for community involvement in the area in which parents are most anxious to participate — in the classroom." Each local school would be supervised by a team teacher leader responsible to the principal at the resource center. Other teachers would include rotating curriculum specialists and parent interns.

These infill units allow easy expansion of education facilities and reduce the time in assembling sites that usually delay school construction. Using the concrete panel and floor plank system that Stull devised for infill housing, buildings could be erected in a matter of weeks. In the structure, extruded concrete planks span front to rear, resting on precast load-bearing façade panels that are subsequently post tensioned as each floor is erected. Nonload-bearing wall panels are used as side walls, and walls can be sheathed in brick facing if desired. Heating and ventilation are achieved through standard classroom units mounted in the outside wall, and carpeting would cover the majority of the floor area. If and when the neighborhood no longer needs the classrooms, they can revert to housing since they are permanent. The infill units are less expensive than demountable classrooms, and provide free span space that can be arranged in various ways. The ground floor could be used for adult functions to bring the school into community life.



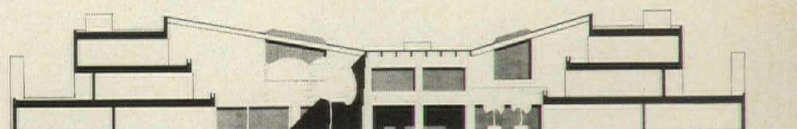


Introspective is the word for Giddings Elementary School, Cleveland. Large central courtyard provides an indoor view for classrooms. Exterior turns almost blank face on surroundings to reduce glare, glass breakage. (Thom Abel photos.)

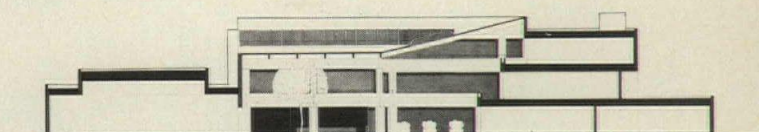


Urban school turns inward

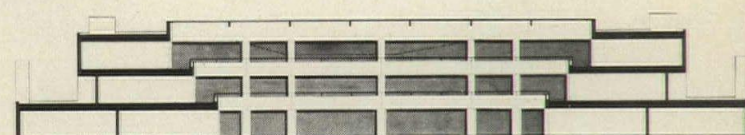
A small two-and-a-half-acre site in an old urban and somewhat deteriorating neighborhood prompted the design of a multilevel "introspective" school. The kindergarten through sixth grade school replaced the original Giddings Elementary School erected in the 1900s and destroyed by fire in the mid-sixties. In the program, the school board felt that "it is psychologically important that vision extend beyond the confines of the classroom." However, they were concerned about glare and glass breakage. The architects, Don Hisaka and Associates, responded by building a school that had no windows on the exterior but turned inward to a large skylighted court. Classrooms are arranged around the court with balconies providing additional interior circulation. Even the classrooms on the ground floor not bordering the court, as shown on accompanying plan, are glazed where they face each other across corridors. Protruding into the court is a glass core containing library and administrative offices, easily accessible to students. The skylighted portion was kept at 30 percent of the floor area so that plexiglass could be used and cooling and heating problems reduced, cutting costs. The significance of the court is already apparent. Students mingle there, school functions tend to be held there rather than in the multipurpose room, exhibits and spontaneous gatherings are easily accommodated. While the exterior is rather fortresslike, the architects designed the building so that small-scale (one story) masses are at the periphery and larger masses, two- and three-stories high, toward the center. Structure is masonry load-bearing walls, with steel joists and metal deck flooring; the court's roof system is steel. Five roof-mounted multizone units offer air-conditioning for the entire school with the air ducted through shafts in stair and utility cores. A supplementary rooftop furnace provides additional heating to the interior court on very cold days.



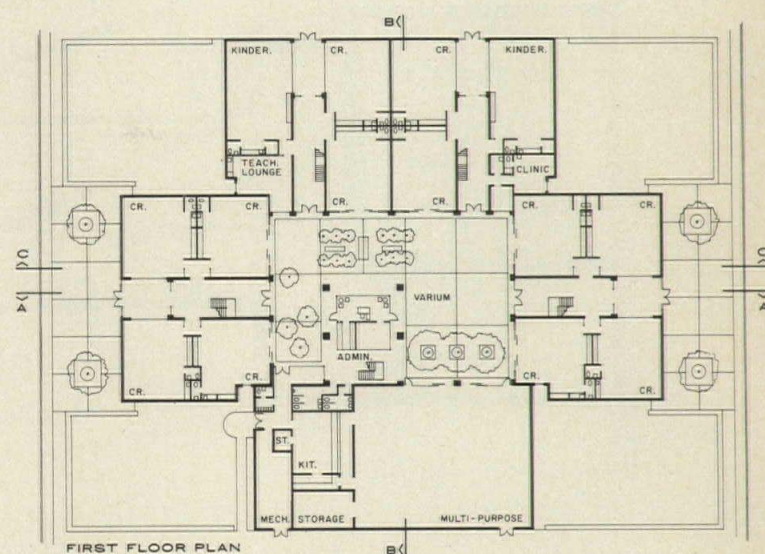
SECTION A-A



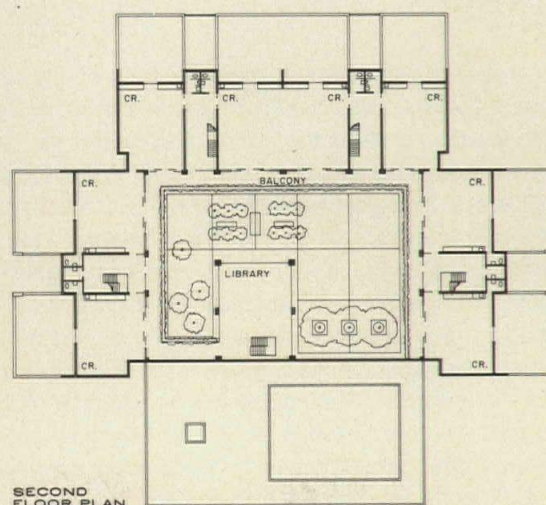
SECTION B-B



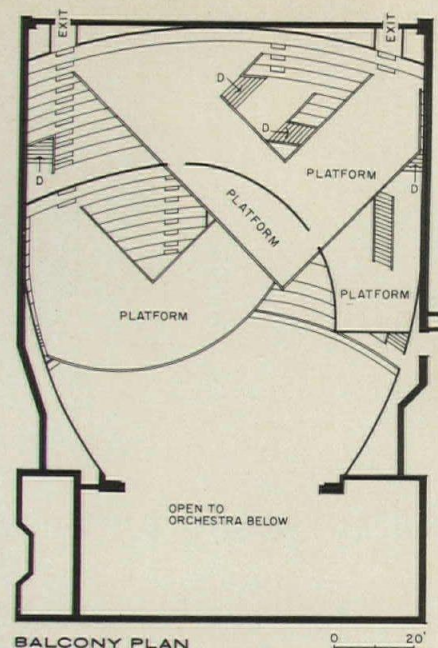
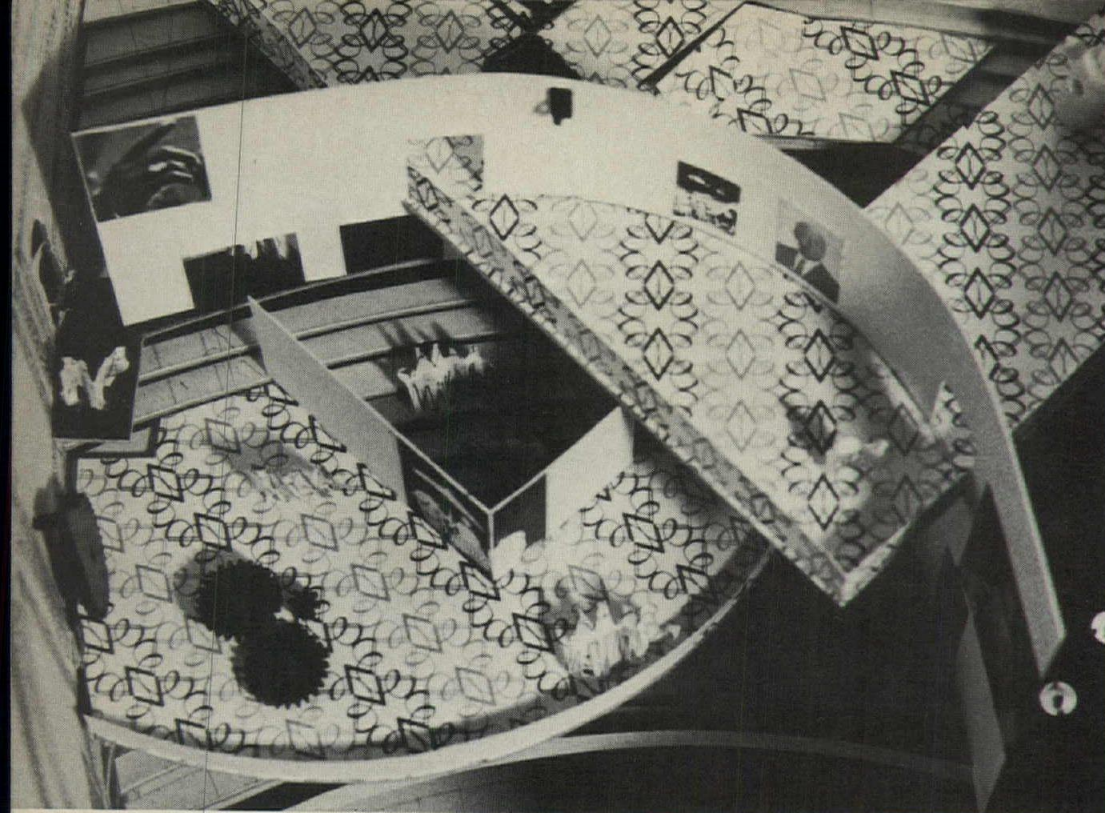
SECTION C-C



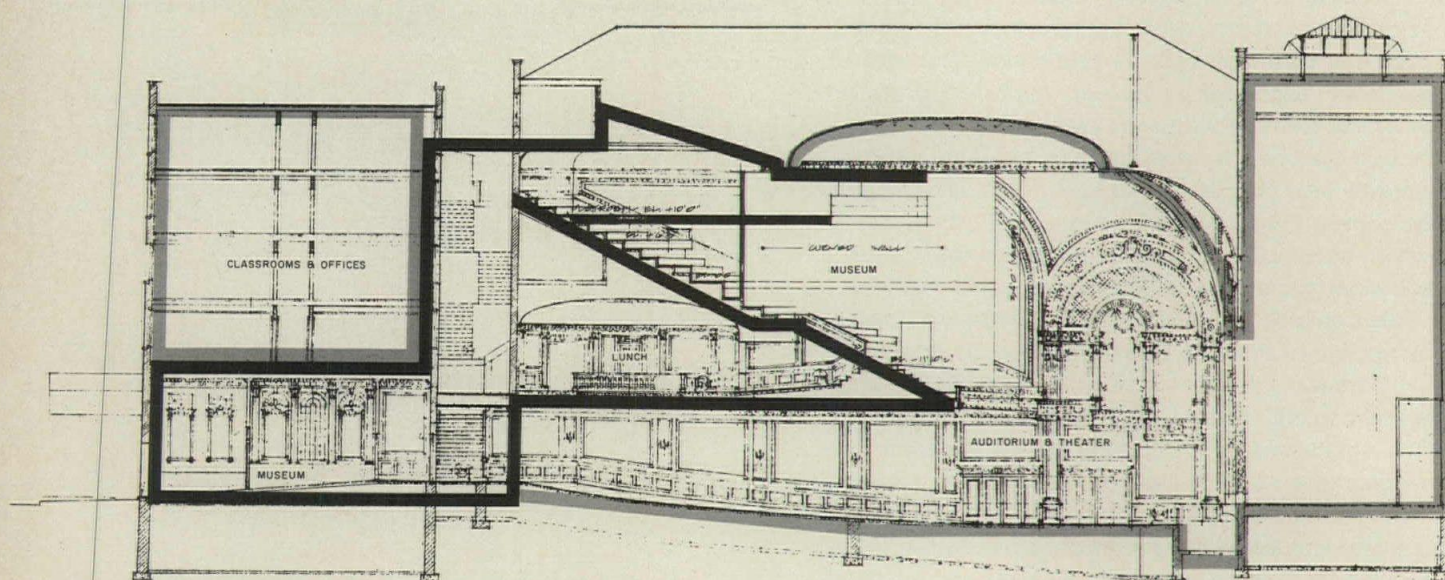
FIRST FLOOR PLAN



SECOND FLOOR PLAN



Old theater (outlined portion of section) yields space for a museum, theater, lunchroom and educational-cultural programs for pupils in Bronx, N.Y. schools.

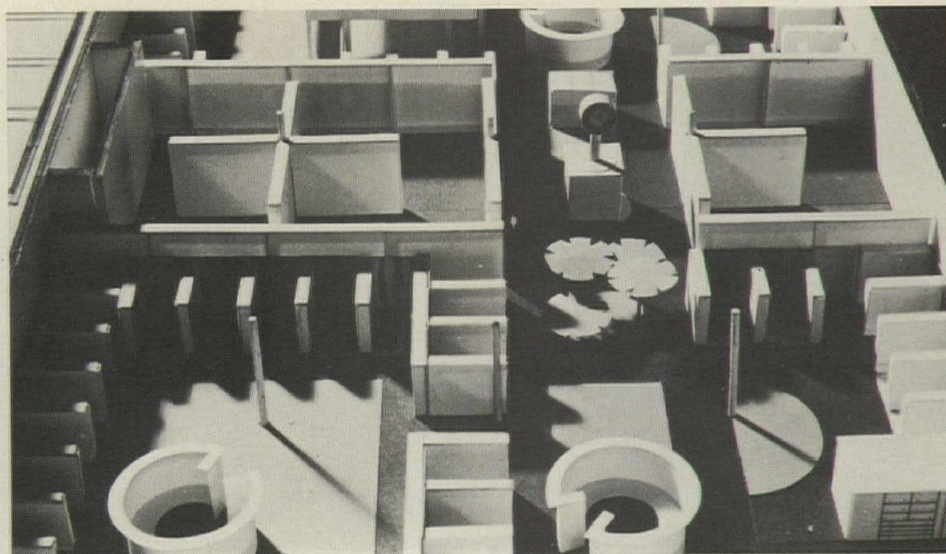


New use for an old theater

Another example of innovative use of existing buildings for educational purposes is a movie theater in the Bronx. Already the theater contains the District Superintendent of Schools' offices, plus remedial reading and other teaching facilities. The actual theater portion is in the process of being transformed into an education environment center, to offer supplementary educational-cultural programs to children in the district. Architects Hardy Holzman Pfeiffer have proposed converting the balcony portion into a museum, with a lunchroom below and a multipurpose theater in the lower level of the auditorium. The museum will make use of the stepped balcony configuration (3500 sq ft) supplemented by diagonal platforms projecting from the risers to yield an additional 6000 sq ft. Seating will be retained underneath the

projecting steel and concrete platforms for viewing films from this area in the theater. Natural lighting is introduced into the exhibit area through a skylight to be installed in the dome of the auditorium. According to the program the children will design and execute exhibits themselves (with help of various city museums) which will be mounted on a framework of pipes rising from balcony parapets.

The district superintendent of schools, Dr. Edith Gaines, has been particularly instrumental in furthering this project with the Board of Education. As she and the architects maintain, a small program such as this is important in laying the groundwork for change in a bureaucratic educational system, since piecemeal steps are more likely to be implemented than across-the-board reform.



Jan Wampler and Warren Schwartz photos

Users design, build school

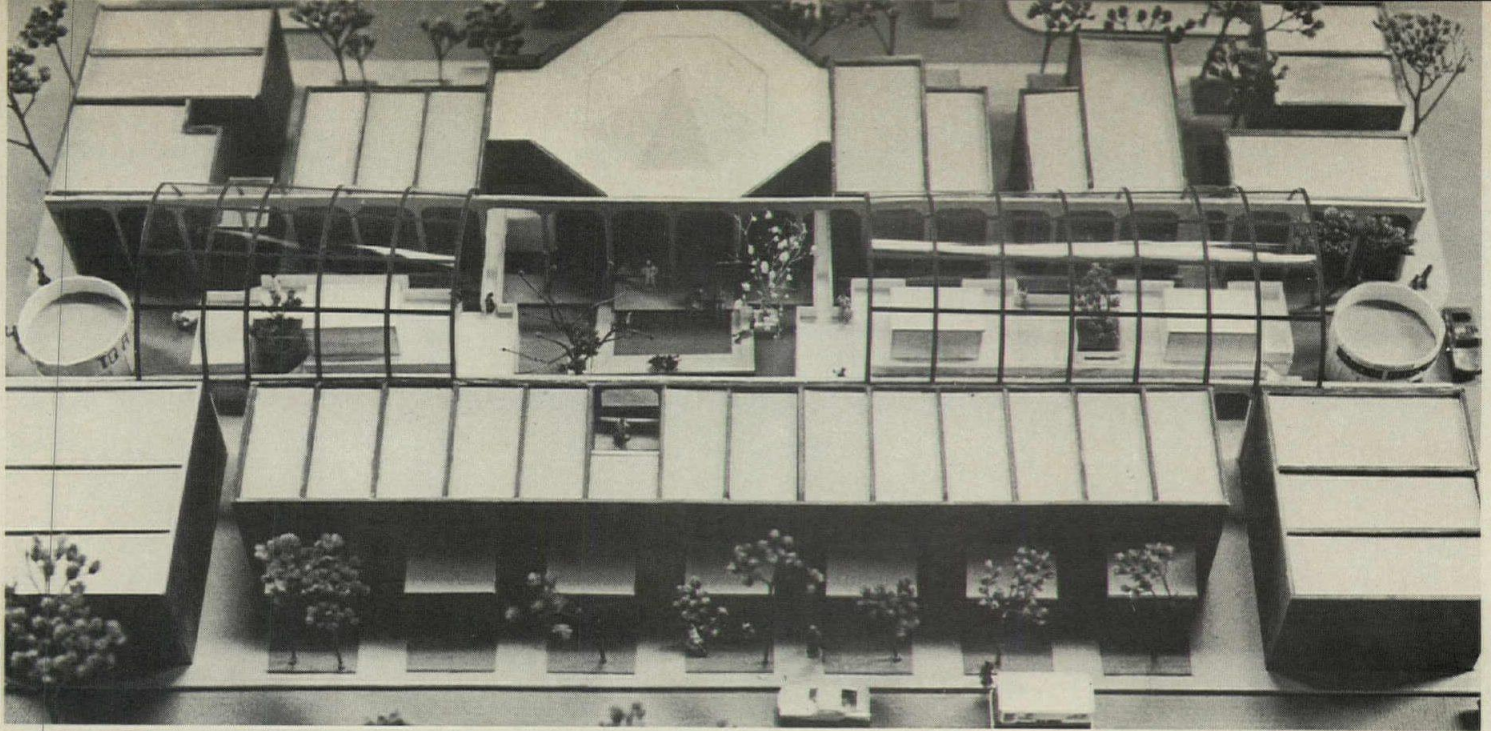
A basement of an Armenian Church Community Center has been converted into a cooperative school for 65 children ages 5 to 17. The Watertown, Massachusetts school had been operating for several months in the 60' x 90' space with 9-ft ceilings and no windows, when older students complained about the excessive noise and chaos. The room was an "open plan" that allowed each student to have a 6' x 3' work area with six to eight activity areas at the center of the room.

The parents asked Jan Wampler, architect with the BRA, to work with them, the students and the staff to devise the proper educational environment. They evolved a school floor plan akin to a city plan so that different age groups could be located in separate "neighborhoods" with four central areas used for ceramics, art, and wood shop. The design went so far as to designate a City Hall that would contain a public telephone, refrigerator, mail cubby holes, mirror and clock. Furthermore, each neighborhood planned a community center, a small circular area where someone could have lunch, a discussion or privacy. The neighborhoods were composed of houses 4' x 4' x 5' deep. After a number of design meetings with the potential users, the plan was translated into a model, built by the students. Each student drew up designs for walls and floors of his own house and, after the model was built and neighborhoods formed, students, parents and staff helped build the school with a \$1000 budget.

