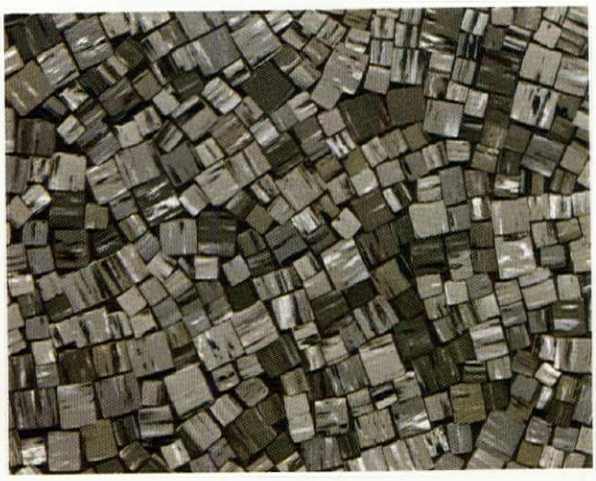
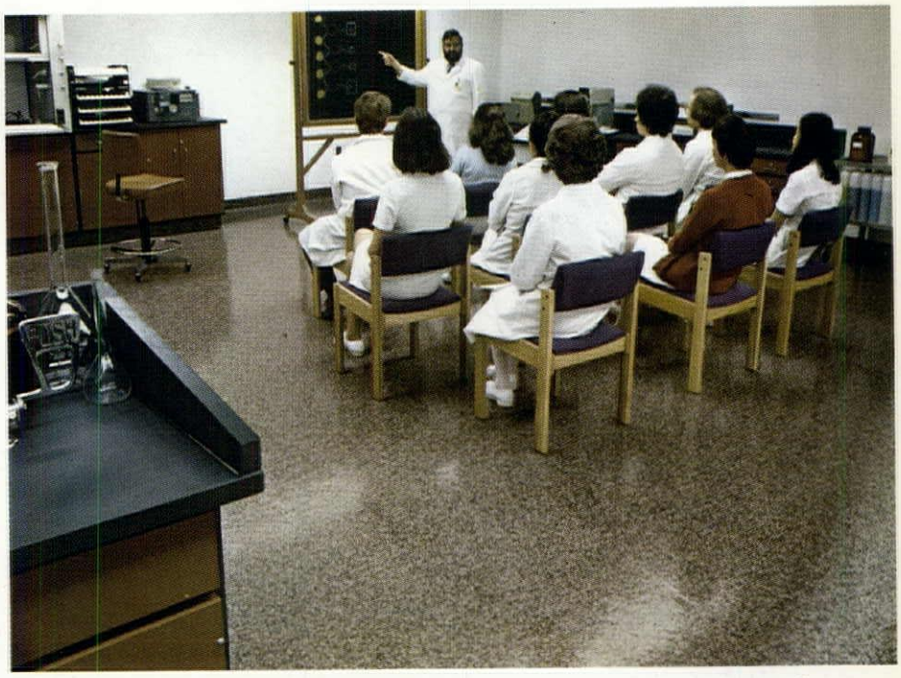
The Brigantine® floor from Armstrong. At Lowell General Hospital, they'll tell you it has the heart of a beauty and the hide of a brute.



Nurses and orderlies want a floor that doesn't make hard work harder.

The custodial staff wants a floor that doesn't fight back when it's cleaned.

And patients want a floor that doesn't remind them they're in a hospital.



At Lowell General Hospital in Lowell, Mass., everybody's happy. Because the floor they got is Brigantine Vinyl Corlon® from Armstrong.

To the nurses and orderlies, Brigantine's smooth surface means they don't have to struggle to wheel food carts, X-ray machines, beds, and other equipment so vital to better patient care.

To the custodial staff, Brigantine's tough, virtually nonporous surface means spills and soaks can't penetrate. That means Brigantine is a floor that's easy to keep sparkling clean. And nowhere is that more important than in a hospital. What's more, this sheet vinyl floor comes in rolls 6 feet wide and up to 90 feet long—a

size that eliminates a lot of seams.

To the patients, Brigantine's colors are truly a ray of sunshine. They're so natural, in fact, they make rooms look more like a home than an institution.

Somebody else who's happy about Brigantine is the hospital administrator. Because Brigantine's vinyl composition resists heavy traffic and scuffs, he won't have to worry about putting down another floor covering for a long time to come.

The fact is, Brigantine keeps its composure from one day to the next. Because while we gave Brigantine the face of a beauty, we also gave it the constitution to stand up to the real world.

And it's available in an array of contemporary colors to do for your hospital, your staff, and your patients what it did for those at Lowell General. Brigantine. The sheet vinyl flooring that puts beautiful style into almost any commercial application, while it helps make maintenance quick and easy. For more information, write Armstrong, 306 Watson Street, Lancaster, Pennsylvania 17604.

Architects & Engineers: The Ritchie Organization, Boston, Mass. Flooring Contractor: S. W. Graves Co., Inc., South Boston, Mass.

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ABP ABC

October 1975

Progressive Architecture

Cover: The interior court of Butler Square (p. 74), an old warehouse in downtown Minneapolis converted to office space and a hotel by Architects Miller, Hanson, Westerbeck, Bell. Photo: Phillip MacMillan James.

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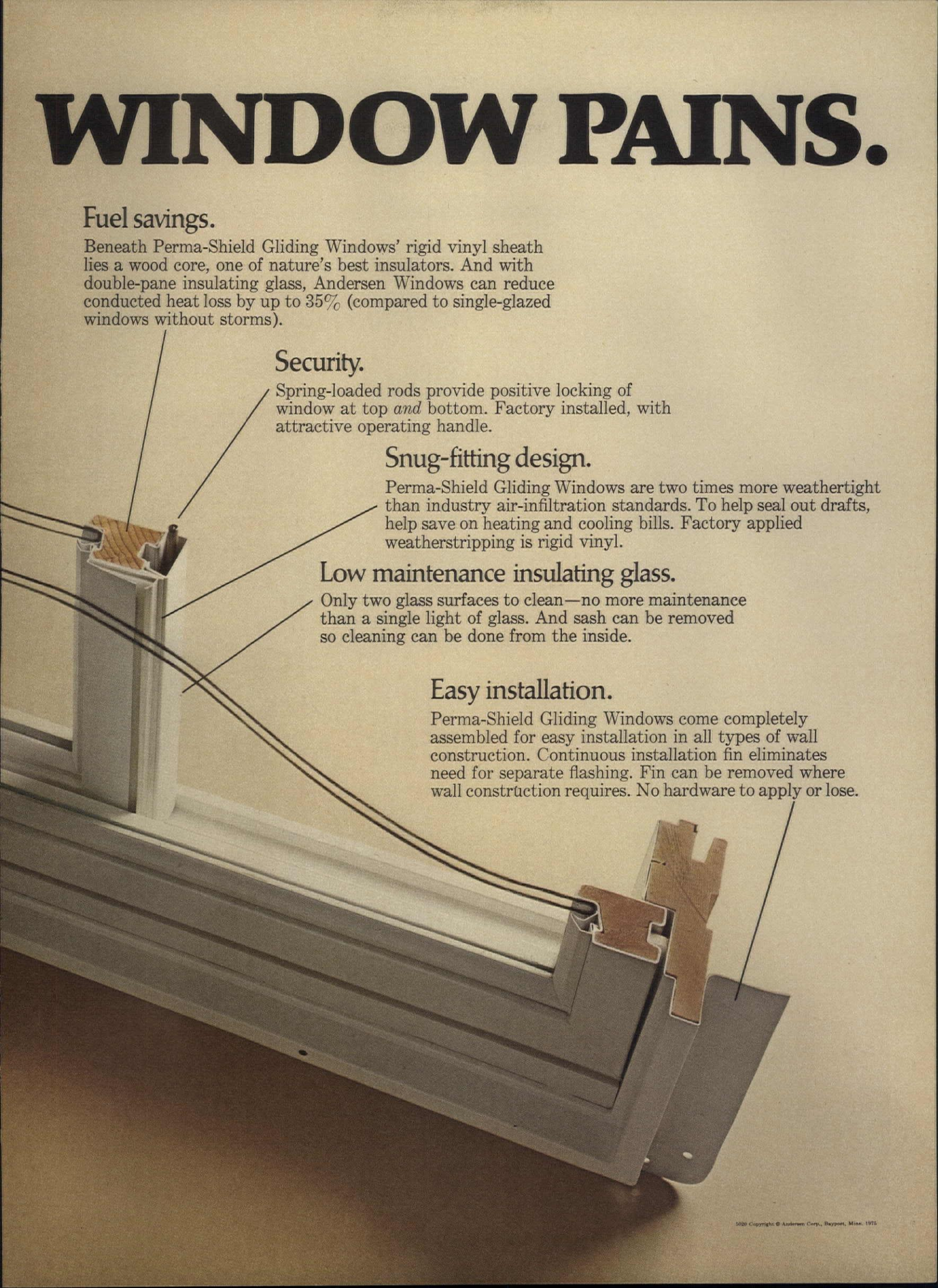

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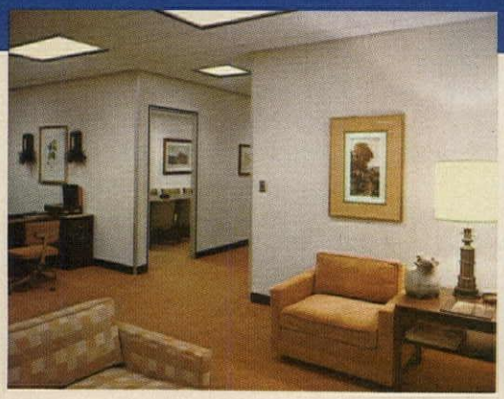


These days, a demonstrable difference can be very effective in attracting prospects. Customizing your space with ULTRAWALL Partitions can give you that difference. ULTRAWALL Partitions were selected for one of the most prestigious new buildings in the South by the Office Development Division of Cousins Properties, who recognized the appeal and promoted it. You might find advertising ULTRAWALL Partitions an effective strategy, too. Write us at 101 S. Wacker Dr., Chicago, Ill. 60606. Dept. PA-105.

UNITED STATES GYPSUM
BUILDING AMERICA

Urban prospects

October 1975

Exposure to European cities and towns is both exhilarating and disturbing. Exhilarating because the environmental qualities we cherish—as architects and architecture observers—are so abundant; disturbing because they are so scarce over here. Even as we enjoy the harmonies of building forms around well-populated streets and squares, we have to wonder whether their qualities will ever become prevalent in the U.S., whether we as professionals don't overrate these qualities, whether they are even valid for the American situation.

At the level of individual landmarks, the disparity is easy enough to accept. U.S. society has never had the massive, single-minded commitment it takes to produce great cathedrals or palaces, but—once we weathered the urgencies of our frontier phase—we have produced some individual buildings worthy of worldwide respect.

But at the larger scale of community architecture, our shortcomings are both more persistent and harder to justify. Obviously, our socially and technologically complex society could not produce the unity of a Siena or a Mont-St.-Michel, but why not the subtleties of a Paris or London neighborhood? Most of the urban scene that delights us in European capitals was created in the last two centuries, under social and economic conditions not substantially different from those over here.

The U.S. made some promising starts in similar directions—in Boston, in Savannah, in New Orleans. But these efforts survive only as enclaves in vast expanses of physical chaos. We enjoy them as we do their counterparts abroad, with wistful thoughts as to why so little of our urban environment yields such satisfactions. The fault seems to lie in our reverence for individual enterprise, our distrust of public initiative, and our restriction of public investment. Waves of public consciousness have left some invaluable 19th-Century parks and some turn-of-the-century City Beautiful compositions. But these efforts were limited to open spaces and institutional buildings, with occasional sympathetic response by private developers. Urban renewal of the 1950s and 1960s manipulated both public and private construction in the interest of urban design, and we should not underestimate what it gave us, for all its defects.

By the late 1960s, some of our architectural avant-garde was counseling us to give up traditional urban design concepts, to write off the pedestrian street and plaza. Technology was shifting our public lives to the private house, the highway, the commercial strip, and the regional "cultural center." The Venturis urged us to examine Las Vegas and Levittown; Reyner Banham saw in Los Angeles the urban pattern of the future.

Place Vendome, Paris. Photo: John M. Dixon

But "trend is not destiny." Their visions of society were based on surprisingly vulnerable assumptions: abundant energy, abundant land, and the affluence to make every household electronically and mechanically self-sufficient.

Now, as we reconsider future urban options, we can still expect Americans to have the TV's and telephones, refrigerators and air conditioners, which reduce activity on the public street. We can reasonably assume, on the other hand, that future residential development will grow more dense, with shrinking private open space; that public transportation will be revived—encouraging density and generating activity nodes; that households will become smaller—less child-oriented and less self-contained socially. If only street crime can be overcome, there should be a healthy demand for livable streets and squares. Some of these are likely to be covered and climate-controlled, quite logically, considering our climate and our technology.

Then there is the matter of attitude: Americans seem ready to support responsible urban design and public development. Sentiment for preserving good cityscape where we have it now seems almost unanimous; public patronage of recent plazas, gallerias, etc. is enthusiastic; "Theme Parks" where increasing numbers of Americans indulge their fantasies recognize evocative street scenes as part of their dream world.

If the public is ready, conditions may be right for the development of a satisfying urban scene. Even here.

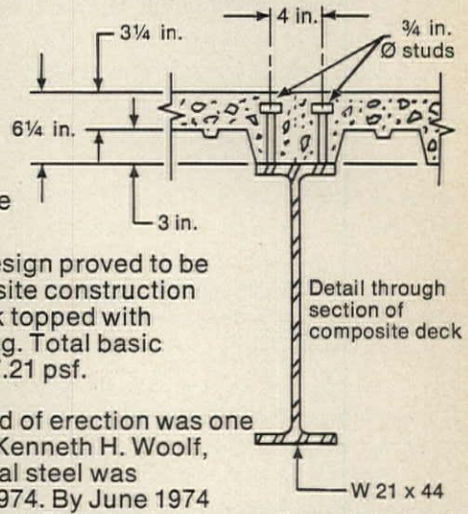
John Morris Dixon

depend on Bethlehem

Preliminary frame analysis pinpoints most economical steel frame

A preliminary frame analysis, conducted by Bethlehem's Sales Engineering Buildings Group helped the owners of this Pensacola office building achieve optimum steel frame economy. The project's structural engineers, Phillip R. Jones & Associates, Inc., requested the computer analysis be based on a structure having 5 supported levels.

The analysis considered four basic framing schemes employing ASTM A36 steel in composite and non-composite construction; ASTM A572 Grade 50 high-strength steel in composite and non-composite construction.



The most economical and efficient design proved to be a high-strength steel frame in composite construction with a 3-in. composite steel floor deck topped with 3¼-in. of lightweight concrete topping. Total basic steel frame weight was estimated at 7.21 psf.

Designed and built in 9 months. Speed of erection was one of the primary reasons the architect, Kenneth H. Woolf, A.I.A., favored steel framing. The initial steel was delivered to the site in mid-January 1974. By June 1974 the office was completed and occupied. Fast-track construction minimized the effects of escalating costs. Steel framing easily accommodated changes during the design/construction phase with the erection schedule closely following the finalization of floor plans.

Steel framing also permitted generous spans ranging from 26 ft, 9 in. to 32 ft. The increased strength achieved with composite construction allowed the steel beams to be spaced 10 ft on center.

Early involvement helpful. Our preliminary frame analysis program can be most beneficial to you and your client if the study is conducted before finalization of architecture parameters. This way, our Buildings Group and your structural engineer can develop an optimum frame design with minimum restrictions.

We'll be happy to tell you more about our preliminary framing analysis program along with the many other technical and advisory services we offer. Just ask for the sales engineer at the Bethlehem Sales Office nearest you. Bethlehem Steel Corporation, Bethlehem, PA 18016.

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Bethlehem BETHLEHEM STEEL

The project's architect (right) reports, "The steel framing was quickly erected, easily plumbed, and by pouring one floor each day, the building was ready for the mechanical work within a week. We were delighted with the economy and speed of erection."

Owners: Baptist Hospital, Inc.;
Architect: Kenneth H. Woolf, A.I.A.;
Structural Engineer: Phillip R. Jones & Associates, Inc.;
Fabricator: Bell Steel Company;
General Contractor/Erector: Dyson & Company.
All of the firms are located in Pensacola, Fla.

Views

In praise of modesty

Of the five on-campus housing projects featured in your August 1975 issue, the Ehrenkrantz design for freshmen in Harvard Yard is to my mind the most salutary.

In contrast to the three other new projects, this one occupies a higher realm by virtue of the civility of its scale, the sensitivity shown in handling materials and proportion, and above all by its accommodation to circumstance in the third dimension. These qualities, seemingly so little valued by your writer ("these buildings are background buildings") are not diminished by time's perspective, but rather enhanced. Fashion is Time's fickle child: what is in today is out tomorrow. I cannot see the other three projects featured being treated kindly by Time. The Ehrenkrantz job, on the other hand, is expressed in direct proportion to Time.

Regrettably, the editorial accompaniment, while feinting with praise, damns the project as insufficiently "spectacular" and certainly not "innovative." To my mind the handling of site, mass, exterior space, materials, proportion, and plan represent far higher goals to which our profession may aspire.

Kenneth Ricci, AIA
New York, N.Y.

[We appreciate Mr. Ricci's enthusiasm for the Harvard dormitories. The qualities he cites are the same ones that motivated us to publish the work. If our praise of the buildings' "unusual sensitivity" was interpreted as "faint praise," that's regrettable.—Editors]

Proper credit

The recent Eileen Gray exhibition in Los Angeles was held at the Woman's Building, not "Woman's House," as reported in P/A (July issue, p. 24). Originally organized by Alan Irvine at the Royal Institute of British Architects, the show was brought to the U.S. through the efforts of Sheila de Bretteville of the Feminist Studio Workshop and Deborah Nevine of the Architectural League of New York, with the help of Diane Poncher, Elaine Jones, Esther McCoy, Suzanna Torre, Michael Graves, Rikki Binder, Jane McGroarty, Sara Nelson, Helen Alm and members of the Feminist Studio Workshop. From Los Angeles, the exhibition traveled to Princeton University, Columbia University in New York, and the Boston City Hall.

Correction

The name of architect Gérard Bureau inadvertently was omitted from among those who participated in the ARC Associates design for a complex on the former Les Halles site in Paris (P/A Aug. 1975 p. 22). The ommission resulted in incorrectly identifying another individual instead of Bureau as son-in-law of John C.B. Moore, whose comments on the project formed the basis of the article.

Notices

Appointments

Paul Kennon has been named president and **E.C. Kobs** executive vice president and chief operations officer of Caudill Rowlett Scott, Houston, New York, and Los Angeles.

James Falick, AIA has joined The Klein Partnership, Inc., Houston, as principal/director of health facilities.

Der Scutt has joined Poor, Swanke, Hayden & Connell Architects, New York City, as an associate.

B. Boykin Bartlett has been elected executive vice president and member of the board of directors of Koetter Tharp Cowell & Bartlett Architects & Planners, Inc., Houston. **B. Carroll Tharp** has been elected vice chairman of the board of directors.

Lawrence C. Bauer, AIA has been made an associate of Crissman & Solomon Architects, Newton, Mass.

Joseph T. Farina, AIA has been named president of Richard Phillips Fox, AIA, Inc., Newark, N.J. **Jacqueline D. Fox** has been appointed vice president and treasurer, and **Alwin F. Archer, AIA** is now secretary.

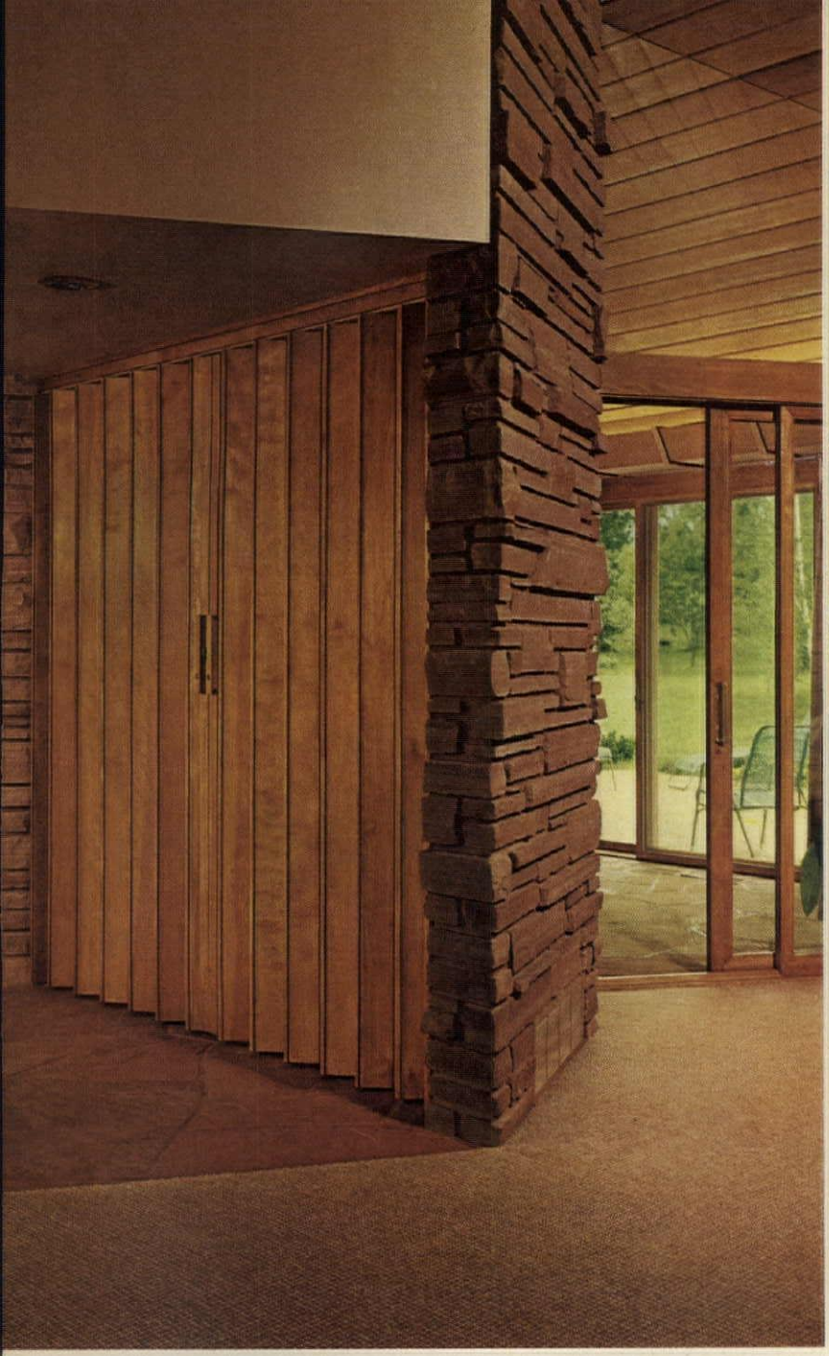
John W. Parker, AIA has become a partner of David N. Yerkes & Associates, Washington, D.C.

James R. Thomas, Jr., PE and **Charles W. Bowen, AIA** have been made associates of George, Miles & Buhr, Architects, Engineers and Planners, Salisbury, Md.

Burk Ketcham has joined Anderson-Nichols & Company, Boston, as vice president, planning.

Harry F. Anderson has been elected president and chief executive officer of Perkins & Will. The firm has named the following senior associates and associates in its New York City and White Plains, N.Y. offices: **Robert E. Gray, John M. Kenney,** and **William F. Schacht,** senior associates; **Edward W. Gay** and **Donald S. Salvato,** associates.

Terry Wakeman and **Delburt E. Allison** have joined Dalton-Dalton-Little Newport, Cleveland, Ohio, as a project coordinator and project manager for health care facilities, respectively.
[continued on page 16]



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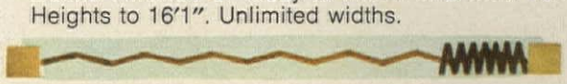

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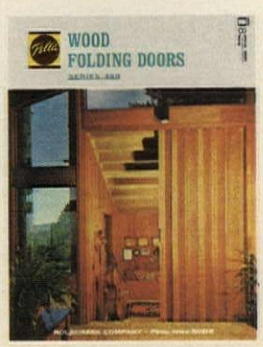

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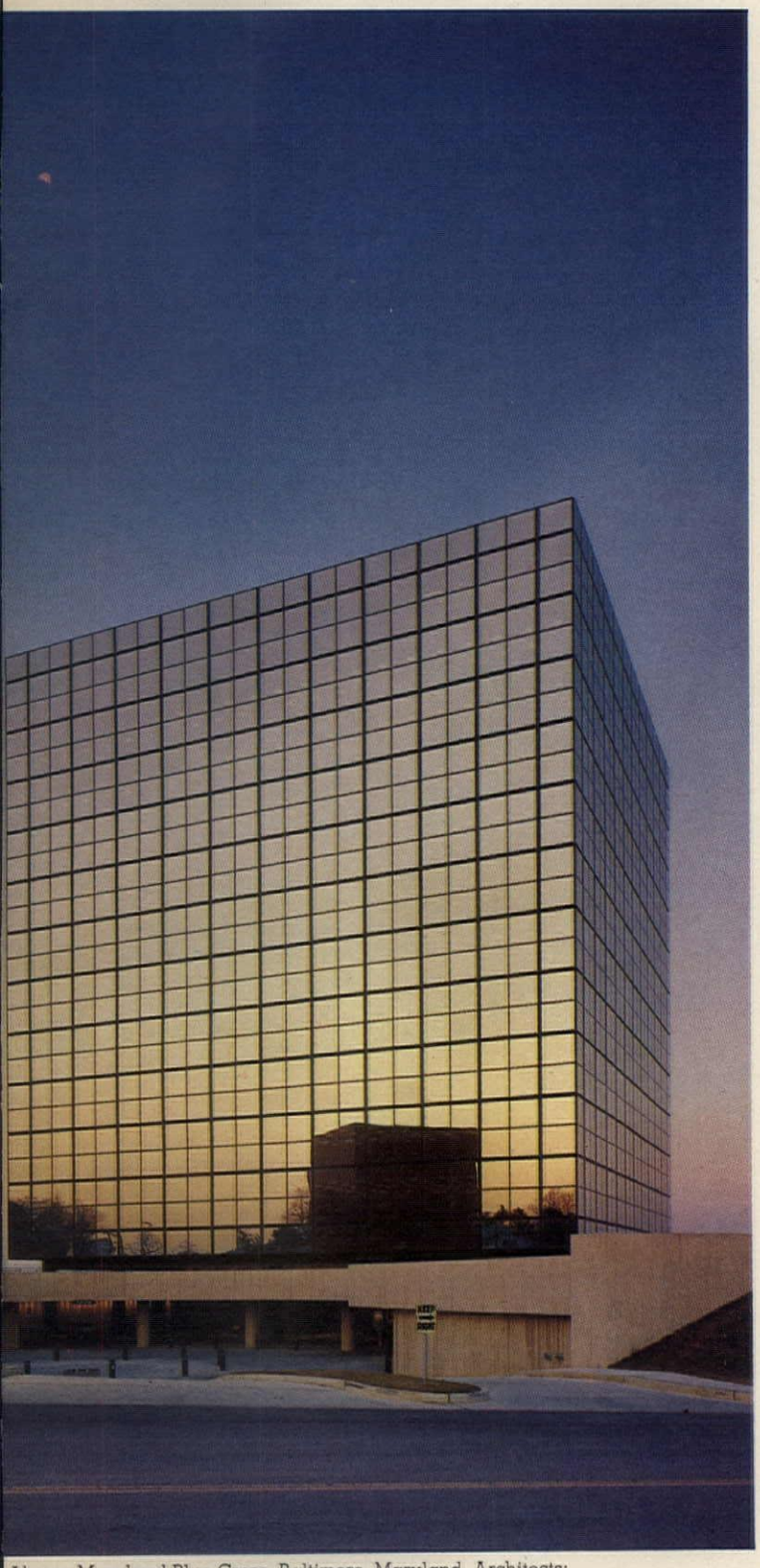
ALL OVER T
THE BLUES ARE

Upper left: Blue Cross and Blue Shield Service Center, Durham, North Carolina. Architect: Odell Associates, Inc. Glass: Vari-Tran 1-108.

Lower left: Blue Cross Building, Seattle, Washington. Architects: Maloney, Herrington, Freese & Lund. Glass: Vari-Tran 1-208.

HE COUNTRY, UNDER LOF GLASS.



Above: Maryland Blue Cross, Baltimore, Maryland. Architects: Peterson & Brickbauer. Glass: Vari-Tran 1-108.

BLUE CROSS AND BLUE SHIELD CHOSE LOF VARI-TRAN® TO HELP SAVE ENERGY.

In a business where operating costs can affect the price of medical care, efficient use of energy is a primary concern for Blue Cross and Blue Shield building design.

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The North Carolina service center of Blue Cross and Blue Shield (upper left) and the Maryland Blue Cross Building (near left) were glazed with Vari-Tran in Thermopane® insulating units. It was chosen for its ability to reduce heat loss during the winter and control solar heat gain during the summer. The energy requirements of the Seattle building were met by monolithic Vari-Tran.

But the beauty of Vari-Tran goes beyond energy savings. It's a dynamic glass. Adding an ever-changing look to a building as it takes on the mood of the sky it reflects.

What's good for Blue Cross and Blue Shield may be good for a building you have in the works. Contact one of our highly qualified architectural representatives. He'll be glad to help you save energy dollars with our high performance glass. Or write Dan Hall, Libbey-Owens-Ford Company, 811 Madison Avenue, Toledo, Ohio 43695.

LOF

Notices continued from page 12

New firms

Peter J. Protzmann has formed **Protzmann Design Associates**, Houston, Tex., specializing in product, interior, and graphic design.

Fuller & D'Angelo, PC, Architects and Planners, 595 W. Hartsdale Ave., White Plains, N.Y. 10607.

Gordon Clark Associates, 6523 Carrollton Ave., Indianapolis, Ind.

Joseph P. Colaco has formed **Colaco Engineers, Inc., Structural Engineers**, 3810 W. Alabama, Houston, Tex. 77027.

Edwin O. Meyer, Jr., ASID and John L. Jacobsen, ASID have established **Interior Associates, Inc.**, with offices in Brookfield, Richmond, Va.

Robert A. Ambrose, AIA has formed a practice at 5620 Greenbriar, Suite 105, Houston, Tex. 77005.

Organizational changes

Keyes, Lethbridge & Condon, Architects & Planners of Washington, D.C., is now **Keyes, Condon & Florance, Architects & Planners.** Francis D. Lethbridge will continue in practice as **Francis D. Lethbridge & Associates, Architects & Planners.**

Charles W. Moore Associates Architects & Planners of Essex, Conn. has become **Moore Grover Harper Architects & Planners.**

Boutwell, Gordon, Beard & Grimes is the new name for Rudat, Boutwell & Partners, and the practice has moved to 1100 S.W. Sixth Ave., Portland, Ore.

Straub, Van Dine, Associates, Architects of Troy, Mich. has changed its firm name to **Straub, Van Dine, Dziurman/Architects.**

Liebenberg Smiley Glotter & Associates, Inc., Minneapolis, has changed its name to **Smiley Glotter Associates, Inc.** and has formed a subsidiary, **Medical Facilities Associates**, specializing in health-related architecture.

The architectural firms of Carson/Oda Associates, Higgins & Associates, and Pellati, Herrera & Partners have merged under the new corporate name of **Higgins, Pellati, Herrera & Carson AIA Architects, Engineers and Planners**, located at 3901 Montana Ave., El Paso, Tex. 79903.

The Landau Partnership, Inc. is the new name for Oxley/Landau/Partners, Inc., Los Angeles.

Case Study No. 13*

Energy-Transfer HVAC System Proves Economical Approach to Cleaner Air for Hospitals

Five-story addition to an outstanding medical facility in Florida features a new type of air handling module built around a heat wheel. By salvaging "conditioning effect" from the exhaust, designers were permitted to use 100 percent outside air for ventilation without penalizing operating cost.

Resort-like landscaping provides pleasant setting for Boca Raton Community Hospital.

Boca Raton, Fla. Preparing to celebrate the grilling of their third billionth beef patty in 1969, executives of McDonald's Hamburgers, Inc. were jolted by a calamitous message from the Southeast. Their man in Boca Raton reported that his building permit application for the proposed restaurant on Federal Highway was in difficulty. The local zoning board had flatly refused any variance from their strict ban against prominent signs within city limits. The crestfallen executives saw the implication at once: there would be no bright Golden Arches in Boca.

As trifling as it sounds, the hamburger confrontation is a very famous bit of Boca Raton lore. Residents recount it often as a means of explaining to the newcomer the extraordinary community spirit that exists in this beautiful, meticulously structured resort town. Since about 50 years ago when the pace of development began to pick up, its constituents have worked to create a clean, uncluttered ambience with none of the garishness that has crept into some cities in the Sunshine State. They are selective about what goes on the land—from parking lots and road signs to estate architecture—even to the extent of setting a maximum limit (40,000) to the number of dwellings that may be built here.

Demography Notwithstanding. The McDonald's anecdote might also help illustrate the devoted civic involvement responsible for the fact that there is a hospital in this comparatively small city. Not just an ordinary hospital but a superb nine-story, full-service health facility that would be a credit to a metropolis of much larger size.

Boca Raton Community Hospital exists only because the residents decided it was essential to the well-being and security of themselves and their neighbors and were willing to work at raising the needed funds (over $10 million thus far). It is described as a voluntary nonprofit facility and has no tax support. Federal and state authorities had ruled that on the basis of demographic studies community health requirements could be served adequately by existing hospitals in neighboring communities. But Boca people felt otherwise because those hospitals were long miles and precious minutes away. So they banded together 10 years ago and began a four-stage building program.

Development of the hospital is ongoing in accordance with a master plan that takes into consideration population growth in the facility's service area. Two of the four stages are presently complete. The original four-story 25,000 square foot building accommodating 100 beds was dedicated in 1967. A five-story vertical addition completed in 1971 brought the building up to design height of nine stories and raised bed capacity to 250. A refinement incorporated in the second stage is an energy-saving HVAC system with rotary air-to-air heat exchangers and electric duct heaters. The heat recovery capability of this system made it economically feasible to use 100 percent outside air for ventilating the upper floors.

Avoiding the Aphorism. It is a generally accepted rule in many fields of design that "form should follow function." Applied to architecture, this aphorism leads to buildings whose outward appearances reflect pretty much the activities within. Most hospitals, therefore, look like hospitals—a commendable enough result when measured against the pragmatic priorities of healing professionals. Patients, however, see things differently and find little to applaud in hospital architecture so literal that it serves only to reinforce the unwelcome predicament facing them.

The architectural image presented by

*One of a series of reports giving recognition to the efforts of architects and engineers on behalf of resource conservation.

With the HVAC modules, outside air cfm was increased by 54 percent while required chiller tons dropped almost 48 percent.

Boca's hospital puts function in a somewhat different form. The opinion shared by many first-time visitors is that it looks more like, well, a resort motel. This impression, more or less, is a fair statement of what the architects and engineers of The Smith, Korach, Hayet, Haynie Partnership had hoped to achieve. "The degree of community involvement made this a special type of project," says architect William E. Haynie. "Boca residents took an intense personal interest in what we were doing and were quick to let us know what features they wanted to make this as pleasant a place as possible for the ill."

Silent Nurses. Drawing on long experience in hospital design, Haynie's firm created an advanced treatment facility that rates highly in medical circles. "Most of our time was spent in developing what I call the 'scientific core' of the hospital—laying out and equipping laboratories, intensive care units, emergency and operating rooms, and treatment areas. We had to plan for efficient movement of material, patients and staff and for the everyday functions such as feeding, bedcare and maintenance. But we surrounded the essentials with a generous helping of the amenities."