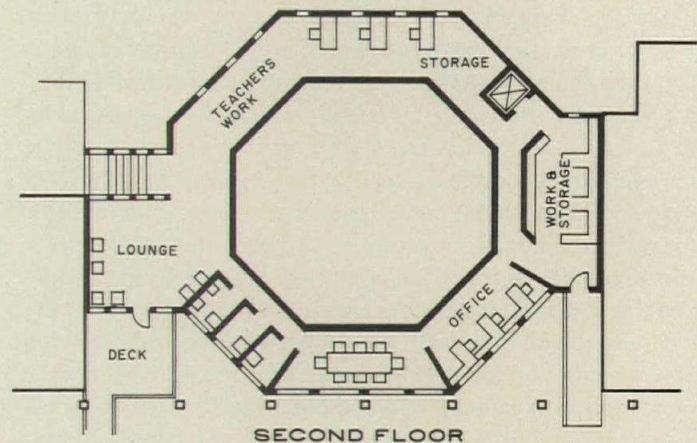
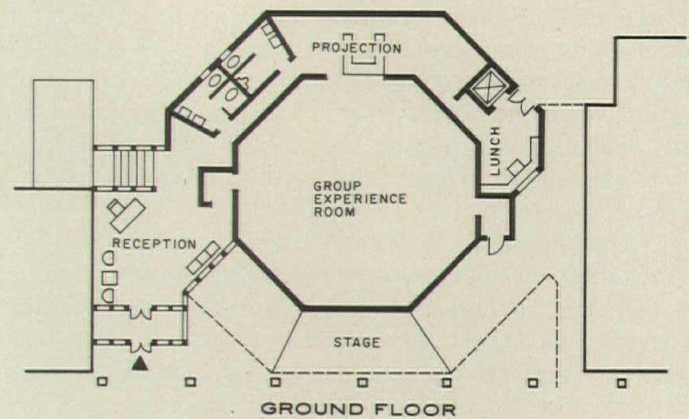
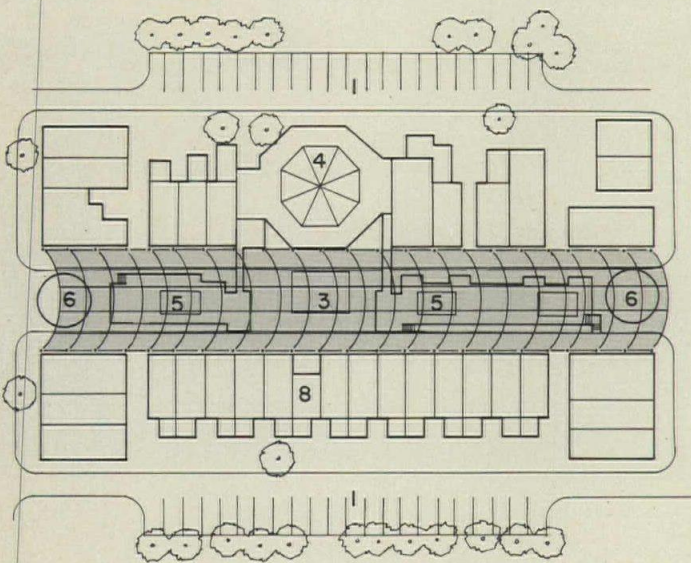
The architect originally had worried that the partitioning of spaces might be too restrictive, but he soon found that chaos could exist happily within the organized framework. The children found scraps of materials and lumber and began altering their houses. They formed second levels by bridging the 4-ft-high partitions with wood, or building pedestrian ways. Pictures of heroes were brought in or graffiti scribbled on the walls, and each day spaces changed. One student enclosed his cubicle entirely and put a door on the front; while another built a tower within the house, added a set of steps and topped the construction with a chair.

As the architect stated, "The important thing is that it has helped 65 kids enjoy their school more than they did before."





Street School Concept: 1. parking and yard improvements, 2. porches, 3. amphitheater, 4. group experience and teachers building, 5. portable student study units, 6. public toilets, 7. movable plexiglass dome, 8. private laundry, child care, stores.



Teaching in the street

One kind of "found space" school suggested in Philadelphia calls for converting the streets literally into classrooms. With the residents' permission, school principal Forest Adams and architect Merle Easton have proposed closing several streets in the Mantua district and placing portable classroom units (either asbestos board or treated plywood) in them. Each unit will house teaching machines and equipment for eight pupils. A plexiglass all-weather dome, supported on precast concrete columns attached to renovated house façades, will be placed over the units, with three sections of the dome motorized for opening. The plan proposes as many as fifteen 240 sq ft "cells" under the dome, with vacant lots and back alleys used for service access and parking for the house. The only permanent new structure on each site would be a group center, a 3000 sq ft two-floor domed octagonal structure. This building of conventional construction would provide a meeting place and auditorium for the children, plus offices, conference, and seminar rooms. In a large section of the city such as Mantua, a middle school would be required for every five to six blocks.

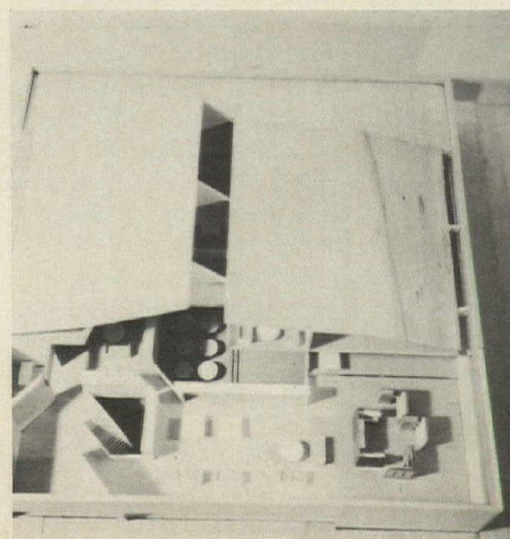


William Stumpf photos

Supermarket school

Ron Haase, formerly an architectural associate with EFL and now head of the New York branch of Hammel Greene and Abrahamson, has been particularly involved in "found space" schools in New York. When he and black architect Barry Jackson turned an old supermarket into Harlem Prep, they planned a lot of changes that could not be implemented for lack of money. Although personal contributions and a grant from EFL helped in buying and renovating the building, the money still fell short of the goals. Foundations were willing to help financially in operating the school, according to Haase, but not in the architecture. So the school exists today much modified from the original plans (as illustrated). The penetration of the bow-string roof trusses to provide an ample skylight for a mezzanine-study area under the rafters is not there, nor is the opening cut into the main floor to allow visual access to activities in the basement levels. Despite architectural sacrifices, the school has recently acquired an action office furniture and partition system donated by Herman Miller.

The program for the school has proved extremely successful. Originally the school was opened by the New York Urban League as the terminal place for its "street academy" program. Since then, however, Harlem Prep, led by a vibrant director, Edward Carpenter, has broken away to become a separate institution. It still is designed for high school drop-outs, and requires that no student graduates until he is accepted into college. Classes are larger than ever, and there is a tremendous sense of community, of pride in the school, and sense of belonging, of which the environment is ample reflection.



The new old school

Old educationally, but not physically, the "new old" school may well be a greater problem for school administrations and school architects than the truly old school. Built by the thousands during the post-war school population boom, these schools have been left behind by rapidly changing educational thinking

The days of the box are over; today's educational thinking calls for large open teaching areas, not self-contained classrooms. Yet most existing schools were built with conventional classrooms, and school administrators must choose between sticking with traditional teaching methods or changing the facilities to allow modern practices.

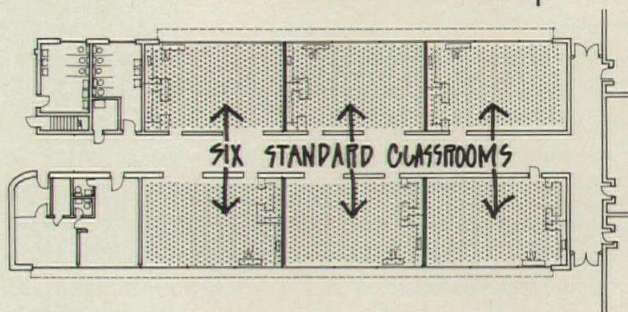
The problem, however, is not confined to the truly old school dating back to the turn of the century. It is more likely to be the 'new old' school, built by the thousands during the 40s, 50s and 60s and probably still being built now that the 70s are here.

It's the typical school, described by Colorado Springs architect Lamar Kelsey as "the old cells and bells school." Self-contained classroom boxes are arranged along a double-loaded corridor, leaving no room for the teaching techniques now being used. It's no wonder that schools completed as recently as 1963 are not only out-grown but out-moded.

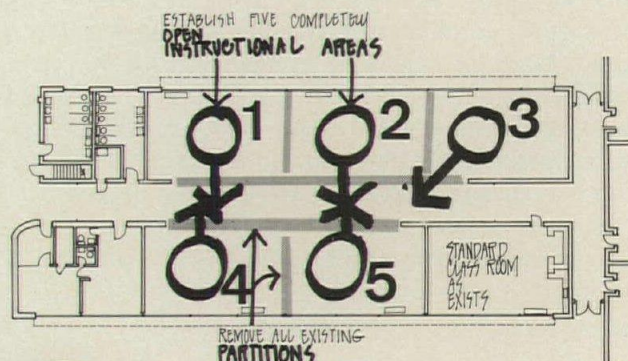
As the following examples show, remodeling can make a school that has been left behind by rapidly changing educational practices useful again. The challenge in up-dating the new old school, says Kelsey, is "to break out of the classroom box without breaking up the budget at the same time." That was the thought behind the feasibility study Kelsey's firm made for an elementary school near Denver. Montview Elementary School is a typical new old school. Its six standard classrooms are lined up three on each side of a central corridor; there is a principal's office, a teachers' room, some storage space and two restrooms. The school is physically confining and educationally limiting.

The proposals in the study would turn the school into a modern facility with the large and flexible spaces needed for today's teaching. The six classrooms become two large open areas, the central corridor a special use area for small groups or individual study.

THE TYPICAL 1940's, 1950's AND 1960's SCHOOL / CLOSED "CRACKER BOX" TYPE CLASSROOMS
PHYSICALLY CONFINING / LIMITING EDUCATIONALLY

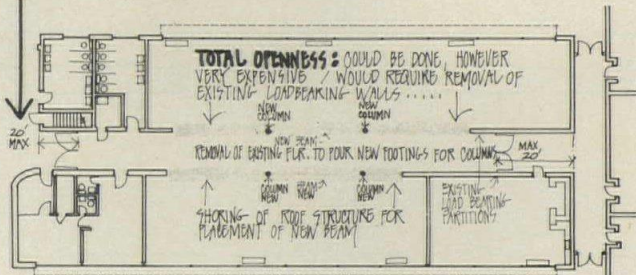


1. EXISTING CONFIGURATION



2. PROGRAM DESIRES

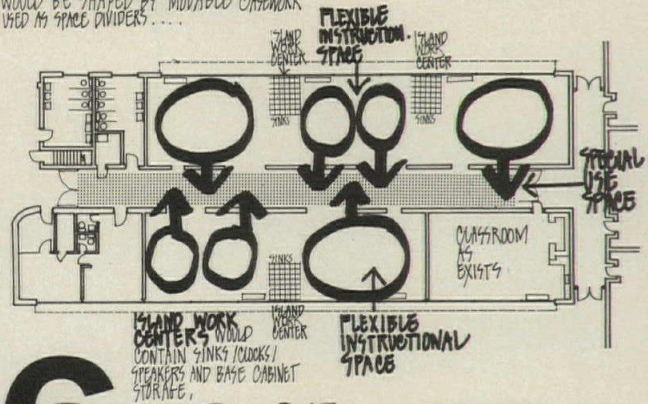
CODE REQUIRES FIRE DOOR SEPARATION FROM THE REST OF THE BUILDING



3. TOTAL OPENNESS/ POSSIBILITY

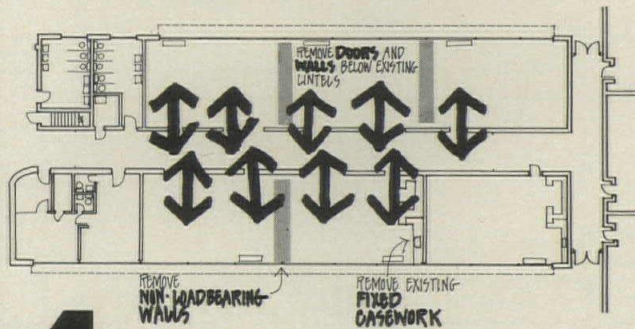
SPECIAL USE AREA OR CENTRAL SPACE COULD BE USED AS A SMALL GROUP OR INDIVIDUAL STUDY SPACE OR AS A DECENTRALIZED PORTION OF THE SCHOOL MEDIA CENTER

FLEXIBLE INSTRUCTIONAL SPACE WOULD BE SHAPED BY MOVABLE CASEWORK USED AS SPACE DIVIDERS...



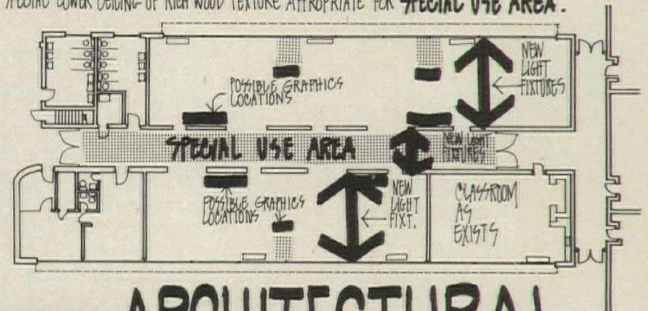
6. SPACE USE

A MUCH MORE EASILY ACCOMPLISHED "OPENNESS" IS AVAILABLE WITH A HIGH DEGREE OF FLEXIBILITY.....



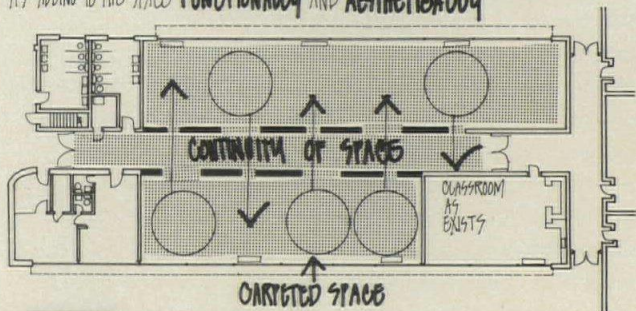
4. PARTIAL OPENNESS

ARCHITECTURAL TREATMENTS / CEILING AND LIGHTING PATTERNS, WALL GRAPHICS, FURNITURE, COLOR, ETC. HELP MAKE A VITAL TEACHING ENVIRONMENT. SPECIAL LOWER CEILING OF RICH WOOD TEXTURE APPROPRIATE FOR SPECIAL USE AREA.

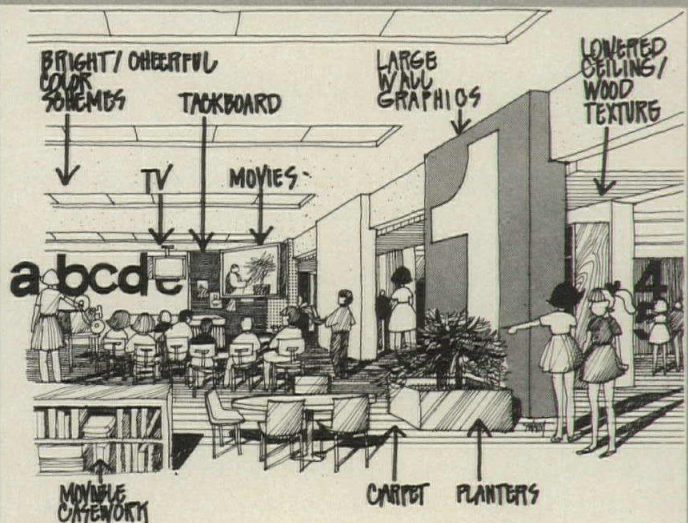


7. ARCHITECTURAL TREATMENTS

A SOFT LAYER OF CARPETING THROUGHOUT THE REMODELED AREA WILL ADD VISUALITY TO THE EXPERIENCE OF SPATIAL OPENNESS AS WELL AS ADDING TO THE SPACE FUNCTIONALLY AND AESTHETICALLY



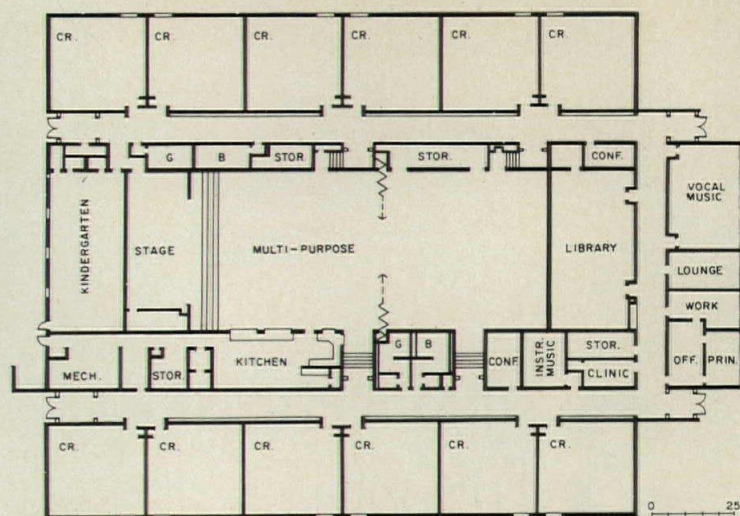
5. CARPETING



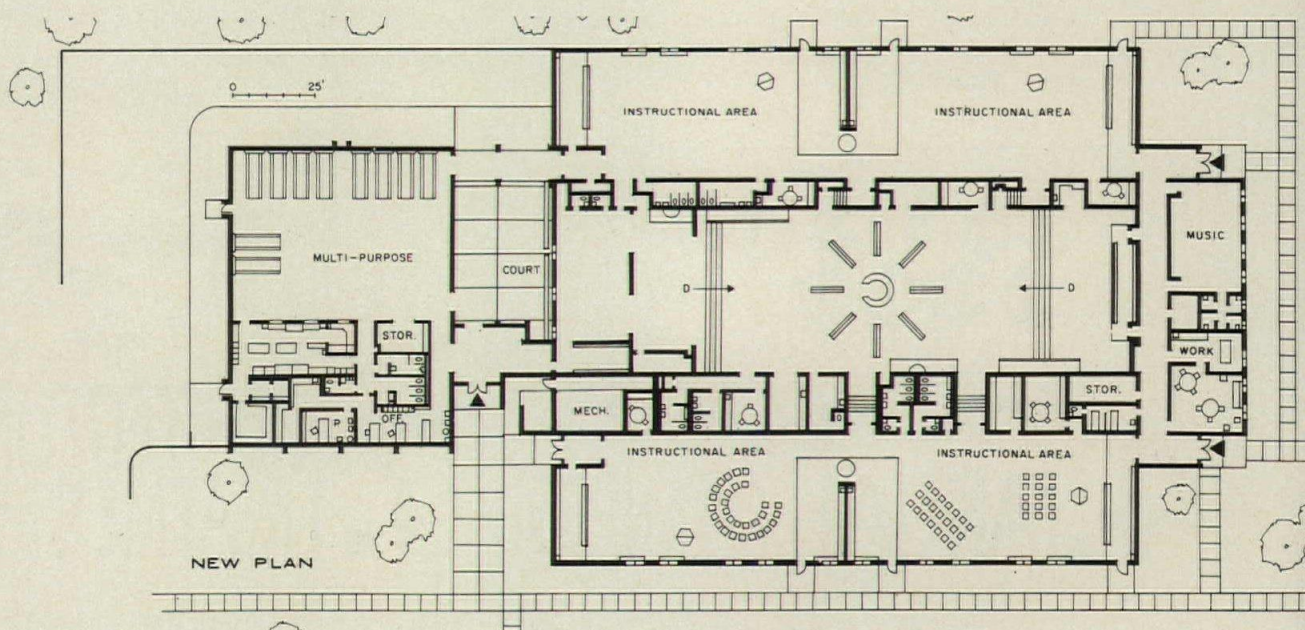
8. ACADEMIC ENVIRONMENT



Opened up interior (below) turns typical school (above) into up-to-date facility with open areas instead of classroom boxes. Furniture designed by architect, students and staff was built in school district shops.



ORIGINAL PLAN



NEW PLAN

Opening up on a budget

School districts sometimes feel that the costs of updating an outmoded school can't be justified, but that's not always true. Faced with a seven-year-old elementary school with no room for today's teaching methods, the Cherry Creek School District in Denver found that opening up the interior increased capacity of the school at lower cost than building an extension.

In 1963, when Eastridge Elementary opened, it had 12 classrooms, a kindergarten, multipurpose room, library and office; enrollment was 350 students. The first phase of a three-stage expansion program boosted capacity to 500 students and the final total is 600.

The first step in architect William C. Haldeman's plans was to convert the 12 classrooms into 4 learning areas at a cost of \$31,000. When the classrooms were opened up, the entire area was carpeted. Students, staff and architect worked together to design a system of movable modular furniture: movable chalk boards with snap-up shelves, tote trays with plastic tops for writing, inflated inner tubes with painted ply-

wood tops for tables, stadium seats and pillows.

Most seating units are easily portable "legos," which are plywood boxes (12 in. high for primary grades, 15 in. for middle grades, and 18 in. for upper elementary grades). They come in 1-, 2-, 3- and 8-ft lengths. They are used singly for individual seating, ganged as benches, and stacked as stadium seating or as table surfaces.