Architect William E. Haynie accommodates hospital services in a kind of building that does not reinforce predicaments.

One such amenity that has worked out well is wall-to-wall acrylic pile carpeting used throughout much of the building, including patient rooms and corridors. In addition to softening the sterile hospital image, the static-free material is claimed to have made floor maintenance easier. It also helps deaden background noises such as the once-traditional sounds of nurses heels hurrying across marble floors.

Kitchen Clocks and Calendars. The hospital is set on a 25-acre site of green lawns and landscaped gardens which handsomely accentuate the facade of alternating light and dark, smooth and textured precast concrete panels. The longer sides of the rectangular structure were intentionally oriented north and south for lower solar gain. Approach is by means of a paved white driveway circling the palm trees, pond and splashing fountains in the forecourt.

The main entrance opens onto a spacious reception foyer floored in Spanish tile and furnished with Mediterranean-style sofas and lounge chairs in place of the usual chrome and plastic bucket seats. The Spanish heritage of the locale is further reflected in heavy ceiling beams of darkly stained mahogany and in the tapestries and original art on the fieldstone walls. Adjacent to the foyer are a visitors' lounge, snack bar and gift shop.

All patient rooms have large hopper type windows. Furnishings are an inventive blend of the scientific and the homelike. Appointments in the latter vein range from winsome touches such as the picture calendar and brightly hued electric kitchen clock in every room up to wall-mounted remote control TV sets. Within the patient's reach is a small "command pod" which is fastened to the end of a tubular support hinged from the wall. The pod has push-buttons and dials for control of lights, radio and TV, and the three electric motors that raise and lower the articulated bedspring.

The pod contains also a nurse call button which is part of a sophisticated hospital-wide communications system. Pressing the button puts the patient into two-way voice contact with operators at a central desk. The operators take his request and relay it to the nurse or nurse's aid closest to him. Hospital administrators rate this technique as a most important morale boost for the patient who is spared the uncertainty of the usual push-and-wait routine.

Attractive lounge off reception foyer eases some of the tedium for waiting visitors.

Instant Replay. The 16-bed coronary care unit is an example of the sophisticated level of treatment offered by the hospital. The eight patient rooms in the unit have windows facing a station staffed by specially trained nurses. Each patient carries miniaturized wireless instrumentation which "broadcasts" to a bedside monitor as well as to the central console at the nurse station. Deviation from a safe range of heart action in any individual patient results in immediate visible and audible warning at the central station.

The monitoring equipment has a memory bank which provides instant replay on a cathode ray tube of the patient's heart action during the 60-

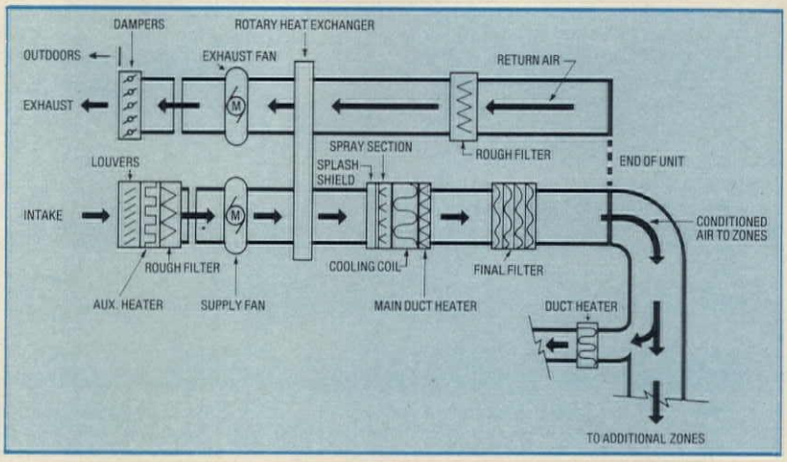
second period prior to the time a warning was sounded. Strategically placed antennae projecting from ceilings of rooms and corridors allow ambulatory patients to be monitored while away from their beds.

HVAC System. Some of the credit for Boca Raton Community Hospital's excellent rating as a health-care facility must go to the quality of the ducted-air heating and cooling system. As planning began for Phase II (the five-story addition), thought was given first to designing the system for an adequate 65 percent outside air, obtaining the balance by recirculating return air. Then, administrators decided to upgrade the ventilation rate to 100 percent outside air. This decision brought two obvious benefits. First, it practically eliminated the oppressive medicinal odors that becloud most hospital environments. Second, the total air change aids hospital asepsis through removal of airborne contaminants.

The exchange of conditioned inside air for raw outside air normally represents a considerable energy expenditure. To put the upgraded ventilation rates on a practical economic basis the designers resorted to heat recovery techniques to reclaim the conditioning effect of exhaust air. The means they chose to do this is the rotary heat exchanger or heat wheel.

Specifically engineered for this project were five unitized air conditioning modules, factory assembled and delivered to the construction site in packaged form. Each module consists of blowers, filters, cooling coils, heaters, spray chamber and heat wheel all mounted integrally together on a structural steel base. The engineers have described the module as a "mechanical room on a skid" inasmuch as only electric power and chilled water connections are needed to put a module into operation. Heating in the five-story addition is handled by in-duct electric heaters controlled by zone thermostats.

Engineer Leonard Hayet hoped to achieve a nominal 70 percent energy transfer efficiency but did even better than that.



AIR FLOW IN HVAC MODULE

Outside air enters system through weatherproof louvers and a low-efficiency filter bank that removes most of the larger suspended airborne pollutants. The supply fan forces the air through the rotary heat exchanger, water spray chamber and chilled-water cooling coil. A water eliminator on the exhaust side of the cooling coil removes excess moisture droplets after which the saturated air passes through a high-efficiency filter into the ducts leading to the conditioned spaces.

Return air enters the module through a low-efficiency filter bank to clear the stream of suspended solids before it flows through exhaust portion of the rotary heat exchanger. Finally the air is accelerated by the exhaust blower and vented from the building through pneumatically controlled dampers.

The conditions described obtain when the system is on cooling. In the heating mode the spray chamber and cooling coils are deenergized and wheel speed controlled to obtain the desired supply air temperature of about 55F. This temperature is low enough to satisfy interior zones requiring wintertime cooling. Duct heaters raise the supply air temperature for perimeter spaces.

It is interesting to note that the designers had estimated that 580 tons of chiller capacity would be needed for the five floors in the 65 percent outside air option. Use of the heat wheel modules dropped the chiller requirement to 306 tons at 100 percent outside air.

Antiseptic Transfer. Transferring energy by means of a common mechanical link (the wheel)—operating first in one airstream and then immediately entering a second—poses an unsettling question in a hospital application. Wouldn't pathogenic bacteria being flushed from the building in the exhaust promptly reappear in the makeup air?

"We considered this possibility, of course," says Charles Jaycox, director of engineering at the hospital. "Before commiting ourselves to the wheel approach we ran exhaustive tests and found absolutely no bacteria carryover at all. We still monitor the situation, exposing culture media in the main supply ducts every month or so. Results show that the supply air is, if anything, even more aseptic than outside air."

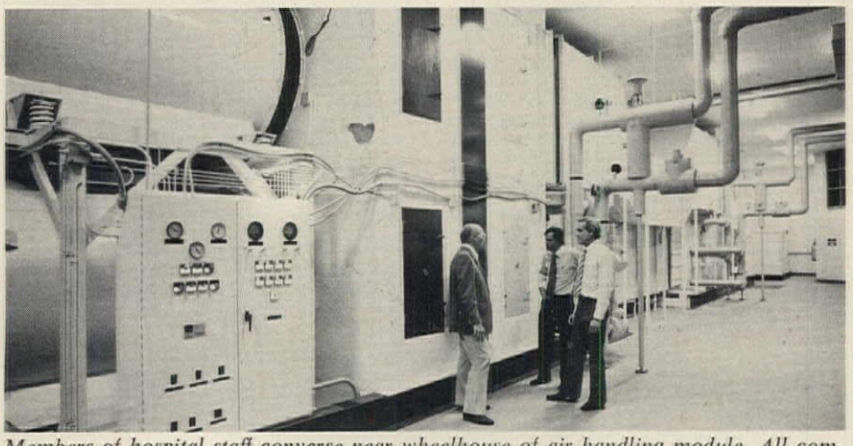
Jaycox attributes the cleanliness of the air to several factors, among which is the extensive filtration employed. Multi-layer filters are installed at two locations on the supply side and, as a final precaution, air is filtered a third time just before being returned to the wheel. The openness of the filler mesh coupled with the high velocity of the discharge air appears to discourage any tendency of bacteria to adhere to the rotating element.

The possibility of cross-contamination is further reduced by incorporation of a purging section. Purging is accomplished by returning a portion of the makeup air to exhaust after it has passed through the wheel. The purge area is a ten-degree sector over the partition between inlet and exhaust chambers. Here, a U-shaped duct scoops up some inlet air and shortcircuits it back to continuously flush out the mesh before it is allowed to contact the supply air.

Efficiency Trade Offs. The U.S. Department of Health, Education, and Welfare has in recent years issued a number of technical advisories intended to help hospitals reduce operating costs. It has recommended consideration of heat wheels and described them as capable of conserving 60 percent or more of the thermal difference between exhaust and outdoor air.

H.E.W. cites a summertime example wherein a heat wheel exhausting 75F indoor air can reduce incoming air temperature from 95F to 80F. Estimated total savings at 75 percent effi-

Hospital's director of engineering services Charles Jaycox stands within wheel compartment of HVAC module to examine exhaust section (lower half) of 12-foot-diameter unit.



Members of hospital staff converse near wheelhouse of air handling module. All components including control center at left are assembled on structural steel base.

ciency are 54,000 Btuh of cooling effort for each 1000 cfm of outdoor air. With 75F exhaust air in winter, the wheel can raise 0°F air to 55F and save about 92,000 Btuh of heat energy for each 1000 cfm of outside air at 75 percent efficiency.

"Actually, transfer efficiencies as high as 90 percent or more are possible," says project engineer Leonard Hayet. "The wheel's effectiveness depends on a number of things, most notably on its physical dimensions. The deeper it is, for example, the greater will be the amount of heat exchange between input and output streams. But peak efficiencies are achieved only by investing more dollars–for the larger equipment itself, for space to house it, for extra fan power to overcome pressure drop through the mesh, and for extra power to turn the wheel. So at some point in the system design it is necessary to face up to the law of diminishing returns–to trade off some efficiency percentage points in return for fewer dollars."

Off-Target. After a feasibility study based on total owning and operating costs the engineers agreed on 70 percent as the design efficiency. Subsequent performance tests indicated the wheels were actually exceeding the targeted minimum by delivering 75.9 percent efficiency.

Hayet reports that the heat wheel module will be used also in Phase III of the hospital development, construction of which is about to begin. This $15-million expansion will increase bed capacity from 250 to 344 and greatly augment the space available for the growing general staff which now numbers 700 full- and part-time employees in 23 departments. The medical staff includes 145 physicians and dentists. Still to come is Phase IV, a separate nine-story building for administrative departments, rehabilitation services, outpatient clinics and similar ancillary uses. Part of the structure will be devoted to motel-type rooms for short stays by persons undergoing tests but not requiring formal admission to acute-care bed facilities.

Judging from the bustling activity at the hospital–over 22,000 in-patient and emergency room cases in 1973 alone–Boca's residents must be rated as astute captains of community destiny. As for the McDonald's restaurant, it was eventually completed on Federal Highway and is doing very good business indeed. Without the Golden Arches, of course.

DESIGN SUMMARY

GENERAL DESCRIPTION:
Area: 138,400 sq ft
Volume: 1,317,400 cu ft
Number of floors: nine

CONSTRUCTION DETAILS:
Glass: single
Exterior walls: smooth and exposed aggregate precast panels against 8″ concrete block, wood furring and lath, three-coat plaster; U-factor: 0.26
Roof and ceilings: built-up tar and gravel roof on 2″ rigid polystyrene insulation (R-7), poured concrete on metal pan deck, suspended acoustical tile ceiling. U-factor: 0.11
Floors: concrete slab
Gross exposed wall area: 55,300 sq ft
Glass area: 7400 sq ft

ENVIRONMENTAL DESIGN CONDITIONS:
Heating:
Heat loss Btuh: 2,784,360
Normal degree days: 300
Ventilation requirements: 50,000 cfm
Design conditions: 35F outdoors; 75F indoors
Cooling:
Heat gain Btuh: 4,667,800
Ventilation requirements: 50,000 cfm
Design conditions 91F dbt, 81F wbt outdoors; 75F, 50% rh indoors

LIGHTING:
Levels in footcandles: 25-300
Levels in watts/sq ft: 1-12
Type: fluorescent and incandescent

CONNECTED LOADS:

Heating & Cooling (575 tons)	600 kw
Air Handling	120 kw
Lighting & Misc.	2,085 kw
Cooking	75 kw
Elevators	120 kw
TOTAL	3,000 kw

PERSONNEL:
Owner: Boca Raton General Hospital
Architects & Engineers: The Smith, Korach, Hayet, Haynie Partnership
General Contractor: Edward J. Gerrits, Inc.
Electrical Contractor: Fassbach Elec. Co.
Mechanical Contractor: Pool & Kent, Inc.
Utility: Florida Power & Light Company

News report

Naive architecture: entrance pavilion to Watts Towers, Los Angeles, by Simon Rodia.

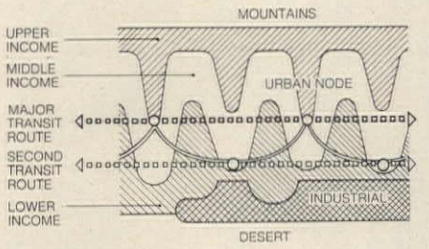
Nader Khalili and Moira Moser-Khalili.

Woman's city plan for working women

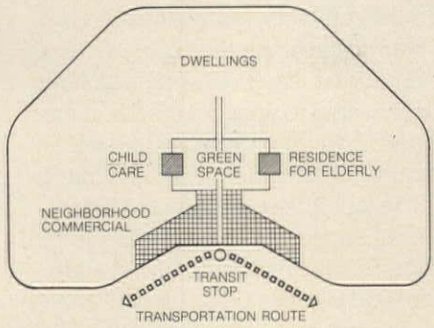
Moira Moser-Khalili, an American architect practicing in Tehran with her husband, Nader, has proposed a modern cavelike city plan for the nuclear family of today. Her concept, disclosed in a paper at the International Women's Year Conference last summer in Mexico City, is a linear city that allows the working members of a family, particularly mothers, to move easily between home and work and conveniently accomplish needed chores like marketing enroute.

The plan is liberating not only to the growing number of low-income women workers living in developing countries but also to upper income suburbanites of Western nations. Writing of the affluent wife, Ms. Moser-Khalili said "the remoteness of her residential districts from the realities of the urban matrix can effectively discourage her from pursuing a career or entering into the life of the city."

Ms. Moser-Khalili's proposal, based on surveys taken in Iran, is a prototype for international application. She has sought the help of the Center for Housing, Building, and Planning at the United Nations in researching the needs of other countries, and has taken steps to discuss her plan at Habitat '76 next May in Vancouver, British Columbia.



PROPOSED MASTER PLAN (INTERLOCKING FINGERS CONCEPT)



NEIGHBORHOOD FACILITIES AT THE "MOUTH OF THE CAVE"

The plan begins with the historic "cave" concept of neighborhood—as opposed to the traditional cellular model—where interface between family and outside world occurs at the mouth of the cave. The neighborhoods relate to each other as interlocking fingers linked by a mass transit route. Each transit stop is an urban node, a community center of shops, child care, and other services. Secondary routes connect these centers with residential parts of the neighborhood.

Her study began with six months work on her own, at which point she received a grant from the Women's Organization of Iran to complete the research. Princess Ashraf Pahlavi, the titular head of WOI and director general of the Mexico City conference, and the Empress Farah, a former architecture student at the Paris Ecole des Beaux Arts, are firmly supportive of the women's movement in Iran as is the Shah, who has given women the right to vote. The Empress also is a member of the National Planning Council.

Ms. Moser-Khalili and her husband did the master plan for a satellite town in central Iran, but the design was completed before her study and so does not directly address the situation of working women. The notion of a sizeable female working class in the Middle East is not remote. The need for workers in Iran is so great that "the employer is little concerned whether a person is male or female."

Naives show travels U.S. and Canada

An exhibition of American grass roots art entitled "Naives and Visionaries" will open Oct. 26 at the Dayton Art Institute—the first of four galleries to show the exhibit since its opening earlier this year at the Walker Art Center, Minneapolis. The Dayton show will continue through Dec. 7. Thereafter the exhibit will be seen at the Worcester Art Museum, Worcester, Mass., Jan. 11–Feb. 22; the Amon Carter Mu-

Rumpus room of Bottle Village by Grandma Prisbrey, Santa Susana, Calif.

seum of Western Art, Fort Worth, Texas, March 28–May 9; and the Winnepeg Art Galley, Winnepeg, Manitoba, Canada, Nov. 14–Dec. 26, 1976.

Five of the nine featured artists are living today: Clarence Schmidt of Woodstock, N.Y.; Fred Smith of Phillips, Wis.; Tressa Prisbrey of Santa Susana, Calif.; Herman Rusch, Cochrane, Wis.; and Jesse Howard of Fulton, Mo.

Objects not exhibited will be represented with photographic blowups and slide projections. Included will be Simon Rodia's Watts Towers, Los Angeles, S.P. Dinsmoor's limestone "log" house in Lucas, Kansas, and "Grandma" Prisbrey's bottle houses of Santa Susana.

The exhibit was organized by the Walker Art Center with support from the National Endowment for the Arts and the Bush Foundation.

International prize for Carnegie-Mellon

A student team from Carnegie-Mellon University, Pittsburgh, was the only American group to receive a prize last summer in the student competition of the World Congress, International Union of Architects, Madrid, Spain. The prize was given by the U.S.S.R., and as winners, the American students have been invited to spend a month in the Soviet Union next year visiting architecture schools and major landmarks.

The students were Howard Graves, Steve Lee, John Whitney, and Richard Behr. Faculty members Volker Hartkopf and Charles Goodspeed headed the project.

Detroit blacks form design organization

Industrial designer David Rice and nearly two dozen other black professionals in Detroit have formed the Organization of Black Designers which, they hope, will attract a national membership. Rice is founding chairman of the young organization. Since its inception inquiries have come from individuals in a number of other cities; meanwhile, final legal steps are being taken to have OBD recognized as a nonprofit group.

Rice said OBD is applying for grants to begin a college level pilot course in multidisciplinary approaches to problem solving. The purpose of OBD is to encourage a synthesis of the design professions as well as to provide an enhanced and more visible image of the black designer and raise funds for scholarships. Inquiries may be sent to Rice at Nexus, 242 Palmer St., Detroit, Mich. 48202.

Women's school ends successful summer

The first session of the Women's School of Planning & Architecture, organized by seven women professionals and held in Biddeford, Maine, ended on a high note and certainly has encouraged its founders to plan for another, possibly expanded, session next year. Gail Frese, city planner for a consulting firm in Farmington, Conn.—whose boss suggested she go and paid her way—was one of 45 participants and an enthusiast when recounting the success of the school.

"I was as excited by it and its implications as by anything, and I honestly feel it's changed my life," she said, adding that she'll go again next year even if it means saving for it. Her course of study focused on primary creativity—new ways of tackling problems—given as an alternative to secondary, or rational processes. One aspect on which Ms. Frese seemed particularly happy to report was a lack of negative competition or backbiting. "And I was looking for it."

The school was held for two weeks in mid-August on the campus of St. Francis College where the Saco River joins the Atlantic. Those enrolled were of various ethnic and economic backgrounds from 21 states and Canada; they ranged in age from 18 to 49. The majority were professional—either practicing or teaching—or studying design at college, although one was a weaver and another a chef. Of the professionals, most were in architecture, and a quarter in planning. Altogether, including the teachers, there were 52 adults and 6 children.

"Nonhierarchical" and "flexible" were key words in discussing the school's structure. The coordinators, who also taught, and the students were participants together. Class scheduling was based on a 24-hour day, 7 days a week, and of necessity it was choreographed so that each student could concentrate on a particular subject and sample other classes as well.

Child care was provided and time was available for recreation. At the outset, the school was to become involved with the community in such ways as visiting the local lumber yard and hardware stores and meeting townspeople—mostly women—active in municipal affairs. The urban design class left behind a site plan of the college, the first the school ever had.

The five basic courses were planning, taught by Ellen Berkeley of New York; carpentry, taught by Katrin Adam, also of New York, who had her tools sent from Germany especially for the class; professional practice—redefined, taught by Jill Hamburg of Long Island City, N. Y., Marie Kennedy and Joan Sprague, both of Cambridge, Mass.; urban design, taught by Bobbie Sue Hood of San Francisco; and women and the built environment, taught by Leslie Weisman and Phyllis Birkby, both of New York. All except Ms. Hamburg are the founder-coordinators of WSPA.

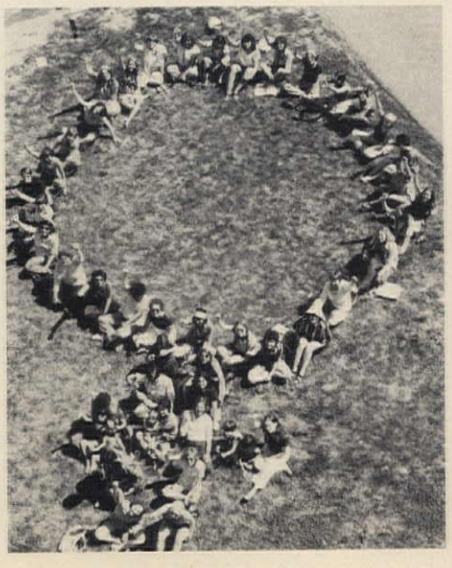
The idea for a school began last year during two design conferences for women: one at Washington University, St. Louis, and the other at the University of Oregon, Eugene. The concept of having a nonhierarchical or collective identity presented itself early, and even the prospectus listed the faculty's professional credits as a group without saying who worked or studied where.

Tuition was $380, which covered all expenses. Work/study arrangements, such as child care and clerical help, were made to defray the costs for some, and several college students received financial help from their universities. Seed money to start the school was provided solely by the founders, who repaid themselves, drew a modest salary, paid all the bills, and still are in the black.

WSPA had its light moments. Notwithstanding their declared purpose of breaking sex stereotypes, the women concluded the two weeks by baking a cake model showing their concept of what WSPA should be, and each had a turn adding the decoration. Finally, a Prix de Biddeford was awarded—toy wooden towers that came apart—and each participant "won" a part to take home, symbolic of the individual contribution toward the unity experienced.

Next year's session probably will be held near the West Coast and may be a week longer; it will have an expanded

Scenes from first session of the Women's School of Planning & Architecture: Heidi Hoffman (with hammer) and Mary Eimer attending class in "Demystification of Tools"; coordinator Ellen Berkeley (top, right, holding book) with attorney Judith Potter, a visiting speaker; open meeting (above) focuses on presenting work by WSPA members; women and children form female symbol (below); "Women and the Built Environment" brainstorming session (below, right) with Marrietta Millet, Claire Larson, and Emily Jean Gabel.



program for children, who proved to be eager learners, too, especially in the carpentry class.

The possibility of including men at future sessions was discussed and definitely ruled out for the present. "Unanimously, all the women felt that the kind of experience we had could not occur in a male-female environment," said one. "A particular kind of bonding took place similar to what happens among men in the professions."

ASID in Los Angeles: two firsts in one

Neither of the two professional interior design organizations which merged to form the American Society of Interior Designers (ASID) a year ago had been very active nationally. Neither had they been very visible. All of that seems to have changed with their first conference, held in August in Los Angeles. While the places where the conference was held (The Beverly Hilton and The Century Plaza) might be suspect as models of interior design, the conference was one of the best held by any professional group in recent years. The entire five days were seriously devoted to over 40 seminars, the scope of which was enormous and encompassed just about every area of concern that would be of interest to a practicing professional.

Seminar topics ranged from specifying floor and wall covering and designing case goods to presentations, contracts, education, research, career planning, color perception, barrier-free design, and assessing accomplishment. The people who spoke, while not well-known, at least had something to say. There was a real first: Walter Kleeman, giving a presentation in the Environmental Research seminar, had taken all the data produced in abundance by behavioral psychologists and attempted to bridge the gap between theory and design. In an effort to alter behavior deemed undesirable by the staff of a ward in a mental hospital, Kleeman renovated the facility and his mapping of use patterns after the alteration proved that his intentions had succeeded (although the institution didn't seem that pleased that they no longer had violent schizophrenics).

In another, more unorthodox, seminar, Jivan Tabibian spoke about applause and accomplishment, objective recognition versus subject evaluation. It's difficult to give form to what he said. Every sentence was full of thought. He defined design as introducing intent into event, then led participants through the labyrinth of feelings about themselves and their sense of effectiveness as designers. The dynamics in the room was probably as important as anything that was said.

Other useful people and ideas emerged. An environmental graphics presentation showed a West Coast approach toward signage and a color perspective seminar presented some useful, if beginning, work on color perception. This was followed in the same room by a talk on the art of decision-making. The speaker walked in and began barking at the assembled group in a very loud voice. Having the choice of only two decisions, we left. [SLR]

Lending pool for city housing

St. Louis has almost as many banks and savings and loan institutions as it used to have gasoline stations, but for years they have offered little aid to anyone who wanted to buy or renovate a house. Many young people, who see older housing in the city as the new frontier—the main possibility for discovery of a house they can afford to buy and fix up—have faced an adamant policy of no loans in many parts of the city regardless of good condition of the house, good neighborhood, and good credit rating.

Now the Board of Aldermen has under study a proposal to establish a $10,250,000 investment pool for buying and repairing properties in the city. The idea, originated by developer William Sheehan, envisions contributions to the fund from St. Louis banks and savings and loan institutions on the basis of their assets. It is expected that the fund would induce lenders to share the acknowledged risks of lending in the city and provide a modest return on the money invested.

St. Louis has hundreds of blocks of late 19th and early 20th century houses ranging from badly deteriorated to well maintained but needing modernization. In the Lafayette Square area of Victorian houses (clustered about the oldest urban park west of the Mississippi, Lafayette Park), an entire neighborhood is being rejuvenated but, until very recently, with no help from institutional loans. The former mansions, badly damaged by long service as rooming houses, were almost entirely financed by private loans and by the new young owners' personal resources. Their efforts have made this area begin to emerge again as a showplace and demonstrated that even rundown properties can be revived and put to good use. [George McCue]

Roosevelt Island exhibit, panels

An exhibition of the four winners and 31 other entries in the Roosevelt Island Competition held this summer by the New York Urban Development Corporation, will be on view Oct. 15–Nov. 4 at the McGraw-Hill Building, New York. The show was organized by the Architectural League of New York which also will hold three evening panel discussions at 8:30 at its headquarters, 41 E. 65 St., in conjunction with the show.

The first panel will be composed of the winners (P/A June, p. 23 and July, p. 58, 1975) on Oct. 15; the second, Oct. 28, will discuss the nonwinning schemes; and the third, Nov. 3, will examine the island's context.

Stanford U loses architecture program

Stanford University in California for financial reasons will terminate its undergraduate architecture program—most likely after the 1976–77 academic year, the university has announced. All 62 majors, however, will be able to complete the program as it now exists.

Stanford offers no graduate degree in architecture, and Provost William Miller, who made the decision to phase out architecture, said an undergraduate program operating without a graduate program was without "intellectual vigor." A recent proposal to offer a graduate degree was turned down, also for financial reasons.

[News report continued on page 30]

A FIRST IN FIRE-PROTECTION.

Kansas City Bank Tower combines fluid-filled columns and flame-shielded spandrel girders.

The painted steel exterior of Kansas City's handsome new 20-story Mercantile Bank Tower encloses a number of unique structural concepts. Chief among them are liquid-filled columns, flame-shielded exposed spandrel girders and a unique steel space truss transfer structure.

Space truss and liquid-filled columns open up pedestrian area.

The architects plan for an open pedestrian area beneath the tower led to the design of the space truss and the liquid-filled columns.

The 18-foot deep space truss transfers the weight from 24 columns in the upper 16 floors to five base columns and the core. The five columns are 60 feet long, are cross-shaped and are fabricated from four standard W-shapes. The columns are filled with a solution of water and antifreeze. This system of column fire protection proved to be more economical than covering the columns with fire retardant material and cladding with steel covers.

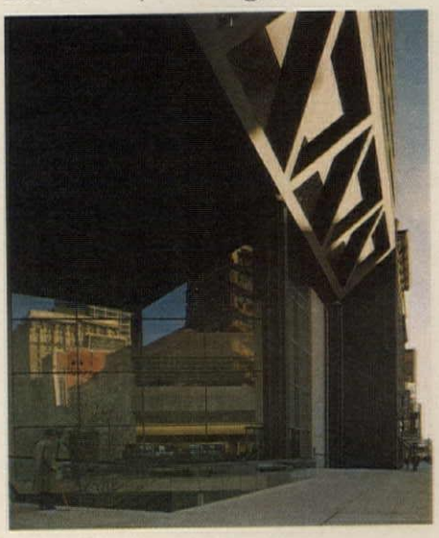
The space truss which encloses the building's mechanical floor is composed of W-shapes forming vees inclined outward at a 45° angle. Top and bottom chords are structural steel W-shapes with composite concrete slabs. The lower slab is post-tensioned with strands running diagonally which transmit tension forces to the core. This design resulted in further reduction of structural steel and a substantial saving in reinforcing steel.

Flame-shielded spandrels function as curtain wall.

The flame-shielded girders serve a dual function of structural component and wall enclosure. They form a part of the framing system replacing the more conventional concealed spandrel girders required to carry the floor loads. While acting with the exterior columns to resist all the wind forces on the tower, these exposed members provide 50% of the exterior wall. The top and bottom flanges with fire protective material on the inner surface provide the necessary protection for the girder webs in the event of fire within the structure. Full-scale mock-up and Underwriter's tests conducted in accordance with ASTM standards have shown this type of design will enable the steel girders to maintain flange and web temperatures below the limits established by ASTM E 119. In addition, the top flanges of each girder provide the form for the concrete floor above.

The Mercantile Tower contains 248,000 square feet and required 2200 tons of structural steel. It is a fine example of innovative architecture and engineering and the use of painted, exposed steel that works both aesthetically and structurally.

U.S. Steel is preparing a structural report on the Mercantile Bank Tower and we will be happy to send you a copy. For your copy, contact a Construction Representative through your nearest USS Sales Office, or write United States Steel, Room C460, P.O. Box 86, Pittsburgh, Pa. 15230.



Owner: Walnut Associates, Kansas City, Missouri.
Architect: Harry Weese and Associates, Chicago, Illinois.
Structural Engineer: Jack D. Gillum & Associates, Ltd., St. Louis, Missouri.
Mechanical and Electrical Engineers: Martin, Nagy, Tonella Associates, Inc., Chicago, Illinois.
Construction Manager: Concordia Project Management Ltd., Kansas City, Missouri.
Structural Steel Fabricator: Havens Steel Company, Kansas City, Missouri.
Spandrel Fabricator: Southwest Ornamental Iron Co., Bonner Springs, Kansas.

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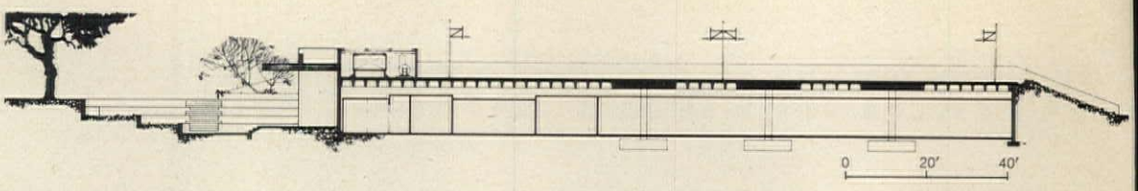
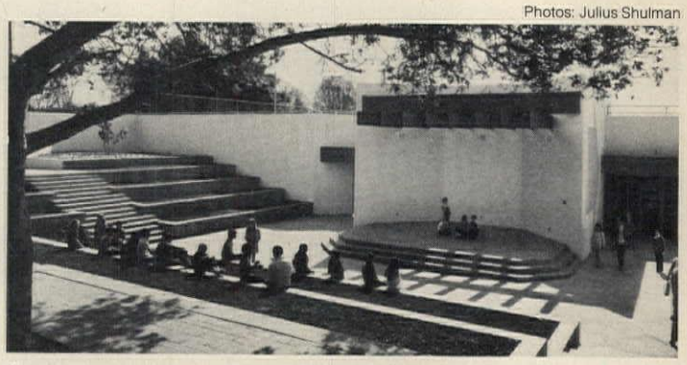
In perspective

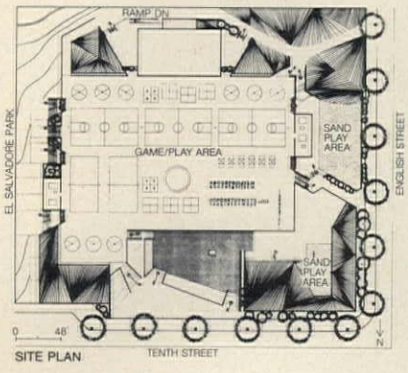


Photos: Julius Shulman

Interiors of underground schools designed on 5 ft flexible modules.



Outdoor teaching area of Wilson School; section shown (above).



Site plan of Fremont School.

Main entry to Hoover School.

Photo: Carlos von Frankenberg

Fremont entry showing play lot on roof.

Three underground schools

Now that above-ground schools are designed windowless to reduce vandalism and heating and cooling costs, the idea of an underground school is not so formidable. Three underground—or rather, partially subterranean—elementary schools designed by Ralph Allen of Allen & Miller in Santa Ana, Calif., are entering their second full year of operation and "theoretically," at least, according to a school official, the heating and cooling costs should be reduced considerably over those of conventional schools.

Statistics which hopefully will prove it will be available soon; meanwhile, the Santa Ana schools' director of construction already has observed lower operating costs. The major concern, as far as the design concept went, was not visual or emotional but acoustical. Since the roof doubles as a play yard, to conserve space, extra insulation was inserted between two concrete slabs forming the roof, and the results are as anticipated: no amount of ball-playing or jumping disturbs students in the classrooms below.

The first two schools completed, Wilson and Hoover, basically had the same program and were accomplished for approximately the same cost: $850,000. Each site was about four acres, both with four existing buildings, three of which were incorporated into the new schools. On both sites the two-story classroom buildings had to be torn down in compliance with California's 1968 earthquake law.

Allen's plan was to convert the existing shed-roofed classroom structures into space for the kindergarten, and he created an outdoor eating area adjacent to the kitchens in the existing multi-purpose buildings. Then the major classrooms were accommodated in completely new, one-story structures recessed 5 ft into the earth. Unlike other parts of the country, California has few homes with cellars, and so the basement concept is a novelty to kids. Well-landscaped earth berms next to the exterior walls create a park-like environment for the neighborhood. A school official commented that one practically has to be next to the school to realize it's there.

The third school, Fremont, a $1.5 million structure, is entirely new and was finished in 1973, the last to be completed. Like the others, it has an adaptable design on a 5-ft module to allow for easy conversion from open to traditional classroom teaching. The exterior concrete walls had to be stronger to bear the play yard on the roof; reinforcing steel bars set vertically in the concrete were up to three times larger than usual, thus increasing construction costs to $28 per sq ft or $2 per sq ft greater than usual. These extra initial costs will be offset, Allen expects, by savings in heating and cooling and maintenance as well as in land cost.

By building into the earth and using the roof for recreation, the architect spared the schools from having to buy additional acreage. All three schools are in the inner city where real estate is high.

Fremont Elementary School was one of six buildings to receive an award from the Concrete Reinforcing Steel Institute in CRSI's 1974 program. [AC]

[News report continued on page 34]

The Century Center Motor Hotel got a great deal on its beautiful white esthetics with Qasal® mineral cladding panels from PPG.