The furniture is being tested in the learning areas; it is built in the district's carpentry shop and costs less than conventional furnishings, according to the school district.

The second stage is a two-story addition. Connected to the original building by an enclosed corridor, the \$125,000 extension houses administrative offices, kitchen and a multi-purpose area.

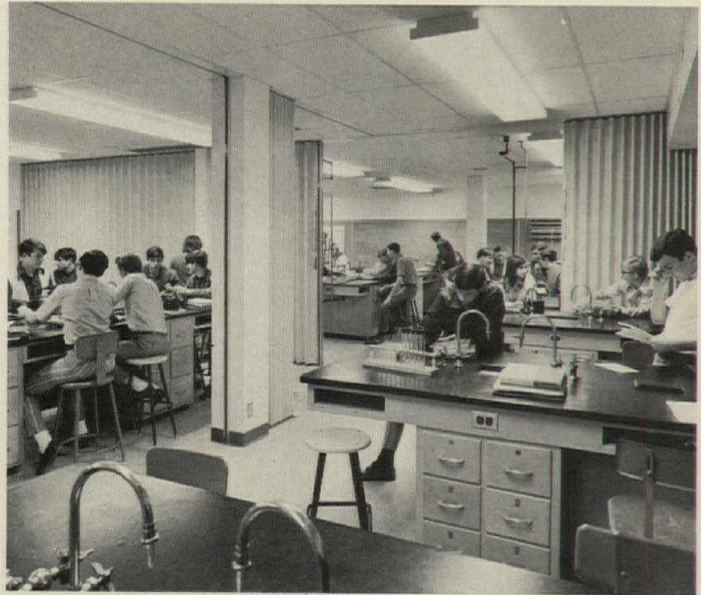
The third and final phase provides two more learning areas in the old building by removing partitions between the library and multipurpose area and between the kindergarten and the stage. The old multipurpose space has been converted into an instructional materials center.

Opening up to expand

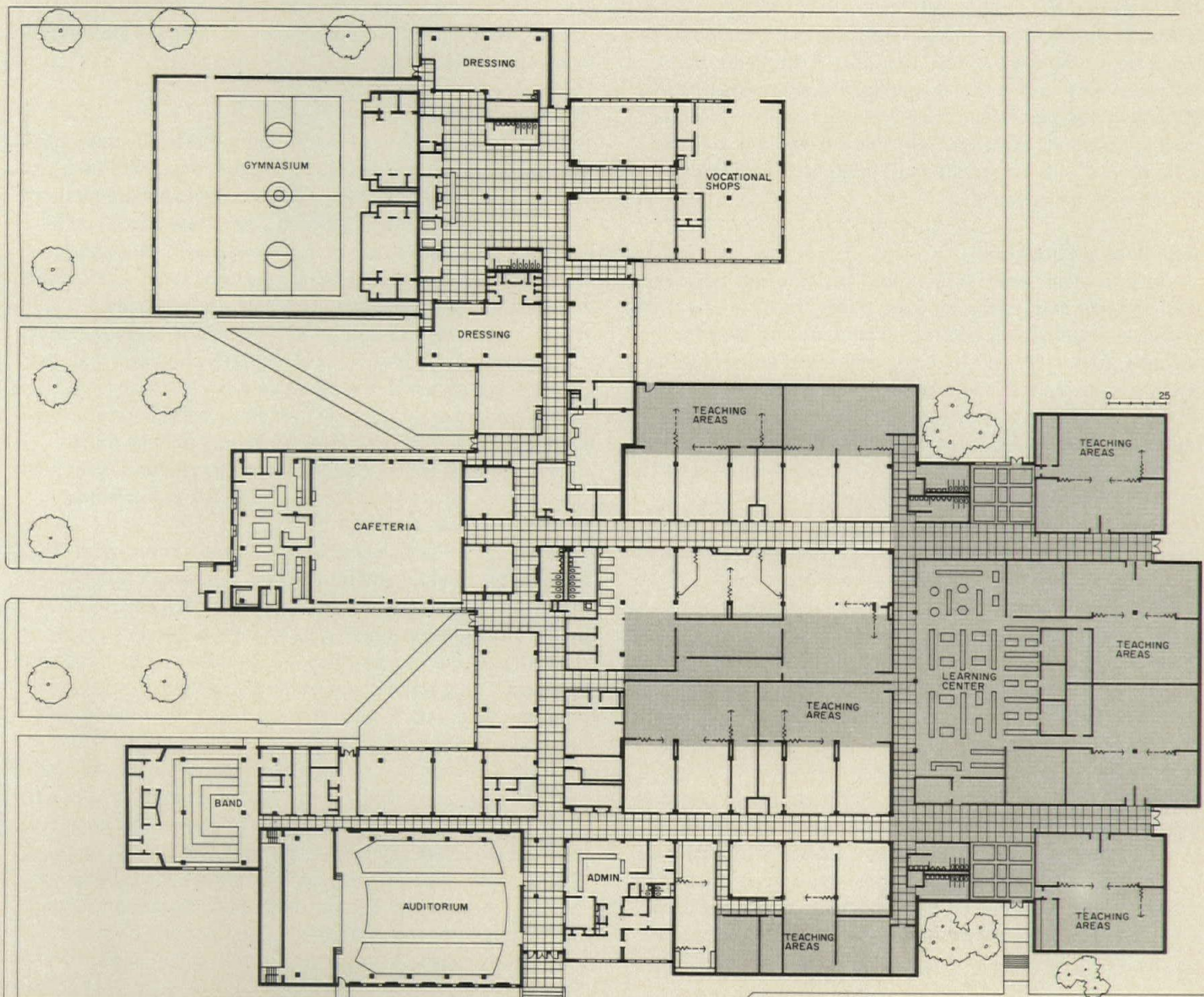
Built in 1961, Plano High School was nearly obsolete within just a few years of its opening. To start with, it wasn't air conditioned, and because there was no attic space or under-floor space, adding air conditioning was a major task. But beyond that, the school layout gave the administration little chance to take advantage of new teaching techniques.

The school was also crowded, and when the capacity had to be doubled (to a total of 1200 students) the architects, Jarvis-Putty-Jarvis of Dallas, came up with a plan that called for clusters of large classrooms grouped around a learning center. The courtyards around two of the fingerlike academic wings were filled in to provide the space. Exterior walls of the wings were knocked down and the courtyards roofed over; additional space was gained by moving some exterior walls outward and by some totally new construction. In the process, attic space was provided above the new construction and air conditioning was installed.

It wasn't the cheapest possible solution; a new structure separate from the old school might have cost less. But the remodeling (\$244,000 for 35,000 sq ft) plus the addition (\$770,000 for 43,700 sq ft) increased the value of the entire school far more than a new building would have. **CP**



New space (gray area on plan) was gained by removing exterior walls, roofing courtyards to provide carpeted flexible teaching areas in Plano, Ill.



The portable desk

New theories and practices in education are making traditional school furniture obsolete. Some schools require custom designs, others make do with available stock

Designs supporting the revolution in education — the open plan, the open corridor, the open school and all its participatory, experiential results — are fast making traditional school furniture obsolete. New furnishings must accommodate team teaching, variable groupings, individual instruction, the non-graded system and the total spectrum of a new lifestyle in schooling that places emphasis foremost on the individual learner. Activism, do-it-yourself flexibility, mobility and permissiveness — these are the motivating factors of the school furniture of the Seventies.

A century-old tradition

Until the recent past, schoolroom furniture was basically a desk or table and a chair for each pupil. Thirty to forty such units were rigidly arranged facing an opposing desk for the teacher. These strict arrangements denoted authority, hierarchy and discipline. The emphasis was clearly on the teacher. Control of the group, in terms of obedience, was more important, it appeared, than control of the learners' interest.

Ronald Beckman, director of The Research and Design Institute in Providence, Rhode Island, compares the old educational environments to prisons and military encampments in that they have "similar psychological overtones of fenced-in, regimented establishments." He points to "a callous, materialistic approach" as being "repeatedly the cause for the institutionalization of public buildings."

Such designs, Beckman says, "do not sufficiently build up a child's self-esteem and interest in learning. They do not provide intimate supervision or permit a pupil to progress at his own educational pace. And they fail to create a sense of involvement in the community where they exist."

Robert Probst, who is president of the Herman Miller Research Corporation, calls this approach "The War-Is-Hell school of design," which produces "defensive architecture." Its aim, he feels, is toward "the impervious environment that will never wear out. It is tough to the hand and looks tough."

Probst calls this "a serious maladjustment of the school facility and the people who use it. Since by the time the chil-

dren hit school they are already opinionated about their environments, in school they feel that they are part of a society of strangers and strangeness. The public school system may not survive unless it becomes more interesting and more credible.

"Schools are losing out to all the other information media and teaching exercises," Probst continues. "Schools are the dullest, least enterprising places for learning. There is more interest in a discount store."

Available furniture

The furniture that has contributed to these allegations includes chairs, tables, desks, carrels, benches, ottomans, lounge furniture and lighting. "Most available manufactured school furniture is cheap looking," says one school architect, "and the carrels are generally wobbly." Other architects feel that very simple basic furniture pieces — those with the least complicated wood tops and strong leg standards — are available and good for all grade levels but that "specialized furniture by manufacturers who think that their designs are unique is in a downhill class."

Built-ins are often the only part of the school furniture program over which an architect can expect to have much influence. Most schools are furnished by clients — with furniture straight out of the catalogs — and few schools have custom-designed furniture.

Educational Facilities Laboratories has done a great deal to sponsor development and design of superior furnishings that would help foster innovative educational and social goals. Among these goals is the desire for greater variety of groupings in the classrooms — for portability and mobility of furniture. The goal is to accommodate a fluid, non-static, open-ended curriculum. In these terms, "office landscape" has come to the schoolroom.

Movable pieces now include not only portable chairs, but also portable desks, folding and stacking tables, and bookcases and divider panels on wheels or casters. Symbolic of this new portability is the tote tray for lower grade pupils. These plastic shopping traylike baskets are the essence of the new freedom that permits either individualized or group instruction. The idea of portability is to permit "a kinetic teaching program" — to permit children to act upon their en-



Blocks are more fun than desks, but just as useful for these pupils at Eastridge Elementary School, Denver. (George S. Zimbel photo, courtesy of EFL.)

vironments in the meaningful ways that adults do.

A further extension of portability is disposability. Instead of squalid, indestructible, inhuman, institutionalized environments, some designers are proposing less expensive throw-away environments. "It is better to have furniture that is continuously being used up, consumed," says Robert Probst, "so it can be rejuvenated constantly."

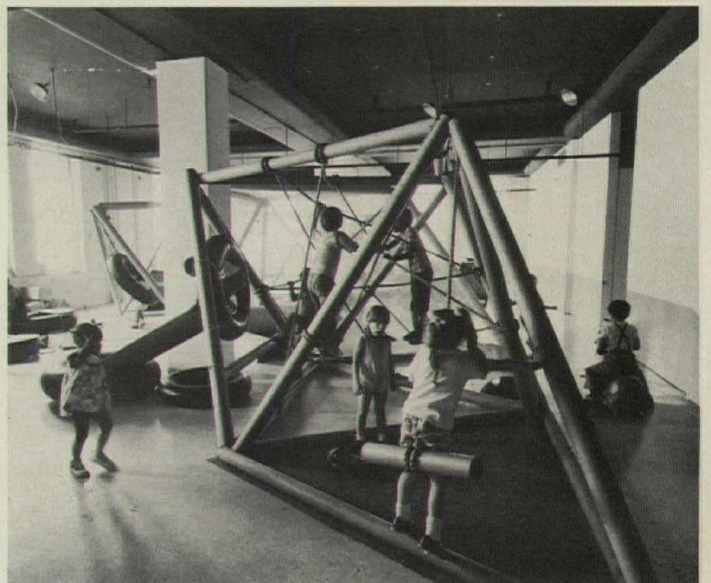
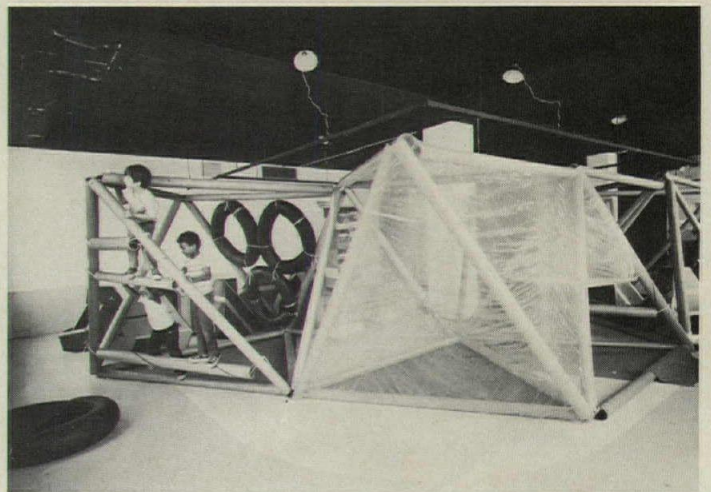
Individual privacy

Besides the potential for variable grouping that the new portability of school furniture provides, it also permits greater individual privacy to be established. Easily and completely portable individual study areas can be moved away from

each other, obviously.

Other means of achieving privacy are with the storage bins, bookcases and other divider units that can be moved to wall off simultaneous activities. Carrel-like partitions surrounding the new desk units are other increasingly used means of providing individual students with a quietly dynamic learning situation.

This new furniture — flexible, mobile, expressive of the will and needs of the individual learner — will provide, in Robert Probst's words, "a repositioning about what we are allowed to do in school. The new population says, 'I know I am an individual.' The professional educators may not have noticed." **CRS**



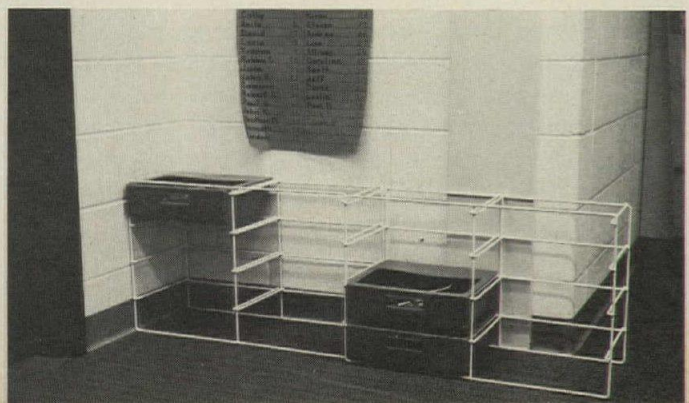
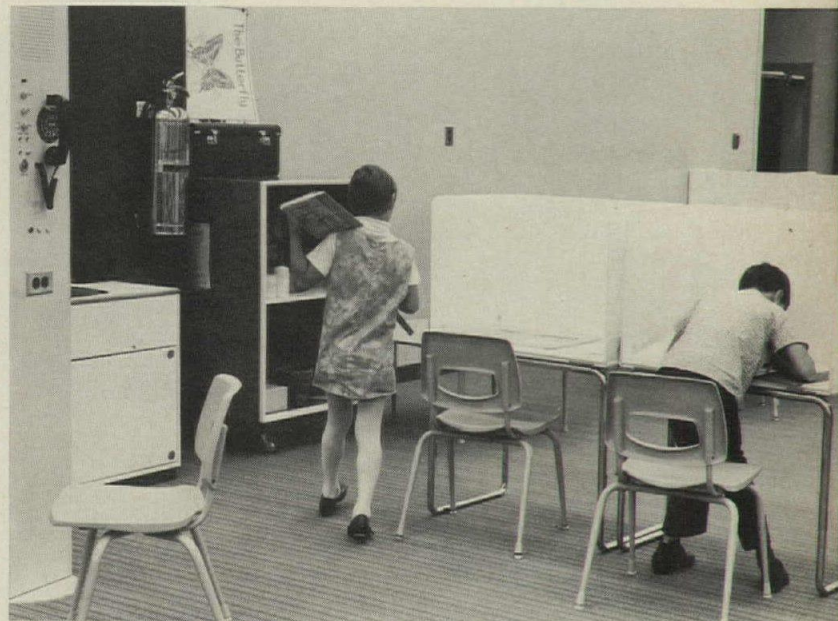
Found objects

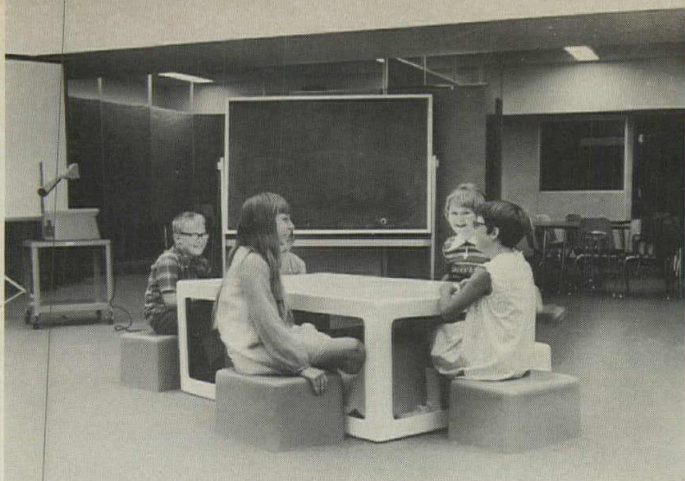
The Day Care Center at Arthur Goldberg's election headquarters in New York City was designed by a group called "Works," who used only \$200 worth of plywood, carpet tubes, sleek tubes, corrugated cardboard, inner tubes, carpet, polyethylene film, rope and paint for the entire project. (Photos: George S. Zimbel, courtesy EFL.)



SEF system

Toronto's Study of Educational Facilities (SEF) program uses a specially designed, flexible furniture and casework system of molded polyurethane foam containers and panels in its first SEF buildings. Designed by Earl Helland and Bill Monahan, and manufactured by Cameron McIndoo Ltd., the containers of six modular sizes can be stacked and ganged. They are designed to accommodate shelves, dividers, wire racks, totetrays, drawers and doors (from the panel component). Panels have work surfaces, chalkboard and display surfaces, and extruded vinyl edges that permit connection to the containers as well as to adjustable height bases. Portability, flexibility, and user determination are the benefits of this system. (Photos: George S. Zimbel, courtesy EFL.)





Boxes and things

With a grant from EFL to the Jefferson County School System in Colorado, architects Rogers, Nagel, Langhart designed a system of portable storage/compactible seating and table-space units of reinforced fiberglass and cubes that

are vacuum formed of an expanded ABX plastic. Manufactured by Boxes & Things of Denver, it is recommended that they be used with other standard classroom furniture. (Photos: courtesy EFL.)



Off-the-shelf

At Tatar & Kelly's Stuart Hill School in Baltimore, Maryland, EFL sponsored a pre-design program, carried out by Research & Design Institute of Providence, Rhode Island, that resulted in an open-plan system with multifunctioning furniture. Constructed of off-the-shelf components, the basic three-carrel units can be easily grouped into various arrangements for individual or group activities. (Photos: George S. Zimbel, courtesy EFL.)



Roll around furniture

A system of roller-mounted panel and storage units called VUE (visual unified environment), designed by Alto Albright and manufactured by American Seating, provides easily positioned and easily removed furniture that can be instantly moved. Aluminum-framed, plastic-laminate surfaced plywood partitions support plywood case units.



Electronic carrel

Table-type, electronically equipped, four-student carrels subdivide the library study room at the Emma Willard School in Troy, New York. Recessed fluorescent gives light for study, while built-in incandescent up-lights provide general room illumination. ISD Incorporated collaborated with architect Edward Larrabee Barnes on the design and execution of the special carrel. (Photo: Joseph W. Molitor.)

Education as business

Concentrating on early childhood, corporations respond to ever-growing educational and sociological pressures. Programs vary, but the desire for quality still exists

Although the entry of the private sector into education is not new, it is playing an ever increasing role in several phases of child development. The amount of interest in the child as recipient of, and participant in, a learning experience, covers a very broad range. In some instances, the child's welfare ranks second in importance to the dollar return on investment, but a few examples can be cited that show a coexistence of quality with net gains.

At the bottom of the scale is the day care facility, usually noneducational. Most day care centers are just what their name implies, a place for children to be watched while mother works or shops. It is now clear to behavioral scientists, however, that the childhood years from one to seven are the most important in the educational process. Although long considered as having little effect on the child, this period sees the development of most learning patterns applied in later life.

Corporate educators

An inevitable extension of the principle of private educational institutions is the current interest of large corporations in entering that field. Many have looked at the burgeoning market created by increased awareness of the potential of the infant, and by the number of mothers returning to work.

The Singer Company, known primarily for its sewing machines, Friden calculators and Link trainers for pilots, is now committed to education as well. The opening in October of its first Learning Center for Early Childhood Education, Cherry Hill, New Jersey, initiated an ambitious plan to create and operate a network of schools. Singer president Donald Kircher points out that the company has been involved in education for many years through its sewing centers. It was due to Kircher's interest that the Singer Company involved itself in education, rather than a more lucrative diversification of interest.