On a building, Qasal (say ka-salle') cladding panels look every bit as good as high-quality concrete work. (Five feet away you can't tell the difference.)

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Owner: Gray Properties, Atlanta, Georgia.
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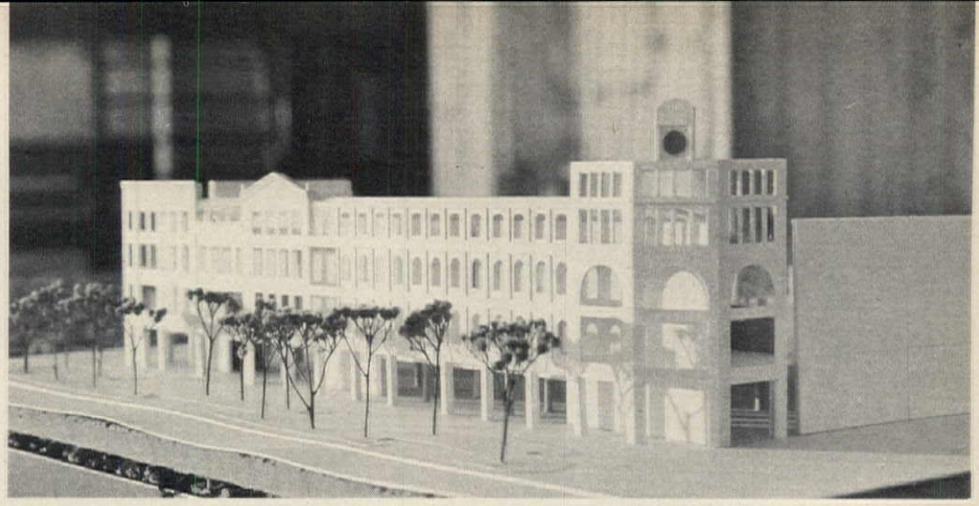
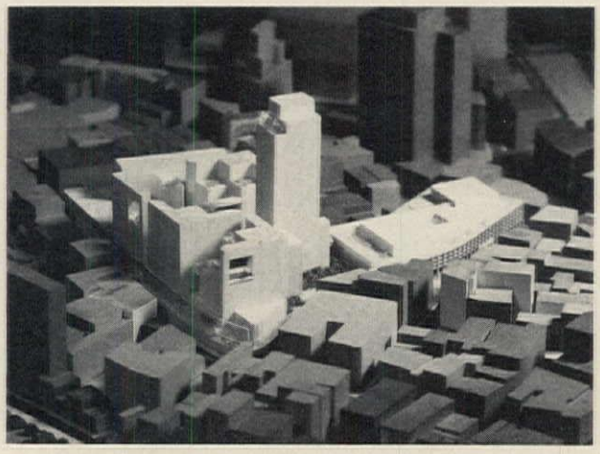
Report from Boston

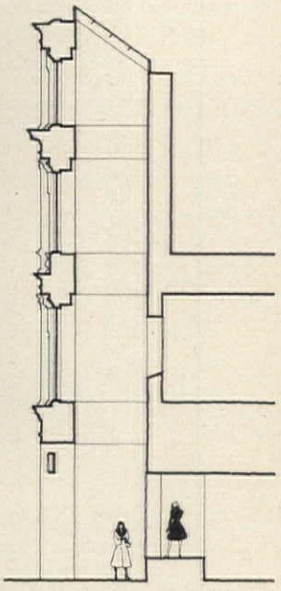
Jordan Marsh store scheduled for demolition.



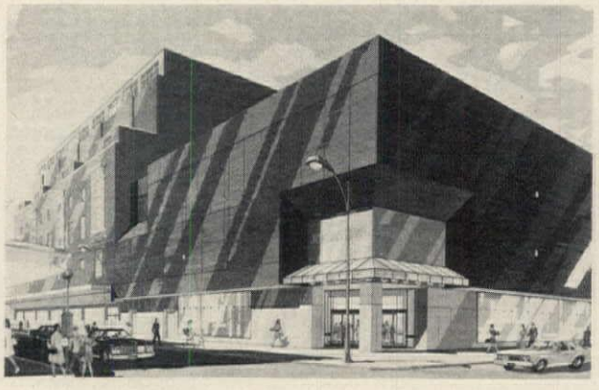
Alternate proposal by Holt Associates.



I.M. Pei's Lafayette Place with Jordan Marsh behind hotel tower. Also shown are low-rise office structures and 1500-car garage.



Jordan Marsh proposal for new store (left). Section (above) of alternate proposal shows new retail space inside existing façade. Except for lateral bracing, new construction and façade restoration could proceed independently.



Unity in Boston to stop Jordan Marsh

"They think we're going to fold our tents and go away," said a preservationist, his voice as full of surprise as fatigue, commenting on the reaction of "they"—Jordan Marsh, New England's largest store—to the battle to save the store's 19th-Century facade. Quite the contrary: for the first time Boston architects, urbanists, and preservationists have banded together on behalf of this elegant, eclectic structure that runs along the old downtown main street.

Six months ago, the Boston Redevelopment Authority bundled the plan for Jordan's new store together with an I.M. Pei-designed project called Lafayette Place into a red-white-and-blue bicentennial package. The L-shaped clutch of buildings altogether bore a price of $220 million and would cover eight acres of Boston's limp retail district with stores, offices, and hotels—a tantalizing array for a depressed economy and a mayor for re-election.

Looking into the package last spring, self-dubbed streetwatchers decided that the $30 million in city funds and more in tax benefits to Jordan's was "a giveaway," to quote from the Victorian Society of New England newsletter. A City Conservation League headed by Leslie Larson has emerged in response. With Jordan's 19th-Century store due for demolition in February, the League has picketed, written protest letters, and proposed a counter scheme designed by Stephen Holt and Richard Bosch of Holt Associates with structural engineer Herberts Ule. Salvage, they maintain, would cost no more money and take no more time and still would place new facilities inside the old façade. The press coverage was positive.

So far, Jordan's, which is fond of flourishing its civic history and beneficence, will talk to the League but won't rework the plan, nor will its parent, Allied Stores, in New York. In like spirit their architect, Sumner Schein, has refused to comment.

By all accounts, the Pei office could barely get a dialogue going on the linked buildings. "No comment," said Jacques Tézé, president of Sefrius Corp., the French firm developing Lafayette Place, about Schein's forbidding, wall-like design.

Stymied for now, the preservationists are moving towards an environmental lawsuit at this writing, but are not too sanguine about the future. They admit that they came in late and won't be too surprised to see a parking lot instead of Jordan's old structure come February. "At least Jordan's has united a bunch of people so it won't happen again," said Bosch. [Jane Holz Kay]

Ms. Kay writes for The Nation *and contributes to other publications.*

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Note: The savings shown above are approximate and are based on the following: Average 1975 fuel and equipment costs. Upgrading roof insulation from 15/16" to 2¼" on a 60,000-sq.-ft. metal deck. Suburban office building. Northern climate. Gas heating and electric cooling.

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News report continued from page 44

Hoboken, N.J., cited for rehab program

Hoboken's Neighborhood Preservation Project has been selected to receive a $50,000 grant from the U.S. Urban Reinvestment Task Force in recognition of the city's comprehensive program of neighborhood preservation. The Task Force, a joint effort of the Federal Home Loan Bank Board and the U.S. Department of Housing and Urban Development, intends to monitor Hoboken's project and, if finding it successful, offer it to other cities as a model. Hoboken's Neighborhood Preservation Project provides below market-rate funds for rehabilitation to owners of multi-family units.

Grant aids advanced studies program

The Advanced Building Studies program at Carnegie-Mellon University, Pittsburgh, has received a pledge of $37,500 in funds for student fellowships from the Equitable Life Assurance Society of the United States. The ABS program emphasizes the team approach to design and is a joint effort of the departments of architecture and civil engineering and the School of Urban and Public Affairs.

John David Fowler dies at 41

London-born architect John David Fowler, assistant professor and critic at Yale University and Cooper Union, New York, died at the age of 41 in August after an illness of several months. Among his honors were a *Progressive Architecture* Design Award in 1969 for the Klema residence in Seal Harbor, Maine (P/A, May 1971) and an AIA honor award in 1968 for the Wasserman House, Weston, Conn. He was a semifinalist in the 1970 Yale University math building competition. He received his diploma in architecture from the Polytechnic, London, in 1957 and his master's in architecture from Columbia University in 1959. Fowler made his home in Guilford, Conn.

Personalities

Mario L. Schack of RTKL Associates Inc. has been elected the new chairman of the Department of Architecture in the College of Architecture, Art and Planning of Cornell University.

Bert T. Anderson, assistant vice president of the University of Wisconsin System, has been named president of the Association of University Architects. **Carl C. McElvy,** recently retired California State Architect, has received the association's Distinguished Service Award.

Leo J. Cantor, PE, Richmond, Va. commissioner of building, has been elected 1975–76 president of Building Officials and Code Administrators International, Inc., Chicago.

Garrett Eckbo of San Francisco has been awarded the 1975 Medal of Honor of the American Society of Landscape Architects.

[continued on page 49]

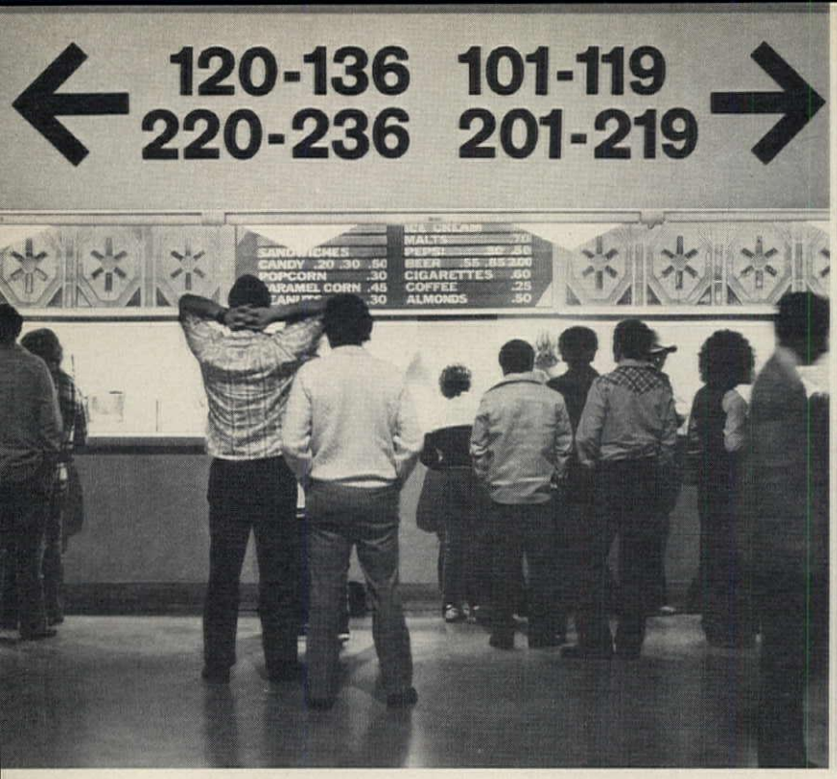
A classroom building on the curve.

ELEVATORS BY DOVER

The new Olin Hall of Engineering at Vanderbilt University presents a striking curvilinear front to its campus neighbors. Inside the 10-level building are classrooms, offices and laboratory space for programs in chemical engineering and materials science and engineering science, as well as the center for water quality management. Three Dover Geared Traction Elevators serve student and faculty needs. For more information on Dover Elevators, write Dover Corporation, Elevator Division, Dept. U, Box 2177, Memphis, TN 38101.

Olin Hall of Engineering, Vanderbilt University, Nashville, Tn.
Architect: Robinson Neil Bass & Associates, Nashville, Tn.
Contractor: Joe M. Rodgers & Associates, Inc. Nashville, Tn.
Dover Elevators installed by Nashville Machine Co., Inc., Nashville, Tn.

DOVER



Even a half-time business needs full-time protection.

When the Golden State Warriors or California Golden Seals play at home in the Oakland Arena, hot dog and beer sales go way up. As soon as the Cookson counter doors go up. And when the Oakland A's or Raiders play next door at the Coliseum, the same thing happens.

During working hours, Cookson counter doors are coiled up, out of sight, out of the way. At closing time, they're easily rolled down, locked into position, fitted snugly to the counter.

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They're difficult to tamper with because the compact removable-crank operator is mounted at the top of the door, not at counter level.

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Cookson Rolling Doors
Best way to close an opening.

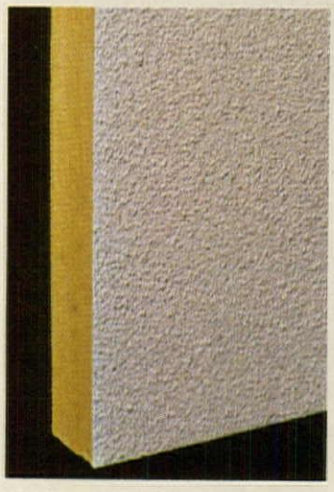
News report continued from page 46

Harry M. Weese, FAIA has received the first Total Design Award of the American Society of Interior Designers/Illinois Chapter.

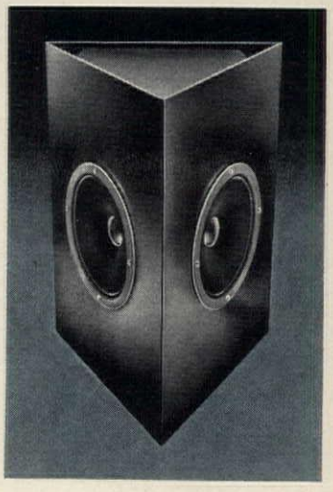
Calendar

Oct. 1–29. Exhibit of books and drawings of Sebastiano Serlio, 16th-Century Italian painter and architect, Low Memorial Library, Columbia University.
Oct. 12. Architecture in Atlanta tour of Tower Place by Stevens & Wilkinson; tour sponsored by AIA Atlanta chapter.
Through Oct. 19. "Art for Architecture: Washington, D.C. 1895–1925" Renwick Gallery, Washington, D.C.
Through Nov. 9. "A Modern Consciousness: D.J. De Pree and Florence Knoll" exhibit, Renwick Gallery, Washington, D.C.
Oct. 20. Deadline for submissions to the AIA Honor Awards Program, Washington, D.C.
Oct. 21–23. National Association of Building Manufacturers national building show, McCormick Place, Chicago.
Oct. 22–24. Conference of Illinois Council of Architects, Decatur Holiday Inn, Decatur, Ill.
Oct. 23–24. Conference on revitalization of shopping environments, School of Architecture, University of Wisconsin-Milwaukee.
Oct. 26–Dec. 7. "Naives and Visionaries" grass roots art, Dayton Art Institute, Ohio. Organized by Walker Art Center, Minneapolis.
Oct. 27–30. Annual conference of The Producers' Council, Inc., Sonesta Beach Hotel, Key Biscayne, Fla.
Oct. 29. Deadline for entry slips in the 1976 Library Buildings Award Program, sponsored by the AIA and the American Library Association.
Oct. 29–Jan. 4. "The Architecture of the Ecole des Beaux Arts" exhibit, The Museum of Modern Art, New York City.
Nov. 3–6. International Energy Engineering Congress and Exposition, McCormick Place, Chicago.
Nov. 3–7. Annual convention of the American Society of Civil Engineers meeting in Denver, Colorado.
Nov. 3–14. Second annual International Film and Video Festival about cities, suburbs, small towns. Columbia University, Graduate School of Architecture and Planning, New York, N.Y.
Nov. 6–7. Annual meeting of the Automated Procedures for Engineering Consultants, Inc., San Francisco.
Nov. 9. "Architecture in Atlanta" tour: The Terminal District, 2-5 p.m., Sponsored by AIA Atlanta chapter.
Nov. 10–13. Sixtieth International Hotel/Motel & Restaurant Show, the New York Coliseum, New York City.
Nov. 12–25. Interbuild building exhibition and conference, Olympia Hall, London, England and aboard the Queen Elizabeth 2 passenger ship.
Nov 15. Deadline for entries in the Concrete Reinforcing Steel Institute Design Awards Program, Chicago.
Dec. 4–6. Fourth national seminar on bicycle and pedestrian facilities sponsored by the Metropolitan Association of Urban Designers and Environmental Planners, Marriott Hotel, New Orleans, La.
[News report continued on page 52]

This beach has the 3 essentials Owens-Corning has the system



1. An acoustically non-reflective ceiling is a *must*—to keep sound from bouncing to other areas. An independent acoustical testing laboratory examined eight ceilings, including expensive coffered and baffled systems. Their verdict: Owens-Corning's Nubby II Fiberglas* Ceiling Board (left) in any standard exposed grid suspension system is *best* for achieving speech privacy at economical installed cost.



*Reg. T.M. O.-C.F.

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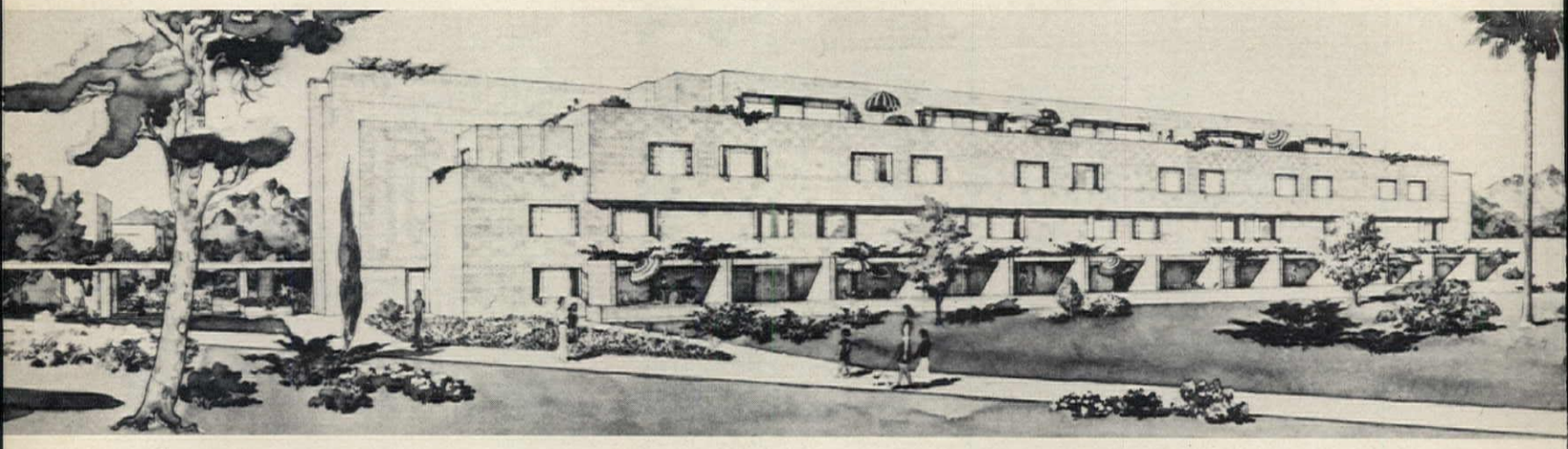
In progress



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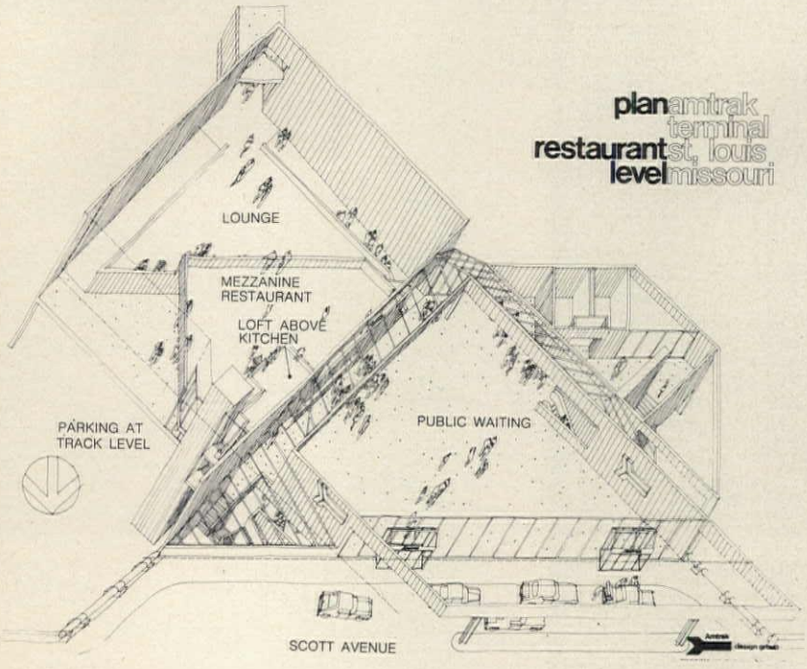

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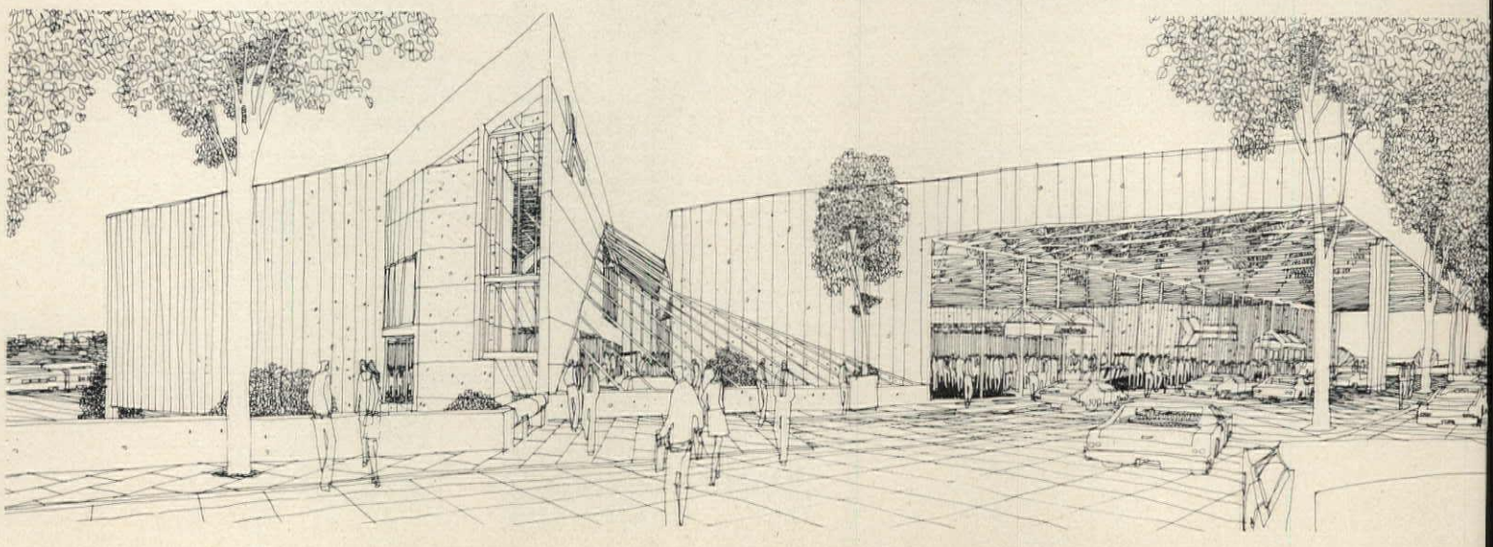


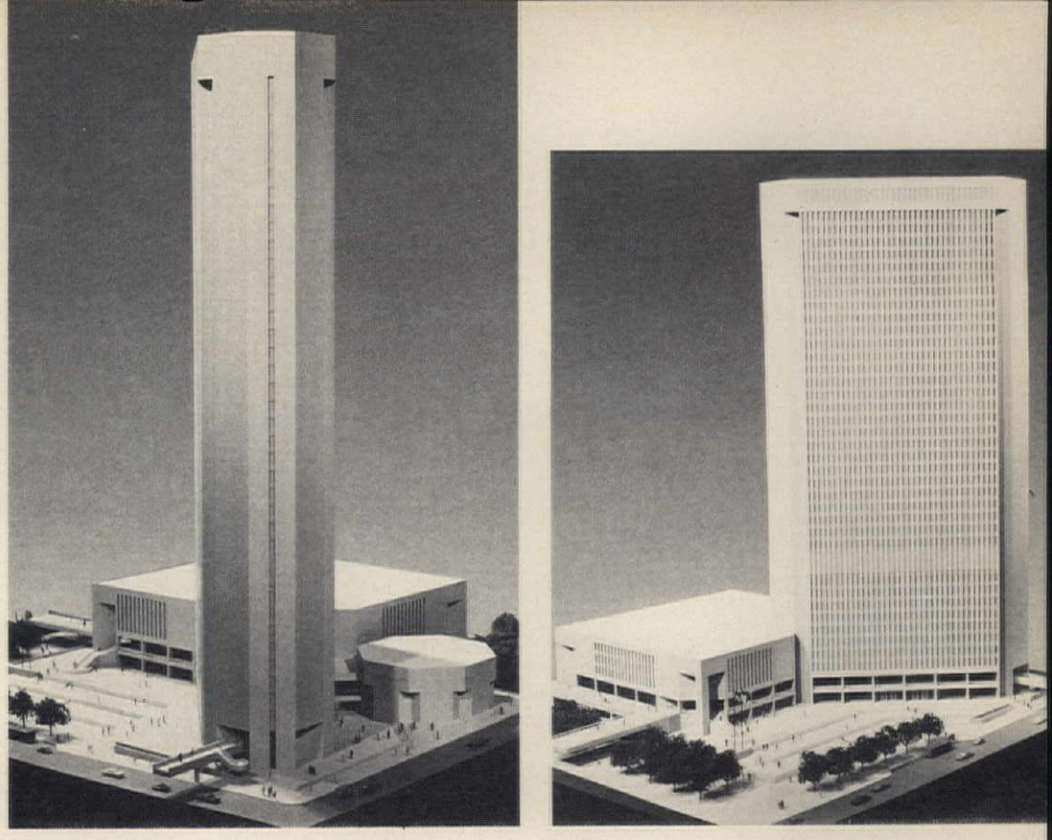
1 Teliesin design for hotel wing—A $5 million wing will be added to the Arizona Biltmore Hotel, complementing the original structure by using the original design for cast concrete blocks by Frank Lloyd Wright. The four-story, freestanding wing is the first expansion of the hotel since the opening in Phoenix in 1929. Designed by John Rattenbury of the Frank Lloyd Wright Foundation, the addition will include a meeting room, service kitchen, and 88 deluxe accommodations. Completion is scheduled for spring of 1976.

2 Amtrak to build St. Louis station—A new St. Louis passenger railroad station, the largest project undertaken by Amtrak, has been announced for a site one mile west of Union Station. The concrete and glass, two-level structure was designed by Curt Willard of the Amtrak Design Group. Waiting lounges and the restaurant will overlook each other and have controlled access, yet be free of partitions. Construction is scheduled to begin early 1976, and Amtrak plans to vacate Union Station by the end of 1976. No plans for the old terminal have been announced.

3 International Space Hall of Fame—The firm of Nolan Stout Pool, Alamogordo, N. M., has designed a 27,000-sq-ft structure to serve the state International Space Hall of Fame Commission. Gold reflective panels are held in a steel frame bronze anodized curtain wall flanked by concrete wall panels. A special feature of the building is its mechanical system which will integrate with future solar energy projects.

4 Nationwide Plaza—Harrison & Abramovitz, New York, and Brubaker/Brandt of Columbus, Ohio, are architects for a 40-story tower and redevelopment project in north Columbus. The client, Nationwide Insurance Company, decided to remain in the city and incorporate its existing building with a new office structure and other future buildings, such as hotels. The new building is set on a diagonal to open the street area and form a plaza. An aerial walkway will connect the Nationwide complex with the Ohio Convention Center. Working closely with the Columbus Department of Development and other city agencies, the architects hope to create a "dynamic public space for the people of Columbus."

5 Scaling a fish market—When I-83 goes through downtown Baltimore it will lop off the rear of an 80-year-old wholesale Fish Market, but a plan has been forwarded to not only save the structure, but also rescue its shorn rear façade. The design is by Arthur Cotton Moore of Washington, D.C.; the façade would swing around to form a handsome backdrop for a plaza next to the market and also screen noise from the highway. The market, in turn, would be adapted for use as restaurants, shops, and artists' studios, and a new fish market would be constructed next door. The $4.6 million plan has city backing and is awaiting implementation.



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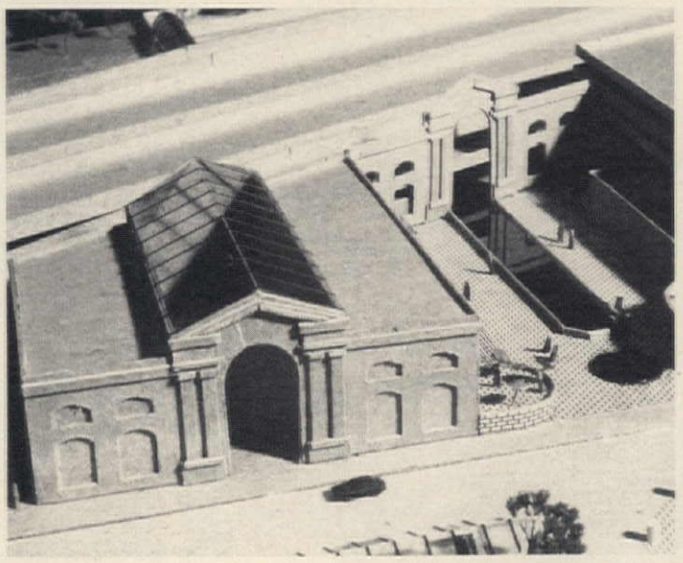

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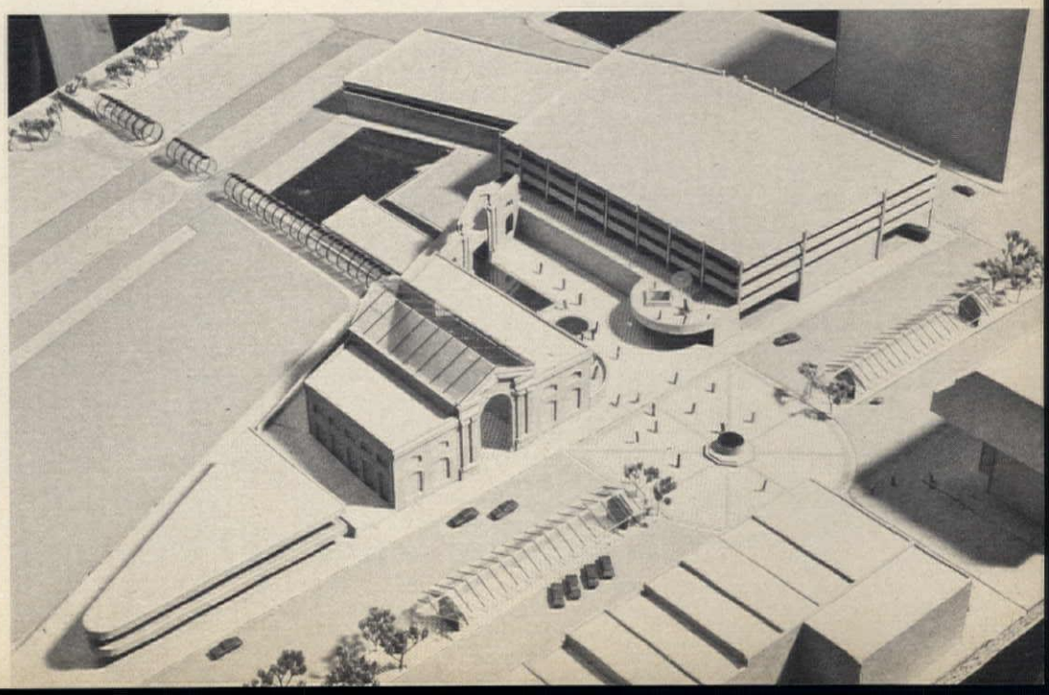

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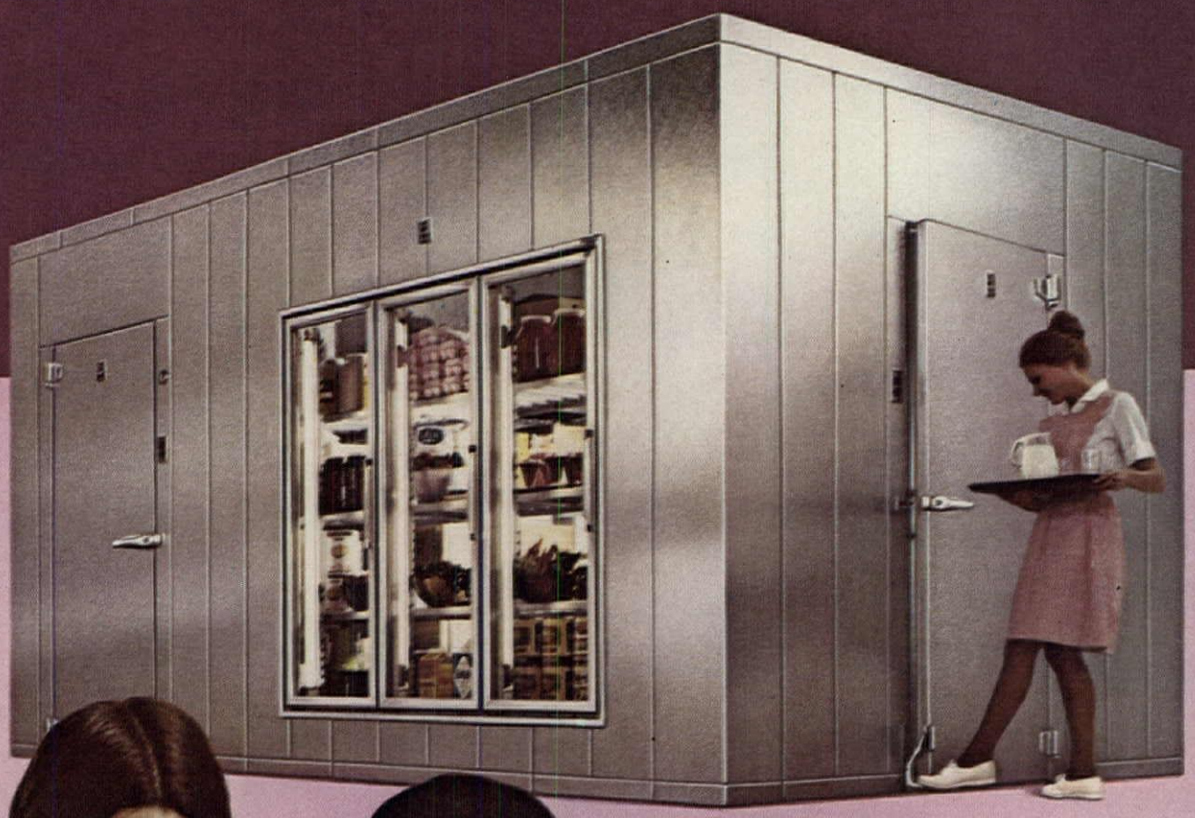

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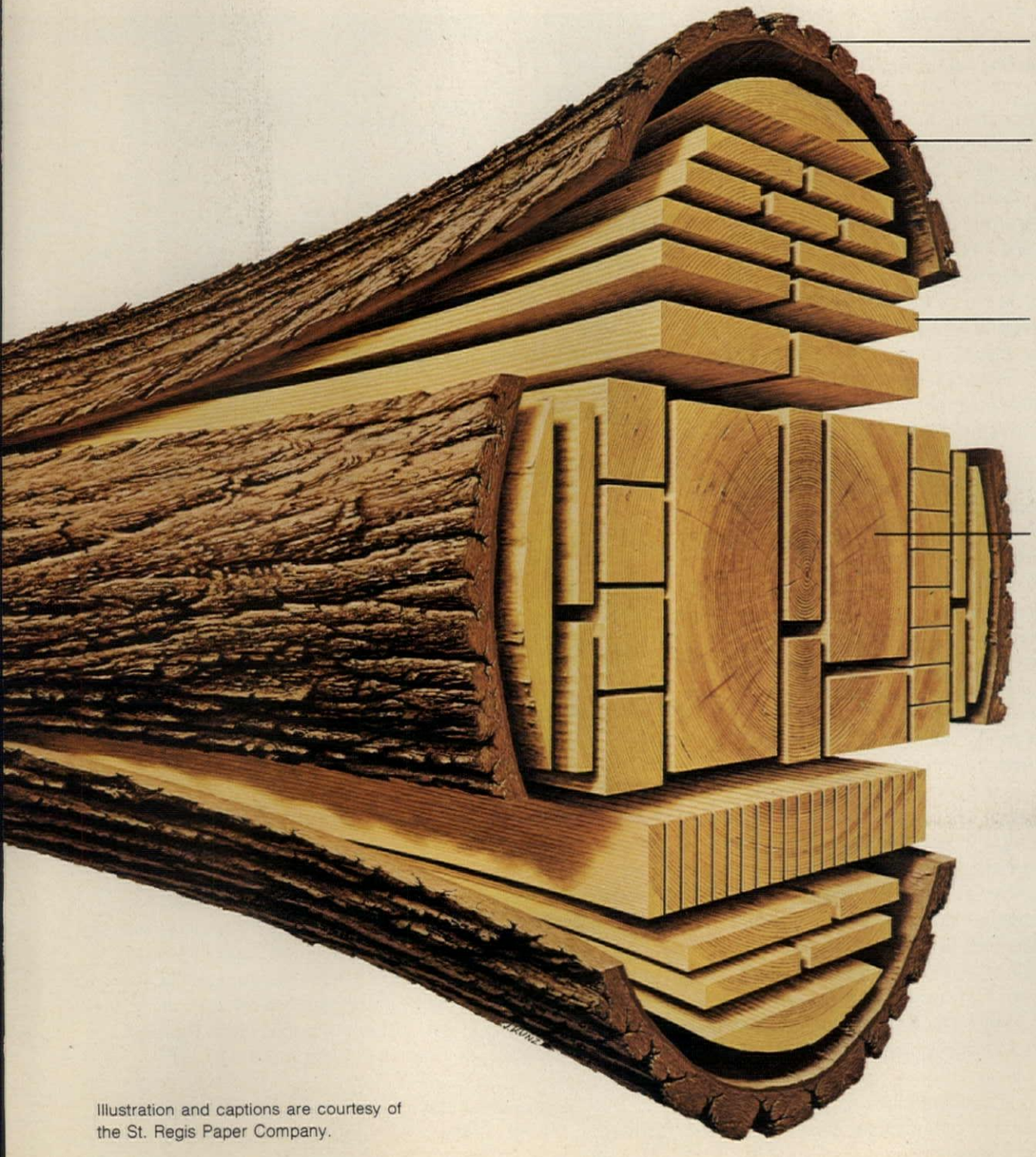
Tales from the American woods



Bark. Unusable for papermaking, it is debarked for fuel and soil mulch.