Vice president in charge of the Singer Learning Centers, Dr. James I. Mason, makes company policy quite clear: it will operate, not franchise, its schools. Lack of quality control in-

herent in franchising, he feels, could impair the effects of even the best educational programs.

Although the educational structure at Singer is even less pronounced than that at a Montessori school, children are also taught by their own activities. Dr. Mason and director of curriculum Dr. Maxwell Jarvis have established a ratio of 25 children per team of one teacher and two aides.

The first school, designed by The SMS Partnership, is another example of the desire for open, flexible space. Constantly changing patterns of use allow the children's need to shape the learning environment. Large spaces at both ends of the plan are separated by common support and administrative functions. Cautious optimism demanded a simple, direct design solution — one that did not bind the facility into any set use pattern. The result is a quiet, responsive package for a changing educational program.

Initial evaluations of the school as a learning environment are encouraging, but will be constantly evaluated by the creators of its curriculum and a seven member Board of Visitors that includes respected educators. Unannounced visits by them check adherence to, and results of, the program.

Financial data indicates that the Singer Center will be at least as successful as projections called for, and probably better. Although the profit to be made in education is considerably less than other corporate ventures might produce, the company has committed \$8 million for the coming year to create eight more learning centers.

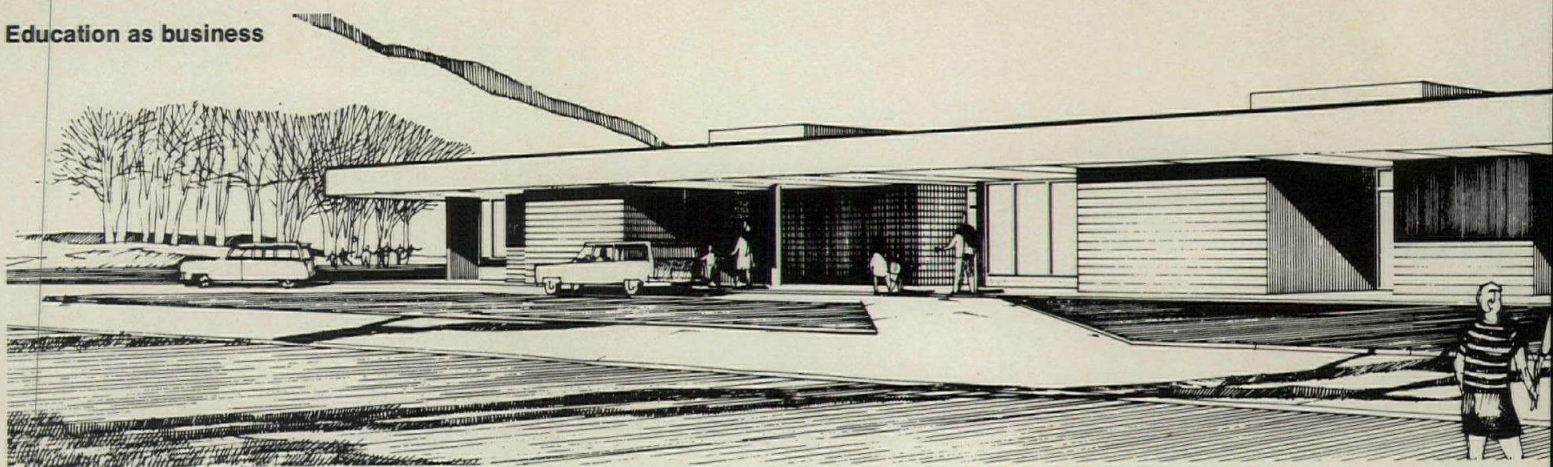
A new thrust in the form of early childhood development is being given to the education of the infant. The Early Learning Center, Inc., Stamford, Connecticut is a Montessori-based school which also draws on experiences of the Leicestershire schools in England. In a warm, open environment the child is encouraged to learn through personal experience. As in Montessori schools, the structure for education is difficult to perceive by those for whom school exists only in a standard classroom. No schedule tells a child when to stop one activity and start another. There are virtually no restraints on his interest, no dictates to what must be accomplished, no grades or test scores. His interest, augmented by the materials, is the main incentive to learn.

After a planning study funded by the Ford Foundation's Educational Facilities Laboratory, Margaret Skutch, director of The Early Learning Center, and architect Egon Ali-Oglu



Accent walls in dramatic colors give points of focus to major teaching spaces at the Singer Learning Center. The architects are using experience from this school in developing a new prototype. (Milton Weinstock photos.)

Education as business



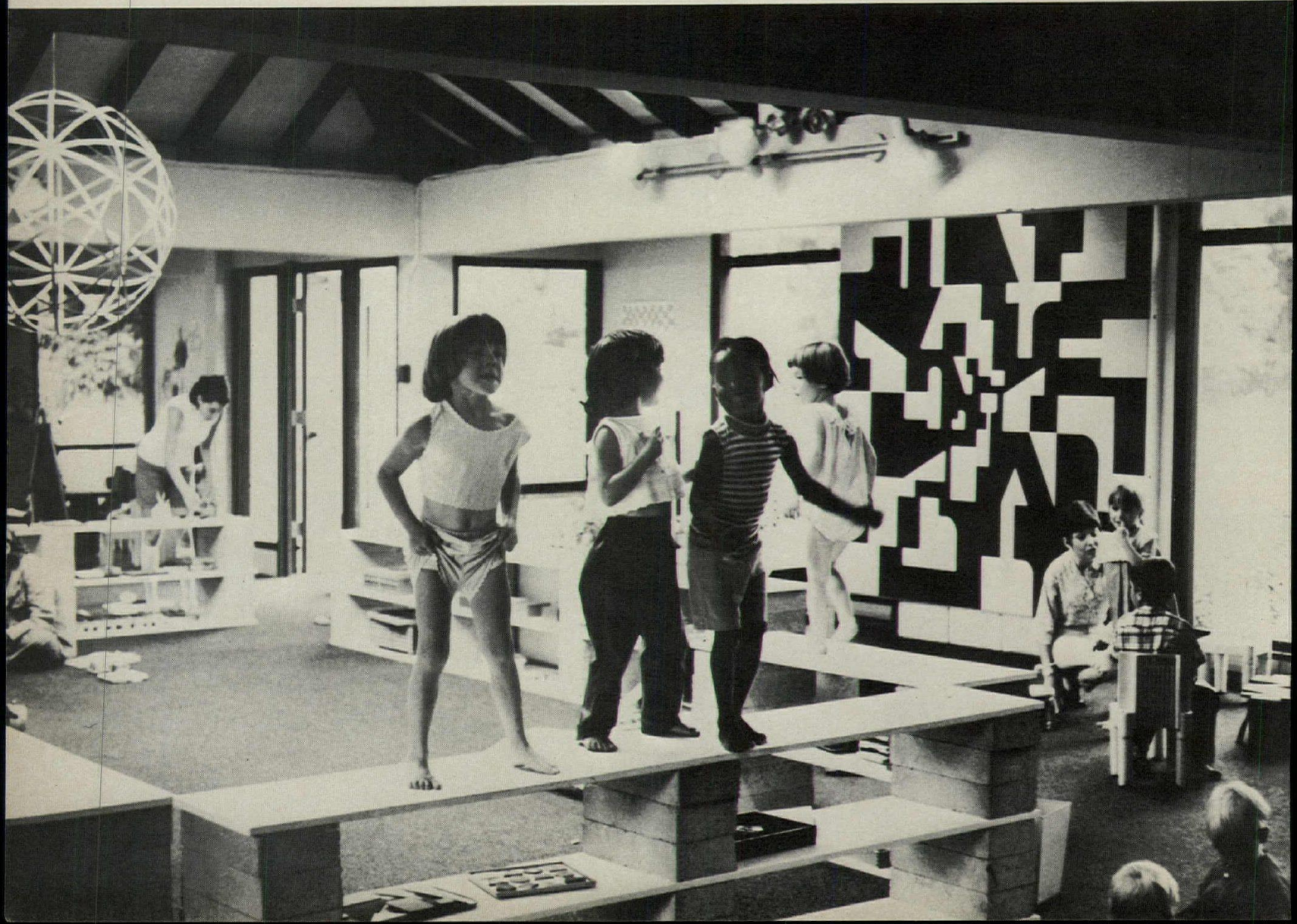
worked together to plan the school. Its structure is *Componoform*, a precast concrete system designed by the architect. Every aspect of the building shows the careful attention to scale which, Mrs. Skutch insists, is essential to a child's learning environment. Even though the main space of the school is open and unobstructed by walls, various secluded corners and subspaces are created by open shelving. The shelves are inviting display spaces for learning materials; carpeted catwalks and enclosures double as climbing structures and as barriers to adults. Together these free-standing elements define some areas as predominantly for children, and others which are shared with the staff. Throughout the

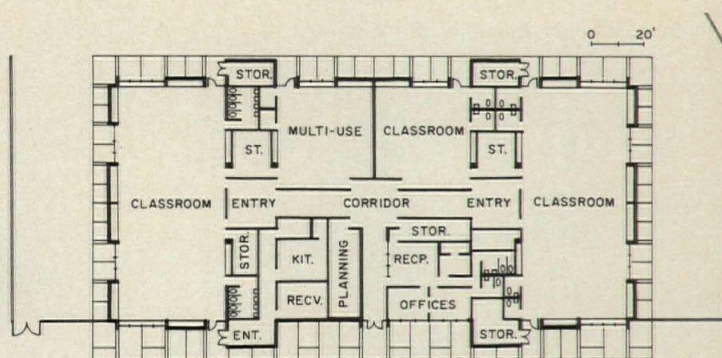
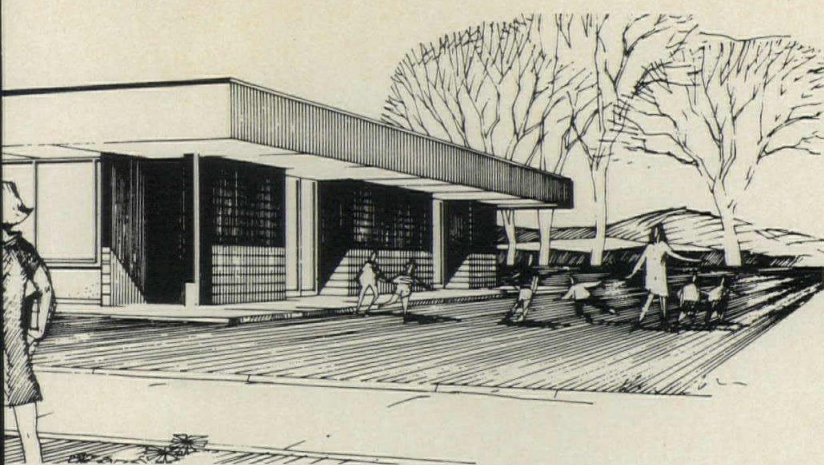
school, the activity and the type of space are determined by the child.

Another objective of the center is to train teachers in methods of early childhood education. The school now accommodates children two to eight years old; future expansion will allow the age limit to go up to twelve years.

Different goals at RCA

Other corporate giants are interested in early childhood education, but most appear to be watching the Singer project to learn what, if any, pitfalls to avoid. Franchising is almost universally shunned, and the financial gain is too low for





The Singer Learning Center provides large, flexible teaching areas around administrative and utility functions. (Milton Weinstock photo.)

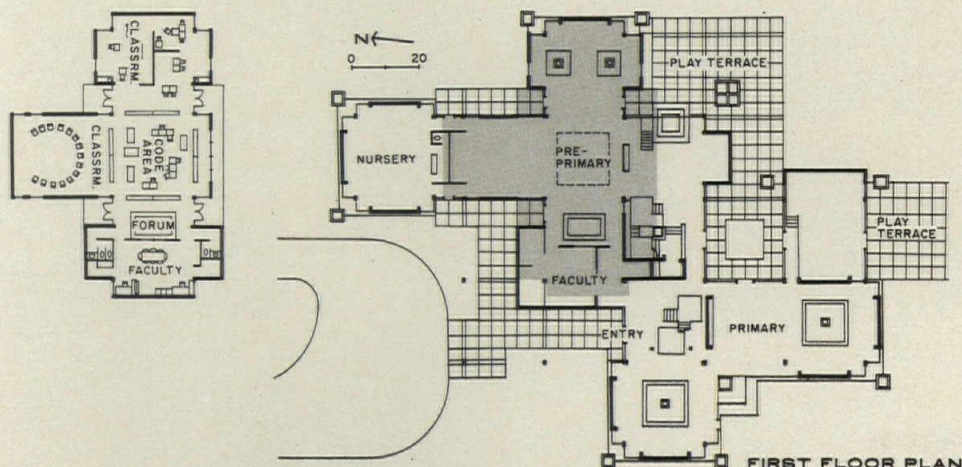
many of the business interests. RCA, long involved in the technology of education, has been providing early childhood training/day care only in programs that indicate the need for it in a supplementary role. The Educational Systems Division of RCA started a program which included educational day care for the indigent in Alabama. The government has taken this project over, keeping the original staff. A similar program for migrant workers is located in North Carolina. In addition, the city of Camden, New Jersey, has awarded RCA a contract to study and redesign its entire school system. Currently, RCA has no plans to establish schools of its own. Much has been written concerning the shortcomings that

have become obvious in schools for the very young. Some public educators see the commercial advance into teaching as an erosion of the public school system. Dr. Mason of The Singer Learning Center feels, however, that any challenge can only benefit the entire system of education.

In an article in *The New Republic*, called "Kentucky Fried Children," Joseph Featherstone says: "Whereas with the schools, the reformers' problem is to fight sick bureaucracies, pathological professionalism, and many other entrenched interests, the problem in early childhood education is simpler and bigger: how to develop from a few shoots, an entire new humane profession, responsible to its clients." **JM**



Children at the Early Learning Center pursue individual interests both indoors (left) and out. Plans show how school will expand. (George Zimbel photo, courtesy EFL.)



With a little help from my friends

Simple to erect, easy to relocate and efficient at enclosing space, domes and bubbles are becoming more than just a fad in creating environments for learning

There exists a virtual spectrum from which an individual chooses his own lifestyle, and architecture reflects that spectrum. At one end is building systems design, promising technological means of achieving the utopian environment. At the other end is a way of life offering an existential means by which an individual investigates the meaning of "it all." In this context, with rising esteem for the individual, the actual enclosure for space becomes secondary. The primary concern is freedom of the individual within the space to determine his immediate environment.

Two of the forms of space encapsulation which are nearest to annihilation of the "edifice complex" are domes and

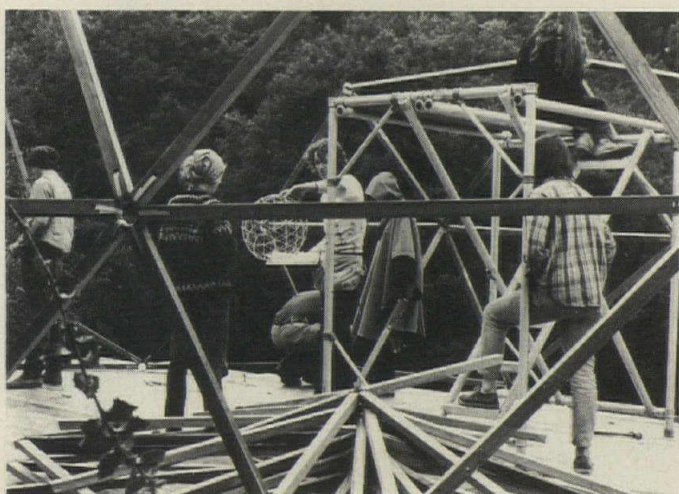
inflatables. While these forms have been little used in schools, except for physical education and temporary classrooms, their advantages are becoming clearer. Both domes and bubbles lend themselves to relatively quick erection with little need for well-trained workers. Both can be moved or removed with minimum effort, leaving very little site damage. Both contain large volumes of space for less money.

Domes for a free school

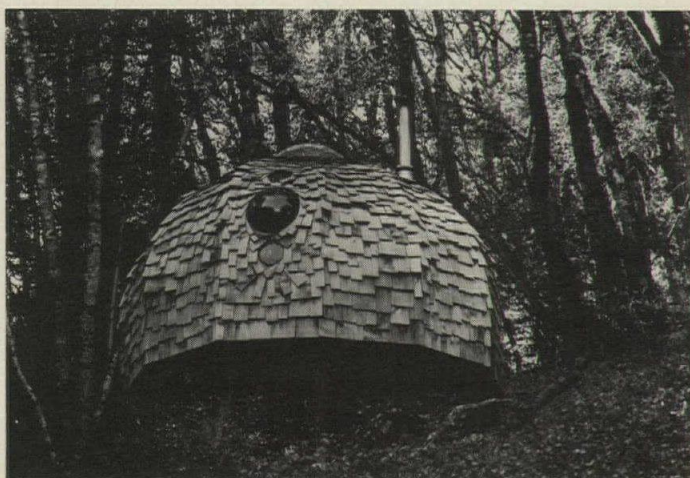
Pacific High, an experimental free school in California, recently built ten domes in a period of four months. The structures were built, for the most part, by 15- to 17-year-olds, supervised and assisted by Lloyd Kahn. Kahn also formed Pacific Domes, a nonprofit educational corporation. One passage from *Domebook One*, published by Pacific Domes, summarizes the feeling of that group:

"New life contained within new geometrical shapes and pat-





Students at Pacific High were their own builders, erecting ten domes in four months. Dome below is all plywood, not the usual geodesic structure. (Photos: Jack Fulton, far left; Lloyd Kahn, above; Nan Biers, left and below.)



Building for self-determination

terns. Shelters designed and built with beauty, efficiency and grace. A skin instead of a roof overhead, a light membrane protecting you from the rain. Symbols of quick escape from the cities. Economical and orderly use of materials. Minimum violation of land. A structural system so simple that anyone willing to exercise a reasonable amount of care and 'quality control' can build his own shelter."

Inflatable structures, also rare in academic use, are receiving more attention. The Educational Facilities Laboratories, Inc. has provided grant funds for the design of two bubble structures, one for The Student Housing Cooperative at Princeton University, Inc. Plans call for a bubble enclosing one-half acre to house 50 single and married students and faculty — "... a place where the people living can have an opportunity for real self-determination. ..." "The structure will have three distinct, interconnected functional areas — private, shared and public, each occupying its own grade elevation.

At Antioch/Columbia College in Maryland, a larger inflatable enclosure is planned to house, in one acre, the entire campus for students in special programs covering all aspects of the growth of a new city. The students requested that the facility be "nomadic/pneumatic," in keeping with the nature of their course. When Columbia reaches a population of 100,000, patterns and effects of growth may take on aspects of all other similar cities. At that time Columbia/Antioch might cease to be, and the students could follow developments elsewhere.

The Antioch bubble will house 300 students, and will include administrative functions, classrooms, resource areas,

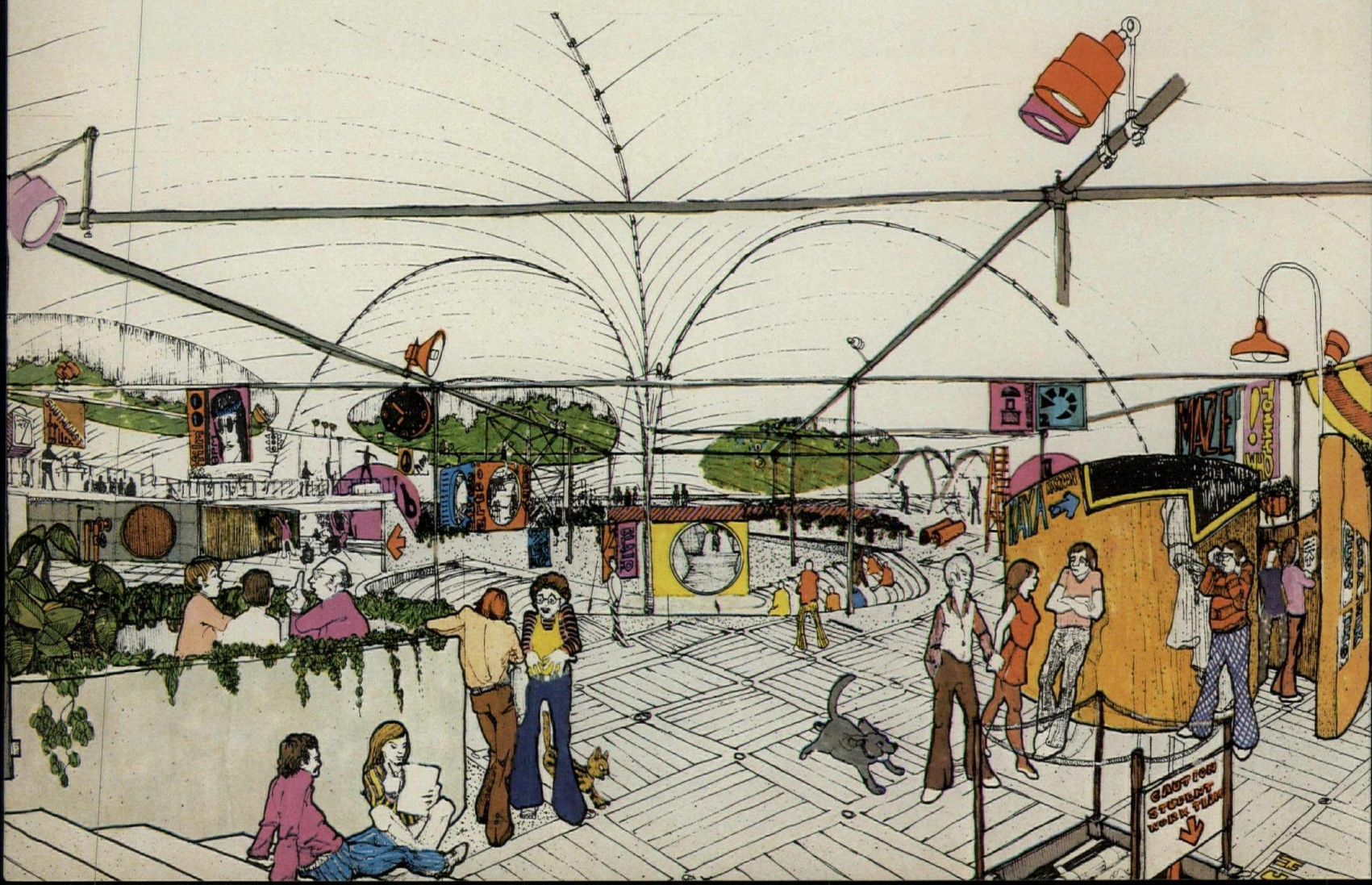
theater practice facilities, art studios and a college green. A prototype will be built from which much information will be gathered before beginning the main structure.

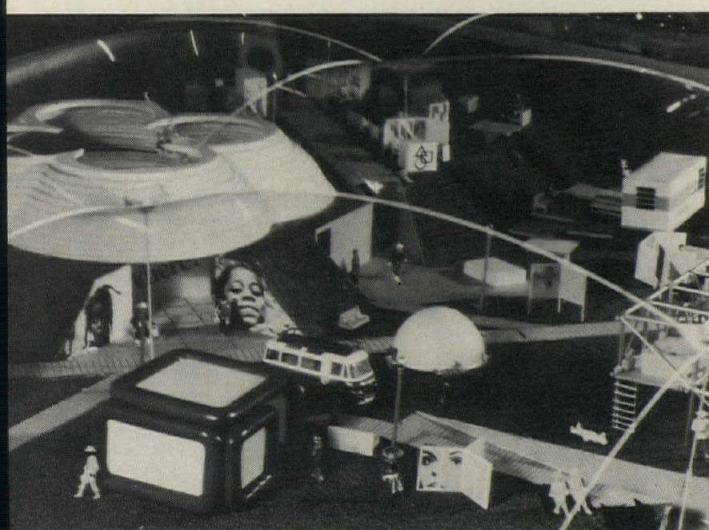
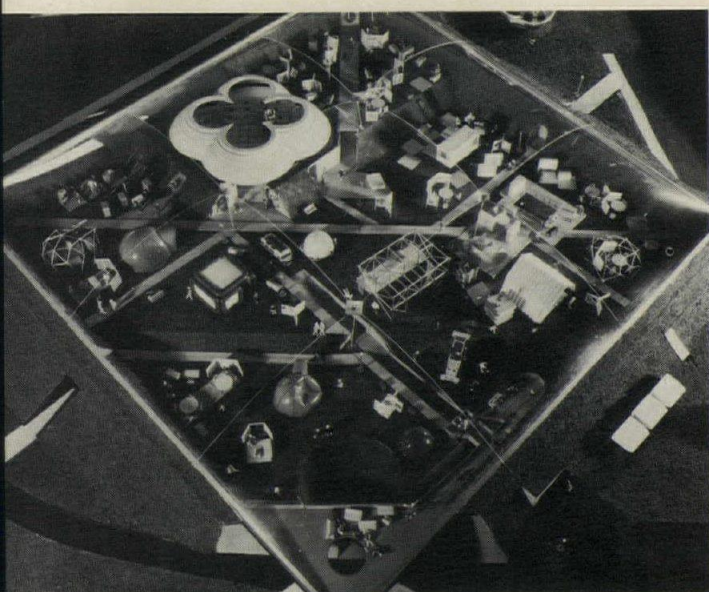
The Antioch designs are the result of a group effort by the office of architect Rurik Ekstrom, the Research and Design Institute (REDE), Charles Tilford and students at both Antioch and the University of Maryland. Engineers at The Good-year Tire and Rubber Company have also contributed their technical knowledge of inflatable design and materials.

No precedent is being set by the structural principles these domes and bubbles represent. The interest being shown in them now has its roots more in sociology than in engineering. What has been described by Ronald Beckman, director of REDE, as a "grass roots movement" is being staged. People with a will to determine their own life patterns are involved in all phases of planning and constructing enclosures for their activities. Beckman notes in this development a new, positive and constructive form of "power to the people," an answer by action as distinct from destructive criticism.

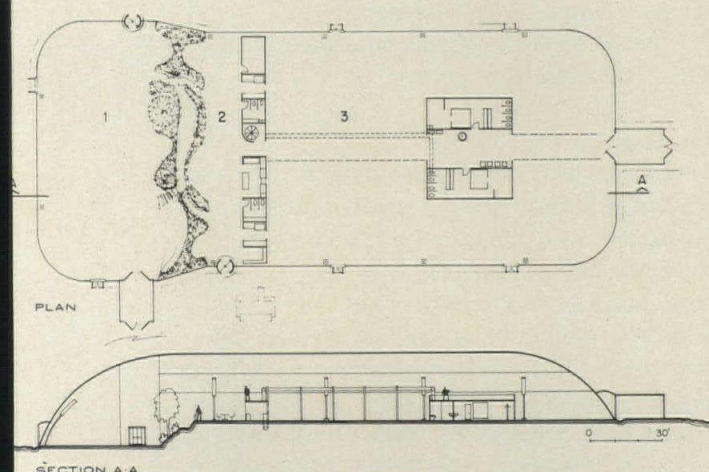
Sociological and economic implications of both the process and the results of this movement will be carefully evaluated and recorded. It is felt by the originators of these projects, and by the institutions supporting them, that opportunities exist for a total educational experience centered around domes and bubbles.

The growth of interest in these forms has been noted in our pages in the past. PA will continue to report on them, feeling that they are expressions of human involvement reaching beyond the "fad" label so easily applied. JM





Antioch/Columbia College (above and left) will have one-acre campus enclosed by inflatable structure. Administrative areas, classrooms, resource areas and other college facilities will be under one roof. (Rendering by Kaya Arikoglu; model by architectural students, University of Maryland.)



Princeton bubble (above) will house 50 single and married students and faculty members. Major areas will be public (1), shared (2) and private (3) where residents will erect own living accommodations.

A non-conclusion

It is apparent that, since PA's last major school issue (April 1968), the one constant in education is still change. The direction change is taking is, at best, nebulous, and the timetable unpredictable. Studies indicate the need for individual learning, beginning in early childhood, placing emphasis on student initiative. While this portends massive changes in academic structure, the inertia of a system largely at rest in the 19th century is enormous.

There are basic disagreements about the nature, scope and order of importance of the questions being raised. It has been pointed out that in order to satisfy a need, we must first define it. Educational questions, however, often elude universal solutions. Problems which loom over a ghetto school may be nonexistent in Middle America. Grosse Point and Palo Alto have different priorities from those of Harlem or Watts.

It is to a somewhat unsettling array of ideas, then, that architects will be asked to address themselves. What are the educational ideas that generate architectural form? Is it time to develop more specialized forms to house a more individualized curriculum, or to abolish the idea of enclosing learning processes? If enclosed, will the space be an assemblage of monastic cubicles or a return to Mies' universalism? Questions such as these will be answered only if perceptive architects join an interdisciplinary action with educators, students, and all phases of the behavioral sciences. If, in the final analysis, the architect finds his form-giving role considerably diluted, he should be prepared to relinquish some of that function in order that a more responsive environment might result.

A school has as great a potential to stifle education as to provide for its advance. Success or failure of an institution will be determined by the people who establish its direction, a team which often includes the architect. It should be clear that dereliction of his responsibility to encourage that direction, and allow for others, is as serious as failure to ensure public safety. The results are not as obvious, but can be as crippling. **JM**

Elevator systems for hospitals

Anton H. Maurer

This is the third article in a series on hospital systems. Two preceding articles have pertained to materials handling and solid waste handling systems

Most older hospitals are faced with the problem of poor elevator service. Greater usage has occurred because of increased personnel and patient traffic along with new medical procedures and expanded treatment facilities. In addition, more materials and services are now provided.

Poor elevator service is also caused by mixed usage, which is no longer acceptable. Elevators in older buildings moved all types of ambulatory traffic: patients, freight, hospital equipment and even animals traveled simultaneously. This is inefficient, unpleasant, unsanitary and unhealthy.

The experience of these older hospitals can be used as a guide in planning additions or new hospital facilities. The recommended arrangement, justifiable in larger hospitals and to some degree in the average smaller hospital, is to provide separate elevators for ambulatory passengers, patients and freight.

Passenger elevator service

Passenger elevators move all ambulatory traffic, including medical and administrative staff, visitors and students. For this, traffic cabs are most efficient when wider than deep.

During most of the day, passenger elevator traffic is two-way in nature. Numerous peak periods occur. Criteria must be met in terms of quality of service (measured by intervals) and quantity of service (measured by handling capacity).

The average time lapse (interval) between elevators leaving the main terminals should be 45 seconds or less. The elevators must provide adequate five minute peak handling capacities to prevent traffic backup. For example, in a 600 bed metropolitan teaching hospital there may be as many as 2800 persons using these elevators during the day, with a capacity for 220 people trips needed during numerous five minute peak periods.

Out-patient department traffic, if extensive, requires sepa-

rate elevators, although when operated on an appointment basis the requirements are reduced. A department treating 500 patients daily generates at least 2000 people trips a day, counting round-trips of patients and visitors but not staff.

Patient elevator service

These elevators move patients on stretcher beds and wheel chairs, with their escorts, empty beds, empty wheel chairs and emergency traffic. They should be hospital shaped, i.e., greater in depth than width, to accommodate stretcher beds.

Most patient traffic occurs between bed floors and the operating room, radiology department and other therapeutic treatment areas. In addition, daily admissions and discharges often amount to about 10 percent of the bed population.

The desirable interval of service is 60 seconds or less. In large hospitals this is relatively easy to achieve because of the number of elevators necessary to satisfy the handling capacity. But in smaller hospitals it may be impractical and uneconomical to provide elevators to meet this time interval.

Surveys indicate that during the peak hour, 15 percent of the total bed population may be moved in one direction or the other. Thus, a 600-bed hospital may generate 90 patient trips an hour, or nine patient trips during the numerous five-minute morning and early afternoon peaks.

Half of the patients may be on stretcher beds while the other half are moved in wheel chairs or therapeutic frames. Hospital-shaped elevators can handle only one stretcher bed at a time, or, though inconvenient, two wheel chairs. So that a fully loaded elevator does not have to make stops when it cannot handle any more traffic, it may be desirable to provide a control system that will allow it to travel express. Such a provision requires enforcement of rules restricting these elevators and their lobby to patient traffic only.

Freight elevators

The number required varies widely depending on the extent of automated materials handling systems in the facility. Some freight elevators are required no matter how extensive the automation, primarily for things requiring personnel escort, (beautician and barber services, maintenance personnel and their materials, medical equipment, bulk supplies, animals).

Freight elevators should also be hospital-shaped not only to accommodate long, bulky equipment, but also to provide emergency backup for the patient elevators.

An interval of 60 seconds is desirable but, again, difficult to achieve except in very large institutions.

Other considerations

Major cafeteria facilities can generate thousands of people trips per day. Unless located at main street entrances or accessible by escalators directly above or below this level, additional elevators may be required.

Daily elevator usage is substantially longer in time with more door operations in a health care facility than in most other building types. Obviously, the owner should purchase the best available equipment and establish a good preventive maintenance program. Emergency power supply for operation during electrical failures is vital and must not be overlooked in planning.

(For a more complete discussion of hospital engineering, we invite interested readers to request Syska & Hennessy's Technical Letter series on the subject.)

Author: Anton H. Maurer is an associate partner of Syska & Hennessy, Inc., Consulting Engineers, New York City.

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Definitions

Harold J. Rosen, PE, FCSI

The industry is in need of more, and more precise definitions of terms. This article points up the existing confusion, and suggests more to come

Specifications and drawings are devices used by architects and engineers to communicate information. The means of communication are determined by that vehicle which can best transmit the intended information. Obviously, relationship, configuration, size and location are best depicted on drawings by lines, symbols, cross-hatching, dots and figures. Quality of material, excellence of workmanship, and fabrication of equipment are best described verbally in specifications.

Systems for each method of communication have been developed that are peculiar to its forms. Drawings use legends to illustrate different materials, and standards have established certain symbols to show plumbing, heating, electrical and structural items. Specifications use certain standards similarly. Where the dictionary meaning is adequate, no further elaboration is necessary. A specific word may transmit the intended information. In addition, many standard references such as ASTM standards, ANSI standards and federal specifications will include definitions that serve as explanations of the meanings of words that are not necessarily fully defined in a standard dictionary.

ASTM standards include definitions as well as materials specifications and test methods. ASTM definitions have always appeared as separate standards in the ASTM Books of Standards. In November 1970, ASTM published for the first time a Glossary of ASTM Definitions in Part 33, which can prove to be a very useful tool for the specifier since it lists in alphabetical order the terms contained under separate standards in 32 books.

In reviewing the ASTM Glossary of definitions which contains some 11,000 terms, it becomes apparent that in many instances, like words may have differing definitions. For example, the word "set" appears five times. Set can mean "strain remaining after complete release of the load produc-

ing the deformation" when it relates to rubber and rubber-like materials. It can also mean "a flow property of porcelain enamel slip affecting the rate of draining, residual thickness and uniformity of coating." It also means "to convert an adhesive into a fixed or hardened state by chemical or physical action." So when the specifier uses the word "set" for rubber or sealant materials, for porcelain enamel and for adhesives, it has three distinctive meanings. Yet in each context, the meaning is clear since it is defined precisely in the ASTM standard.

Peculiarly enough, while ASTM lists seven sealant standards which include preformed cellular elastomeric gaskets, elastomeric glazing gaskets, extrusion rate for one- and two-part joint sealants, indentation hardness of elastomeric type sealants, rheological properties of one- and two-part sealants, rubber gaskets for cast iron soil pipe and staining and color change for one- and two-part joint sealants, ASTM has not yet provided a definition for a sealant. Nor is there a suitable dictionary definition of the word sealant.

The ASTM Glossary also reveals that there are 14 definitions for deflection, 28 for sample, 7 for hardness, 5 for relative humidity and 15 for tensile strength. Obviously some coordination is required to reduce these multiple definitions which in some instances are essentially the same in concept but differ slightly in wording.

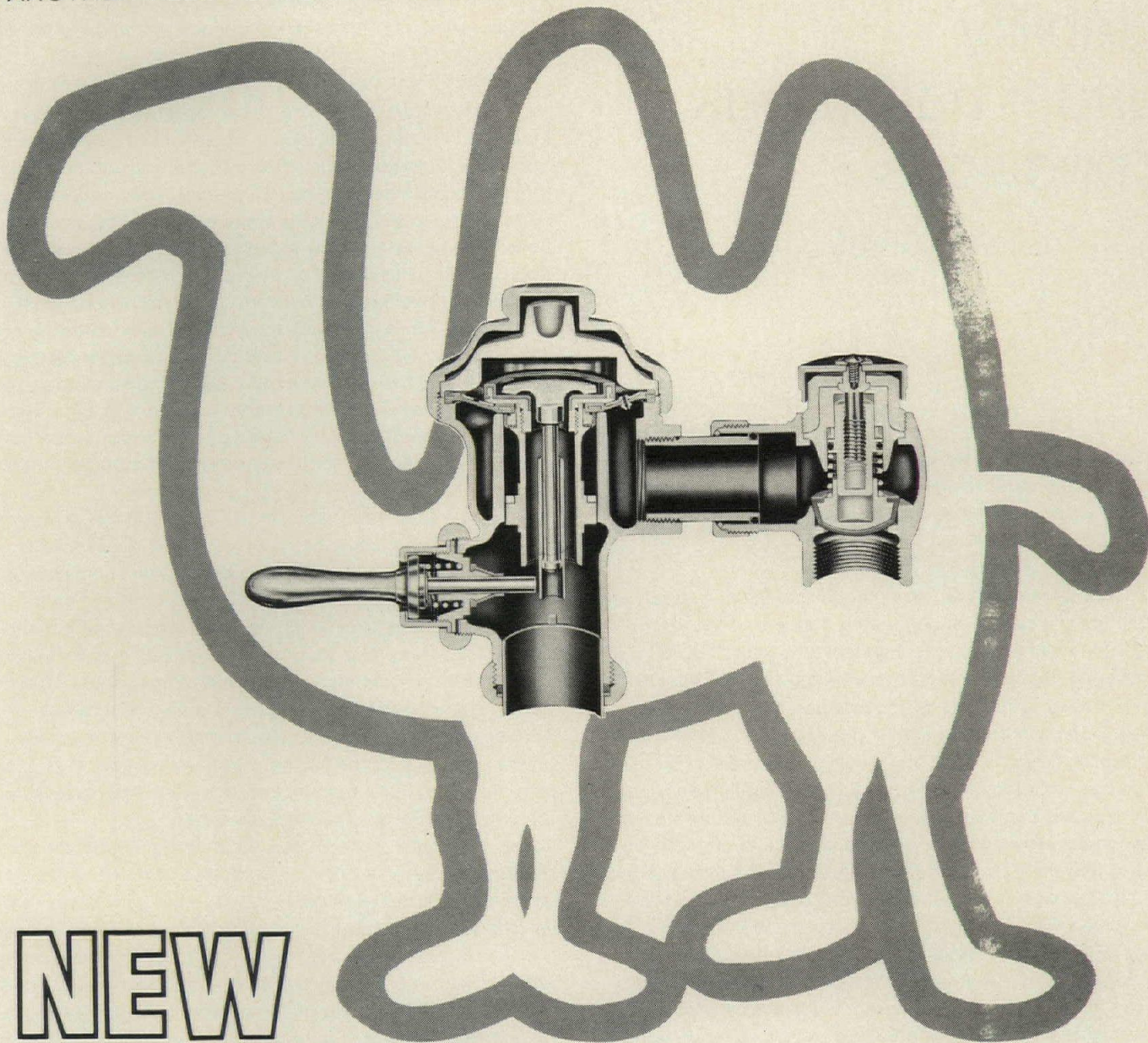
The specifier uses the word "mastic" when he describes the setting of some flashing and roofing materials in some indefinable roofing bitumen. What does he really mean? The dictionary defines mastic as "any of various pasty cements." ASTM has two definitions: (1) a material with adhesive properties usually used in relatively thick sections that can be readily formed by application with trowel or spatula; (2) a protective finish of relatively thick consistency capable of application to thermal insulation or other surfaces, usually by spray or trowel in coats greater than 30 mils. . . . The first describes adhesives, the second, mastics for insulation. The term "mastic" is also used in the paint industry to define certain paint formulations. So what is roofing mastic?

When a specifier uses the word "butter" in masonry for laying up brick in mortar does he mean a thin or a thick application of mortar? If it's a refractory mortar, it usually is intended as a thin application. For normal brick work, to butter a joint would not necessarily imply any specific thickness.

It is quite apparent that the construction industry can use a book of definitions. At the moment one must look to many industry sources for definitions of terms. The last comprehensive book of definitions, if indeed a book ever can be all inclusive on the date of publication, was written ages ago. New materials, new application techniques and the fast approaching systems design and systems building will require still more definitions of terms, and we haven't as yet defined terms for our current technology. How can we communicate intelligently in the field of specifications in the absence of some good industry standards?

Author: Harold J. Rosen is the Chief Specifications Writer of Skidmore, Owings & Merrill, New York City.

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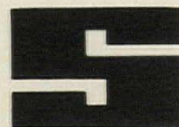
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Liability under hazardous conditions

Bernard Tomson and Norman Coplan

What is the architect's responsibility when a workman is injured as a result of a hazardous condition that arose during construction? Herewith, a case in point

Uncertainty concerning the potential liability of a supervising architect is a source of continuing concern to the architectural profession. Where a workman is injured on a building project due to a dangerous condition which has developed during the course of construction, the tendency has been for a claim for damages to be asserted against the architect for the project on the ground that he did or should have had knowledge of the dangerous condition and therefore stopped the work. The architect who is administering the construction contract is particularly in an exposed position where the contract documents expressly authorize him to stop the work if in his judgment a hazardous condition has arisen. This is illustrated in a Utah case (*Nauman v. Beecher* 467 P. 2d 610) which case was ultimately determined by the Supreme Court of that State.