Rounded sides. Because "slabs" are not suitable as timber, they are sent to the chipper for pulping and conversion to paper and paperboard.

Outer portion. "Clear" lumber has fewest knots and is made into boards or planks from one to three inches thick.

Inner portion. The center of the tree is the oldest section where earlier branches were pruned, leaving knots. Less suitable as boards, it is usually sawn into heavier planks and beams.

Peeler log. A long blade is held against a rotating log to peel veneer for plywood. The core is treated as a small log, and excess material is sent to the chipper.

Illustration and captions are courtesy of the St. Regis Paper Company.

Wood, the bread and butter of home builders, is also a vital structural and aesthetic element for architects. Technical advances in the wood products industry may extend its traditional usefulness in new directions.

Brace yourself, Daniel Boone. Long green assembly lines stretching miles into the woods. Young trees squabbling for sunlight, greedy for photosynthesis. Giant logs straining to explode into a million precise pieces. Welcome to the American forest.

This sanctum of primeval splendor tantalizes our urban sprawling nation. Yet, in a curious way, construction products from the contemporary forest are only as wild as prime grade beef. Though we cannot grow timber as precisely as beef, technology can now sway nature's will to a surprising degree. For the architect, this means new assignments for wood that could extend its usefulness in construction dramatically.

Wood may be the bread and butter of home builders and a vital structural and aesthetic element for architects. But outside home building, where it enjoys nationwide use, wood assumes a regional personality. Architects universally apply it to interior work. But in commercial, institutional, and industrial applications, it is decidedly not the prevailing structural material.

Reservations about its environmental vulnerability and skepticism about its technical imprecision have prejudiced designers, code enforcers, and underwriters alike. This divergence of opinion between home builders and architects is reflected in the nature of timber consumption in the building industry. Nearly one-third of the nation's softwood lumber and plywood and substantial volumes of other building products such as hardwood plywood, particleboard, and insulation board were used in housing in 1970. Simultaneously, about one-tenth of the nation's lumber and plywood as well as substantial volumes of other wood products were consumed in nonresidential buildings and structures for commerical, institutional, governmental, and industrial purposes.

The wood products industry contends that technical developments, assured supplies, and changing economies of building materials markets make wood strongly competitive with its recent and traditional rivals. Or, in the industry's words, we're getting reacquainted with an old friend.

Once was not enough

Our forefathers could hardly keep themselves out of the woods. In three centuries they carved out some 40 percent of the forest standing when Columbus arrived. And the fate of so much forest? Settlements, agriculture, industry, and transportation corridors—not to mention the timber itself, useful in construction, furniture, housewares, tools, paper, containers, and fuel. Our early architecture was primarily a study in wood joinery. English Georgian motifs of stone, brick, and mortar were loosely copied by the colonists in American wood.

Wood was the obvious building block of the colonies. This unique aggregation of cellulose fiber cells cemented together by lignin had incredible strength and resiliency. Its low thermal conductivity made it a natural insulator. When properly detailed, it could coexist with water, temperature extremes, insects, decay, rot, and ultraviolet degradation. It was easy to shape, transport, and fasten. It was plentiful. It was beautiful. It was cheap.

Trouble was, America was loving its forest to death. Wood is the only major building material that renews itself—given the chance. Germany recognized this early in the 18th Century in laying the foundation of modern forest management. The U.S., blessed with deceptively fathomless riches, waited until 1817 to establish timber reserves for warship building. However, the American way to the forest was still marked by classic signs of forest abuse: vast acreage indiscriminately leveled, thin, fragile soil cover torn up, exhausted, and abandoned, wildlife pillaged, and more.

I want you

A glimmer of sanity shone in 1877. Secretary of the Interior Carl Schurz alerted Congress to the need for forest reserves. By 1891 Congress authorized the President to set aside forest land in the interests of "securing favorable conditions of water flows and to furnish a continuous supply of timber for the citizens of the United States." Under the administration of President Theodore Roosevelt, Chief Forester Gifford Pinchot zealously advocated the European profession of forest management of public lands through scientific practice, enforced by government law and regulation.

The rising political star of forest conservation can be followed in the ascension of its regulatory office. The Division

Who owns the U.S. commercial forest

Ownership	Area thousand acres	Proportion percent
Federal	107,109	21
State	21,423	4
County, municipal	7,589	2
Forest industry	67,341	14
Farm	131,135	26
Misc. private	165,101	33
Total	499,697	100

Source: Forest Service, U.S. Dept. of Agriculture, Washington, D.C.

Wood displays its versatility. Matrix at Bellevue Community College, Bellevue, Wash. by Naramore, Bain, Brady, Johanson, Seattle is a student dining facility framed and sheathed solid wood posts for heavy duty use and enduring appearance with minimal maintenance (below left). Photo: Art Hupy. Vacation residence, Mendocino, Calif. by Donald McDonald, San Francisco resists harsh weathering of open exposed beach site with rough sawn plywood and lumber carefully selected for this environment. Deer Point Townhouses, Ocean City, Md. by Leo D'Aleo of Meyers & D'Aleo, Baltimore is an elevational exercise (seven interior levels) with uncluttered detailing that wood construction easily facilitates thanks to easy workability and tolerances. Both residences are 1st Award winners, 1975 Plywood Design Awards, American Plywood Association.

of Forestry, Dept. of the Interior (1891) became the separate Bureau of Forestry, Dept. of the Interior (1901) and then, recognizing forests as renewable resources, it became the Forest Service, Dept. of Agriculture (1905). Owing to the efforts of Presidents Harrison, Cleveland, the Roosevelts, and their successors, the federal government has become a truly imposing forest manager. In fact, Uncle Sam has acquired the largest claim to the nation's commercial forest. Approximately 51 percent of the nation's valuable softwood sawtimber belongs to him. The logging right he periodically sells to the forest industry make the Forest Service one of the few federal agencies whose operations generate a profit for the government.

Who's been logging in my forest?

There are 2.27 billion acres of U.S. land of which 753.5 million acres (33 percent) are forest. Of this acreage 499.7 million acres (66 percent) are commercial forest, and only 67.3 million of these acres, considerably less than supposed, are held by the forest industry (see table).

What remains of our original forest is a veritable factory for the conversion of sunlight, air, water, and soil nutrients into wood. In 1970, the U.S. commercial forest harvested 14.0 billion cu ft of growing stock trees of which 62.8 billion board feet were sawtimber. This could also be expressed as removals of 28.1 cu ft of growing stock per acre of commercial forest against a new growth of 37.2 cu ft.

These are general statistics for all species of wood and all ownership classes. Forest industry net growth and removals lead all other ownership classes. National Forest net growth is the lowest of all; other public agencies have the lowest removals.

Of course, timber was never the only crop. From the earliest days of forest management, watersheds were as

highly prized as timber. Today, forest management has become a sort of real estate development in which silviculture, economics, sociology, politics, and business administration play complex intertwining roles. The woods are still lovely, dark, and deep. And everyone wants a share. Proponents of wildlife preserves, recreation sites, grazing rangelands, commercial timber stands, and even nonforest uses want a portion of those 499.7 million acres of commercial forest for their own sometimes exclusive enjoyment. (Camping and picnic sites in the National Forests must be booked months in advance due to overwhelming demand.)

Not altogether healthy for the forest, this wholesale return to nature. It suggests a deep ambivalent yearning in the American people which a massive postwar suburban migration does not satisfy. It also suggests that forest industry hopes for steadily increasing timber removals could be trampled in the melee of conflicting activities.

That the forest is actually shrinking only makes allocation more difficult. Until the 1960s, the reversion of agricultural land to commercial forest offset losses of acreage to nonforest intrusions. Heavy withdrawals of forest land for urban growth, airports, highways, power lines right-of-way, and agriculture were more than counterbalanced by net growth through reforestation.

Then, between 1962 and 1970, the commercial forest lost 8.5 million acres. By Forest Service estimates, a chronic loss of over 5.0 million acres per decade will continue to the year 2000—despite the fact that the nation ceased to be self-sufficient in timber as of 1941. While the government agonizes over our continuing dependence on Middle Eastern oil, some 20 percent of our timber needs must be supplied largely from Canada and Southeast Asia.

Without more intensive forest management and technological advances in timber utilization, architects could find raw wood supplies tightening and finished wood products costs rising more than they or the industry care to see.

Knotty problems

Federal foresters and the forest industry grasped the implications of a vanishing forest some time ago. As annual consumption of industrial wood products grew from 1942 to 1972 by 65 percent to 125 million tons, annual consumption of industrial roundwood to manufacture them grew at a *lesser* rate, by 56 percent, to 13.7 billion cu ft. Two rabbits were plucked from a hat: the perfection of "better" trees and the transformation of raw natural substances into precision building materials.

Definitions: growing stock trees are live commercial species qualifying either as **desirable,** i.e., highly vigorous with no serious defects in quality that could limit present or prospective use for timber products and lacking pathogens that could result in premature death, or **acceptable,** i.e., meeting specified size and quality standards without being desirable; **sawtimber** trees are live commercial species containing at least one 12-ft saw log or two 8-ft noncontiguous logs and meeting regional specifications for minimal diameter and freedom from defect; **National Forests** are not to be confused with **National Parks,** as the former are managed by the Forest Service for timber sales, and the latter are natural preserves for recreational use in which the National Park Service, Dept. of the Interior, forbids logging.

Improving nature? An ancient conceit. And yet, a tree can be persuaded to choose from its biological permutations such traits as man finds more useful. Silviculturists strive to nurture what foresters call a "sexy" tree. Fast and uniformly growing, minimally tapering, easily cut, less branching with smaller and tighter knots, resistant to insects and disease, prolific flowering and fruiting—ready to harvest in only 30 years or less (against 40 to 60 years).

Their successes have drawn vociferous comments from certain critics of the industry. For along with selective breeding of superior species, foresters encourage optimum growing conditions at the site that may seem ghastly and senseless to laymen. In truth, such intensive cultivation practices as "clear cutting" all the trees from a given stand or "shelter wood cutting" all but three or four seeding specimens in a stand are dictated only for the healthiest regeneration of a given species. This varies greatly with species and site.

Even-aged monocultures, those stands of single species propagated in one planting, have also drawn criticism. Yet they are familiar to nature. Fires, storms, insects, and disease are as likely to create the conditions for such stands as man is. If man does not kill a tree, these natural forces conspire with old age to do so. The sometimes mentioned alternative, "selective cutting," removes individual mature trees growing in mixed age stands. This is not very practical outside the hardwood forest.

Ingrained habits

Architects can readily appreciate the resulting more abundant supply of higher grade wood. More likely will they appreciate what the industry is doing to it. New techniques atomize wood right down to the fiber, cellulose, and lignin, only to reassemble the parts in ways nature never dreamed possible. For the wood industry, this means larger inventories of forest products for construction; for the architect, it means that wood can be handled as a precision material.

This has been a reluctant reformation for the entire building industry, to be sure. Generations of carpenters took mental notice of the wide ranging working stresses, moisture contents, knotting, warpage, and dimensional stabilities of the wood they used. Materials were often selected piece by piece. Structures were detailed with the generous margins of error few other building materials allow.

Such endearing vagaries are like sabots in the cogs of technology today. Quality control once reserved for costly cabinetmaking is now demanded by home builders and architects who simply cannot afford the luxury of variable building costs. One way to achieve this is to unify lumber grading practices. Another is to intensify the processing of wood matter in ways that further man's control over its succeeding transformations. The industry has invested in both strategies.

A many splintered thing

Composite wood products like plywood have always been graded by standards that cut across minor distinctions in materials and methods. Lumber grading, by contrast, has been a chaotic affair for the unversed architect. Lumber grading once varied from species to species. Little wonder the architect distrusted the material whenever it strayed from familiar species like Douglas fir.

Wood spans a five-story 20,000-sq-ft structure. Beacon Bay Office Building, Newport Beach, Calif. by Albert C. Martin & Assoc., Los Angeles is an interwoven fabric of reinforced concrete columns, stair towers, and girders with glulam cantilevered beams and exposed plywood flooring and ceiling (from which power, lighting, and HVAC duct work are suspended). The building is sprinklered. Photo courtesy of American Institute of Timber Construction.

In recognition of this difficulty, the industry issued a product standard, American Softwood Lumber Standard PS 20–70, in 1970 which conformed all species to a single grading scale and established working stresses for all grades and species. Wood may still be shipped "green," 19 percent or higher in moisture content. However, whether marked "S-Green" ("S" is for surface) or "S-Dry," a piece of lumber must meet minimum dressed sizes for any nominal sizes, and must reduce to no less than a minimum net size.

Some aspects of timber selection are relatively unchanged. Pressurized treatments to give wood desirable resistance to rot, decay, termites, and fire have been available for a long time. Their effectiveness for each species is still hard to predict without expert advice. Although no really new treatments have appeared recently (a possible exception is a nonleachable water borne treatment) less conspicuous water-borne salts like copper chromated arsenate are gaining favor over messy petroleum-borne treatments and creosote as the use of such submerged products as telephone poles declines.

Nor are there any surprises in curing techniques. Kiln drying is currently considered to be the best way to expel water from lumber for most jobs. Steam curing wood from low temperature and high humidity to inverse conditions in a steam kiln has eliminated the cracks once associated with this process. By contrast, electronic curing is costlier and air curing is slow and labor intensive (piles must be covered, aerated, and weeded).

Branching out

Current experiments with composite wood might be viewed as ingenious exercises in frugality. Composite wood, a natural substance restructured by man, embodies a dream of the forest industry. That is, total utilization of the tree for high grade construction products.

The goal is surprisingly near. Only bark, tough and dirty, still defies conversion. Sold as mulch today, bark may soon be recovered in the pulp mills along with other residues and wastes by new chemicals and improved processes. Already the percentage of a log useful as lumber products seems ready to jump from the current 60 percent to over 90 percent due to recent state-of-the-art developments.

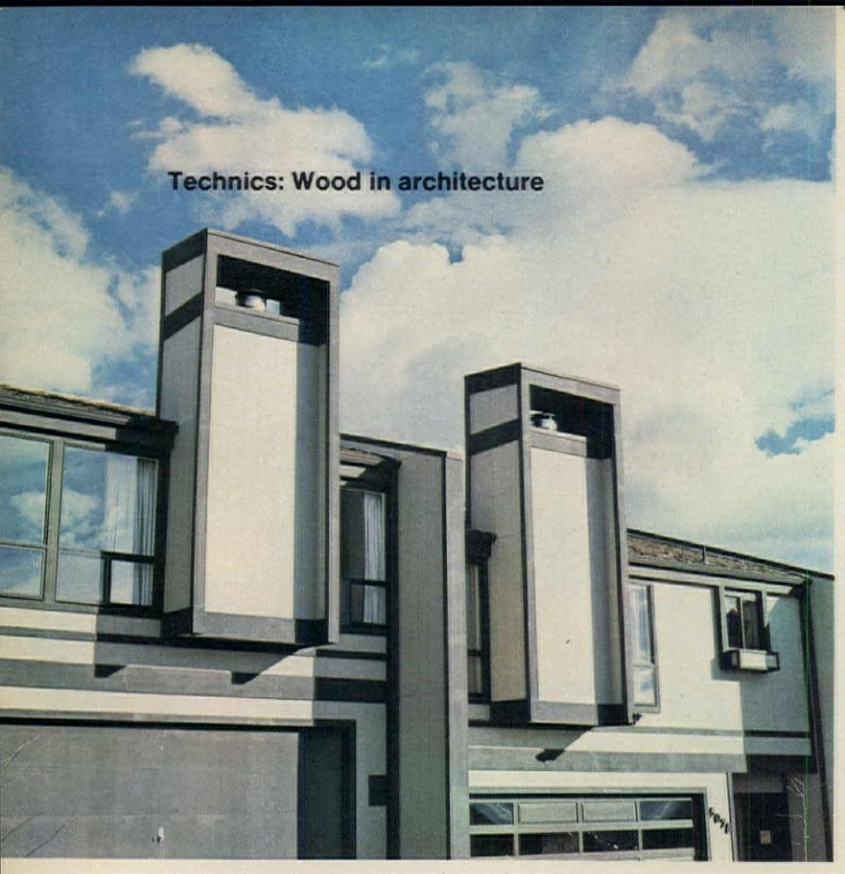
The magic ingredient holding the dream together is synthetic glue. Glued wood construction is a centuries-old craft for which casein (a milk derivative) glues and fish glues were developed. Their comparative strengths and durabilities bear little comparison with plastic-based glues introduced after 1945, however. The newcomers are stronger, more resilient, and more immune to a host of troubles: moisture, temperature flux, and living organisms. With their entry has come a new life for wood.

Wood and plastics composites make a curious partnership. But it works. Plastics greatly strengthen wood's structural capacity by bonding and reinforcing wood fragments as small as individual fibers and as large as whole wood planks into highly efficient structurally integral units. Plastics also conveniently extend our wood resources for construction by incorporating lower grade woods in higher grade building products. The future holds enormous potential for more collaborations of this nature.

Peel it off!

One of America's favorite sandwiches is a ubiquitous if anonymous sheathing formed of veneers peeled from logs and glued cross grained one atop the other. Plywood: any review of composite wood products begins here. In its many forms, it has been the most convincing demonstration of how man could restructure wood. Rotating its veneer grains 90 degrees from each other introduces diaphragm stressing capacity while helping to control dimensional stability across the grain (wood's movement parallel to the grain is almost nil).

Inexhaustible variations are possible with this workhorse of the construction industry. Tough exterior grades have been around for years. Where they were formerly sheathed



Multifamily residences, Idaho by Thurber-Marler wears finished sheathing of new phenolic resin coated, veneered, and textured exterior plywood. Photo courtesy of Simpson Timber Company.

over with building paper and clapboard, sheet metal, and other materials, they can now boast a finished surface simulating rough sawn planking. When coated with a resin-impregnated natural fiber mat, they enjoy a much longer service as concrete form work. Even wood building foundations are possible using specially treated, carefully detailed plywood. Thanks to preservatives, plastic membrane linings, and well designed drainage channels, the "all weather wood foundation" has already been tested by home builders with considerable success.

Interior grades sheathed with a top veneer of choice hardwood have made otherwise prohibitively expensive solid wood paneling accessible to a wide market. A new interior grade is dressed with a tough paper/phenolic resin lamination ready for painting; another bonds a printed pattern and polyester resin overlay to plywood for interior architectural use and cabinetmaking.

More daring structural feats have been inspired by certain waterproof glues like resorcinal formaldehyde. "Glulam" is the industry expression for glued laminated timber, an assemblage of selected, treated, stress-graded lumber in a resorcinal, phenol, or melamine based lamination. It can be formed into beams, columns, and decking in an extraordinary range of shapes, sizes, and strengths.

Glulam bonded in casein glues had been found susceptible to moisture and was thus reserved for dry use. Since the perfection of synthetic glues and the firm establishment of quality controlled lumber grading, glulam has become competitive with other heavy duty structural materials like steel and reinforced concrete. Going beyond even heavy solid timbers, glulam working in tandem with steel hardware creates wide span and multistory potential for wood.

Out on a limb, endlessly gluing

Try to keep a handful of sand or gravel from slumping into its familiar cone. Would you build on it? Add wet cement. Can you trust those tiny particles now?

The same inability to cohere plagued early industry attempts to salvage low grade wood fiber, flakes, chips, shavings, and sawdust for construction products. Early fiberboard was a satisfying, though limited, solution. Bonding fibers together under great pressure created a flexible sheathing product that could not take tensile stress. Then plastic resins were added. The resulting particleboard has become almost as universal as plywood.

With or without a finished sheathing, particleboard offers the bulky presence of solid wood with steadily improving structural characteristics. It is excellent under compressive stress, and its tensile performance is improving. It has a generous selection of surface finishes including hardwood veneers, phenolic, polyester, and paper laminates, and natural and synthetic fabrics.

One of the more promising adaptations of particleboard is under development by the Forest Service. It reverses a common lumber mill operation by shaving the strong, stiff, dense outer portion of the tree into wood facings while converting the knottier, lighter, less uniform center portion into particleboard. The two parts are reunited to form a sandwich of solid facing veneer and particleboard core which is suitable for lumber and panels.

"Comply" as it is called could greatly appreciate the commercial value of timber. Low grade and waste products would command lumber prices as Comply. The Forest Service estimates that a log so processed has almost twice the value of one sawn into lumber.

Despite this worthwhile accomplishment, particleboard still falls short of its potential. The problem: the haphazard nature of its particle alignment. The chips, sawdust, and other materials suspended in the particleboard resin matrix are placed in random grain. They cannot generate the strength or maintain the directional stability of aligned natural wood fiber.

Consequently, two forest producers, Potlatch and Louisiana-Pacific, have decided to mimic nature. Their methods are very different. But both can induce wood particles to align themselves.

Potlatch orients fiber by flaking solid low grade material, blending the strands with phenolic resin and wax, and vibrating them into narrow troughs where alignment occurs. A hot press forms a solid sheet from this fluffy mat. It then becomes a plywood core some four times stronger than conventional particleboard. Louisiana-Pacific reduces fiber to much smaller pieces, fluffs and mixes them with resin, and drops them freely on a mat between two electrostatic plates. The charge aligns the fibers, and a hot press finishes the processing. This is directly marketed as a medium-density particleboard.

Into your trunk I'll creep

Up to now, particleboard has been excluded from general structural work for obvious reasons. Only composite products simulating natural wood fiber alignment could deliver the needed high level performance. In the development of Comply and fiber orientation comes a tempting proposition: changing mill waste into gold.

Plastics have also infiltrated wood products in a number of quiet ways. Tighter, stiffer, more silent floors are now possible when plywood rough flooring is glued to the joints

with elastomer as well as nailed. Hardwood flooring impregnated with acrylic resin and then radiated, sports a hardness and toughness never achieved before with wood. Long lasting polyurethane finishes form enduring top coats for conventional hardwood flooring subject to heavy traffic.

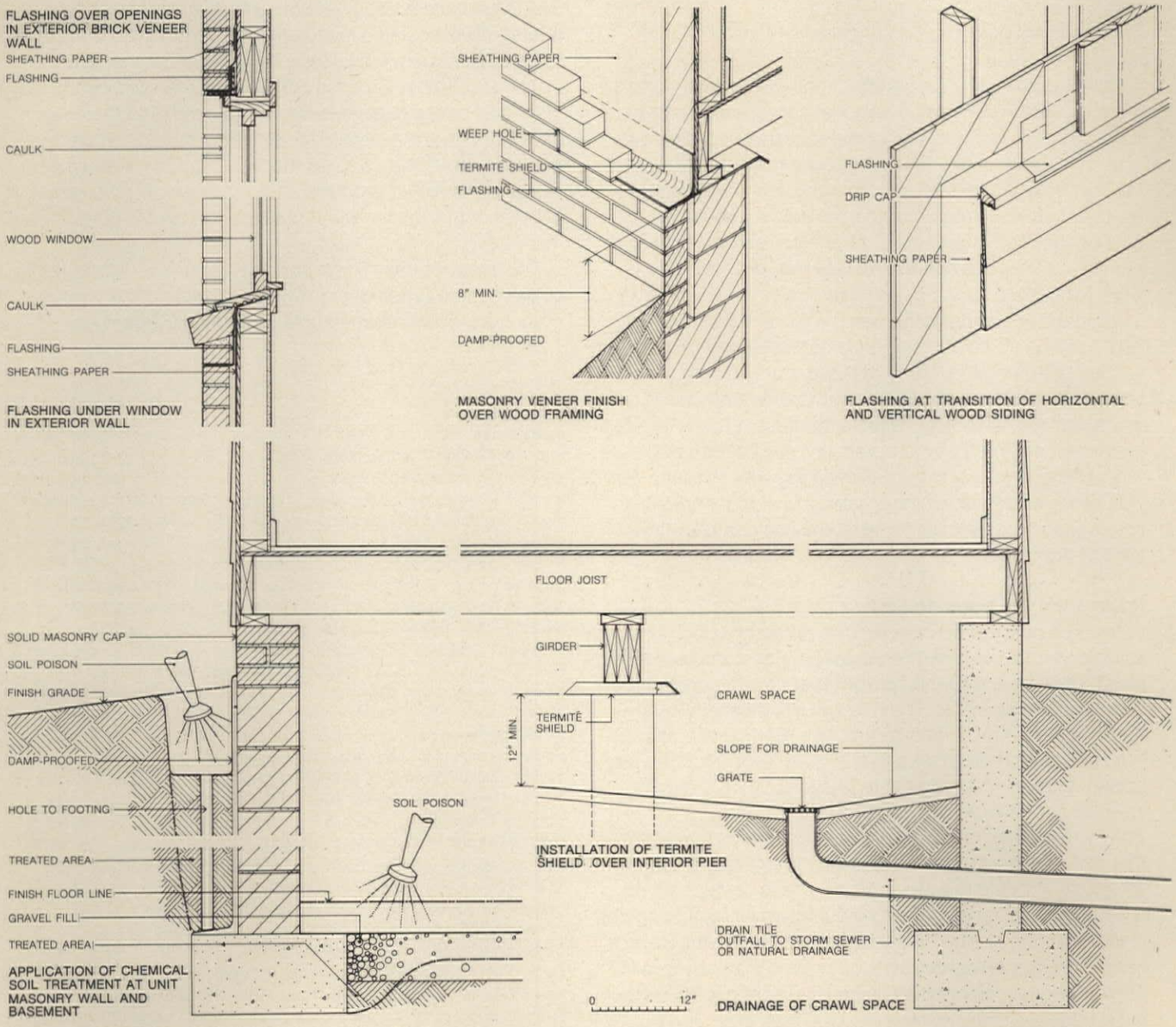
To some extent, wood products are being prefabricated to speed construction and control workmanship. Such factory produced items include roof/ceiling/floor decking, wall panels, and trusses. However, much wood construction continues to be executed in situ, as befits a material so easy to handle.

In fact, a healthy number of wood products and processes have not changed for years. One example: paint still gives wood its best exterior protection from ultraviolet degradation, a 10-year service life. Stains require reapplications every two to three years; bleaches last somewhat longer. For another: vegetable oils and resins are still used to penetrate and seal interior hardwoods for paste wax or plastic surface finishing.

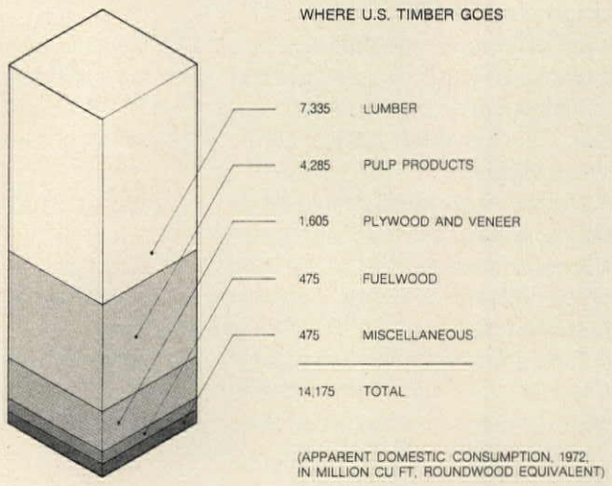
Pining for more

We are all forest consumers. We may never have set foot in one nor touched a raw 2 x 4, but each year our appetite for wood products grows. We each use some 570 lbs of paper a year. Can this lavish lifestyle continue as the forest gives way to civilization?

A preliminary answer should be due in January 1976. At that time, a congressionally sponsored report on national policy recommendations for the renewal of all natural resources on National Forest land will be completed by the Forest Service. Titled the "Forest and Rangeland Renewable Resources Planning Act of 1974, Alternative Goals for Six Resource Systems," this act is a major step towards a national forest plan. It asks the Forest Service to present



Suggested details from *Design of Wood Structures for Permanence*, Wood Construction Data No. 6, National Forest Products Association.



options to America for spending this limited, but replenishable, resource.

Our decision will strongly affect both the industry and architects. Historically, congressional appropriations have not favored Forest Service budget requests. Funding cuts of some 32 percent in the past decade have probably contributed heavily to the disappointing gap between authorized removals by timber companies and official allowable cuts of commercial stands. Timber sales preparations cost money; reforestation after removals requires funds for fertilizer, irrigation, thinning, and manpower.

Shortages of wood could also originate within those 296.2 million acres of commercial forest owned by a cross section of Americana. Many of these four million individuals and associations do not care to sell their timber, much less manage it professionally. Thanks to forest industry efforts, the American Tree Farm program provides supporting services to those willing to try. Still, dealing with so many individuals for whom each timber sale is custom tailored is a time-consuming process for what may be relatively little yield in cubic feet.

Hark! hark! the trees do bark

In the face of these quandaries, the future of wood construction looks healthy. The Forest Service continues to research new uses for forest products at its nine forest experimental stations, whose findings and practical advice are disseminated throughout the industry. Particular stations like the Forest Products Laboratory, Madison, Wis., an important applied research center, have spun off a remarkable string of building products.

Why does the Forest Service spend more for research than the combined efforts of industry giants like Weyerhaeuser, Potlatch, and Simpson? These companies do have ambitious research programs. However, giants do not stand very large in the American forest. The Forest Service has far greater resources at its command than any or all of the five largest companies combined. There are 8000 sawmills in the U.S. serving tens of thousands of related concerns large and small. (Unlike the great majority of the 19,000 mills in 1947, our present day mills tend to be larger and equipped with sophisticated equipment such as computer operated saws with thinner kerfs, and new processing machinery like the chipping headrig.)

These many little industries frequently concentrate on the timber in their regions, the manufacturing capabilities at their disposal, and the nature of both regional and national demands. Which makes sense. As a commodity market, the forest products industry approaches a true economic model, sensitive to the slightest changes in local supply and demand. This helps explain the abundance of trade associations, each extremely knowledgeable about a specialty wood product that escapes easy generalizations.

U.S. consumption of timber products is increasing by some 4 percent annually. Potential supplies of softwood sawtimber should increase only about 31 percent by the year 2000, while supplies of hardwood sawtimber should simultaneously increase about 66 percent. These Forest Service estimates assume that 1970 levels of forest management will be held steady and that commercial timberland acreage will decrease by minor amounts. But the outlook for timber supplies differs widely by ownership, region, and prices relative to other major building materials. Wood prices are expected to rise at the rate of 1.5 percent per year above the 1970 trend level of lumber, with smaller increases for other products. Yet, who can predict what will happen in the volatile world markets for raw building materials?

Pity the poor tree. To paraphrase Samuel Butler, a tree is a pine cone's scheme to grow another pine cone. And another tree. Ad infinitum—knock on wood. [Roger Yee]

References: There is a wealth of information available on wood design and specification in architecture. What follows is a sampling of the many organizations prepared to assist architects seeking further information on wood. P/A suggests readers direct further inquiries to them. American Forest Institute, 1619 Massachusetts Ave., N.W., Washington, D.C. 20035, American Institute of Timber Construction, 333 W. Hampden Ave., Englewood, Colo. 80110, American Plywood Association, 1119 A St., Tacoma, Wash. 98401, American Wood Council, 1619 Massachusetts Ave., N.W., Washington, D.C. 20036, American Wood Preservers Institute, 1651 Old Meadow Rd., McClean, Va. 22101, Architectural Woodwork Institute, Chesterfield House, Suite A, 5055 S. Chesterfield Rd., Arlington, Va. 22206, California Redwood Association, 617 Montgomery St., San Francisco, Calif. 94111, Canadian Wood Council, 701-170 Laurier Ave. West, Ottawa, Ontario K1P 5V5, Canada, Forest Products Research Society, 2801 Marshall Court, Madison, Wis. 53705, Forest Service, U.S. Dept. of Agriculture, Independence between 12 and 14 Sts., Washington, D.C. 20250, Hardwood Plywood Manufacturers Association, 2310 So. Walter Reed Drive, Arlington, Va. 22206, Industrial Forestry Association, 1220 S.W. Columbia St., Portland, Ore. 97201, National Forest Products Association, 1619 Massachusetts Ave., N.W., Washington, D.C. 20036, National Oak Flooring Manufacturers Association, 814 Sterick Bldg., Memphis, Tenn. 38103, National Particleboard Association, 2306 Perkins Place, Silver Springs, Md. 20910, Ponderosa Pine Woodwork, 1500 Yeon Bldg., Portland, Ore. 97204, Red Cedar Shingle and Handsplit Shake Bureau, 5510 White Bldg., Seattle, Wash. 98101, Southern Forest Products Association, P.O. Box 52468, New Orleans, La. 70150, Store Fixture and Architectural Woodwork Institute, 608 So. Hill St., Los Angeles, Calif. 90014, Western Red Cedar Lumber Association, 700 Yeon Bldg., Portland, Ore. 97204, Western Wood Moulding and Millwork Producers, P.O. Box 25278, Portland, Ore. 97225, Western Wood Products Association, 700 Yeon Bldg., Portland, Ore. 97204.