The facts of the Nauman case involve the construction of a Hall of Justice complex in Salt Lake City, Utah, on behalf of the city. The architect who had been retained by Salt Lake City to design the project and to administer the construction contract was sued by an injured employee of the general contractor, for injury sustained during the course of construction. The architect's contract provided that he was to furnish a qualified on-site inspector for the construction period and that the city would also provide a project representative. The construction contract provided that the general contractor was to comply with all Federal, State and Municipal safety laws in order to prevent accident or injury to persons working on the project, and expressly required the contractor to provide and be responsible for all temporary shoring needed for executing and protecting the work.

The building project included the excavation of an east-west utility tunnel extending 900 feet in length for the purpose of bringing heat from a new boiler room to an existing

building. The architect's plans and specifications for the tunnel indicated the location, dimensions and material to be used but contained no provision as to the method or means of excavating, that being left to the determination of the general contractor.

From the commencement of the excavation, the architect's representative and the owner's representative complained to the contractor about lack of shoring or raised questions concerning the sloping of the walls of the tunnel. A State Safety Inspector found certain unsafe conditions in parts of the excavation. As a consequence of these objections and violations, the work was stopped for a period of approximately three weeks, during which time the general contractor replaced the foreman for the excavation work with a more competent and experienced man. After the excavating was resumed the contractor's superintendent advised the excavation foreman that earlier complaints by the architect's and owner's representatives were exaggerated and that he could increase the amount of shoring but that there was no need for further tapering of the banks of the excavation.

The contractor's foreman for the excavation work was in the tunnel after excavation had resumed and was taking grade shots when a cave-in occurred. He received serious injuries when one wall of the tunnel gave way and hit a wooden concrete form which he was standing behind and which struck him. The Trial Court, in awarding damages to the excavation foreman against the architect, found that the trench in the area where the cave-in occurred was dangerous and unsafe and that the architect knew or should have known of such condition and was negligent in failing to stop the work. Upon appeal, this judgment was reversed and the claim against the architect dismissed.

The Appellate Court pointed out that the immediate cause of plaintiff's injury was the unsupported form which the cave-in had thrown against him. The court concluded that whether the form should have been placed or removed was a matter of construction method or practice with which the architect had no right or duty to interfere. The court stated that "it would be outside the bounds of reasonable care to require the architect to scrutinize each act done by the foreman and 58 other workmen over an 11-acre construction site to make certain that none of them did a potentially dangerous act."

The Utah court further ruled that to sustain the Trial Court's findings and judgment there must be competent and substantial evidence that a condition existed which a reasonably prudent architect practicing in the locality would have regarded as dangerous and thus justified the closing down of the excavation work prior to the cave-in. Although the construction contract provided that the architect could close down the work if in his judgment circumstances arose that might be dangerous, the exercise of that judgment would have to be measured by the testimony of other architects and not based upon the testimony of lay persons.

Although the architect in this case successfully resisted the suit against him, the case is one more illustration of the fact that an architect can be found liable for injury to a workman on a building project even though that injury was engendered by improper means or method of construction, for which, it has been generally assumed, the architect has no responsibility.

Authors: Bernard Tomson is District Court Judge, Nassau County, N. Y., Hon. AIA. Norman Coplan, Attorney, is Counsel to the New York State Chapter of the AIA.



GYMNASIUM: Lake Forest College, Lake Forest, Illinois
ARCHITECTS: Loeb, Schlossman, Bennett & Dart, Chicago



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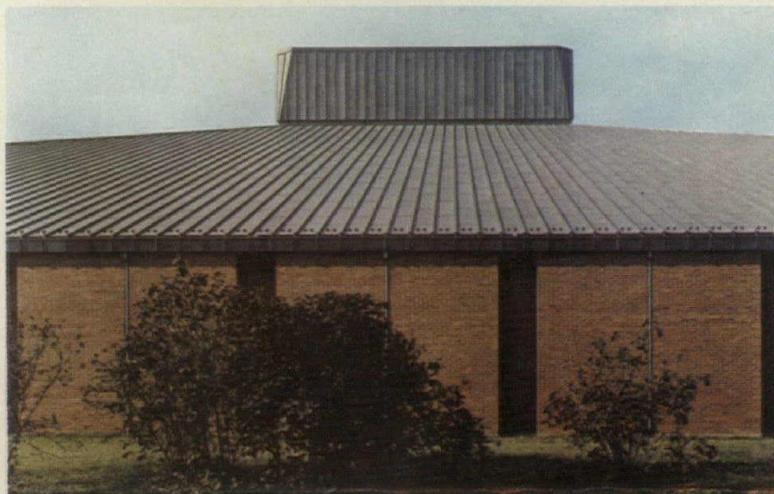
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TITANALLOY "A" THE ARCHITECT'S METAL

Architectural detailing

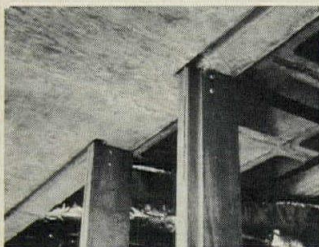
Wright Salisbury, AIA

With this issue, *Progressive Architecture* inaugurates a new editorial and advertising feature called "Details From The Industry." Indexed for filing under the Uniform Filing System adopted by the AIA, CSI and Producers' Council, these pages may be removed and saved for future reference to various methods of fabrication, joining and protection. First in this series of advertisements and details came from Russwin, Division of Emhart Corporation.

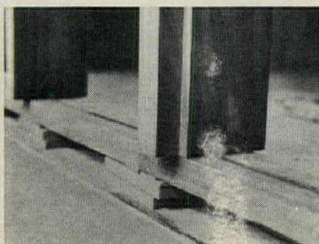
One key to successful detailing is the intelligent staging of installation procedures. Careful planning, by architects Markus and Nocka, of each step in the installation of the window walls in the Leonard Morse Hospital in Natick, Mass. produced the refined and economical solution shown.

As the detail drawing indicates, insulating glass is set into reglets in the walls and the underside of the concrete slab. Sill and vertical members of the casement window frame are of African mahogany. These were installed first, with stops removed (1, 2). The glass was then eased into position (3) and the wood supporting member and stops applied (4). Mahogany framing members are being allowed to weather naturally.

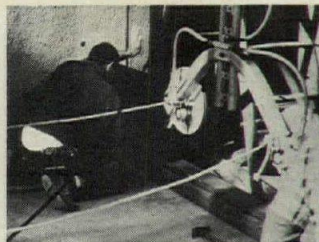
According to the architects, this method of framing costs less than half as much as conventional methods using material of comparable quality.



1



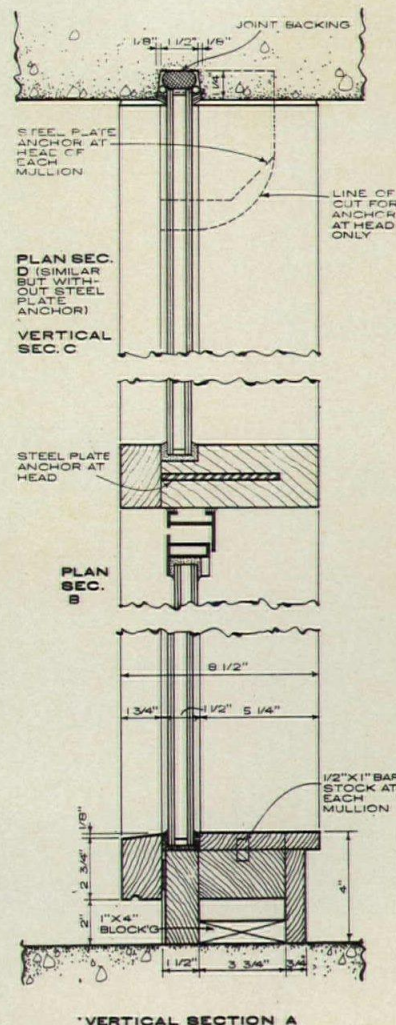
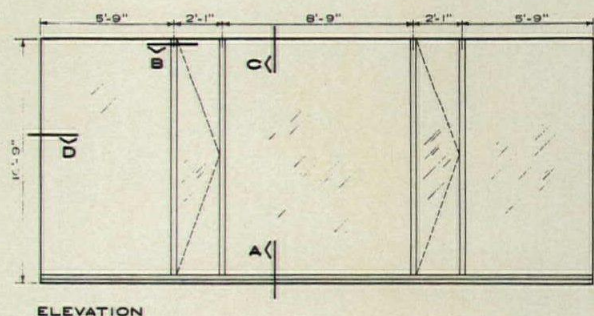
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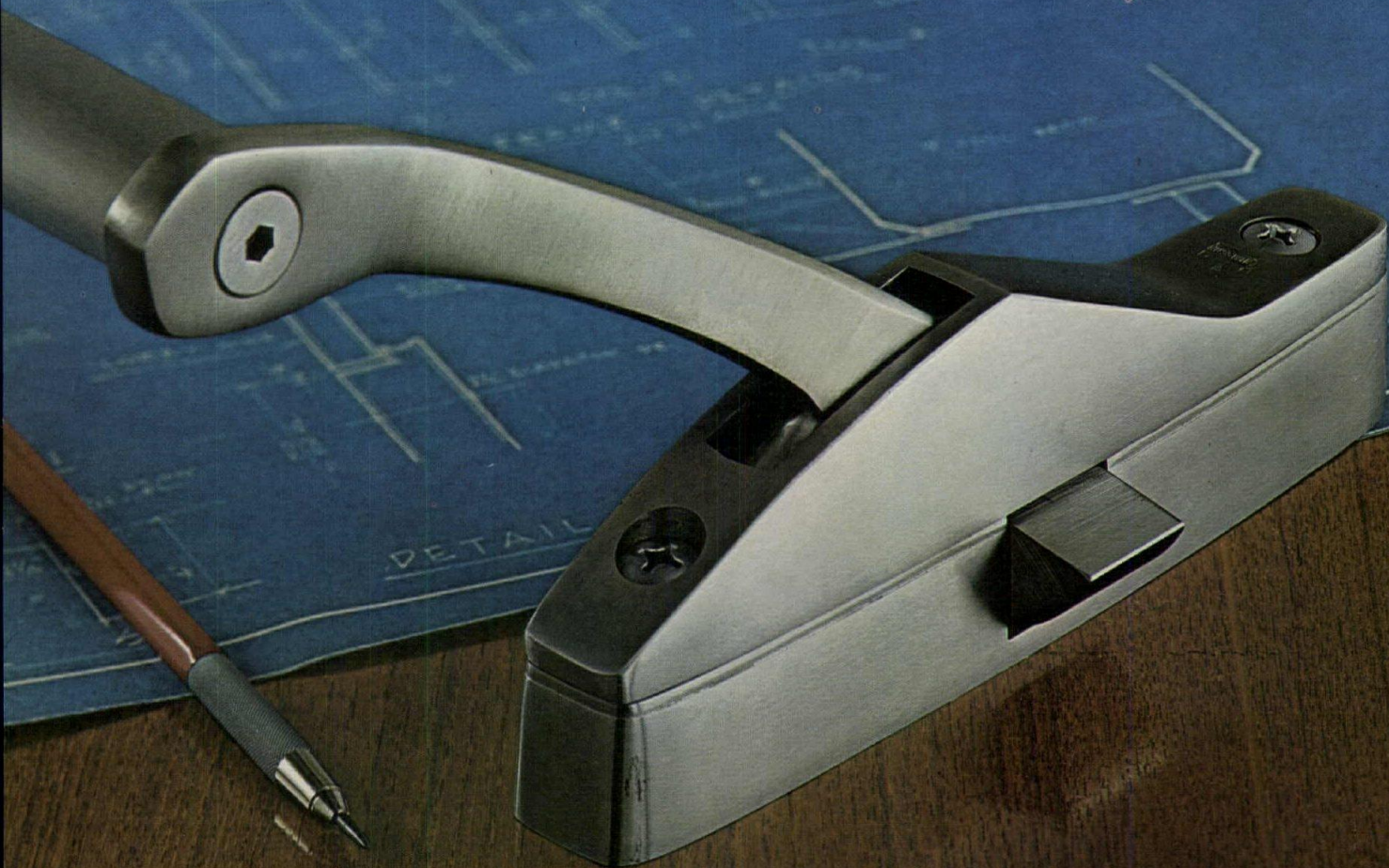


3



4





Lightning bolt

Split-second response to the slightest touch makes the EXITER II* fire exit bolt fast and foolproof. Streamlined styling too. Unmistakably Russwin.

Russwin, Division of Emhart, Berlin, Connecticut 06037.
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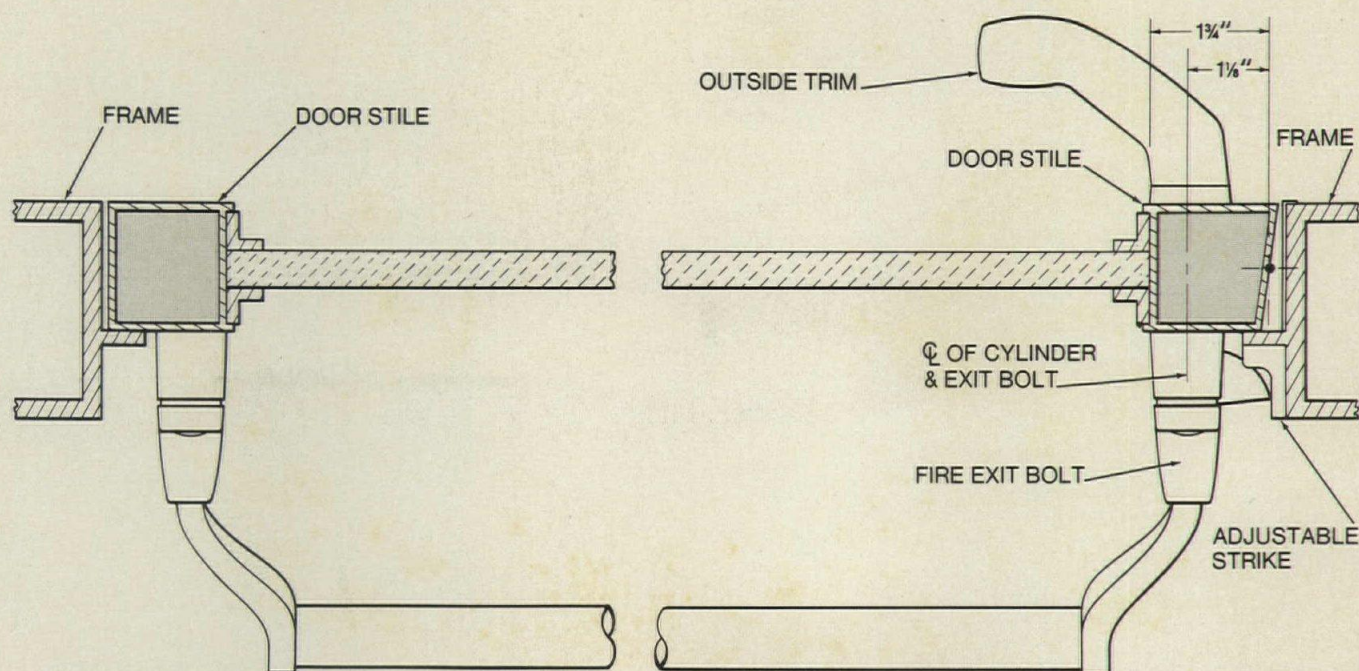
630 EXITER II Series — Heavy-Duty Rim Type — Fire Exit Bolt

Functional elegance with traditional built-in safety for all exits and especially for those with narrow stile doors

Safety and elegance are combined in Exiter II Fire Exit Bolts to provide touch-and-go action and the dependability of safety-engineering. A design concept to satisfy aesthetic and functional requirements.

Safety and design are combined in:

- ☐ Unique, twist-proof, oval shaped crossbar.
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- ☐ Heavy duty precision parts coupled with abuse-proof construction.
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Suggested specification

Fire Exit Bolts shall be Russwin Exiter II series, fully reversible, "UL" casualty listed in the function, material, trim and finish specified.

Active and inactive cases shall be uniform in design and size. Crossbars shall be of oval shape and lock into drop forged lever arms to resist twisting.

Lever axle shall be $\frac{3}{8}$ " chrome plated steel, nylon bushed. Crossbar dogging shall be furnished for each case. Latch bolt shall be the pivoted type with $\frac{11}{16}$ " throw. Strike shall be adjustable and of necessary depth for $1\frac{3}{4}$ " door stiles.



Tectum Full-Span Corridor Panels. They're even kid-proof.

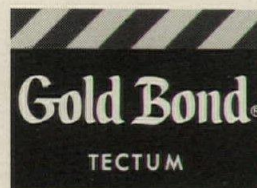
You know how boisterous students can be. They even bounce books off ceilings. So you need a material that can take it. Tectum can. Available in natural or painted finish, its textured surface of resilient wood fiber offers a degree of protection not found in any other acoustical product.

And Tectum holds down noise, too. Tectum® Full-Span Corridor Panels

are non-combustible and completely accessible. Reaching services in the plenum is a simple matter for two men.

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Coping with kids is a National responsibility.
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A child went forth

A child went forth: A documentary film about urban schools — their problems and their promise. Co-sponsored by the AIA, Educational Facilities Laboratories, and the United States Office of Education. Larry Madison Productions. Available through purchase or loan from the AIA Library, 1735 New York Avenue N.W., Washington, D.C. 20006.

"There was a child went forth every day" says a Walt Whitman poem that continues, "and the first object he look'd upon, that object he became." The line captures the spirit and purpose of this very moving film; the tragedy of contemporary urban educa-

tion is that what a child sees most is the dead-end decay of his local schoolhouse. City school buildings are traditionally egg-crate structures, old, dirty, and deteriorating. Their rigid, square rooms and straight rows of desks describe an emotionally and physically oppressive environment where teachers become wardens and students, prisoners. Within such a setting, the desire to learn must die, for as the film vividly depicts, the schoolroom itself repeats and reinforces the torporific quality of urban life outside. It becomes a microcosm of the world the youth of our depressed cities want most to escape. *A Child Went Forth* documents, in a very poetic way, some solutions.

In one city in the Midwest, a large old warehouse has been converted into a schoolroom where students have the space and freedom to participate actively in the process of learning. An art class becomes a science class. In learning about light, the students really work (and play) with the medium; they do not just read about it. They make their own light show — bending light, refracting and filtering it through gels, fluids, and glasses. They go on to polarize light, setting it in motion to see what it does and why, then dance to it while rock records play in the background. They learn more about the basic principles of color and light than they would ever have through a conventional classroom assignment.

In New York, a carpeted, undivided school becomes a learning beehive. The students are so involved in what they are doing that they become oblivious to those around them; and it is often difficult to get them to go home at night. If that is not a sign of success, what is?

The film does not (and could not) outline a specific system, but by showing that some techniques presently in use seem to work, *A Child Went Forth* contributes to a desperately needed rethinking of our approaches to education.

Building Code of the City of New York by Frederick S. Merritt, Consultant. Van Nostrand Reinhold, 1970. 860 pp. \$14.95.

Reviewed by Frederick Frost, Jr. The reviewer, an architect, acted as consultant in writing the new New York City Building Code.

In recent years, building codes have become the favorite target of those who enjoy criticizing the building industry, often destructively. Of course, some criticism of some codes is justified. Codes have be-

[continued on page 126]



The Stubborn Dutchman says:

**You may never need a
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but Schmidt builds 'em that way.**

The Stubborn Dutchman claims his walk-ins are built to last as long as your building. He uses only the finest materials — for example, a special steel for exposed surfaces for added strength and longer life. One restaurant can swear to this superior construction. Their installation lasted even **longer** than the building.

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It's not only that they're exquisitely carved. That's impressive enough.

But the big thing is, they're made of an exotic hardwood.

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And that's very impressive. Because Malaysian meranti is basically a furniture wood. And looks a lot like its cousin, mahogany.

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And if you don't see what you want, we'll custom-build it for you. Impressed? Write us at Box 1593, Tacoma, Washington 98401.