Market Place, Glen Lochen, Glastonbury, Conn.

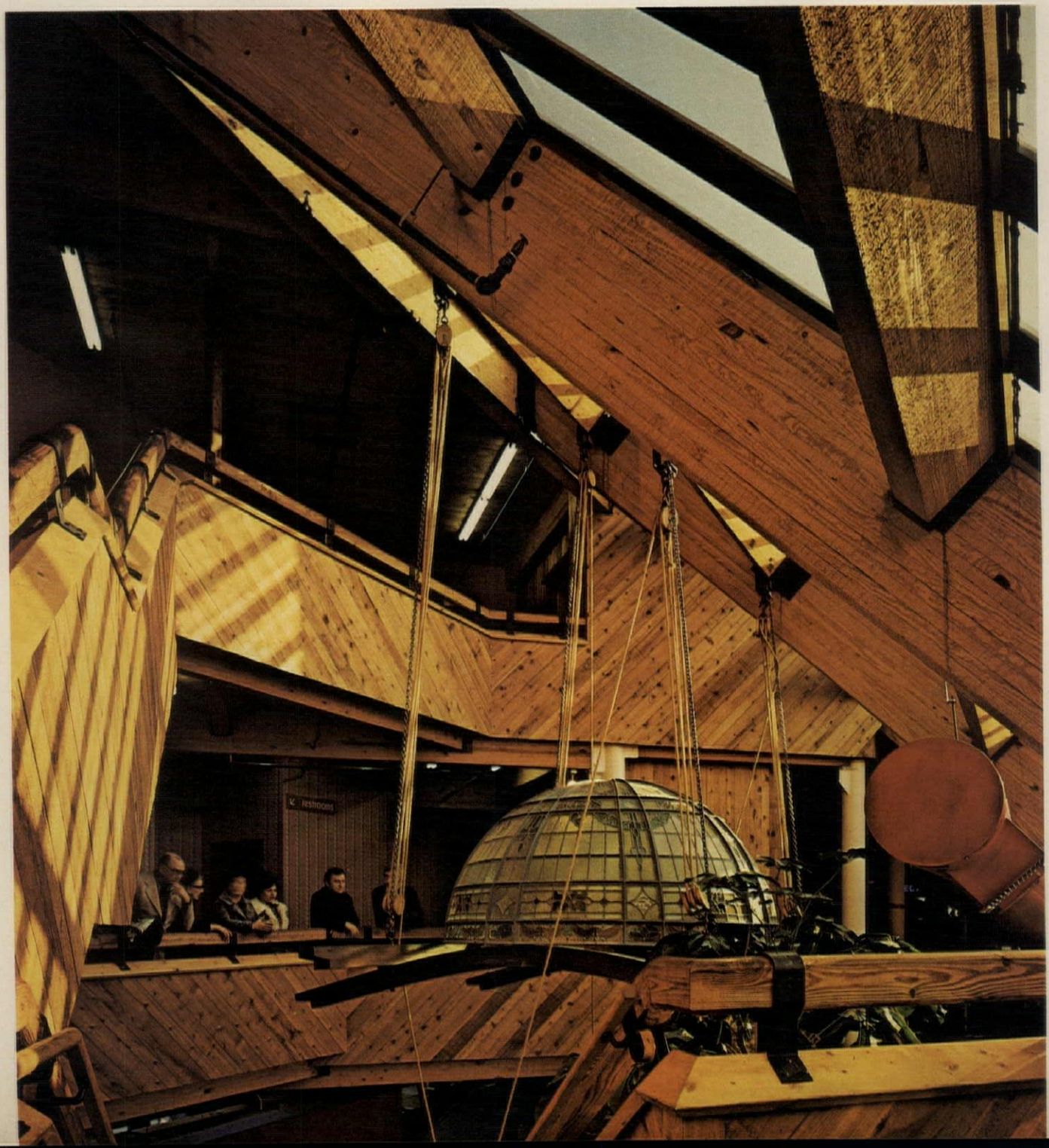
Green mansion

Callister Payne & Bischoff has designed a community shopping center in wood for retail specialties. Its busy forms and functions are a treat for the senses.

Your horse steps smartly to the entrance. Or perhaps your horseless carriage? The Market Place, Glen Lochen, a community shopping center in Glastonbury, Conn. evokes an image Americans pursue more than they find: the rambling country house of generous spatial proportions and unexpected surprises in detailing.

But it's not a country house. It's a shopping center. And unlike the benumbing acres of typical centers that smother the nation, this complex wood structure delights in offering visitors intricate structure and playful elevations. The Market Place contends that while a shopping center is a shell for its tenants, a shell firmly molded in its own aesthetic can

Norman McGrath

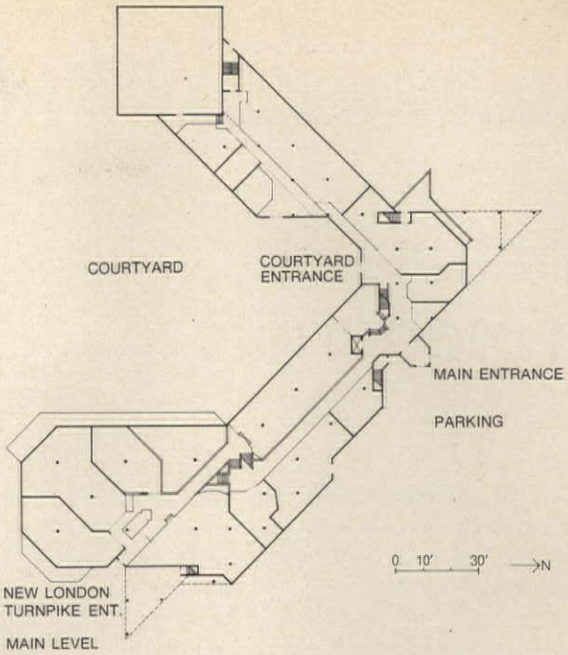


Market Place, Glen Lochen

Robert Perron

Norman McGrath (above and below)

Much of the finishing details for the Market Place, Glastonbury were resolved on site by CP&B and the client in close coordination with a skilled and ambitious construction team. These views of the vast sprawling building, exterior and interior, reveal the woodworker's art which resulted. An overall ground floor plan is shown at right.



improve the visual response of even the most excessive tenant.

Developer David MacClain commissioned Callister Payne & Bischoff to do just this. To create a unique retail facility for specialty quality merchandise. He secured a 32-acre parcel within the 90-acre Glastonbury Center Urban Renewal Project in this satellite town of Hartford. Planning and design consultants were called in to assure him of the site's potential as a legitimate alternative to commercial strip development along the existing main thoroughfare. And design, specification, and construction of the Market Place, the first increment of a planned community, rushed into being.

The completed boomerang shape is a long, 90,000-sq-ft three-level structure. It recalls the firm's work in Talcott Village, Farmington, Conn. and Heritage Village, Southbury, Conn. There is a longitudinal circulation spine clearly delineated throughout the cavernous space. However, a higher order of complexity is at work. The exposed and articulated glulam beams, lally columns, ductwork, fire sprinklers, and other services juxtapose and overlap like graceful vaulting overhead as a labyrinth of ramps, stairs, and platforms mesh below, to enrich and enliven a basic double-loaded corridor scheme of rectangular bays. Light pours in unexpectedly from windows (some taken from existing buildings) and skylights. The store displays of some 30 retailers have intensified rather than diminished this baroque unfolding of space.

MacClain treated the site with care. The swamp and dumping ground was restored to a former more natural state. Although swampy areas were filled, existing trees, open waterways, and meadow were integrated into an $8.5 million scheme for Glen Locken which will ultimately include office condominiums, residential condominiums and rentals, and commercial facilities, all clustered around landscaped squares. The Market Place, wrapped around its central courtyard and natural pond, is the focal center.

As the first stage of a PUD, the Market Place has established a persuasive architectural vocabulary for its successors. Wood was chosen by CP&B for structure and sheathing both for its handsome, durable appearance and its highly competitive cost. The architect found that a comparable steel or concrete design could have exceeded the budget; whereas a composite of glulam beams and concrete filled steel pipe columns with some steel beams did not. Glass and copper were selected for a workable and contrasting roof.

For many Americans, the shopping center represents the only "downtown" they have. This is so frequently a vast amorphous architectural formula that fears discovery and delight. By its resounding success with tenants and visitors, the Market Place suggests that even Ralph Nader might enjoy shopping if given this chance. [Roger Yee]

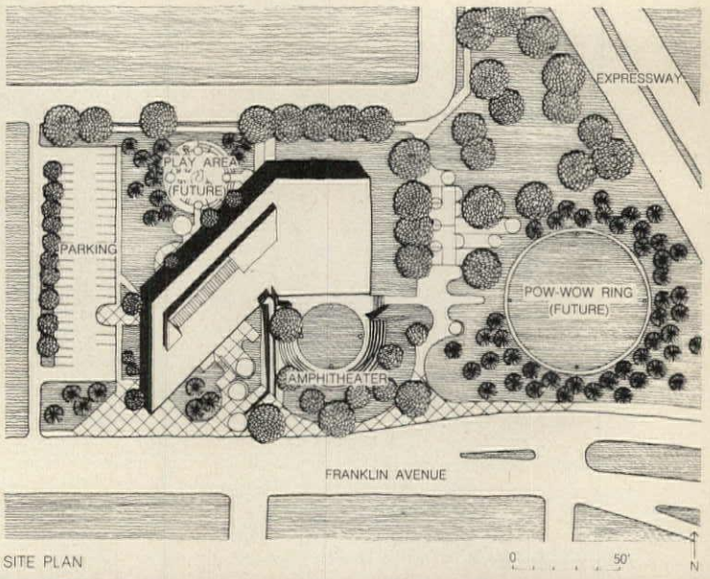
Data

Project: The Market Place, Glen Lochen, Glastonbury, Conn.
Architect: Callister Payne & Bischoff, August Rath, architect of record; David Williams and Byron Ruth, project designers.
Program: 90,000 sq ft of retail and professional office space.
Site: 32-acre meadow in transition zone between town center and flood plain conservation area.
Structural system: exposed poured concrete base; laminated heavy timber frame supported by concrete filled steel pipe columns; exposed laminated wood decking at floors and roof.
Mechanical system: forced air HVAC system; gas-fired hot water boiler with perimeter water to air conversion units.
Major materials: wood flooring, wood siding on exterior walls, wood siding at interior stairways, peeler log handrails, copper roof, laminated tinted glass skylights, glass windows, painted gypsum board interior partitions, exposed painted sheet metal ducts (Building materials, p. 116).
Consultants: Callister Payne & Bischoff, site planning; R.A. Goodell, structural; Donovan, Hammick & Erlandson, mechanical and electrical; Megson & Hyppa, civil; Lombardi & Associates, flood control; David MacClain, landscape.
Contractor: David MacClain.
Client: David MacClain.
Costs: $1,728,000 excluding tenant improvements; $24 per sq ft.

Robert Perron

Native American Center, Minneapolis, Minn.

Of nature and modernity



SITE PLAN

The Hodne/Stageberg Partners suitably combine wood and concrete to create a form expressing the traditional and modern psychic affinities of the urban Indian.

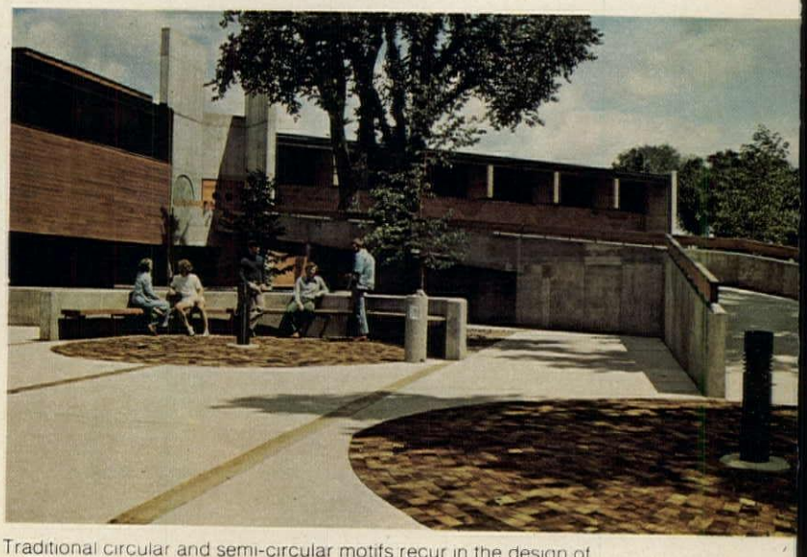
"You mean you really *grew* up on a reservation!" exclaimed the East Coast city-dweller to the Chippewa designer. "I thought they had gone out with the Hollywood westerns." And that just about sums up the extent of savvy of many whites who have never laid eyes on the folks who were here first. Until Indians became culturally and politically vocal in recent years, some cynics suspected they existed only as romantic celluloid creations of 20th Century Fox. More often, Indians themselves find they have another less mythic stereotype to contend with—that of the indigent "wino" living hand to mouth in the seedier sections of Midwestern cities.

When the Native American Center was spawned by the Minneapolis Model Cities program seven years ago, its organizers, elected leaders in the Indian community, felt a center would help spur a renewed sense of identity, a truer self-image than had been imparted to Indians previously. They sought a physical form that would proclaim to the Indian community and the rest of the city an emerging pride in the Indian heritage, at the same time providing a place for ceremonial, cultural, social, and recreational activities.

The center's board of directors selected The Hodne/Stageberg Partners as its architects despite their non-Indian ancestry. They in turn pledged to work closely with the board and the Indian community during the intensive programming and design phases. They also promised that if an American Indian architect showed up, they would be glad to associate with him or her. One did arrive after design started, and Hodne/Stageberg promptly hired part Arapahoe and Shoshone Indian Dennis Sun Rhodes to fully integrate traditional Indian design motifs into the physical solutions.

In many ways, the Native American Center represents the more traditional notion of architecture as artifact. It is meant to be seen, to be perceived as something unique, different, distinct. The center—the first of its kind planned, funded, and run by Indians—obviously is unique. Located in the somewhat rundown section of Minneapolis inhabited


Mural of inlaid cedar by Indian artist George Morrison, 18 ft high and 98 ft long, clads outside wall of field house (above) to right of entrance ramp.


Traditional circular and semi-circular motifs recur in the design of open spaces; here end-block wood paving indicates seating areas.

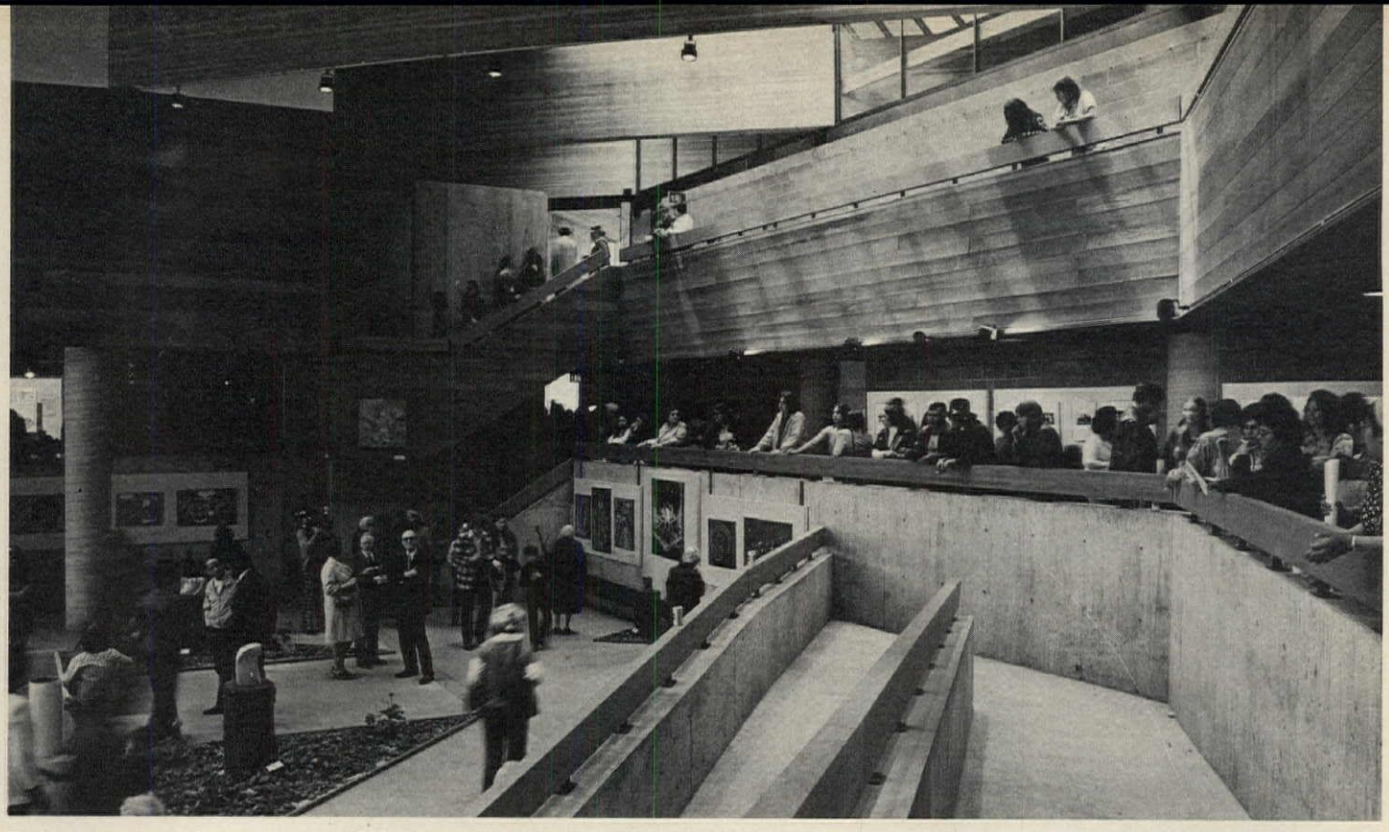
One wing of building juts out to sidewalk; open spaces embraced by center include circular amphitheater plus circular seating areas.

by a population of Chippewa, Sioux, and Winnebago Indians, the center had to convey its integral relationship to the community, but stand out from it. The Indians steered away from blatantly symbolic architectural cliches such as the hogan or teepee. But they also eschewed any suggestion of recycling the 19th Century Victorian-style school building formerly on the city-owned site as too much of the white man's legacy.

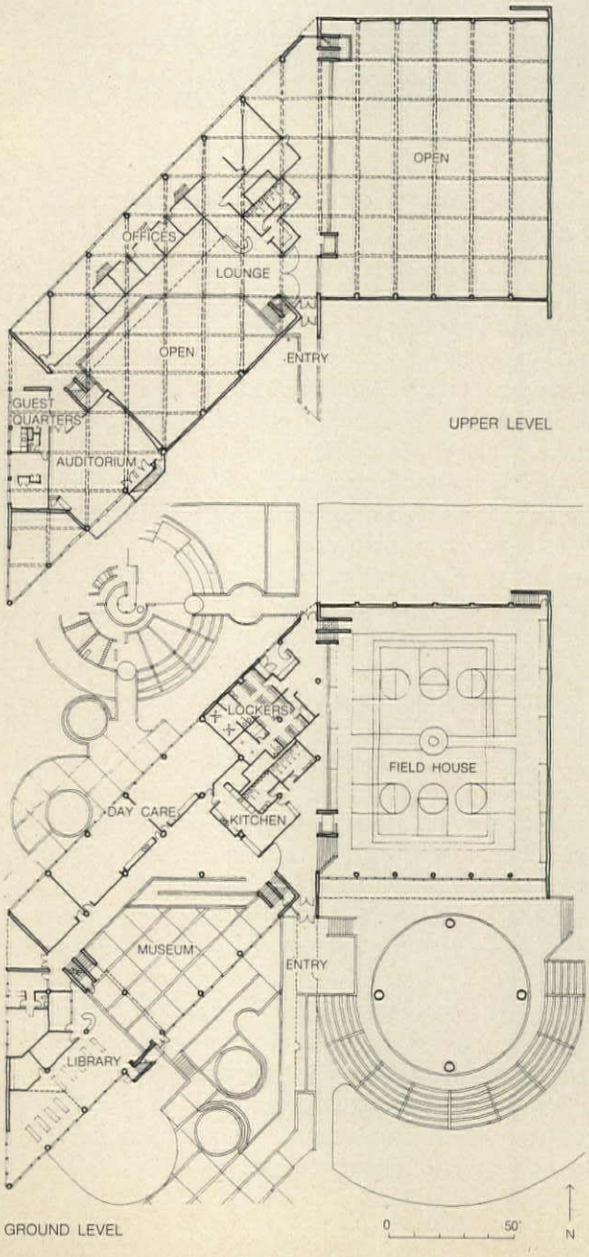
The center was to house three quite separate functions—social, recreational, and cultural—in one structure. The social services program provided necessary counselling for the community; the cultural programs were seen as a way to augment knowledge and appreciation of native American artistic accomplishments. The recreation activities were to meet the athletic requirements of the Indian community, and assure vitality to the center all day long.

To combine all these activities in a mutually inclusive but not intrusive scheme, Hodne/Stageberg designed a 42,000-sq-ft pavilionlike two-level structure. A long concrete exterior ramp slices through the middle of the center separating the 112′ x 98′ field house on one side from the museum, library, and social service wing on the other. This "processional" ramp leading to the main entrance actually debouches onto a second level mezzanine that overlooks both the gymnasium and the exhibition space—the two major areas onto which most subsidiary spaces physically or visually connect. The architects made wood a dominant material in this center for structural, cladding, and aesthetic purposes. The Indians had expressed a strong preference for natural materials and open spaces: Thus the pavillion features 112-ft-long glued laminated fir beams (72 in. deep and 10½ in. wide) supported on poured tube-formed concrete columns and board-formed load-bearing end walls. Decking and purlins are also glued laminated fir, while rough cedar siding clads exterior and interior walls and ceiling. In addition, Chippewa artist George Morrison has executed a wood parquet geometric mural for the exterior wall of the field house (photo, left). To permit natural light to permeate the interior, Hodne/Stageberg glazed long stretches of the exterior walls and installed a skylight above the exhibition hall's mezzanine.

While the center retains the low-scale of surrounding buildings, principally supermarkets, laundries, and other retail services along the main avenue (Franklin St.), it breaks away from the street line rather than hugging it. The building is partly angled to the street, and partly aligned with it, reflecting the programmatic division of spaces within. The center took this configuration in order to embrace a large outdoor amphitheater for pow-wows—ceremonies that attract not only the immediate Indian community (3500 people), but the 12,000 Indians living in the seven-county region. In effect, the building is oriented in an eastward direction, where a small wooded plot and a large elevated expressway terminate Franklin St. Although the center seems thus to turn its back on the main thoroughfare, Hodne cites two reasons for the orientation: When Indians come down the street (usually from the west and by foot), the first part of the building they come into contact with is the glazed library and exhibit space jutting out to the sidewalk (photo above). When other city dwellers pass through the area, usually by car along the expressway or eastward from it, they are immediately aware of the entire building. The design has been geared to operate on two scales of perception, depending on two different approaches.



Skylight over mezzanine provides additional natural light to 31-ft exhibition space.



Native American Center

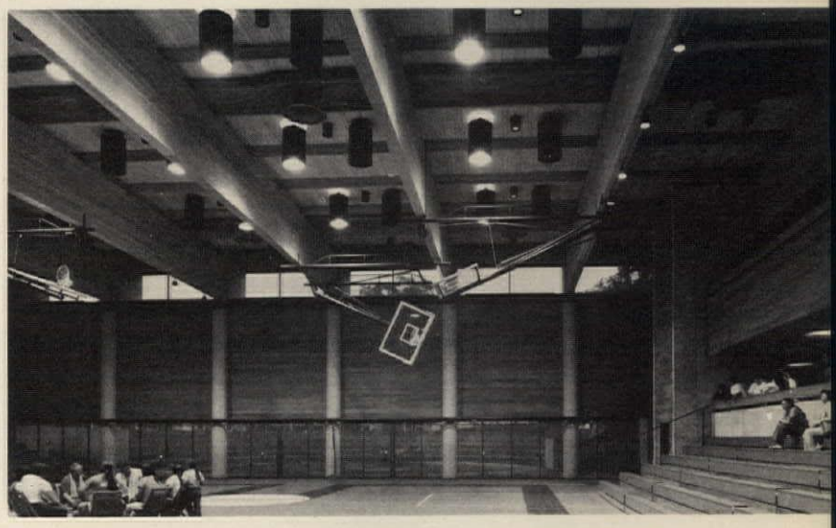
Administrators of the center's program vouch for its unqualified success in the community. Already more office space is needed, but funding must be obtained from the revenue sharing program. Originally the center received major funding from Department of Housing and Urban Development's neighborhood facilities grants ($1,705,580), the city ($534,178), and Model Cities ($350,000). Now more money is needed to apply finishing touches to the building—quarry tile and carpeting—to turn a smaller circular area into a youth play center at the rear of the building, and then to expand westward along Franklin St. (Meanwhile enough educational and cultural programs have been planned to require another building.)

While the building's "user-clients" appear quite enthusiastic about its architectural merits, both functionally and aesthetically, flaws do exist. The staff comments that circulation within the building makes it difficult to separate visitors from staff. (The main entrance ramp is used less often than the doors underneath it and elsewhere around the building.) Architects for their part might be more dismayed at the awkwardness in which concrete block walls are integrated into the building's frame, or the way sections of the block walls were painted black to almost line up with the black steel beams in the exterior walls; or the peculiar manner in which wallboard might turn a corner in one of the angular offices. Curators would find more fault with the inflexible exhibition area, with its limited wall spaces and lighting mounted in hard to reach locations.

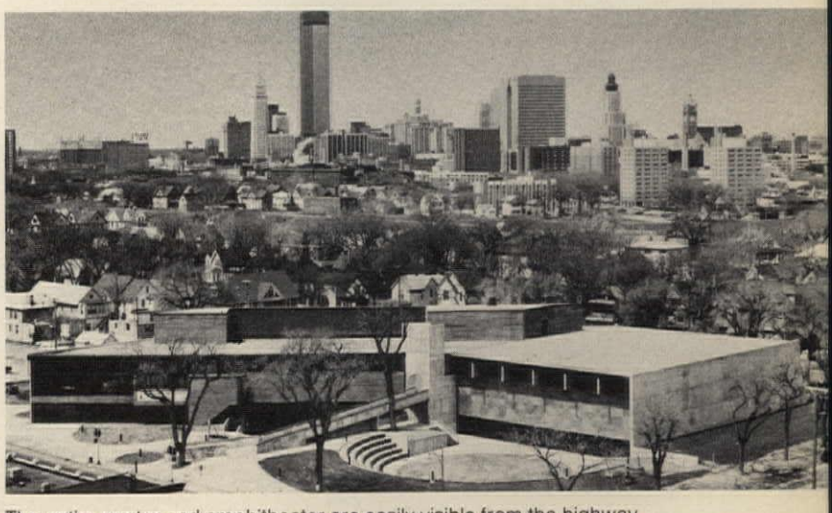
The general success of the building however does not necessarily depend on the details (pace Mies). Clearly here success has more to do with a design that responds to an abstract level of concerns of a particular interest group. In this case the architectural solution was required to perform a lot of tasks—from providing workable integrated spaces for a range of activities, to generating a focus of community

A double height library looks out onto street through glazed window walls; 72"x10½" laminated fir beams rest on poured concrete columns; steel beams in window wall provide additional support.

Loft type offices at the top of the wood stairs sit above offices enclosed by burnished concrete block; both types open onto the corridor/desk area. All beams, purlins and railings are laminated fir; window walls are solar glass set into black steel frame.



The 112-ft-long clear span gymnasium offers space for ceremonial and recreational functions. Rough cedar siding surfaces walls, doors and ceilings; floor is poured polyurethane; glazing is reduced along walls because of indoor games and snow glare.



The entire center and amphitheater are easily visible from the highway.

spirit, to making a dramatic but unpretentious statement about Indian social and cultural aspirations in the larger miliea. The fact that it could do all this is a prodigious accomplishment. [Suzanne Stephens]

Data

Project: Native American Center, Minneapolis, Minn.
Architects: THE Hodne/Stageberg PARTNERS, Inc. Team: Thomas H. Hodne, Jr., Gerald S. Johnson, partners; and Dennis Sun Rhodes, associate.
Program: to provide facilities for cultural (museum, library), social service (counselling offices, training classrooms), and recreational activities (field house) to the Native American community in the Minneapolis region, plus space for ceremonies (outdoor amphitheater).
Site: a 2.8-acre partially wooded site on a busy thoroughfare.
Structural system: a two-level pavilion structure is spanned by glued laminated beams (72" x 10½") extending 112 ft, resting on poured concrete columns and end walls. Steel beams supplement structure; floors are concrete.
Mechanical system: exposed mechanical ducts with forced air heating and air conditioning system.
Major materials: rough cedar siding for interior and exterior walls and ceilings; glued laminated fir beams, purlins, and decking; concrete block and drywall interior partitions, solar gray glass and steel mullions, quarry tile and carpet over concrete floors (Building materials, p. 116).
Consultants: Herb Baldwin & Associates, landscape architects; Ericksen Ellison, Associates, mechanical; Meyer Borgman & Johnson, structural; George Morrison, wood muralist.
General contractor: Acton Construction Co.
Client: Mayor Hofstede, city of Minneapolis; Erv Sargent, board director of the Native American Center.
Costs: $1,938,000 for $37 per sq ft.
Photography: Phillip McMillan James, except for p. 69 (bottom) Gerald S. Johnson, and p. 66 (middle) Nancy Pierce.

Myott Park housing, Omaha, Neb.

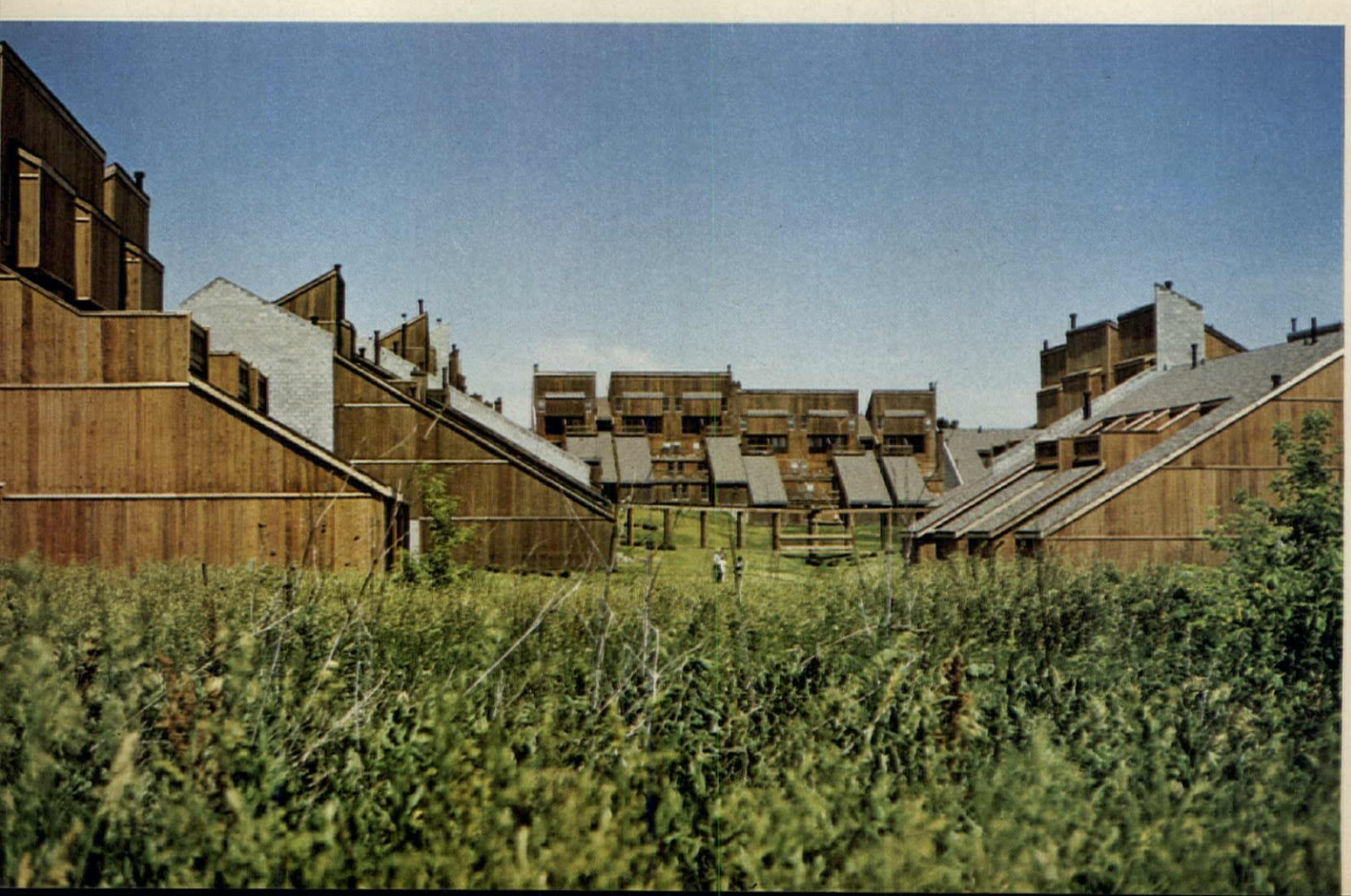
Astle's castle

On a rolling field in Omaha, Nebraska, a 236 housing project by Neil Astle & Associates forms an outer wall around seven acres of spacious, open green land.

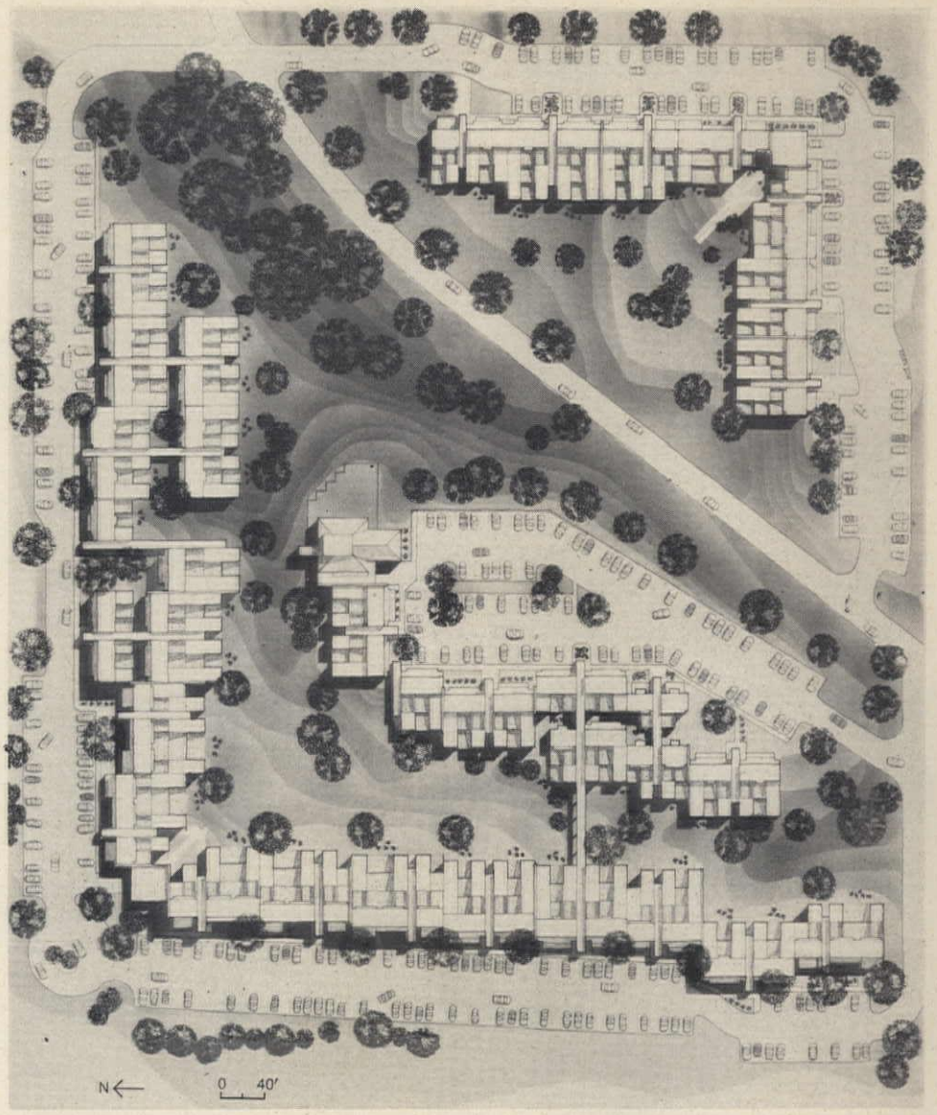
One of the current problems in housing is that it is no longer possible to accommodate low and moderate income families in a reasonable living environment without some kind of government assistance. But the problem with government-supported housing, because of the restrictions placed on it, is that it rarely attracts enough families capable of paying market rental rates to allow it to achieve a desirable range of income groups. At the Myott Park 236 housing project in Omaha, Neb., a high (for 236 projects) 10 percent of the 219 one- to four-bedroom units rents at market rate, and architect Neil Astle reports he expects this figure to climb as the development becomes fully occupied.