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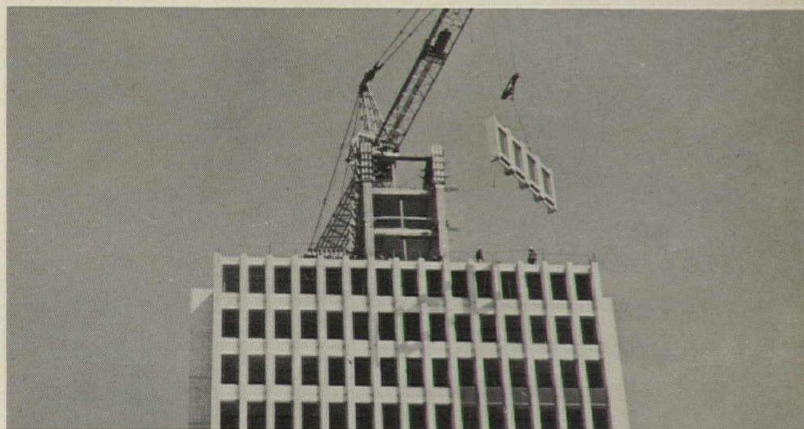
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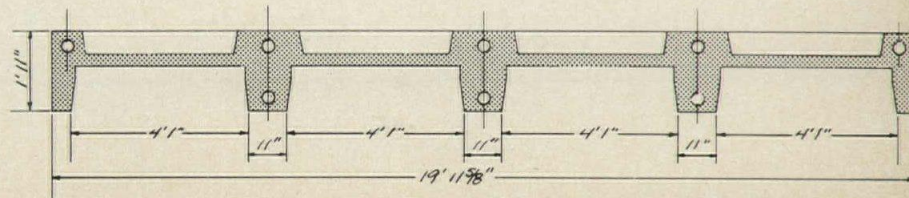
MUTUAL BENEFIT LIFE INSURANCE CO., PHILADELPHIA, PA.

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Eggers & Higgins, New York City, New York
Engineers: David Bloom Associates, Philadelphia.
Robert Rosenwasser, New York City, New York
General Contractor: E. Frankel Enterprises, Philadelphia.
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MEDUSA

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come enormously complicated not only for the architect engineer to interpret but for building officials to enforce. Many are excessively restrictive. In general, they tend to be inflexible and to discourage the use of new technology. Often they tend toward obsolescence; sometimes they serve special interests.

For these and many other reasons, building code experts talk about the desirability of performance codes. In New

York, the new code turned out to be a performance-type code. With the pure performance code, both building designers and enforcing officials require standards of performance spelled out so that there can be reasonable uniformity of interpretation. Without adequately detailed standards, decisions can be based upon individual judgments. Substantial progress has been made toward setting up performance standards in the new code but much remains to be done. The establishment of a Building Code Commission, a major recommendation not yet adopted,

could be the vehicle by which these and other improvements could be made.

Occupancy classifications

Occupancies are classified according to typical combustible content; the speed and intensity of burning. Incidentally, the title "Occupancy Classifications" was used instead of the former "Classification of Buildings" because classification of individual spaces within buildings is just as important as the classification of each building as a whole in establishing the amount of fire protection to be provided by surrounding construction. Ten main occupancy classifications were established to replace the three of the old code and they reflect the increasing complexity and variety of building types.

Occupancies which constitute less than 10 percent of the net floor area of a building were regarded as incidental, and were not considered in the total building classification. On the other hand, the highest-hazard occupancy of two or more occupancies, which exceeds 10 percent of the net floor area of the building, determined the classification of the entire building. Thus, a building may be classified by an occupancy which occupies only 11 percent of the building floor area, but an "escape" clause is included, permitting such an occupancy to be completely enclosed on all sides by fire divisions, in which case it may be treated as a separate building.

Most codes classify residential building solely on the basis of the number of occupants or the number of rooms. This method operates unfairly against school dormitory buildings in that it usually classifies them as hotels, when they are properly classified with apartment houses.

Code provisions governing fire resistance are intended to require the degree of resistance necessary to protect the occupants from exposure to the burning of the contents, of the structure itself, and of its finishes. As a broad generality, this is accomplished by "compartmentation" of each building into areas of reasonable size for escape of occupants and containment of the fire.

Height and area limitations

Determining factors are (1) fire resistance and combustibility of building and contents, (2) accessibility of areas within the building for fire fighting, and (3) time and distance for escape of occupants.

Size limitations should be equalized in order to maintain uniformity of fire risk.

[continued on page 130]

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Photo: Sprayberry High School, Marietta, Ga.



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Bradglas® bowl colors
borrowed from nature.



Shades of Mother Nature. Bright brick from red clay country. Subtle salmon. Surf green. Deep desert yellow. And seven others. Contemporary colors, clean lines . . . to fit in with today's washrooms.

Bradglas® Washfountains. Colorful like nature. Durable like steel. Smooth, nonporous. Resistant to abrasion, acid and corrosion. Won't swell, shrink or warp. Won't chip, peel or flake. Vandal-proof and fire-safe, too.

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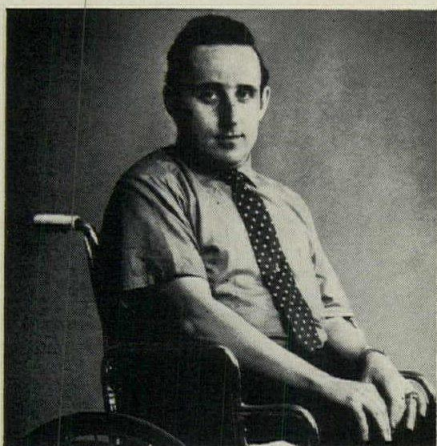
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Every dollar spent to rehabilitate someone with a physical or mental handicap will increase his lifetime earnings by \$35. (Thirty-five taxable dollars that he earns himself.)

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The U.S. Department of Health,
Education, and Welfare.



Books continued from page 126

That is, depending on the nature of the occupancy and the class of construction, size limitations should be proportioned so that one building and its occupancy will not constitute a greater fire menace than any other building and its occupancy. If this principle is not observed, unbalanced fire risks are created, and economic discrimination results.

Interior construction and finishes

The new provisions are based on the premise that just as two different occupancy and construction classifications may exist side by side, so also may portions of single buildings with differing occupancies and constructions be permitted not only side by side but also one within another and one atop another, providing only that the differing areas are compartmented by proper fire separations and the combination does not exceed the height restrictions for the least restrictive occupancy.

Fire stopping regulations have been liberalized to permit combustible buildings and to set minimum standards for compaction of mineral wool and insulating granules used for fire stopping. Fire protection of wood stud-bearing partitions is required. Partitions of combustible construction are permitted in Construction Group I; noncombustible buildings, provided they are contained within an area of 5000 sq ft under a single tenancy and have a fire resistance protection of at least one hour.

The new Code, like most modern codes, sets up limitations on the flame spreadability of surfacing materials. It recognizes that fire-resistive protection of structural elements is important to the preservation of a building but that flame spread resistance is important to the preservation of lives, as well as property.

Special uses and occupancies

Provisions that relate to special uses and occupancies take precedence over all other provisions in the new Code where there are conflicts.

Theaters were given greatly liberalized provisions so that new stage forms such as "open," "thrust," "arena" and "caliper" were legalized as well as the traditional "proscenium" type. This was accomplished by permitting the use of a deluge water curtain in place of the asbestos [continued on page 134]

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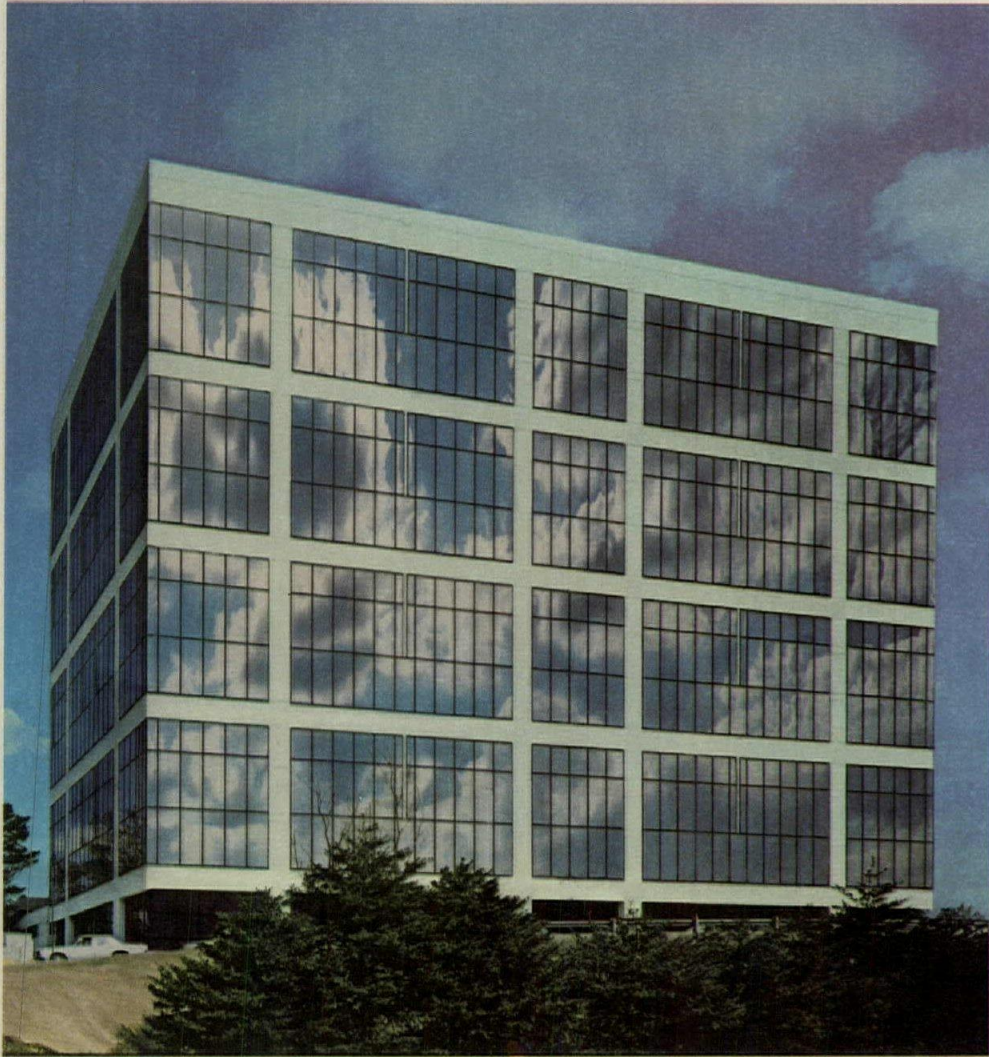
Two-piece Mo-Sai precast columns up to 110' high ... with close dimensional tolerances (to 1/16") for field-welded splices ... and matching Mo-Sai finish on both structural columns and spandrels were noteworthy features of the new Washington Mutual Savings headquarters building in Seattle. The Mo-Sai exposed aggregate finish, in a white-gold quartz aggregate, was echoed in the planters.

Washington Mutual Savings (head office) / 1st and 2nd Avenue at Spring Street / Seattle, Washington / Architect: Paul Thiry, FAIA
General Contractor: Howard S. Wright Co. / Photographer: Art Hupy

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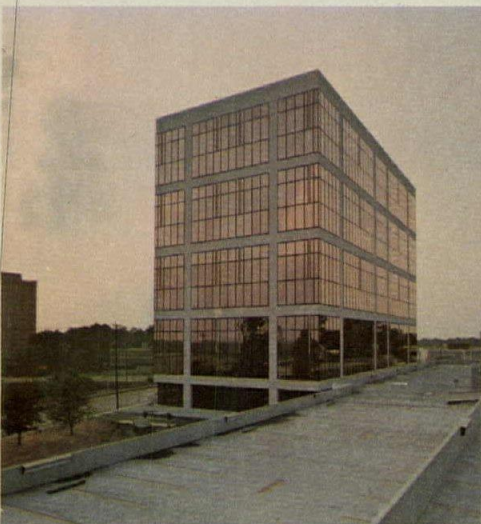
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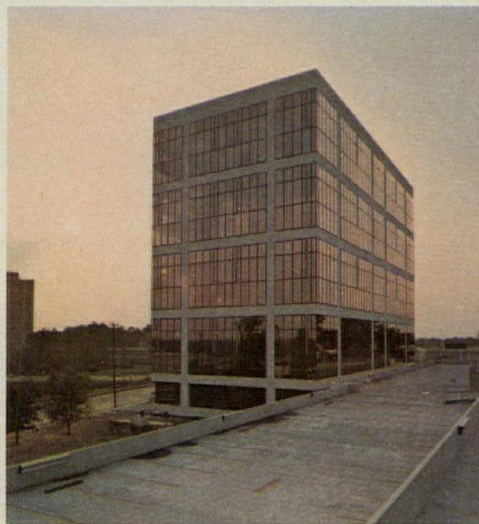
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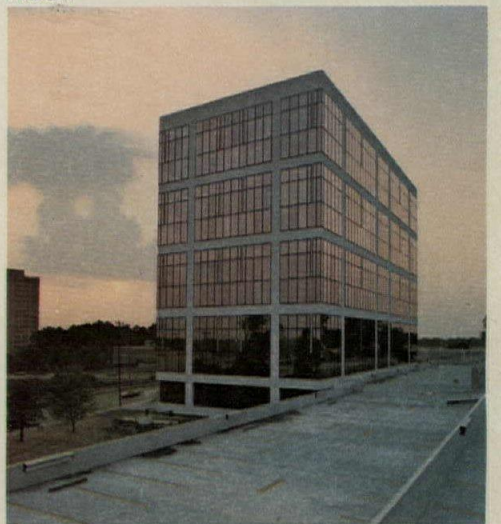
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4 p.m.



5 p.m.



6 p.m.

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He chose PPG's *Solarban® Twindow®* Unit, and used it as an active design medium. The reflectivity of the *Solarban Twindow* Units insures that the building facade will never be static. Its color, tone and reflective patterns will change as often as the sky tones, light intensity and cloud patterns change.

In addition, the architect and me-

chanical engineer found that the performance of the glass would offset its higher cost by contributing to savings in HVAC equipment and operating costs.

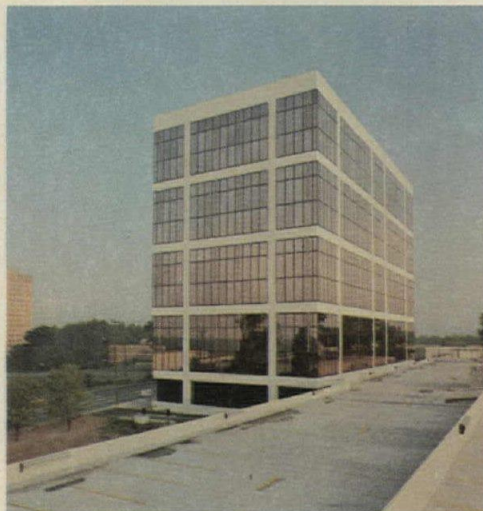
The architect attributes the design success of his building to the fact that he recognized this idea when he began: "Glass should not simply be something you use to see through. Glass is an active design medium."

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medium to meet any esthetic consideration, solve any environmental problem and provide a solid return on investment. Write PPG Industries, Inc., One Gateway Center, Pittsburgh, Pa. 15222.

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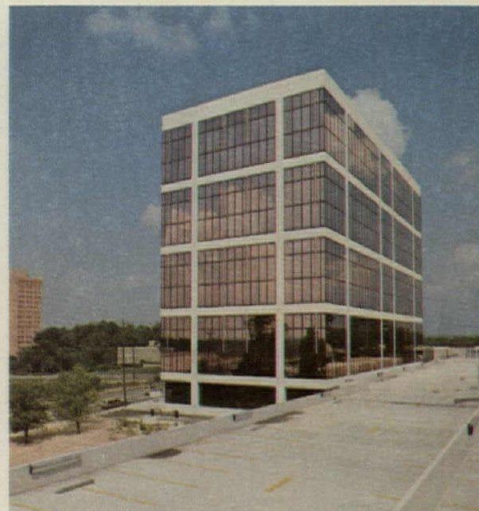
Developer: Office Planning Associates, a Division of Cousins Properties Incorporated, Atlanta
Architect: Toombs, Amisano & Wells, Atlanta
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8 a.m.



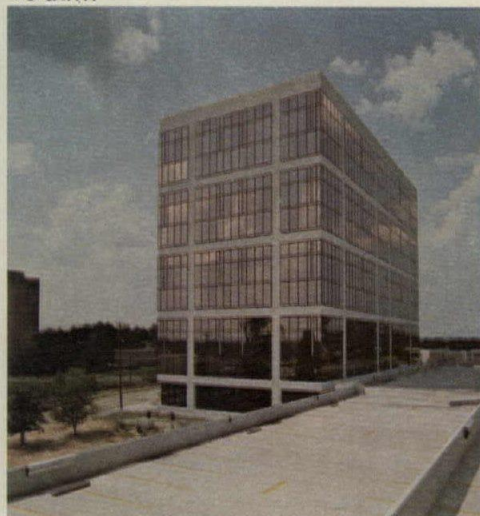
10 a.m.



11 a.m.



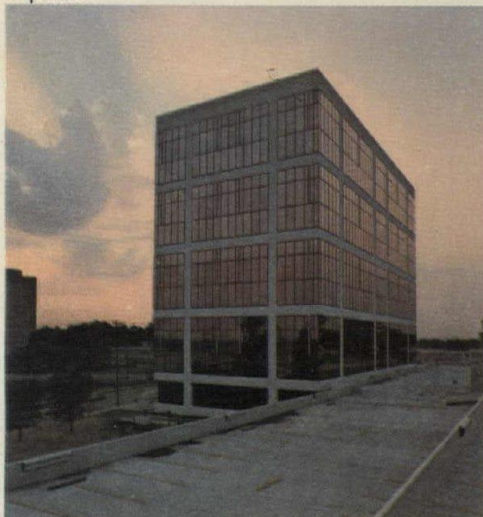
1 p.m.



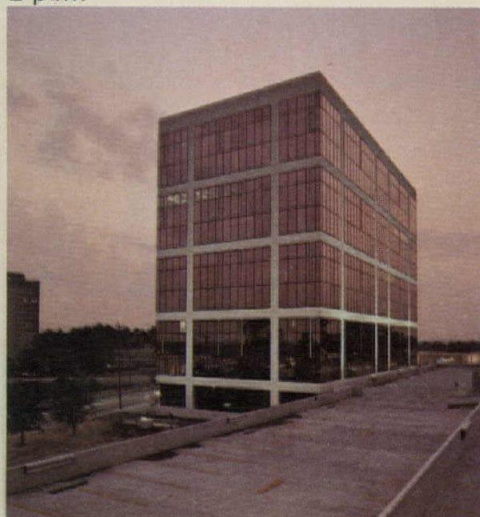
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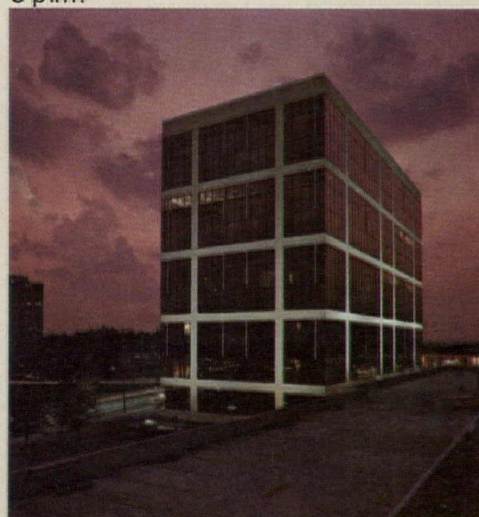
3 p.m.



7 p.m.



8 p.m.



10 p.m.



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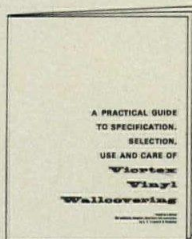
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Books continued from page 130

curtain which necessitated a fixed proscenium opening between the audience and the stage. On the other hand, regulations relating to audience panic were expanded in response to the advice of psychologists that the primary factors in avoiding panic are adequate emergency lighting and means of communicating emergency instructions. Fire control stations are required from which emergency lighting and communication as well as emergency ventilation are manually activated. As an extra precaution, automation of these safety systems is also required.

The new Code contains much which is not only new, but is also progressive. It may be a useful guide to designers and to those writing other new codes.

The Architectural Record Book of Vacation Houses. Selected by the editors of Architectural Record. New York: American Heritage Press, 1970. 246 pp. \$9.95.

Leisure homes have taken a variety of forms and sites, as demonstrated in this survey selected from houses shown within the last five years in the pages of *Architectural Record*. Sixty houses, ranging from a \$5000 two-room home to a \$100,000 rural palace, are featured accompanied by floor plans, site plans, elevations and structural details.

Man's Impact on the Global Environment.

Assessment and Recommendations for Action. Report of the Study of Critical Environmental Problems Sponsored by the Massachusetts Institute of Technology. Cambridge: The MIT Press, 1970. 306 pp. \$2.95.

This report presents the results of a month-long, interdisciplinary examination of the global climatic and ecological effects of man's activities. The focus of the study was on those environmental problems whose cumulative effects on ecological systems are so large and prevalent that they have world wide significance.

Four Great Makers of Modern Architecture.

Gropius, Le Corbusier, Mies van der Rohe, Wright. The verbatim record of a symposium held at the School of Architecture, Columbia University, March-May, 1961. New York: Da Capo Press, 1970. 285 pp. \$12.50.