Why should Myott Park be different? It is different because like all successful housing, before anything else, it takes the individual into account. It does this by providing a wide range of choice of social involvement for its residents by establishing a carefully thought out hierarchy of public, semiprivate, and private spaces. Here, spaces are not the ill-defined anonymous type usually found in subsidized housing projects.

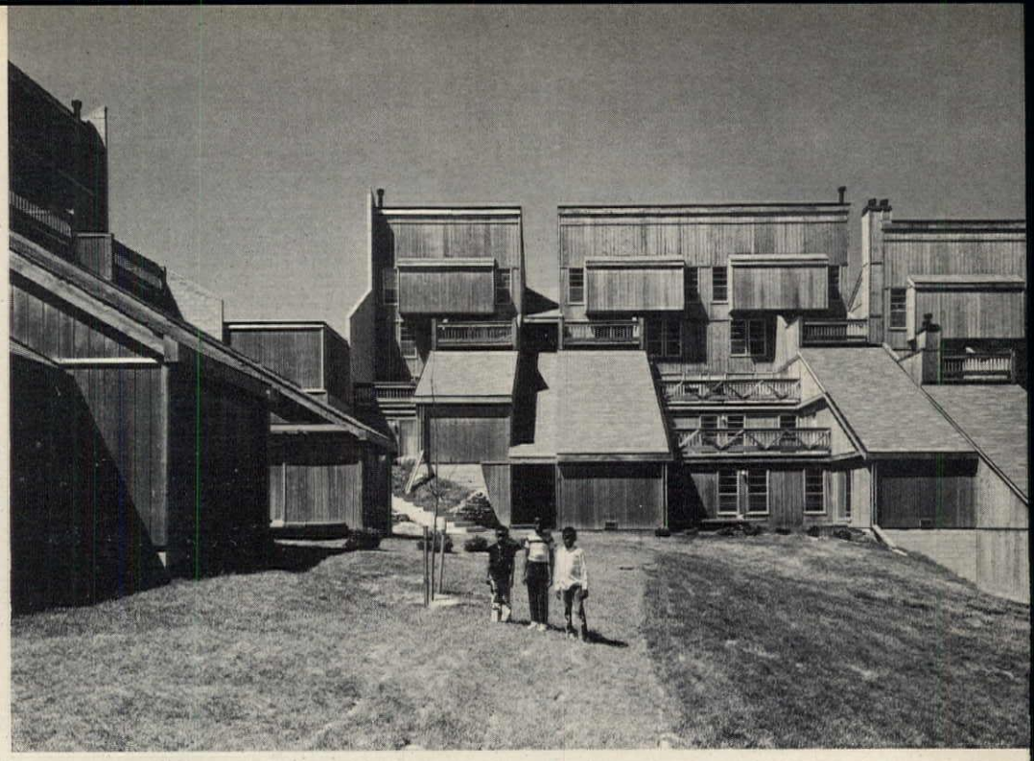
The perimeter of the square, 16-acre site is given over to auto parking, with interconnected "row" housing ringing the site directly behind the parking areas. A smaller arm of housing and parking extends into the middle of the site. The outer wall of housing forms a barrier around the site



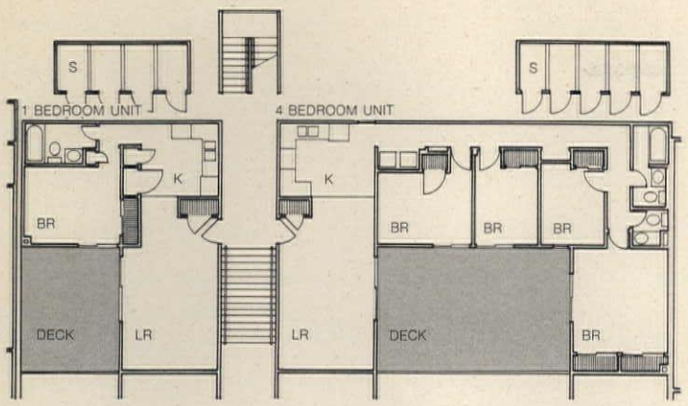
At Myott Park housing, no unit in the apartment buildings, which range up to five stories, is more than one flight, up or down, from ground level due to the way the buildings are sited on the undulating field. Buildings surround the 16-acre site (site plan, right) and face into the open space at the rear (facing page), but present a closed façade to the street (below).

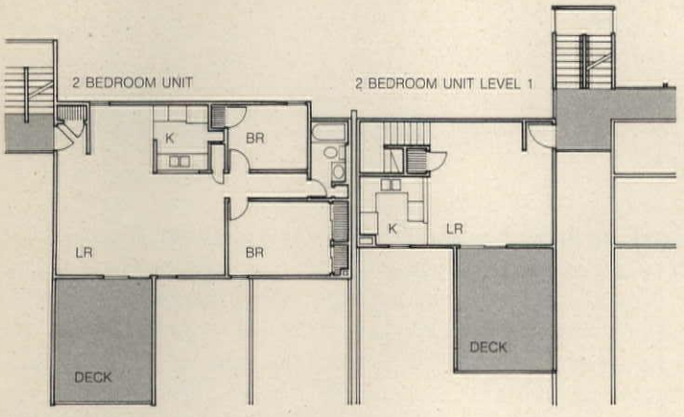


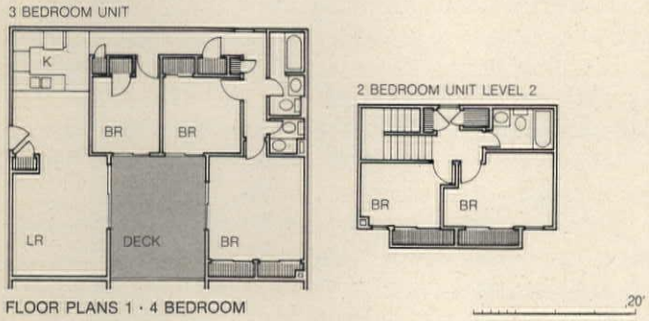
Myott Park housing, Omaha, Neb.



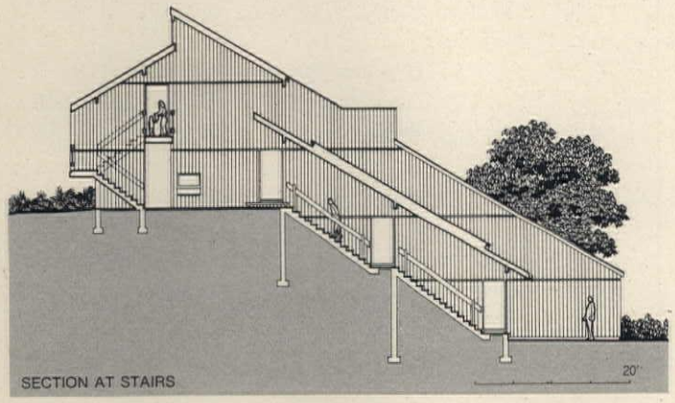
Through-building stairs (below) connect 8 to 10 apartments and form the basis for sub-group tenant organizations. Community house in the middle of the site (below right and bottom) has meeting rooms, a day care center, and offices.

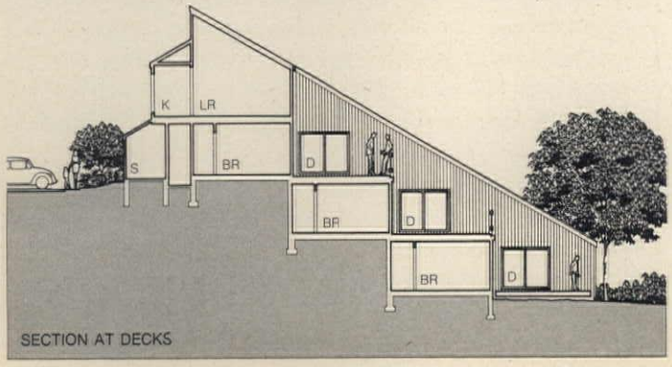






FLOOR PLANS 1 · 4 BEDROOM





that assures the project of at least psychological privacy. This sense of privacy is reinforced, however, because all of the units on the outer ring face into the enclosed green. At the center of the site, a community house provides communal spaces, an on-grade day care center, a laundry, and management offices. The idea of territoriality, of privacy, and of individuality is clear.

Within the apartment buildings themselves, stairs and outdoor decks are organized into a system of controlled semiprivate spaces. The covered stairs, which lead from the parking to the units and then on to the public green areas connect subgroups of 8 to 10 apartments. This arrangement has fostered an unforeseen social plus: the day-to-day meetings of the tenants who live along each of the 26 major stair corridors has evolved into an organization of "stair representatives" who speak in behalf of their group at tenant meetings.

Each apartment has a 12′ x 16′ outdoor rear deck, with the exception of the four-bedroom units, which have 24′ x 16′ decks. Generally, the units wrap around the deck in such a way that a minimum of three rooms open onto it. Outdoor decks of this type, which are rarely found in subsidized housing projects, are an important key in providing a sense of community to the project because they relate not only to each other, but also to the common open spaces.

Although the apartment buildings range up to five stories in height, no unit is more than one stair flight, up or down, from ground level because of the way the buildings are sited on the undulating land. The advantage of such an arrangement is obvious, but that it has been accomplished here, at a density of 14 units to the acre, is rare indeed. And with the units clustered in the way they are, seven acres of land are still left for public open space.

The units are of frame construction, and although they were originally envisaged as being prefabricated in 12′ x 16′ modules, they were ultimately "stick built" because of the extremely short period allowed from design to bidding: *60 calendar days*. The project is entirely built of wood, except of course for the concrete block foundations, for an impressively low figure of $21.50 per sq. ft. [David Morton]

Data

Project: Myott Park housing, Omaha, Neb.
Architect: Neil Astle & Associates.
Program: 219 one- to four-bedroom units of 236 housing with community building.
Site: 16 acres of gently undulating field.
Structural system: wood frame on concrete block foundation.
Mechanical system: individual gas-fired furnaces; forced warm air.
Major materials: wood frame, walls, floors, roof; asphalt shingle roof surfacing; gypsum board partitions; red cedar plywood exterior siding; double-hung aluminum windows (see Building Materials, p. 116).
Consultants: Mits Kawamoto & Assoc., landscape; Neil Astle & Associates, interiors; Raymond G. Alvine & Associates, mechanical; Walter Rudeen & Associates, structural.
Client: Midlands Corp., Omaha, Neb.
Costs: $21.50 per sq. ft.
Photography: Neil Astle, pp. 70, 71; Gordon Peery, p. 72.

Up, up and atrium

Architects Miller, Hanson, Westerbeck, Bell transform a rugged 1906 landmark warehouse in downtown Minneapolis into a light, airy commercial structure.

Minneapolis has more than its share of unusual architecture. Most prominent are Philip Johnson's new IDS Center and Hardy Holzman Pfieffer's Orchestra Hall. There are Barnes' Walker Art Center and Rapson's Guthrie Theater, important cultural landmarks, and on the other side of town, there's the Federal Reserve Bank, simply an unavoidable landmark. There's the nation's first mall, as well as its first shopping center.

Now, after all this progress, it has its first major recycled building, Butler Square, a 500,000-sq-ft warehouse adjacent to prime downtown land. Although the building was listed on the National Register of Historic Places and designated for preservation by the City of Minneapolis, it was its location more than its architectural attributes that convinced developer Charles Coyers to purchase the building. It was vacant for nearly 10 years while no one quite knew what to do with it. Coyers, the developer responsible for Canal Square (P/A, April 1971) in Washington's Georgetown area, knew what could be done and gave the architects, Miller, Hanson, Westerbeck, Bell, Canal Square as a model. The building program called for retail shops and office space in one half and a luxury hotel in the other.

Conceptually, the architect's approach was to create an internalized environment, leaving the monolithic façade and patina untouched. Because the 20,000 sq ft per floor seemed excessive for the luxury office market, several structural bays were removed from the center of this portion to reduce the total floor area and flood the offices with light from the new interior skylit court. The first two floors are small retail shops, fronting on the tiled, tree-filled courtyard; the top seven floors are offices of varying sizes which, when completed, will create a lively montage of uses seen through the glass curtain wall of the court.

The building was structurally sound, being originally designed to carry nearly 300 lbs/sq ft. The Douglas fir columns, varying from 22 in. on the lower floors to 8 in. on the upper floors, formed the structural system of 14′ x 16′ bays. The columns and beams removed to form the atrium were reused for other details in the new construction.

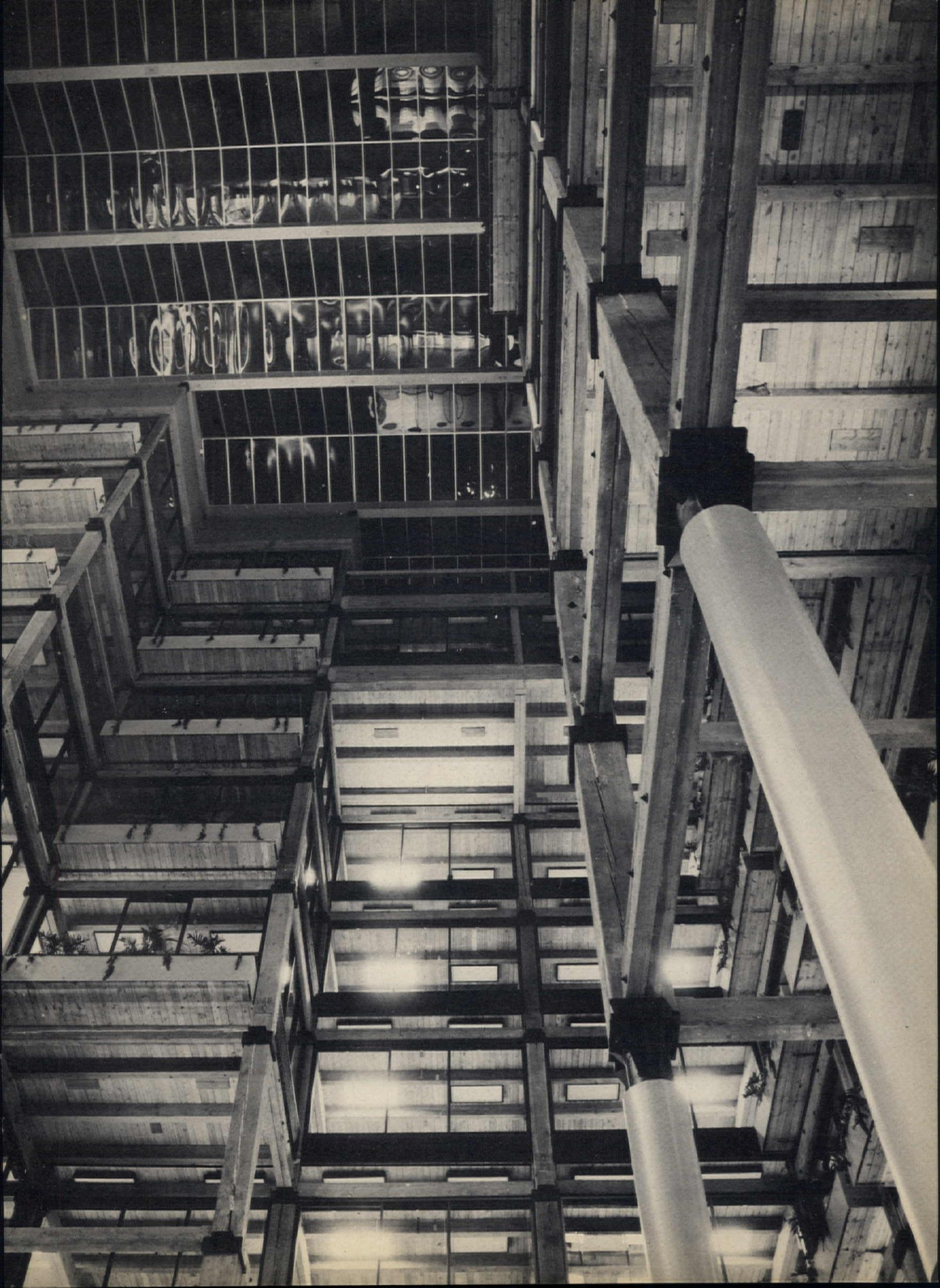
Actual renovation was kept as minimal as possible. The wood structure and the interior brick walls were sandblasted and left exposed. The exterior was not touched except to lower the brick spandrels to give floor-to-ceiling windows in the peripheral offices. New mechanical equipment was confined to an old freight elevator shaft and existing roof appendages. A new raised floor was laid on steel joists (see detail) above the old floor, the intermediate space carrying a/c ducts, electrical conduit, and telephone cable, leaving the underside of the wood beams and decking exposed for their aesthetic qualities.

The basic space that a new tenant receives has the exposed brick walls, raised, carpeted floors, exposed beams and wood ceiling and a glass curtain wall overlooking the atrium. Construction of partitions for each office is gypsum board and the architects review tenants' plans to insure compatibility of design.

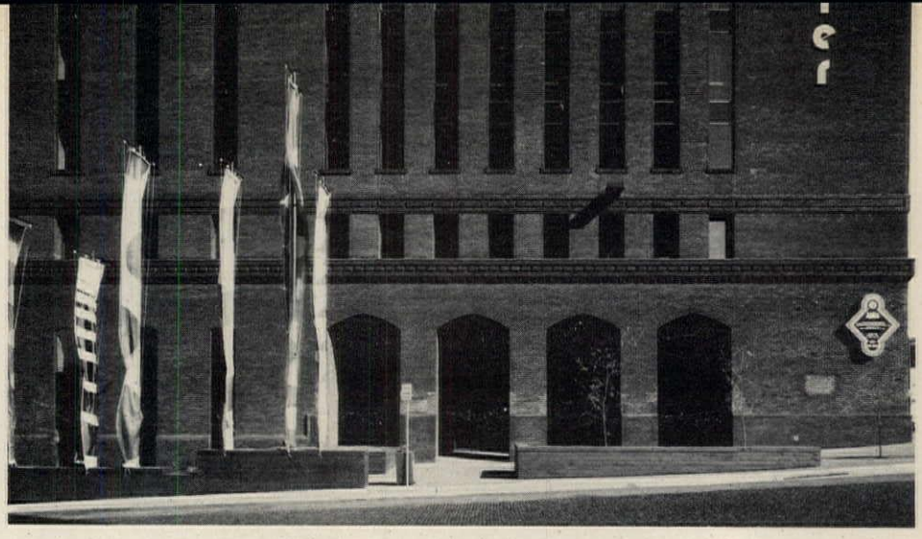
The hotel half of the building is organized around the same spatial concepts, with perhaps one major difference from other hotels with large atriums. Here, hotel rooms and private balconies will front on the court hopefully producing a multi-layered social space. Plans for the rest of the hotel include turning the cavernous basement and boiler room into restaurants and night spots. While the office part of the complex has been completed and partially occupied for sometime, the hotel has not yet begun construction, although cleaning and preparation of the structure has been completed.

But despite the project's incomplete state—the hotel is expected to act as an anchor, drawing people through the retail areas—the completed portion is felt to be a success by the owners, the architects, and the jury who gave it a Minnesota Society of Architects Honor award. If the hotel is completed with the same skill and finesse as the offices, Minneapolis will have another important landmark. [Sharon Lee Ryder]

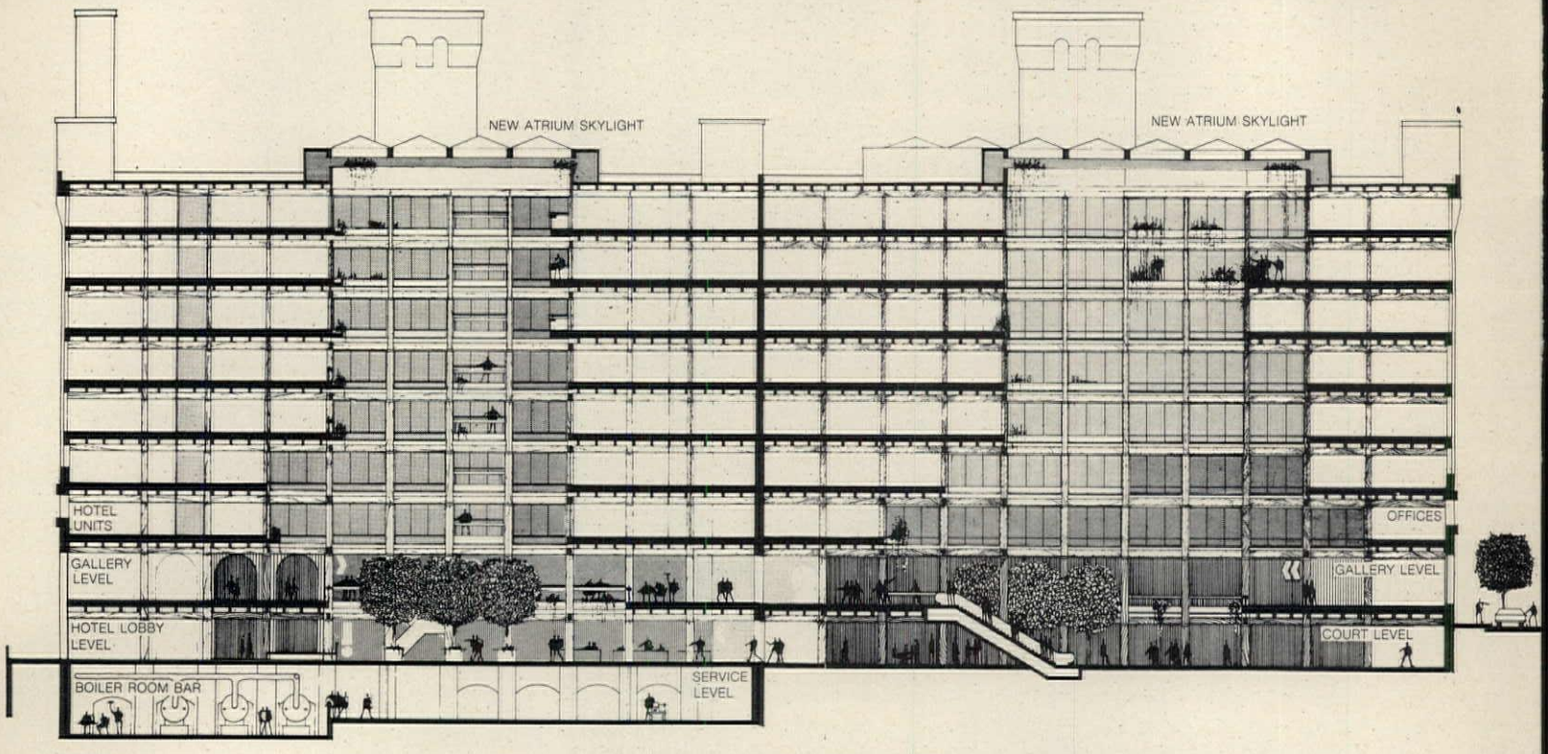
Night view of the new skylit atrium, formed by removing some of the structural bays. Skylite brings natural daylight into the offices.



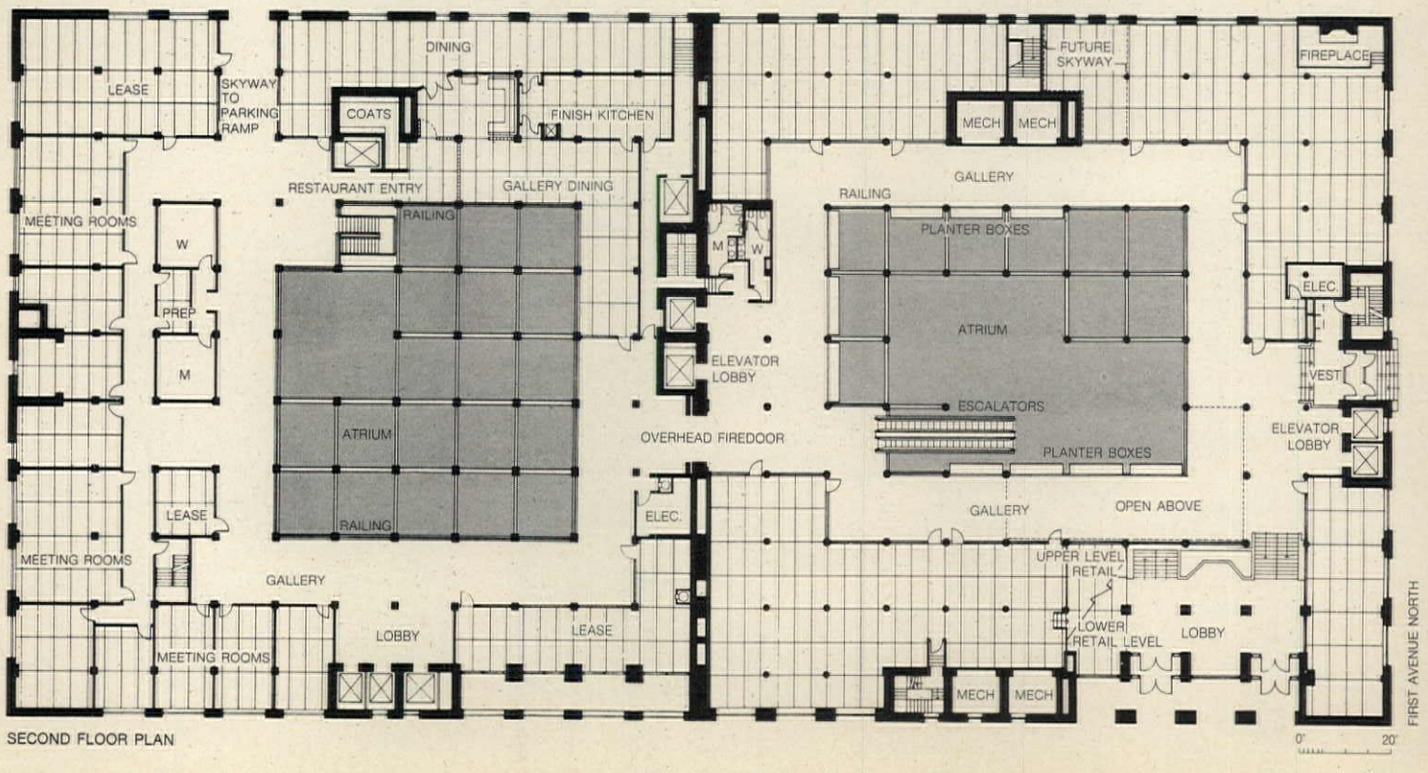
Interior architecture



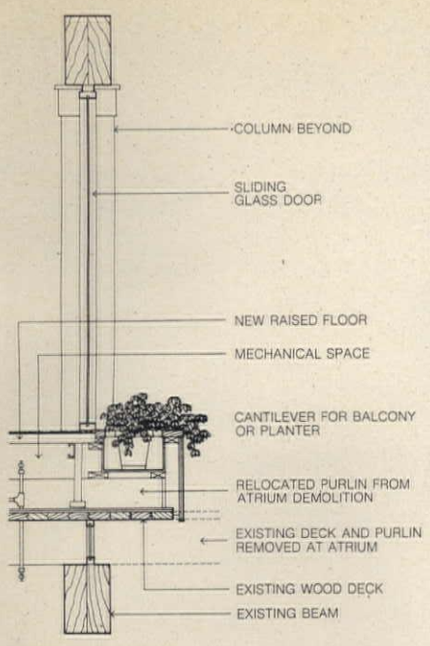
The patina on the exterior of the building was left untouched, but colorful banners and signage were added by the architects. Section and plan below show the hotel portion of the building which is not yet completed.



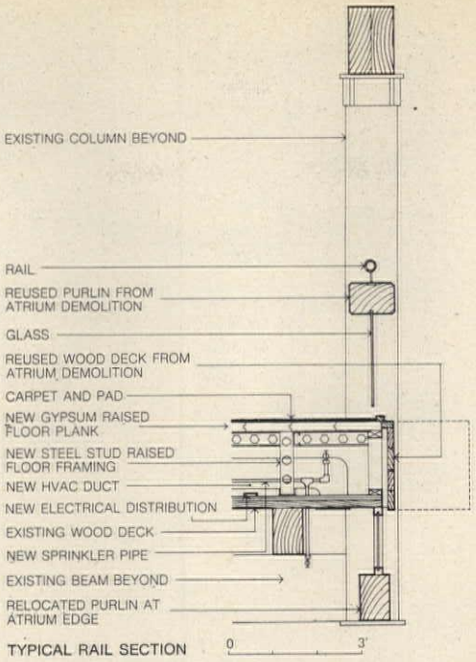
SECTION



SECOND FLOOR PLAN

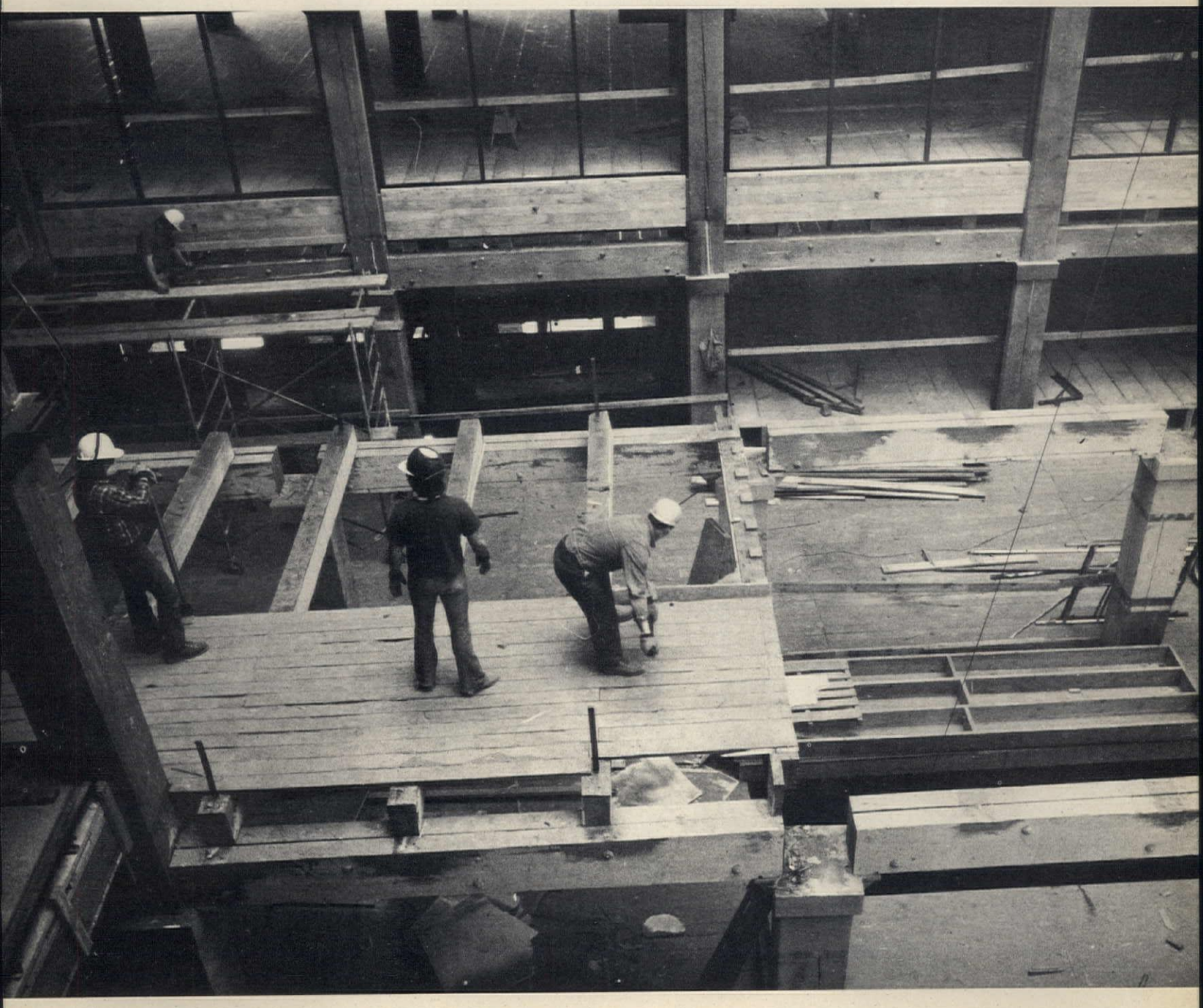


TYPICAL BAY SECTION



TYPICAL RAIL SECTION

Details at left are of the raised floor area which contains the new mechanical system. Photo shows the new floor being laid.

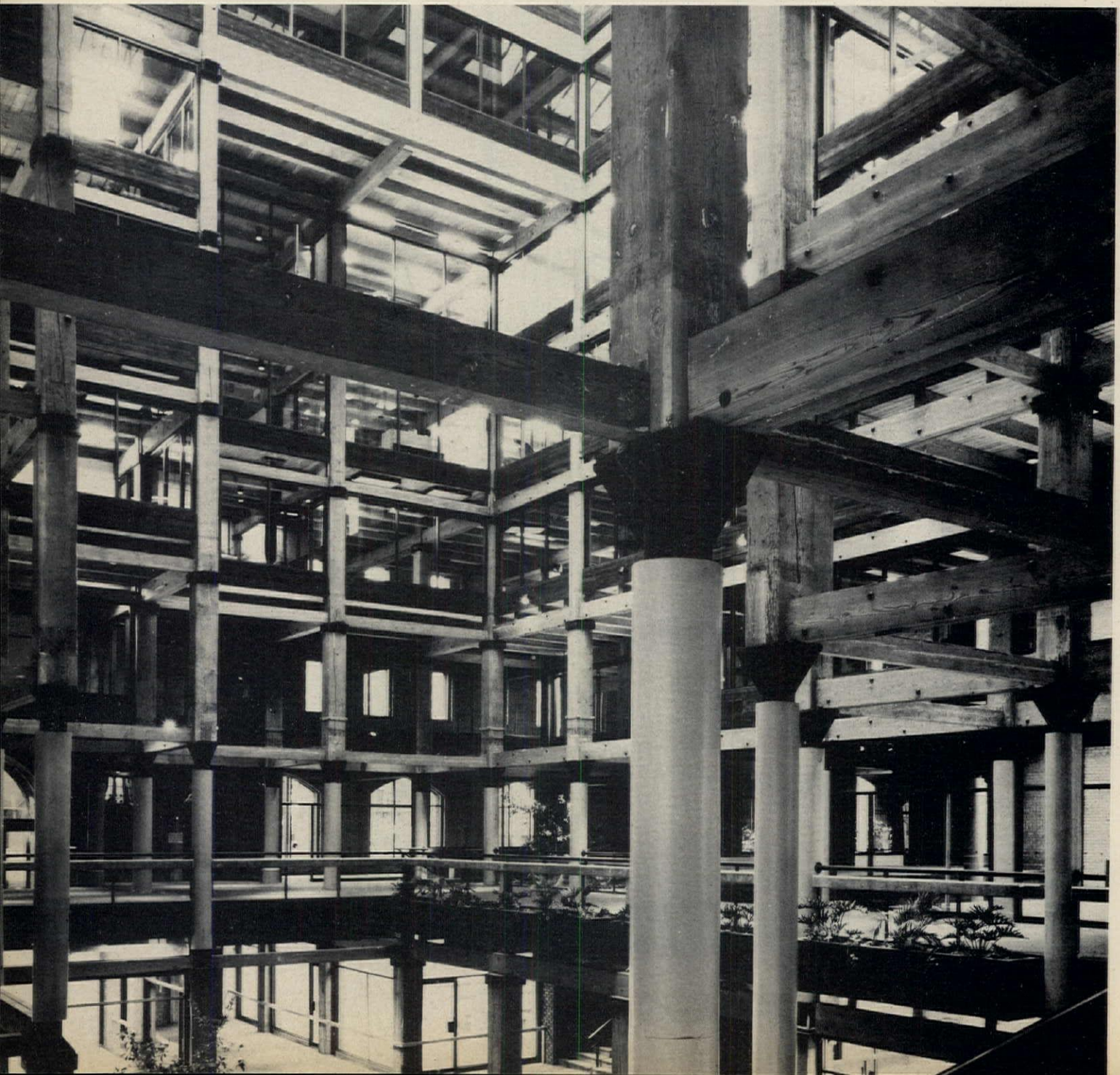


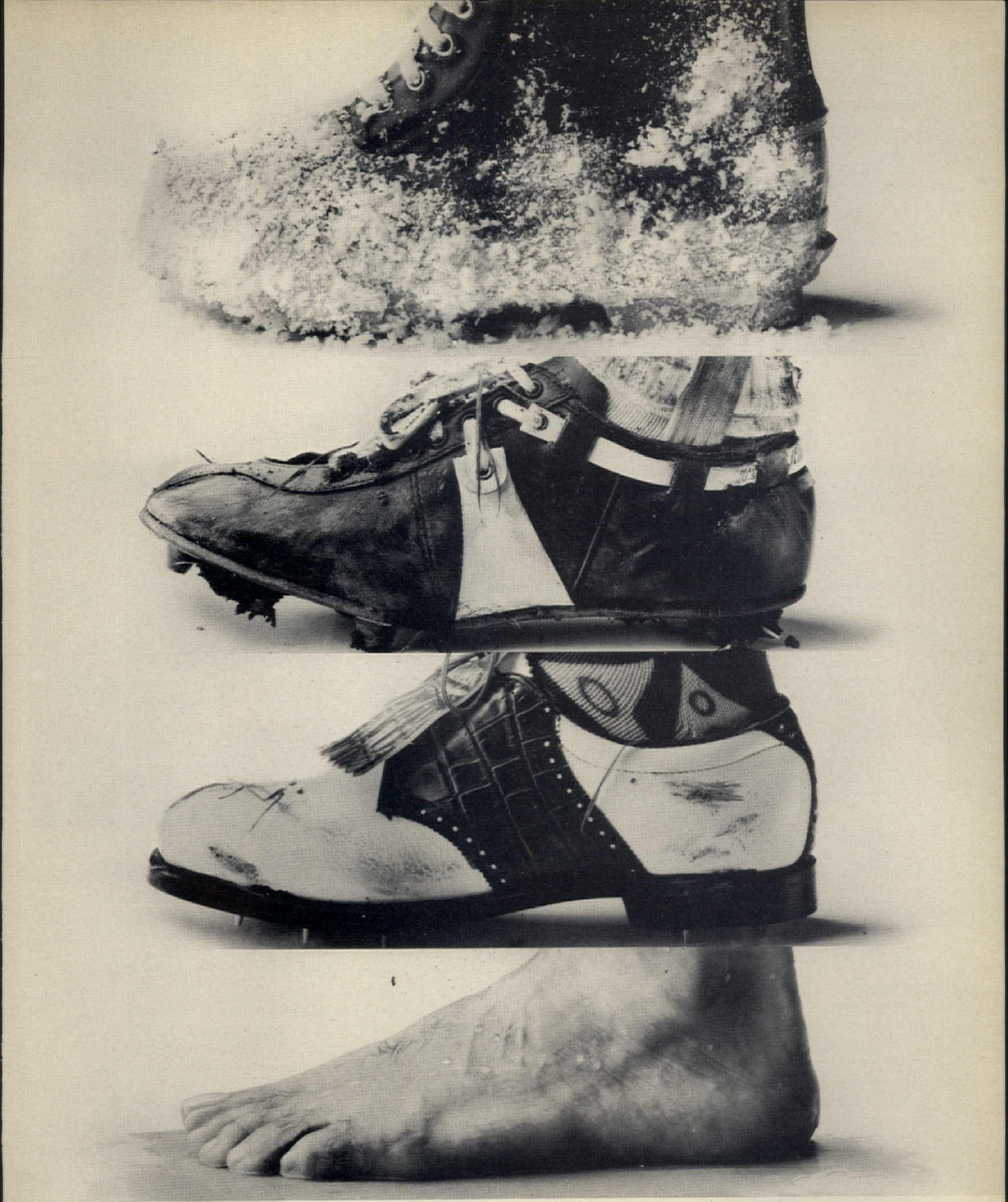
Interior Architecture

Data

Project: Butler Square, Minneapolis, Minn.
Architects: Miller, Hansen, Westerbeck, Bell Architects Inc.; John Miller, principal; Arvid Elness, project architect.
Program: renovation of a 500,000-sq-ft warehouse into hotel, office, and retail uses.
Site: an entire city block adjacent to prime downtown land.
Structural system: existing Douglas fir columns and beams.
Mechanical system: central HVAC distributed under new raised flooring.
Major materials: glass, recycled wood tile, carpeting.
Costs: approximately $20 per sq ft on completed work.
Photography: Philip James.

Interior of an office with the sandblasted wood structure left exposed.





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Design for the corporation

Ann Nydele

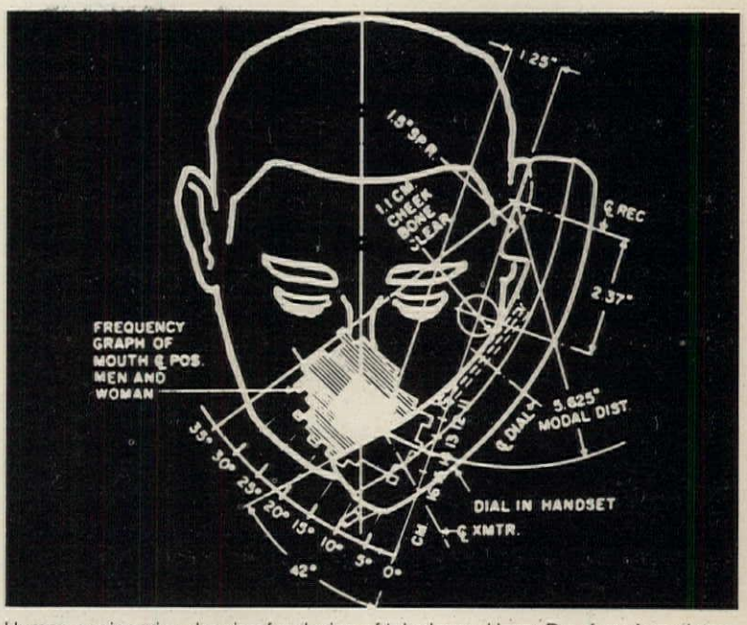
Corporate design, begun in the 1930s with design for industry, has developed into a complex, multidisciplined practice for major corporations.

Ten or fifteen years ago, at a Museum of Modern Art symposium designed to bring together architects and industrial designers, George Nelson remarked that, with the proliferation of modular components, all an architect had to do to build a building was read through Sweets Catalog. "It looked to me," he said later, "as if architecture was turning into industrial design." The reaction, he says, was a roar of disagreement; "People were standing on their chairs and shouting."

Possibly, as Niels Diffrient of Henry Dreyfuss Associates says, neither the architect nor the designer should be so differentiated. Echoing Nelson's thought, he points out that any standard high-rise is a collection of "industrial designed" products, from window frames to thermostats. "Yet, we are not always proud of the way these buildings are put together. Maybe if the interface was better, things would fit together better."

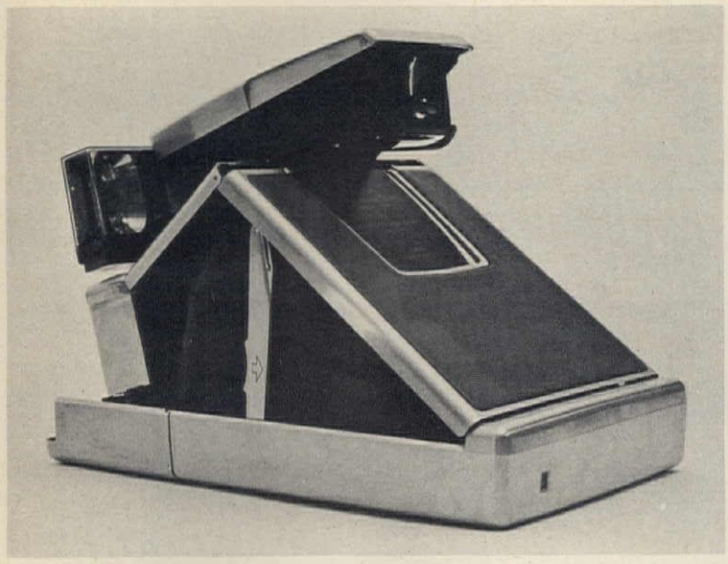
The emphasis on specialization is peculiarly American. Yet, there is no question that the multidisciplinary approach of the Bauhaus has also greatly influenced American designers, and has led to the definition of the industrial designer as someone who "designs for industry" and mass production using industrial methods and materials, in contrast to the craftsman who produces one of a kind.

During the 1930s, many American firms responded rapidly to the idea that design could solve their problems and to meet this demand, a peculiarly American breed of designer emerged. He is personified, perhaps, by the "big four": Norman Bel Geddes, Henry Dreyfuss, Walter Dorwin Teague, and Raymond Loewy. All of these men were trained in other disciplines; Bel Geddes and Dreyfuss were stage set designers; Teague was a book designer and graphic artist; Loewy, whose work is the subject of a major exhibition at the Smithsonian's Renwick Gallery in Washington (Aug. 1–Nov. 16), began as an inventor at the age of 15. Out of their multiplicity of talents and the multiplicity of demands for packaging, trademarks, better-looking products, and exhibits, the concept of the great industrial design firm as a multidisciplinary service emerged. Almost from the beginning they were successful. Suddenly, refrigerators, stoves, packages, world's fair exhibits—an incredibly wide range of artifacts—started looking better. They also worked better, as designers turned their attention to the human factors' problem—the knobs, handles, dials, doors, buttons that occur where people use things.



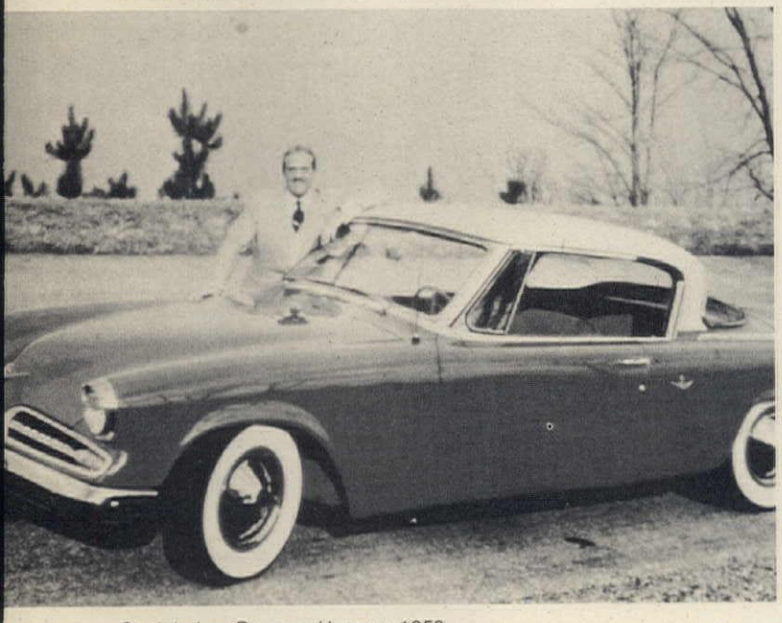
Human engineering drawing for design of telephone: Henry Dreyfuss Associates

If the industrial designer was born of the Depression, the post-World War II period gave him his second great opportunity. An explosion of design erupted as the American market expanded. War-weary Americans were hungry for everything. For the first time, the "look" of mass produced products was being projected by designers like George Nelson and Charles Eames in furniture that was elegant as well as "modern"; by Dreyfuss in telephones and industrial equipment; by Teague in airplane interiors and consumer products, and by Loewy in stores, buses, and trains. In the business world, a new standard of design for the corporation—still unique—was established by Eliot Noyes for IBM working with Charles and Ray Eames as filmmakers and with graphic designer Paul Rand. And, in another mode entirely, the American automobile began to change radically

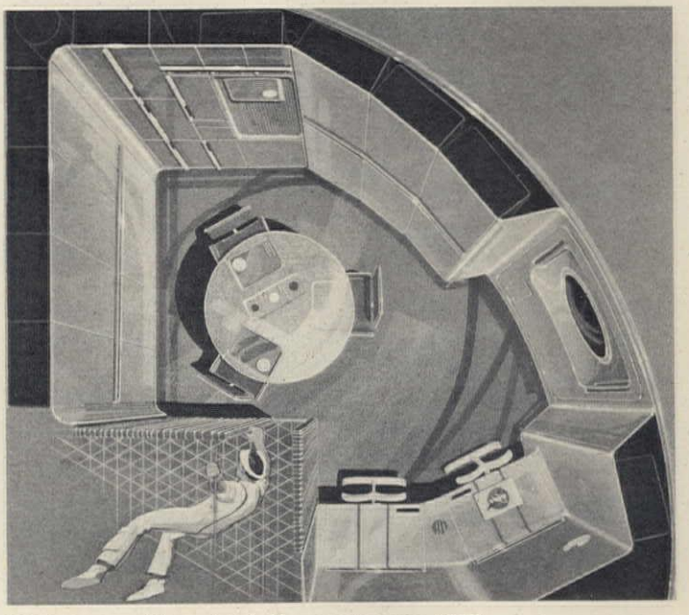


SX-70 Land Camera: Henry Dreyfuss Associates

Package Design: Raymond Loewy, 1970



Studebaker: Raymond Loewy, 1953



Washroom model for skylab: Raymond Loewy, 1969

in appearance as attention to styling became the selling point. Motivational research was invented; people didn't buy things to use anymore, they bought pieces of their most flamboyant fantasies.

Just as new production technologies made possible new products, so new selling techniques made radically new demands on packaging. Without the salesperson, the customer had to rely on the package to communicate what the product was, how to use it, and why it was better than its competition. A complex physical packaging technology was developed to make the package more a part of the product.

Correspondingly, there arose an identity crisis for corporations whose communications network no longer reflected their business or businesses. It was perceived by firms like Lippincott & Margulies, who pioneered a complex name selection and identification design service that went far beyond the simple trademark redesigns of the past. Using the jargon and management techniques of the advertising agency with which clients were already familiar, the firm began tailoring an approach to the corporate mind that made it the most successful of its kind, and the most imitated.

But with the unprecedented growth not only in business but also in organizations, the design consultant was gradually being co-opted by the corporate organization. Corporations were establishing their own in-house design departments and using design consultants, if at all, as insurance against tunnel vision about their own product. More and more, the design function was controlled by a Vice President of Marketing or a Brand Manager with his own problems within the corporate hierarchy.

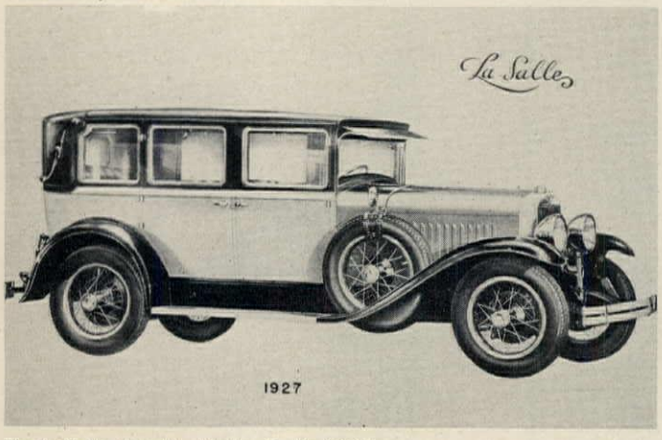
Regardless of position in the hierarchy, however, corporate design programs seem to fall into one of three categories: the corporate function without any consultant input at all; fairly extensive use of outside consultants; or, the classic situation, in-house departments with considerable input and influence from consultants in the overall direction of its design program.

General Motors

The undisputed leader of automotive design philosophy is General Motors inspired by Harley Earl, who served as Vice President of Design for a period of 18 years. The Design

Early stylized symbol for RCA

Photo courtesy of General Motors

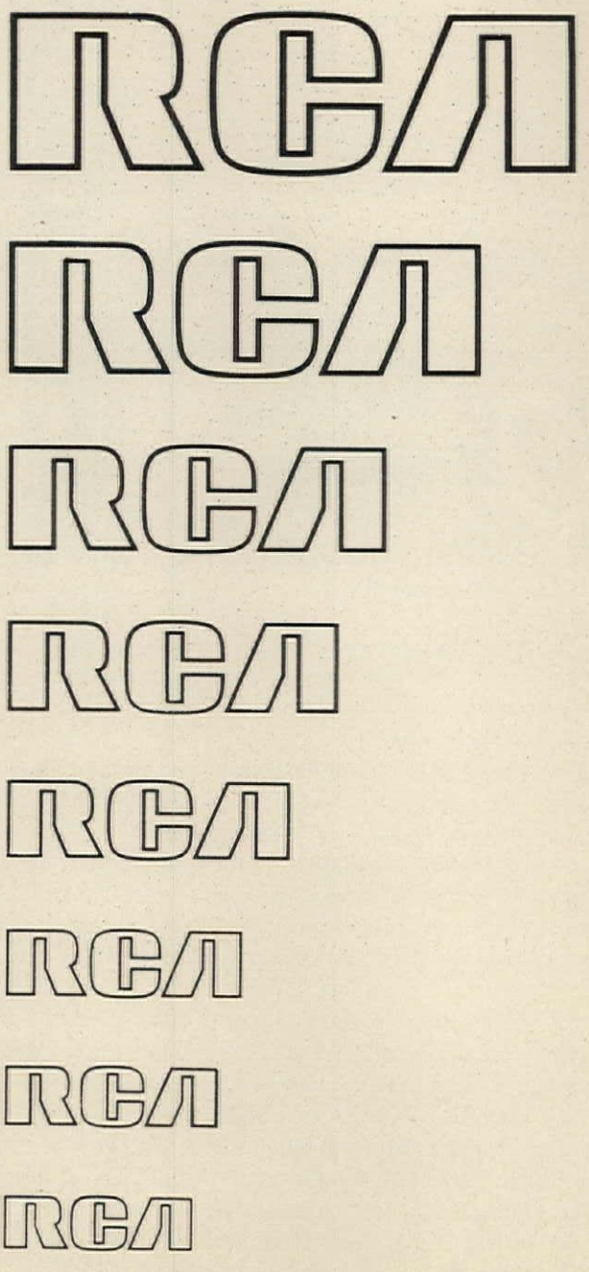


The LaSalle styled by Harley Earl in 1927

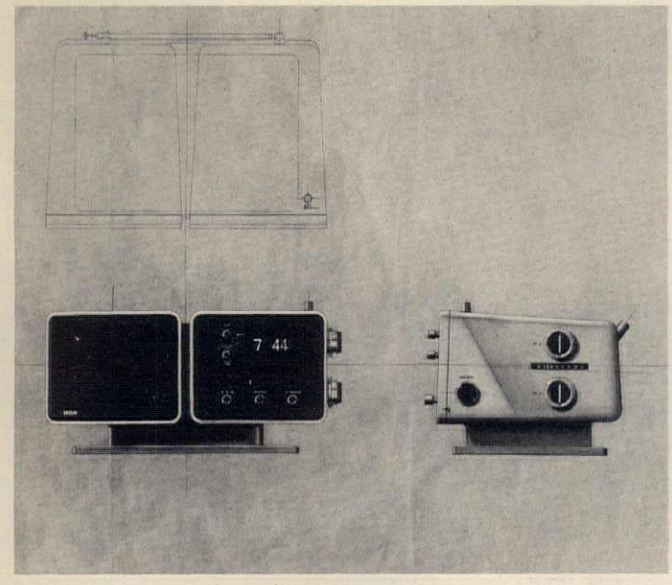
Staff of GM is the central design facility for all GM products. It is responsible for production, automotive design, and body development, research and industrial design of appliances, office interiors for the corporation internationally, packaging, technical exhibits, and displays.

Under Vice President William L. Mitchell, the staff today numbers 1500, and includes engineers, modelers, technicians, designers, artists, craftsmen, and managers, who are supported by a full range of design-related professionals: human factors engineers, aerodynamics experts, psychologists, and marketing men. No design consultants have been used in 40 years. Decisions affecting design emanate from the top executive Product Planning Group. These men decide what cars, prices, sizes, and features will be cycled into the GM output, and using PERT and CPA techniques it takes two years for a clay model to go into production at the Fisher Body Division. Unlike Ford, GM divisions compete with each other in a decentralized operation that, GM executives think, is good for business. The corporate design operation, too, acts as a profit center, available for and billed to other divisions of the company.

This year, in spite of the generally bad news from Detroit, GM is spending a lot of money (last year, $941 million for new tooling and $1.4 billion for facilities) in the biggest program, according to Chairman Thomas A. Murphy, ever embarked upon at GM.



New symbol developed by Lippincott-Margolis, showing proportional reduction.



Plan view and rendering of prototype TV/Radio combination for RCA

Photo: Ezra Stoller

IBM Education Center designed by Noyes, 1958. IBM logo by Paul Rand.

RCA

With more than $4 billion in annual sales, RCA is the leading supplier of electronics and communications products, particularly of television receivers. It is also probable that it has employed more American design 'names' than any other corporation.

In 1939, RCA introduced television. To date, over 400 different electronic products, including color and black and white television receivers, radios, phonographs, and tape instruments have been produced under the design direction of Tucker P. Madawick, Vice President of Design. He now heads up the $2 million Consumer Electronics Division Center opened in April 1972 as a "laboratory" for product development and style innovation of the various consumer products. The department includes over 40 managerial, creative, and back-up staff members who also critique advertising and sales promotion material, procure art, implement corporate identity, and design packaging.

Madawick places strong emphasis on the exploration of behavioral patterns, consumer attitudes, and lifestyle trends. Despite all the resources he controls, however his department has not been without its flops. One, a triangular corner set, never really made it, although dealers report that some customers keep asking for something like it.

In addition to in-house resources, RCA has always used consultants beginning, in 1933, with John Vassos who was asked by President David Sarnoff to generate conceptual design studies in the radio and television fields. Lippincott & Margulies (creator of the new RCA corporate identification program), and Ford & Earl Design Associates are among the other consultants whom RCA has used on a continuing basis.

The consultants, plus Madawick's staff, are expected to generate at least 200 design ideas a year. Once a proposal is accepted, the product begins a two-year development cycle, overseen by the Product Planning Committee, in which design, advertising, and sales are coordinated with product management. A strategic introduction date is established. The program then passes through a computerized path of 36 milestones to make sure all dates are met. Daily printouts analyze each step in detail along the way. But not all of the design work at the Center involves new products; a third are cosmetic changes and another third involve major modifications. In addition, the design department's responsibilities include materials development as well as back-up to the six design managers in the analysis of marketing, consumer, and industry trends.

International Business Machines

Perhaps no company has been so well identified with good design as has IBM. In 1956, Thomas Watson, Jr. asked architect-industrial designer Eliot Noyes to develop a design program that would include everything—plants, offices, machines, graphics, and packaging—and thus initiated a unique client/designer relationship.

Acting as Consultant Director of Design since then, Noyes brought in Paul Rand to develop the graphic program and Charles and Ray Eames to do major exhibits and films (including the 1964 New York World's Fair IBM Pavil-

IBM Selectric Typewriter designed by Elliot Noyes

Photo: © MARIS (ESTO)

Photo: William Devine

Chase logo designed by Chermayeff and Geismar.

Photo: Malcom Smith

IBM Executary designed by Noyes.

ion). During the 1950s, Noyes began working with IBM's in-house industrial design groups, then only in New York State and California, and developed a philosophy of industrial design for the company. Through the 1960s and 1970s, many new design centers were added, reaching a total of about 25—15 in the U.S., and the remainder in other countries. Major directions and design guidelines are worked out by the consultants and headquarters design coordinators, who supervise their use by the internal designers. Noyes, as chief consultant, reviews product design work at the centers, as well as holding quarterly reviews. Overall contact with the company is maintained through Corporate Communications.

Design at IBM for which Noyes is responsible includes three areas: product, graphic, and architectural. Noyes works closely with the Real Estate and Construction Division (RECD) on all matters relating to architecture. The department of 200, including administrative, managerial, and technical skills, is responsible for IBM's world-wide facilities and industrial design. Architects retained by the corporation at Noyes's recommendation include Marcel Breuer, Eero Saarinen, and Mies van der Rohe. The selection of architects is now handled by RECD in consultation with Noyes. (Other clients for which Noyes performs the same services include Mobil Oil—for which Chermayeff & Geismar Associates, Inc. did the trademark—and Westinghouse, with trademark design by Paul Rand.)

Noyes's office provides many design services for IBM, industrial design for typewriters and office products, and architectural design of many buildings. At the same time, a major part of the product design is done in-house under his supervision. This combination of functions differs somewhat from the classic multidisciplinary office where all design is done under one roof.

Chase Manhattan Bank

In 1960, before the corporate identity boom, a program was designed for Chase Manhattan Bank by Chermayeff & Geismar Associates, Inc. that set the standard for such programs among financial concerns. A change in the bank's graphic identification was dictated by a merger between Chase and the Bank of Manhattan. At the same time, the SOM Chase Plaza building was being designed, along with a new branch bank prototype that would eventually carry the Chase image to new areas upstate and overseas. The new corporate identity would be applied to all Chase communications—letterheads, statements, forms, literature, and advertising. In particular, it would appear conspicuously on entrances, window frames, and walls of the banks and branches.

"We explored 9 or 10 design directions—all abstract," reports Tom Geismar, "working with David Rockefeller and a Review Committee that included Jim Fox, then Vice President/Corporate Communications, who administered the program." There were two reasons for an abstract shape: there was no way, the designers felt, to articulate the whole name, and there was the very real possibility that the nomenclature "Chase Manhattan Bank" might be changed. There was also the quality of uniqueness; except for Mercedes and Cadillac, few companies used abstract symbols. David Rockefeller selected the origami-like design which at first was difficult for bankers and businessmen to appreciate, but is now widely recognized.

At Chase, administration of the signage program as well as of all physical facilities is managed by the Construction and Property Management Department, headed by Vice

President Paul E. Steinborn. The design of the more than 250 Chase branches (following the six or eight prototypes provided by SOM) as well as all interior design and procurement is carried out by the department. As a result of this program of standardization, branches can be installed very quickly.

California dreamers

While the major development in corporate design took place principally in the East, there is a lively new school emerging on the West Coast with a style all its own. West Coast consultants and their clients tend to be small, and rather than providing a broad-based service, the successful small design firms offer in-depth services in their specialties, including product concepts, development engineering, industrial design, and production detailing. One such firm, McFarland Design, Inc., is vertically integrated to develop new products from concept to production drawings, an appropriate approach in an area where, right now a good deal of social and technological innovation is still germinating.

What's happening?

Having evolved into such a distinct and complex professional discipline in such short time, the question arises as to how it will change to meet new demands. Inventor-engineer-designer Walter Dorwin Teague thinks that the important future design influences will come out of the current problems: the energy shortage, the need for privacy amid an exploding population, pollution control, and the general increase in leisure time. In many ways, he says, the effect of these influences will enhance our quality of life. "It isn't very difficult," he says, "to design a comfortable house that only needs one-tenth of the normal energy output." He also points out that people have been driving small, agile sports cars by choice for a long time, not because of their low fuel consumption but because they are fun. For "thinking" architects, designers, and engineers, he says, the present crisis offers an unlimited opportunity to turn world problems into advantages that can make our lives healthier and better. Corporate planning is going to go far beyond the kind of product planning that is concerned only with next year's line and will begin to look at the population itself.

Dick Latham of the Chicago design firm of Richard Latham & Associates is now involved with basic demographics and psychographics. "We want to know what people would be like," he says, "if they had other choices than the ones available to them now." The interesting thing is that companies are now willing to take a serious look at society as something other than a "market" for their products. "Planning," he says, "will also be concerned with systems rather than objects and will become a rational study of what's good for people as individuals rather than what's good for the large establishments that hold the power of decision."

Communications will become even more omnipresent in people's lives. RCA's decision to drop its audio line is one indication of this. In addition, it is introducing new technology that will make television even more important as an entertainment/information medium. In the works are Videodiscs, prerecorded films on discs that are expected to have a tremendous impact once decisions are made about what system to use. Consultant firms, according to George Nelson, will be serving smaller companies that will benefit more from innovation because they are growing. "If you are doing $5 to $10 million a year and you have dreams of doing $50 million," he says, "the only way you can possibly crash into the big leagues is through some rather startling, attention-getting products."

American consultants' services are now being exported by foreign companies and/or governments. One example of this is the June 1975 agreement (with "renewable options") between Raymond Loewy International and the Soviet Union, in which the American firm (and its Paris office) will be involved in a five-year total planning and design program covering consumer products, automobiles, hydrofoils, hotels, shopping centers, stores, and industrial equipment. More typical is the recent assignment received by the New York packaging firm Gerstman + Meyers when BASF retained them to do a major physical and graphic packaging program for their line of consumer audio products. The reason, according to Corporate Advertising Director Bernt Berghauser, is that American design firms are more marketing oriented than European design firms. "They can often solve problems better and faster because they concentrate on overall problem-solving first and work out details later."

American designers are getting more involved in public service. For some time now, Gene Smith, head of a design firm in Ohio, has been showing his "Why Ugliness?" film documenting the worst excesses of highway signage to legislators, civic, and professional groups. He has become embroiled more than once with the billboard interests and occasionally antagonizes clients. Other public service activities involving product safety and environmental control are being carried out through committees of the Industrial Designers Society of America. And recent federal attention has been sparked through the first Federal Design Assembly which is encouraging government agencies to use designers more effectively as advisors on issues affecting the environment.

As everybody knows, designers have never been shy about making predictions. Because they are involved by definition with innovation and because they have as resources a vast array of para-design professionals—anthropologists, social scientists, behavioral scientists, psychologists—they are always worth listening to. More than this, they have what George Nelson defines as a "a positive attitude." It is possible, he says, to be "positive without being optimistic." It is this trait, perhaps, that is the most endearing about the industrial designer. No matter what our Alvin Toffler future is going to be, somewhere in the middle of it, the designer will be standing. Thinking positively. □

Author: Ann Nydele has been a writer and publicist in the design professions and Executive Director of the Industrial Designers Society of America. She is now a freelance communications consultant in New York.

Hampshire College Recreational Facility

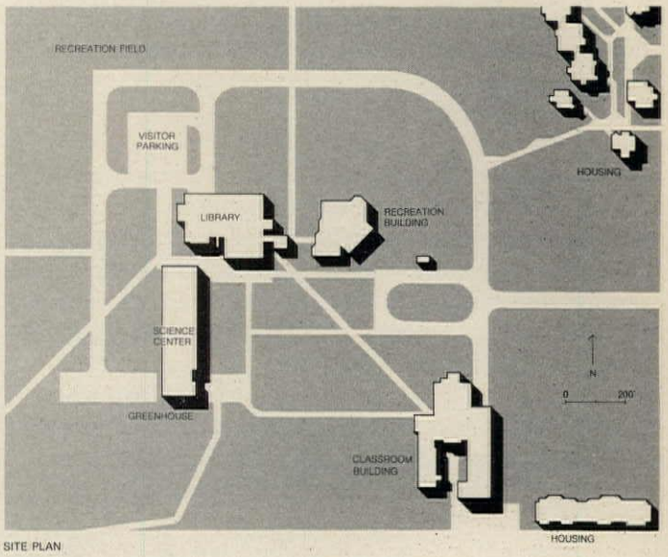
Judicious juxtapositions

A recreational facility by Davis, Brody & Associates represents one significant step by a college to tie a campus together socially and symbolically.

It may seem a little jarring to find a gym at the center of campus, much less *next* to the library. The juxtaposition of uses and of images between sporting and academic life strikes most as uncomfortable at such close quarters. For Hampshire College to site its gym so blatantly in the foreground seems downright anomalous. This experimental educational institution, opened in 1970 as an offspring of Smith, Holyoke, Amherst Colleges and the University of Massachusetts at Amherst, boasts much too dignified a lineage for such jocklike overtures. Actually a "recreation" building, the gym is intended to perform on a social and symbolic level that hardly pertains to competitive sports.

Hampshire, located in Amherst, Massachusetts, was originally formed with high-minded educational goals of creating a cross-disciplinary educational community where the free exchange of ideas between students and faculty,—and the five schools—could take place. But it began to discover that its new campus facilities were neither reinforcing nor communicating, in design terms, the nature of these goals. Certain steps had been taken to generate a physical image of another kind of school—the more traditional sort. And pieces missing from the original master plan (owing to a slowed expansion) prevented the concept from achieving total success on a social level. As a partial solution to the dilemma, the recreation building, designed by Davis, Brody & Associates, eventually evolved.

When Hampshire was planned in 1966, campus administrators hired Hugh Stubbins & Associates to execute the master plan and design the first series of buildings—a centrally placed library and science hall, and two clusters of student and faculty housing with a nearby academic building. The plan represented a reasonably experimental "village" concept applied to a college campus: A "town center" where principal academic buildings were located formed the hub around which neighborhoods, comprising both student and faculty housing and some academic buildings, were organized. Sasaki, Dawson & DeMay's site plan included a grand sweeping entrance off the road, near a farm housing administrative offices.