Viewed as footnotes to history, the papers in this volume offer a re-examination of the beginnings of contemporary architecture by its founders and by their second and third generation offspring.

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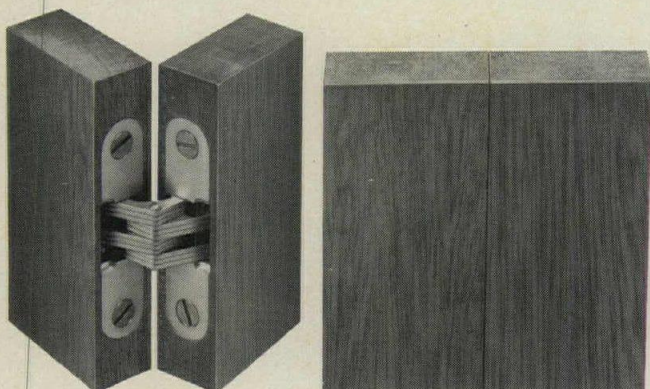
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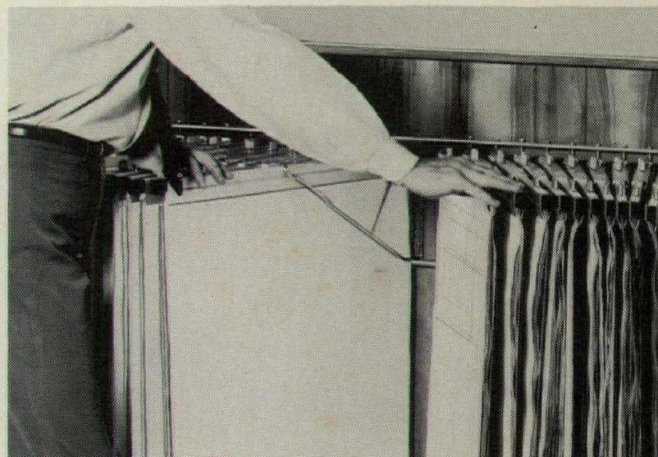
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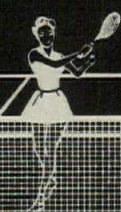


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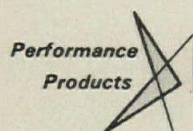
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☐ G-TC Guide Specification for use in construction of new courts.



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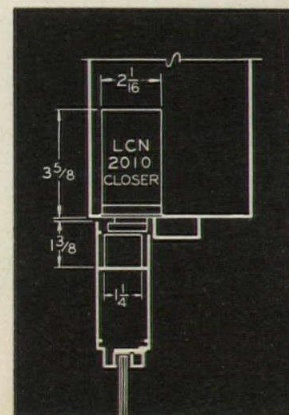


Engineering -Technology Building, West Valley College, Saratoga, California. Architects: Joint venture—Reid and Tarics, San Francisco; Higgins and Root, Los Gatos, Cal.

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Notices

Mergers and expansions

Vincent DeSimone, Consulting Engineers, New York, N.Y. announce the partnership of **DeSimone and Chaplin**.

William J. Brown, Willard C. Pistler, Jr. and Hubert M. Garriott of Cincinnati announce the reorganization of their architectural practice as **Architekton, Inc.**

Armand G. Winfield, Plastics Consultant, West Babylon, N.Y. has consolidated practice with LaBarge Industries Ltd., the new business to be known as **Armand G. Winfield Inc., Plastics Consultants**.

Ingham Kaffka Marcu and Schmertz and Erwin Assoc. announce the formation of **The IKM Partnership**, Pittsburgh.

Name changes

Group: Design, Portland, Maine, is the new name for the design firm formerly known as Group Engineers.

Giffels & Rossetti, Inc., Detroit, is now **Giffels Associates, Inc.**

Earl Heitschmidt & Associates, Los Angeles, is known as **Heitschmidt/Mounce/Associates**.

New addresses

R. W. Shipley Associates, Inc., 175 W. First Ave., Elmhurst, Ill.

Rahenkamp Sachs Wells and Associates, Inc., Stetson House, 1717 Spring Garden St., Philadelphia, Pa. 19130.

Ilmar Reinvald Architect, 206 Rice Building, Troy, New York 12180.

[continued on page 144]

Since

HOPE'S

1818

CUSTOM MADE STEEL WINDOWS



Photo by Ezra Stoller (ESTO)

Inland Steel Company Research & Development Laboratories, East Chicago, Indiana
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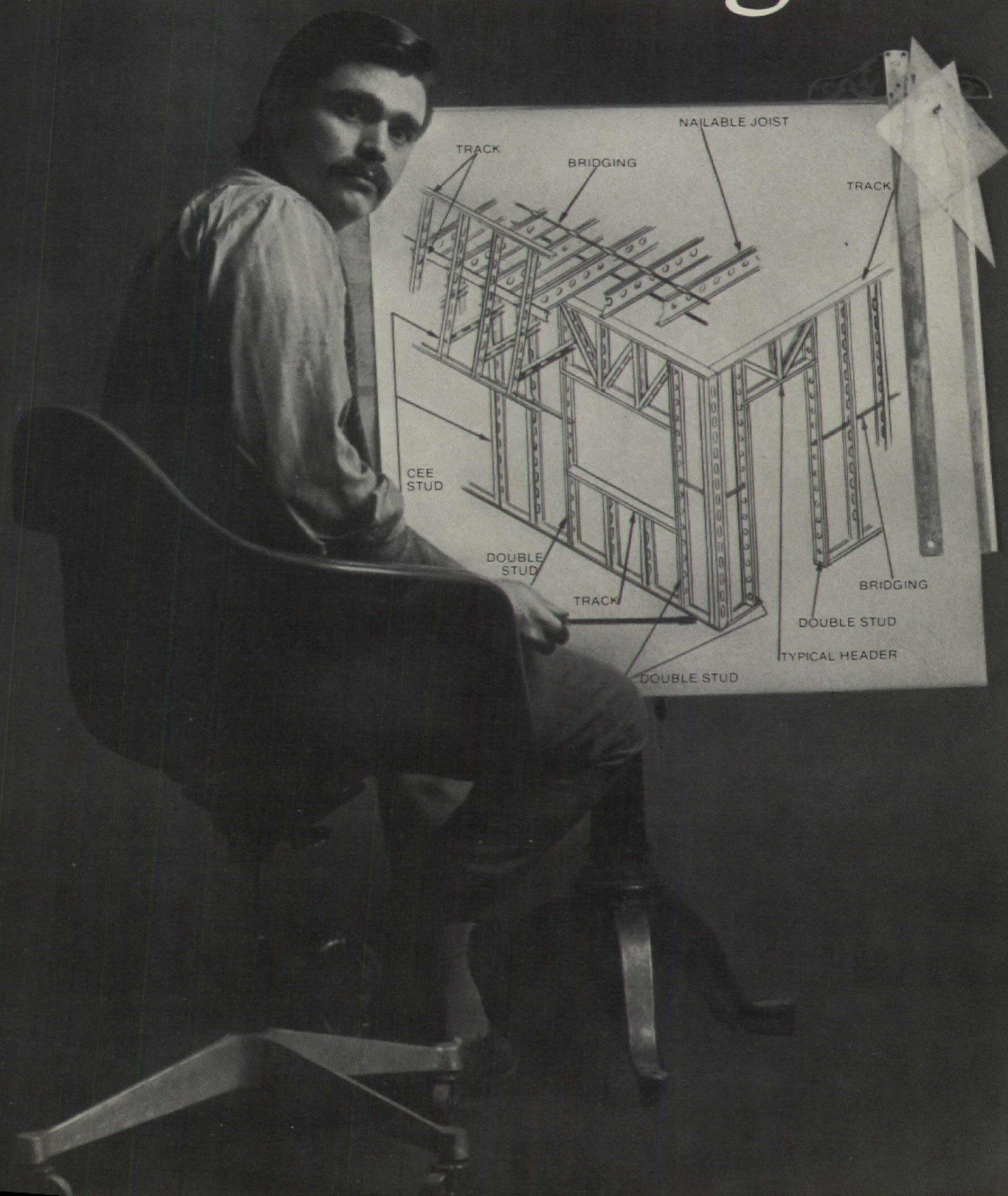
The large fixed windows comprising the window walls in this extensive laboratory complex were carefully engineered in close cooperation with the architectural designers. Special attention was given to windload, glazing and installation. All window frame components (head, jamb and sill members) were machined from light structural steel beams and hot-dip galvanized before assembly. From the outset all Hope's efforts in engineering, fabrication and erection were directed towards producing an installation of custom steel windows which would require minimal future maintenance.

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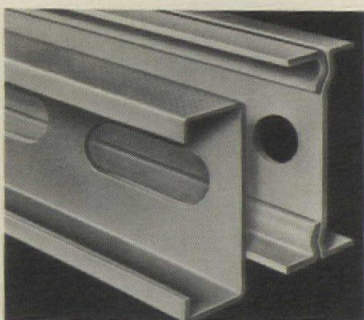
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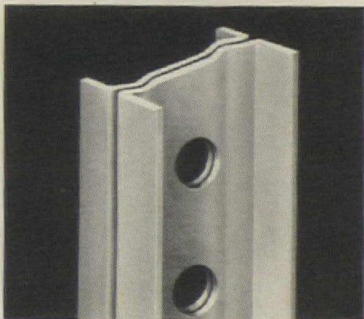
This revolutionary can change the way next building.



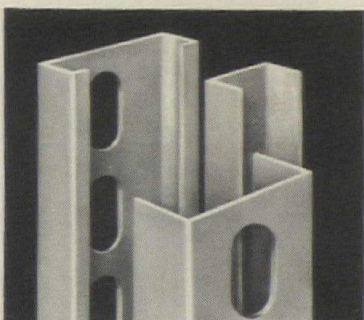
structural system you design your



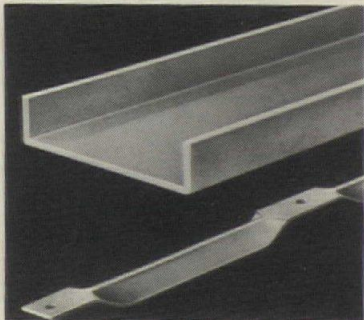
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Nailable Studs



Channel & Cee Studs



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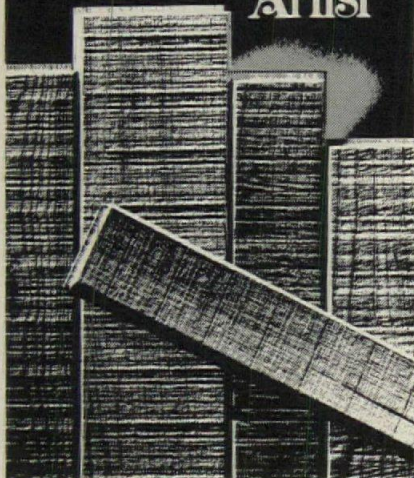
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Notices continued from page 140

Environmental Planning Associates, 333 Fayetteville St., Raleigh, North Carolina 27601.

Johnson-Graham & Associates, 644 Grand Ave., Billings, Montana 59102.

Gardner Hale, AIA, Architect, C & S DeSoto Building, Savannah, Georgia 31402.

Stanley John Lacz, AIA, PE, PP, 662 Goffle Rd., Hawthorne, N.J. 07506.

Appointments

Marquis and Stoller, Architects and Planners, San Francisco, announces that **Phyllis Martin-Vegue** has joined the firm.

Sidney Cobb, AIA, was named vice president of Nathan Johnson Associates, Inc., a black Detroit-based architectural firm.

Michael Barry Gould has been named architectural designer for Benham-Kite & Associates, Inc., Los Angeles.

Arthur L. Spaet Associates, New York, N.Y., announces **Bertram Waller, PE**, as Project Manager.

Seymour S. Zamos has been named administrative assistant to the president of Gruen Associates, Los Angeles.

Orrin A. Haworth, AIA, has been named vice president and member of the board of directors of the Honolulu architectural and planning firm of Au, Cutting, Smith & Associates, Ltd.

Samuel B. Nelson has returned to Daniel, Mann, Johnson & Mendenhall, Los Angeles, as vice president.

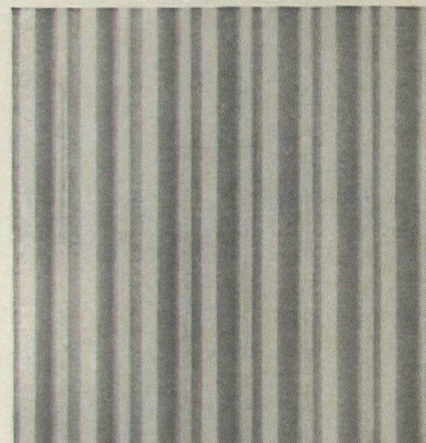
Doxiadis Associates, Inc., Washington, D.C. announces **Kenneth D.B. Carruthers** as vice president.

Ashley/Myer/Smith, Inc., Cambridge, has named **Robert Fleischauer** and **Tyrus J. Porter** as associates.

Farkas, Barron & Partners, New York, N.Y. announce the appointment of **Elias N. Canelos, PE**, as associate.

Thomas J. Lucas, Jr., AIA and **Ralph C. Steele, PE**, have become principals of Tarapata-MacMahon-Paulsen Associates, Inc., Bloomfield Hills, Michigan.

NEW!



SYMONS DEEP RIB TRAPEZOIDAL FORM LINER

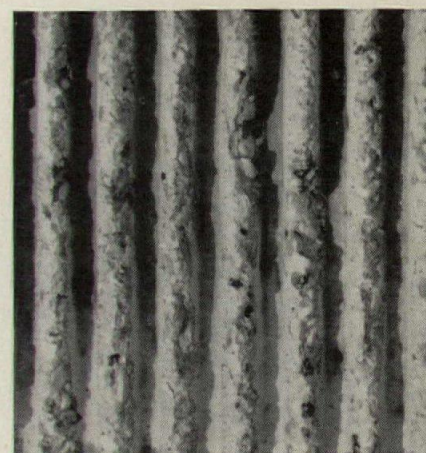


Now, deep and architecturally dramatic ribs can be easily cast into any concrete surface with this new Deep Rib Trapezoidal Liner. As the sun revolves throughout the day, distinctive shadows appear within the ribs, giving the concrete surface strong, clean lines.

The surface imparted to the concrete by the liner may be of a slightly textured finish, shown above, which is standard, or a smooth finish available on request. A rough finish, as illustrated below, may also be obtained by bush hammering or hammer blows.

Ribs are 1½" deep by 2" on center. The liner is made of special ½" plastic material which is highly durable and reusable. Either nails or a neoprene adhesive may be used to attach the liner to the form facing.

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ture, urban design, planning. Resume: Tatar and Kelly, Inc., 520 Light Street, Baltimore, Maryland 21202.

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Continued on page 150



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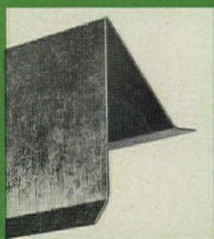
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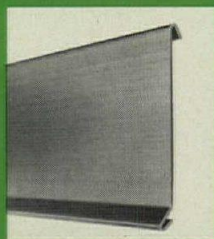
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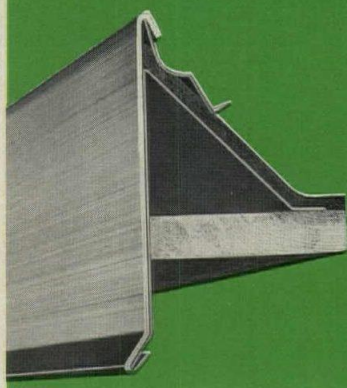
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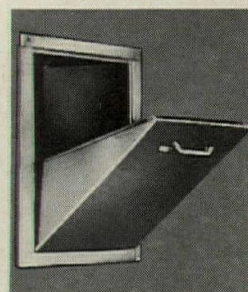
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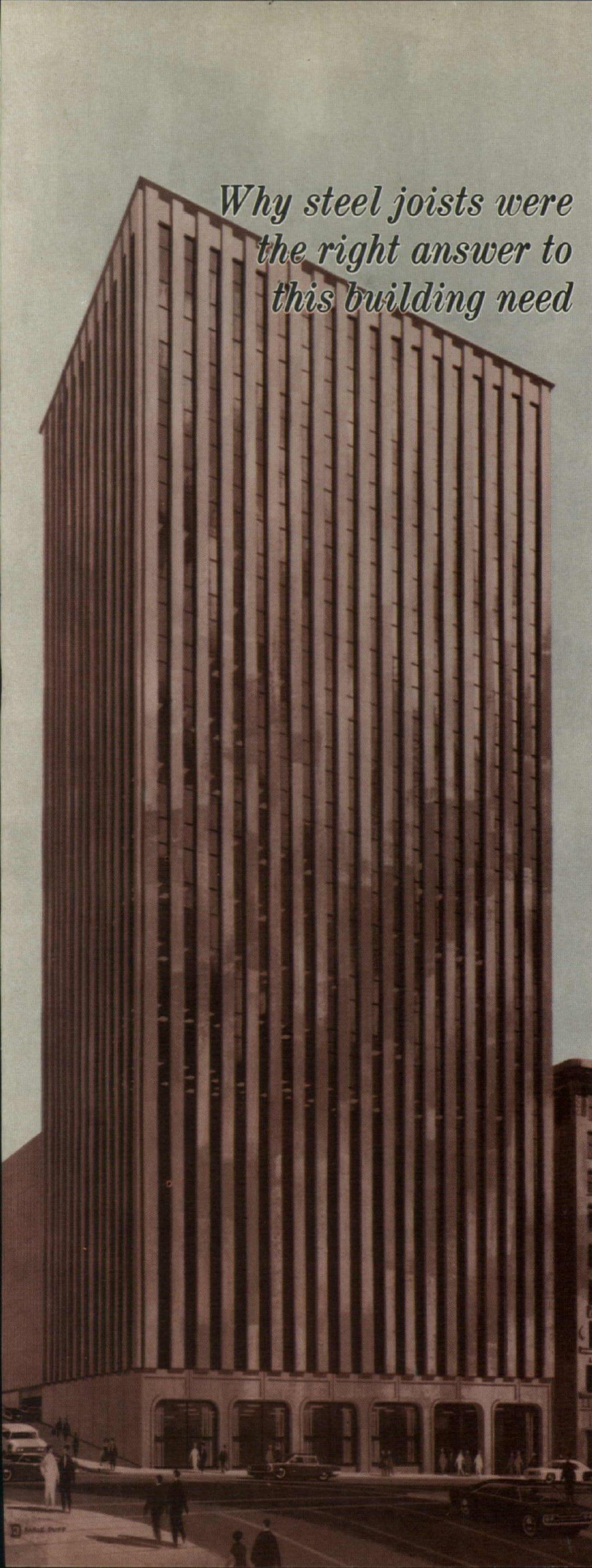
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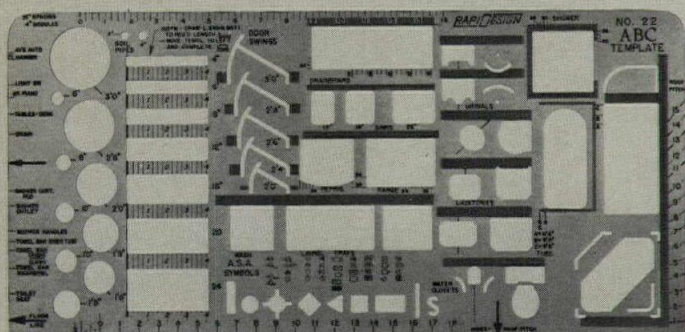
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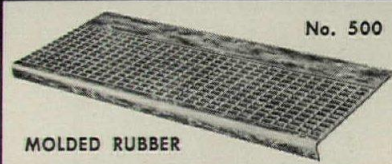
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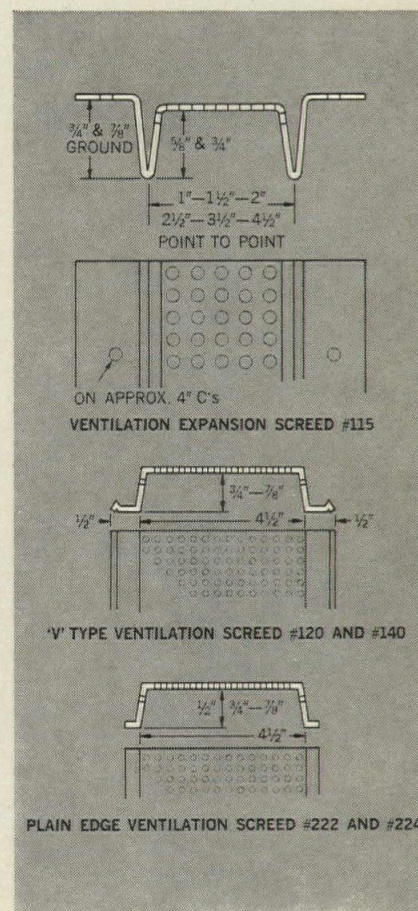
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