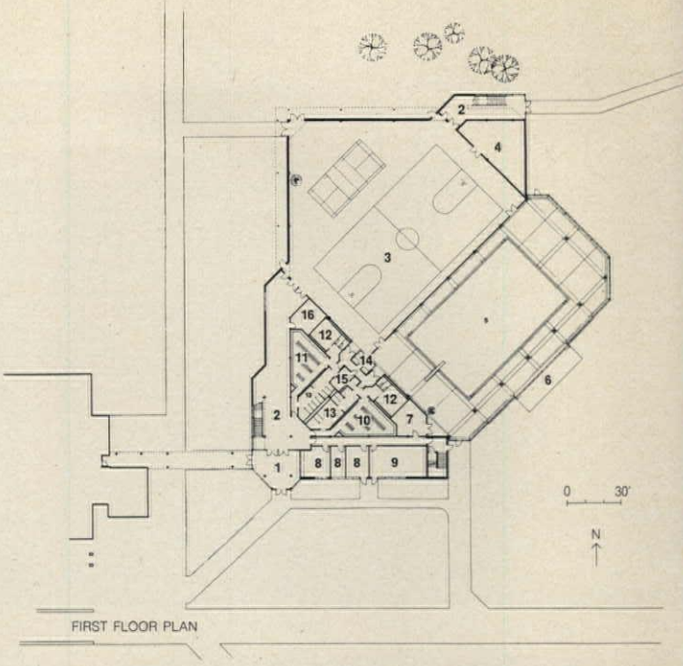
SITE PLAN

Meanwhile, because of economic pressures, the college decided to maintain its student enrollment at about 1250 students instead of the initially projected 3000. The other buildings that were to fill out the center—the humanities and arts building, the social science facility, and the recreation building, would be realized in more increments than originally anticipated. This period of limbo gave the school time to pause and reflect about the shape the campus was taking. Two architects teaching a nonprofessional architectural course at Hampshire, Norton Juster and his partner Earl Pope, came up with programmatic criteria on which the next major school buildings should be based. Their analysis reflected, in part, student sentiment about the campus facilities.

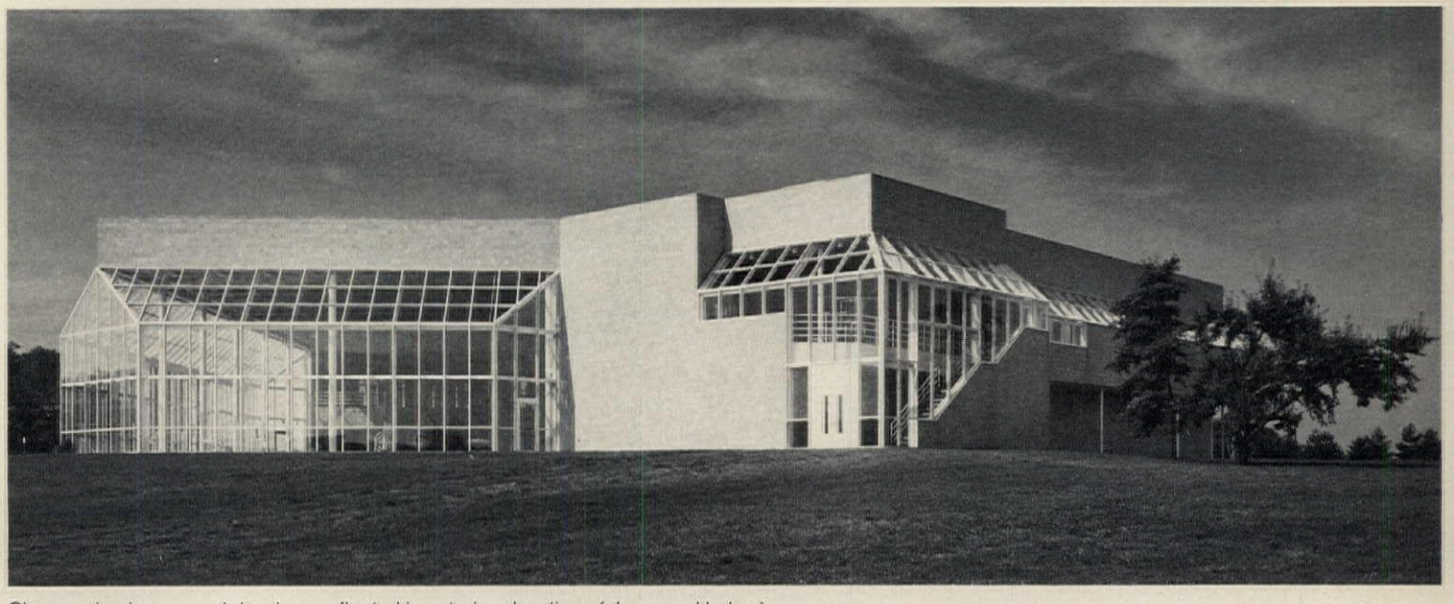
In this splendidly rural setting with its rolling countryside and 18th and 19th Century farmhouses, students were objecting to any additional encroachment by the man-made environment. While the college housing was screened from the rest of the campus by trees, the campus center, com-

The recreational center by Davis, Brody (opposite) adjoins library and the science center by Hugh Stubbins & Associates (site plan above). Inside the building, the 75'x45' pool (opposite bottom) receives natural light from east and southeasterly window walls and sliding doors. Sense of space is augmented by painted white exposed steel decking, open-webbed joists and columns.

Hampshire College Recreational Facility

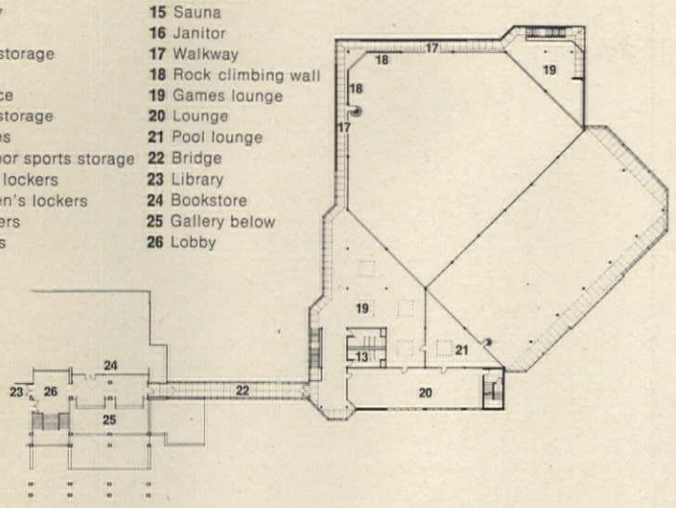


Main entrance is located at corner of building: bridge links to library.



Changes in plan on each level are reflected in exterior elevations (above and below).

1 Vestibule
2 Lobby
3 Gym
4 Gym storage
5 Pool
6 Terrace
7 Pool storage
8 Offices
9 Outdoor sports storage
10 Mens lockers
11 Women's lockers
12 Showers
13 Toilets
14 Supervisor
15 Sauna
16 Janitor
17 Walkway
18 Rock climbing wall
19 Games lounge
20 Lounge
21 Pool lounge
22 Bridge
23 Library
24 Bookstore
25 Gallery below
26 Lobby



SECOND FLOOR

prising only the library and science building, were sited atop a treeless mound. By contrast, they loomed rather large and bulky over the horizon.

These two buildings, the housing clusters, and a nearby academic building, were all designed by Stubbins in a vocabulary of concrete frame and brick infill that has become synonomous with recent campus construction in the Northeast. Too synonomous. The image of the campus conveyed by these buildings simply didn't communicate distinctly enough the particular identity of the college and the uniqueness of the curriculum. Although other architects were brought in to design wood prefab housing clusters, or masonry and metal siding low-rise units, the housing clusters were too dispersed in their natural setting, or too disparate in architectural styles to add that missing identity and coherence to the campus.

Clearly, the college had a problem (and still does to a large extent). Furthermore, as Juster and Pope noted in their report, few spaces had been created where students would happen to meet, interact, or spend time. Despite the students' strongly romantic desire for back-to-nature isolation, they still required and desired a "density and intensity of contact, an urbanity" to make the college situation work socially and educationally. If Hampshire were, in fact, to break down barriers traditionally maintained between the disciplines, the architects observed, they would need casual contact and a lot of it.

When money was donated for the gym, Davis, Brody & Associates were hired to design it, as well as to produce a revised, scaled-down master plan. From the beginning, the gym was not to be a "gym" per se. After all, the main sports at Hampshire are mountain climbing, kayaking, and frisbee. Instead, it was to be a recreational building where swimming and basketball or other individual or team sports could occur, along with informal play, talk, social activities, or school dances.

Davis, Brody suggested situating the facility at the center of the campus adjoining the library. Compounding this rather heretical notion, they proposed a second level bridge to connect the recreational facility to the library. (An enclosed second level walk system eventually to extend from the center to the housing clusters had been urged by Juster and Pope in order to allow students additional space and places to meet and chat.) In deference to the students' antipathy toward more intrusions into the natural environment, the architects tried to avoid plunking down a heavy massive block on the grassy knoll. They also sought to make the active informal functions of the building highly visible. Thus they decided to glaze the building lavishly and wrap brick like a skin around the steel structure instead of applying it as a dense infill into the concrete frame. Rather than the dark-hued brick of the other buildings, Davis, Brody selected a lighter, almost concrete colored block. The glazed portions—the skylights along the walkway at the second level and the canted glass window walls on the southeasterly elevations of the pool—give the building its needed transparency, aided by the white skeletal steel columns, trusses, and roof decking of the interior.

To relate the building's orientation more closely to the other two buildings, Davis, Brody placed the main entrance at one corner. The organization of spaces within the building envelope continues the established diagonal by the entrance corner, in counterpoint to the deformed rectangular shape of the building itself.

Student appraisal

In many ways the 40,000-sq-ft structure has achieved, socially and symbolically, what it set out to do. Comments by students in Juster and Pope's design course reveal three types of response depending on a different perceptual stance. Some students indicate an affinity to nature that they experience while in the hall: "Every morning I see the red glow of the sunrise as I swim up the lane in the pool. The sensation lifts my body with an indescribable spirit." Or, "The center seems to be as seasonal as the apple orchards, because the glass frames and reflects the changing colors of New England." From outside the building, some students appreciate the opportunity the architecture affords them to observe activity and life going on in the gym: "As I walked back to Crown Center, I could see lots of action going on in the building. . . . All of these activities brought me much closer to the college community." Another student confessed, "The location next to the library is a great contrast. One can spend all day working in the library, and then within a few yards of the desk take a dive in the pool or play volleyball. Watch your time though—I've often spent more time swimming than working—a personal problem, not an architectural one."

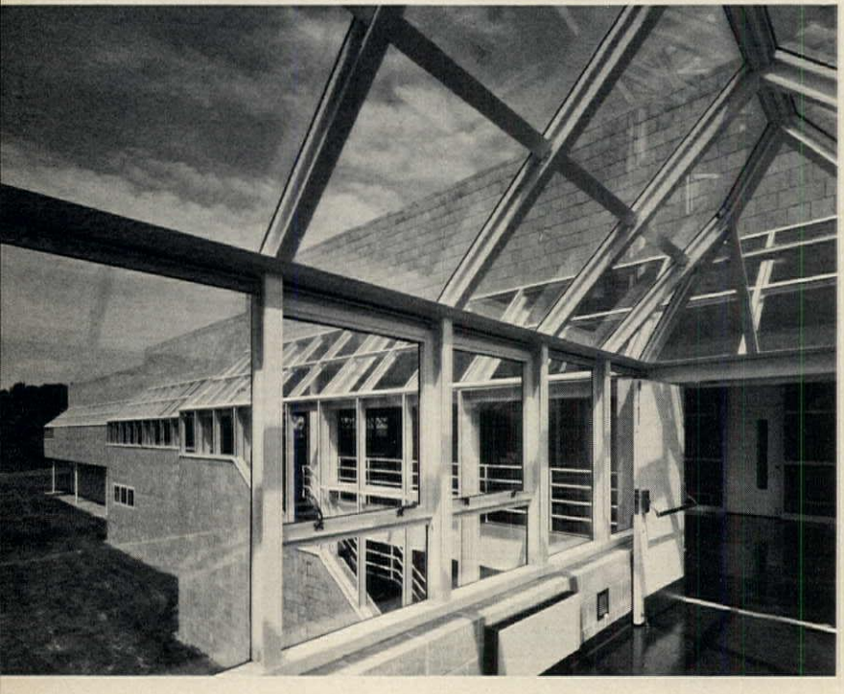
One point that should be mentioned, however, is that the upstairs lounges, included as ancillary spaces to respond to fluctuating needs, haven't received that much use. Norton Juster expresses surprise that students have been shy in appropriating these spaces for spontaneous activity. (Obviously still to be worked out is the whole notion of structured and hierarchical spaces and how far they must be predetermined to invite use.)

The architecture itself elicits a diverse set of student opinions, as can be expected. Most students like the extensive use of glass, whether for its transparency or reflectiveness. The color of the block, lighter than brick and a little darker than concrete, has been the controversial aspect of the building—not its proximity to the library, as might be expected. One student states that the building is livelier because of the block, another deems it "atrocious."

Hampshire College Recreational Facility, Amherst, Mass.

Lounges receive sun from five rooftop 7'-8½" square skylights (above).

Tempered glass-enclosed walkway leading from the library (above and below) continues around the building to rear stair. Floors are surfaced in linoleum tile; ceilings in 2'x4' acoustical tile; walls are concrete block.



About its second level circulation system from the library around the pool elevation and the gym, students are enthusiastic: "It seems to have been designed to encourage easy travel throughout the building."

Whether this new architecture can successfully shift the physical image of the college to a closer embodiment of its educational goals remains to be seen. The building was designed to be architecturally distinct from the science and library buildings, but not necessarily to posit a new architectural vocabulary of form. It certainly speaks of a freer spirit, but doesn't make one forget the more traditional, rigid massive forms next door. And, while the glazed portions open up the interiors to view, and the massing breaks down the scale, the building can't really fade into the natural landscape. The color of the block prevents that. No one building however is likely to solve all the architectural and planning problems of the school. But it can only make one step along the way. Perhaps by proceeding cautiously and slowly, school administrators may evolve a physical reality that supports and reflects Hampshire's own educational self-image. [Suzanne Stephens]

Data

Project: Robert Crown Center, Hampshire College, Amherst, Mass.
Architect: Davis, Brody & Associates; Tony Louvis, associate; Ian Ferguson, project architect.
Program: recreational facility, 40,000 sq ft gross for small (1250 students) college campus. Building was to be flexible to accommodate individual, group, informal or organized sports, casual meetings, social events, and learning and applying skills for outdoor sports.
Site: a 750-acre campus in the rural central part of the state.
Structural system: steel frame, long-span steel joists, and roof deck; floors are steel deck with concrete fill; walls, concrete block (exterior) spread footing foundations.
Mechanical system: gym and pool have rooftop forced air units; pool has baseboard hot water heating; offices and lounges have fan coil units.
Major materials: brick, exposed block, steel structure; tempered glass skylights, glass window walls; vinyl flooring, except in gym, poured urethane; acoustical ceiling tile; painted, gypsum board walls.
Consultants: Dubin-Mindell-Bloome, Associates, mechanical; Wiesenfeld & Leon, structural; David A. Mintz, Inc. lighting.
Central contractor: Daniel O'Connell's Sons, Inc.
Client: Hampshire College, Howard Paul, Director of Physical Plant.
Costs: $1,596,000, including built-in equipment; $35 per sq ft.
Photography: Nathaniel Lieberman, except, Bob Gray, p. 87, top; p. 88, top and bottom; p. 90, top.

Clerestory type windows allow natural light to permeate both gym and pool areas (above) supplemented by mercury vapor and incandescent artificial lighting. The 60'x120' gymnasium has poured polyurethane flooring. Concrete block walls are fitted with climbing footholds.

Custom curtain walls

Josephine H. Drummond

The standard curtain wall does not exist. Because each site demands individual attention, the architect tailors each project's curtain wall assembly "to fit."

There is no such thing as a standard curtain wall system. Excluding what sheathes the totally prefabricated building, every building's curtain wall assembly is unique. It requires careful selection and detailing to fit its design parameters.

The architect needs no reminder that he is ultimately responsible for the performance of all his project's components. He gains little protection when attractive photographs or easy-to-detail templates in curtain wall manufacturers' catalogs seduce him. Many firms specialize in the design, fabrication, and sometimes installation of curtain walls. Their systems are "standard" only when used in installations identical to their design and test conditions. When changes are made in modules, methods of support and anchorage, ambient conditions, and numerous other parameters, the so-called standard system becomes a custom design. System failure is usually a complicated interaction of the building, the curtain wall, the weather, and other factors difficult if not impossible to determine.

Many variables therefore affect a project's curtain wall performance. We must resist the temptation to "Do the same thing we did on 'Project X' two years ago while changing the asbestos cement spandrels to aluminum." Even if "Project X" is half a block down the street, and even if the same "standard" curtain wall is proposed, some of the installation conditions will be different.

How can the architect afford himself reasonable assurance that the completed system will function? The first step would be to give the same attention to each detail of the system—whether it be nominally standard or fully custom design. So that nothing is overlooked he must be thoroughly familiar with the technical aspects of curtain walls. Unbiased data, as well as manufacturers' literature, is available to assist him.

Several articles on the subject have previously appeared here. The National Association of Architectural Metal Manufacturers (1033 South Blvd., Oak Park, Ill. 60303) *Metal Curtain Wall Manual* provides basic design, specification, and testing information. ASTM standards E283, E330, and E331 provide test methods. *Time-Saver Standards,* Fifth Edition, John H. Callender, ed., New York, McGraw-Hill, includes a comprehensive chapter on curtain walls.

The following outlines the major items of concern: 1 Basic metal sections (size, configuration, weight, alloy, structural properties, structural reinforcement, suitable thickness of section, glazing rebate, size, and design), 2 Section joinery (type of mechanical joinery, reinforcement, welding types and restrictions, discoloration of finish, isolation of dissimilar materials, provision for movement), 3 Thermal breaks, 4 Condensation control, 5 Sealants (types, joint design), 6 Glazing (tolerances, method of setting, glass type and thickness), 7 Finishes, 8 Insulation, 9 Connection to structure (structural tolerances, curtain wall tolerances, provision for differential movement, isolation of dissimilar materials), 10 Mockups and testing, 11 Submittals (shop drawings, samples, calculations, 12 Fabrication and installation, and 13 Guarantees.

Laboratory testing of mockups is usually advisable for major projects whether the wall be modified "standard" or fully custom design. Several qualified independent laboratories are listed in the NAAMM "Methods of Test" portion of the *Curtain Wall Manual.* Testing is not a substitute for proper consideration by the architect of all appropriate conditions. However, testing should verify the general workability of the system.

Tests can determine air and water infiltration and structural deflection of wall systems. Standard methods have not been developed to determine thermal movement, adequacy of anchorage (except as it affects deflection), effect of seismic motion, and moisture control other than direct leakage. For some projects, the architect may wish to develop requirements and tests to verify them.

Only careful inspection of the system's assembly assures compliance with the intent of the design and adherence to standards established during testing. Omission or overtightening of fasteners, failure to re-prime abraded anchors or connectors, improper glazing, sealing, and other "minor" errors or oversights can cause failure. This may not be obvious for years (e.g., corrosion caused by failure to isolate dissimilar materials).

For projects of substantial size, complexity, or unusual conditions, the architect may wish to consult a specialist in curtain wall design, testing, and inspection. As the consultant can be of assistance at all phases, his engagement would begin with preliminary design.

In summary, the architect should know the potential problems of curtain wall assembly. He should design to accommodate them; test the proposed construction; scrutinize field installation, with the assistance of specialists if needed. No one judges architecture solely by its skin. But a skin rash is no sign of health. □

Author: Josephine H. Drummond is Specifications Writer and Construction Administrator for Gruen Associates, Architure/Planning/Engineering, Los Angeles, Calif.

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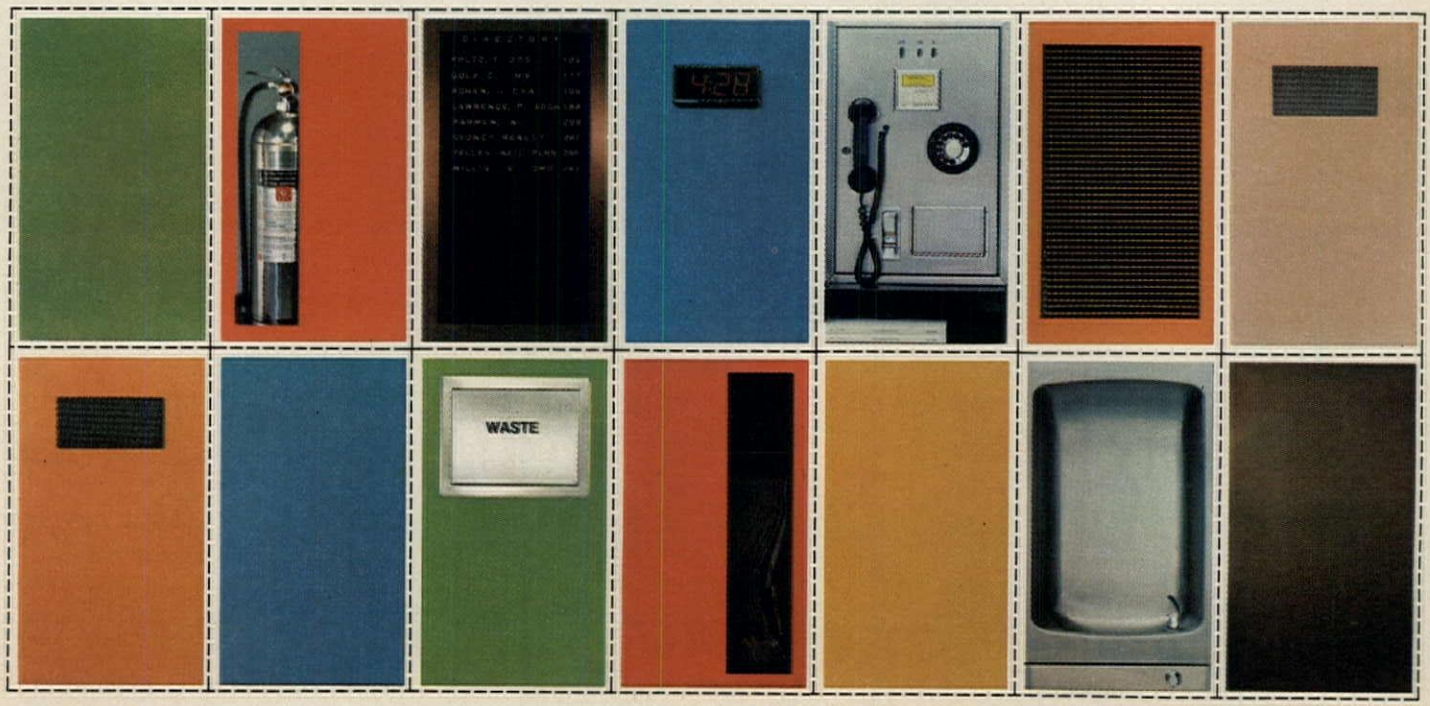

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Lifetime liability limited

Bernard Tomson and Norman Coplan

In some states, an architect's potential liability continues throughout his lifetime, but a New York Court recently made a significant ruling on this subject.

The most common type of legal action instituted against architects, and other design professionals, involves either the owner's claim based upon alleged errors or omissions, or a suit by a third party claiming negligence on the architect's part in the performance of his duties, resulting in personal injury or property damage. The time within which such suits must be brought, or be otherwise barred, is governed by statute, and such statutes, as well as their judicial interpretation differ in the various states. The period of limitation within which a legal action must be commenced is generally measured from the date the alleged cause of action accrued, but, as pointed out in this column ("It's the law," Apr. 1975) the determination of such accrual date often becomes a disputed legal issue.

A third party who is injured at a building site could not have had a cause of action against the architect who designed the building until such injury occurred, and this occurrence may take place many years after the completion of the architect's services and the owner's acceptance of the building. Even if the time in which suit must be brought is a relatively short period following such injury, the professional, in the absence of a specific statute providing otherwise, is subject to such a possible suit during his entire lifetime. Several states have adopted statutes cutting off professional liability after a given number of years following the completion of the project and many other states have refused to act in this area. In those states, this continuing potential liability is a significant problem for the architectural profession, and the need for statutory relief is quite evident.

The owner who claims damages arising from errors and omissions of his architect is in a different position than the third party who sustained personal injury in respect to the time in which he is required to bring suit against the architect. Although even in this kind of action the threshold question as to when the cause of action accrued must be determined in order to calculate the limitation of time within which suit must be instituted, the said cause of action will normally accrue at the time the architect's services are actually being performed, or at least no later than the completion of the building project. The New York Court of Appeals, in a recent decision (*Sosnow* v *Paul*) has made a significant ruling on this subject.

The *Sosnow* case involved a claim by an owner against an architect for malpractice which, according to the owner, reflected itself when masonry began cracking on the owner's building. It was the owner's claim that the problem was due to the failure of the architect to provide for expansion and control joints. The construction of the building had been completed in 1965, but the masonry defect did not appear until several years later, and suit was instituted in 1971. In New York, an action for malpractice must be commenced within three years from the time the cause of action accrued. Consequently, the issue before the Court was whether the action was barred because more than three years had elapsed since the architect performed his services and the building was completed, or whether the owner's suit was timely because the action had been instituted within three years from the date the defect appeared.

Initially, the Trial Court held in favor of the owner but this determination was reversed on appeal by a divided court. The majority opinion of the Appellate Division of the New York Supreme Court (an intermediate court) stated:

"The rule in cases where the gravamen of the suit is professional malpractice is now and has always been that the cause of action accrues upon the performance of the work by the professional. This rule was relied on by defendants in their brief on this appeal and was amply substantiated by them with viable case law. Plaintiffs have failed to cite a single applicable case abrogating that rule. We have found none."

The dissenting judges stated that the statute of limitations should not be deemed to have commenced to run until the defect became evident. In this respect, they stated:

"There can be no doubt that a cause of action accrues only when the forces wrongfully put in motion produce injury. If the defendants failed to exercise care, i.e., failed to provide for and control expansion, contraction, and creep, and this, combined with time and weather conditions, eventually produced the cracked masonry and roof parapets, it was only when the latter occurred that the action accrued."

The decision was further appealed to the Court of Appeals, New York's highest court, which affirmed the Appellate Division and ruled in favor of the architect and against the owner. The Court of Appeals stated:

"While, if they were correct, the dissenters at the Appellate Division were properly repelled by the idea that a statute of limitations should preclude a cause of action before it ever accrued, that was not the case here. Upon completion of the buildings a cause of action accrued for the harm done, namely, the cost of correction of the defects in the buildings contructed, or, if the defects were not remediable, the difference in value between properly constructed buildings and those that were in fact built."

This decision, while helpful in limiting the duration of an architect's liability to the owner, is of little application to third party suits with which the profession is even more concerned. □

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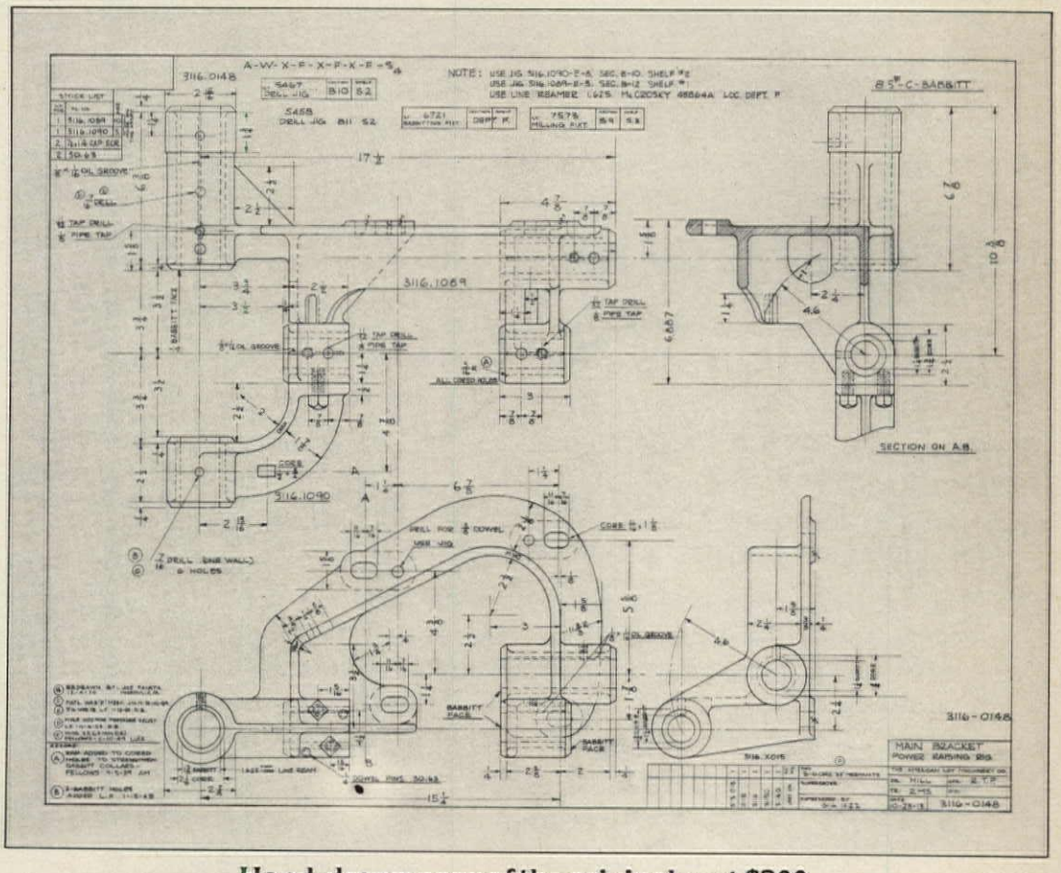

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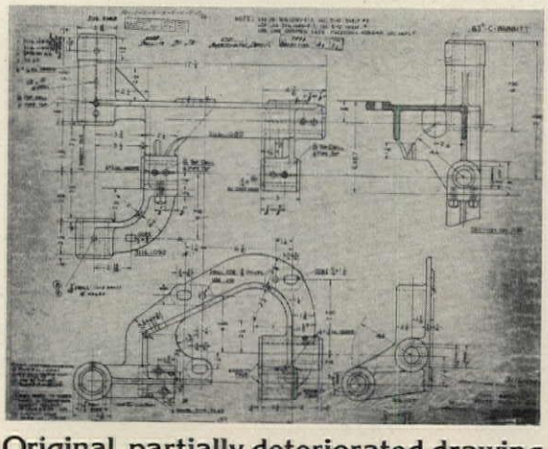

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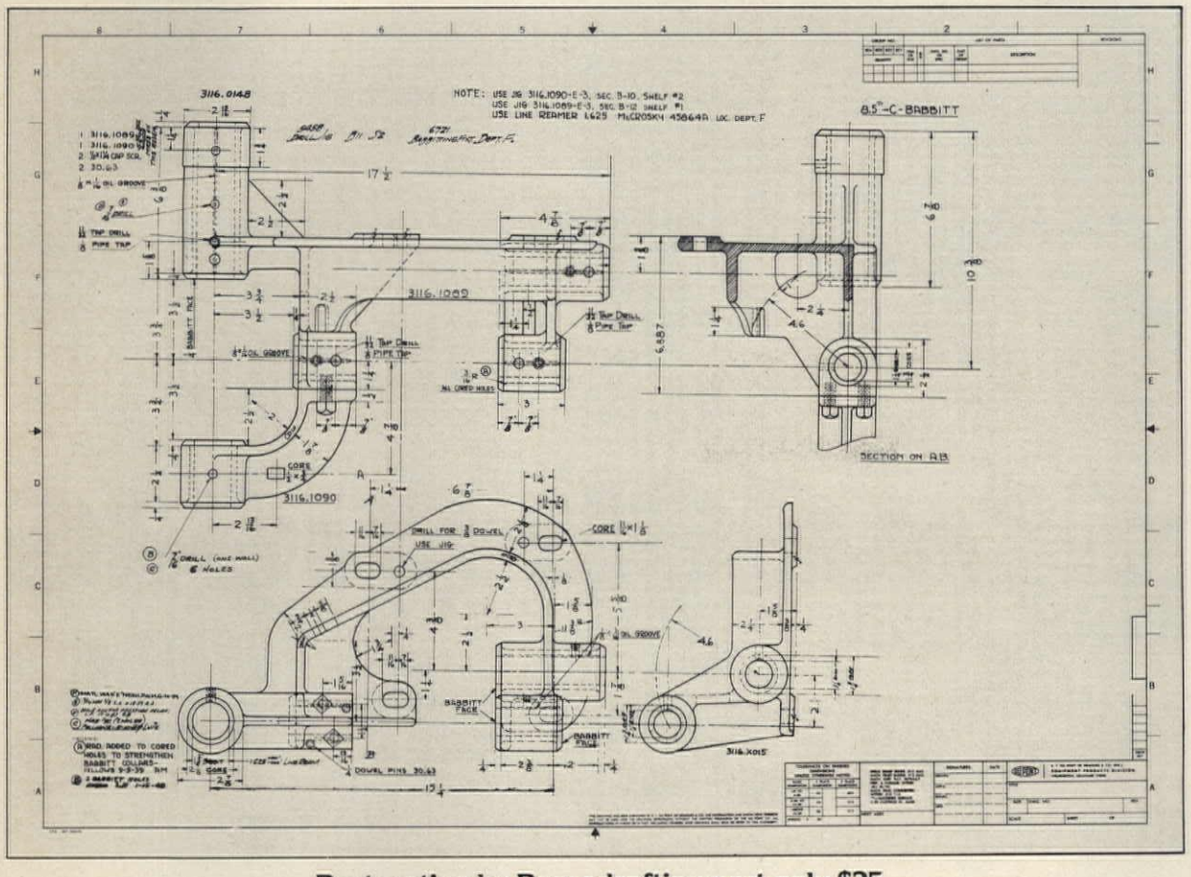

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On Aalto

Alvar Aalto: Synopsis; Painting, Architecture, Sculpture *edited by Bernhard Hoesli. Basel, Berkhauser Verlag, 1970, 240 pp., illus., $22.50.*
Alvar Aalto *edited by Karl Fleig. New York, Preager Publishers, 1975, 208 pp., illus., $10 cloth, $4.95 paper.*
Alvar Aalto 1963–1970 *edited by Karl Fleig. New York, Preager Publishers, 1971, 248 pp., illus., (currently out of print) $29.50.*
Alvar Aalto, *introduction and notes by George Baird with photographs by Yukio Futagawa. New York, Simon and Schuster, 1971, 135 pp., illus., (currently out of print) $7.50.*

Reviewed by William C. Miller, Asst. professor of architecture, University of Arizona, Tucson.

Unlike many of his contemporaries in the modern movement, Alvar Aalto prefers to avoid the arena of architectural ideologies and polemics. Instead of becoming over-absorbed in theoretical issues, he devotes his time to building. If questioned about his theories, Aalto replies that he builds and one should look to his buildings. When we look to his buildings, we find a sensitivity to the human condition and a richness of architectural form seldom found in architecture today.

Aalto's sensitivity to the human condition results from feeling that "Architecture—the real thing—is only to be found when man stands at the center." One senses this attitude in his buildings, and is struck by the dignity they offer to the actions of the inhabitants. This dignity results from Aalto's attempt to reconcile architectural space and form with basic human needs and values. This understanding of needs is seen in his description of the patient's room for the Tuberculosis Sanitorium at Piamio: "The ordinary room is a room for a vertical person: a patient's room is a room for a horizontal human being, and the colors, lighting, heating and so on must be designed with that in mind."

Coupled with this sensitivity, Aalto is a master in the manipulation of basic architectural elements: space, form, light, stairs, textures, and materials. Aalto's basic frameworks are a synthesis of his understanding of the activities that generates space, and the quality of architectural envelope necessary for enclosure. Robert Venturi, in *Complexity and Contradiction in Architecture,* states: "Designing from the outside in, as well as from the inside out, creates necessary tensions which help make architecture. Since the inside is different from the outside, the wall—the point of change—becomes an architectural event. Architecture occurs at the meeting of interior and exterior forces. . . ." The church at Vouksenniska, the cultural center in Wofsburg, and the engineering building at the Technical Institute at Otaniemi are superb examples of how Aalto mediates his walls and ceilings to reconcile interior activities with exterior forces.

But, sadly enough, given the importance of Aalto's work and his position in the modern movement, there is a dearth of information concerning him and his architecture. Several essays by Aalto, a handful of periodical articles, references in works on modern or Finnish architecture, and a couple

[continued on page 102]

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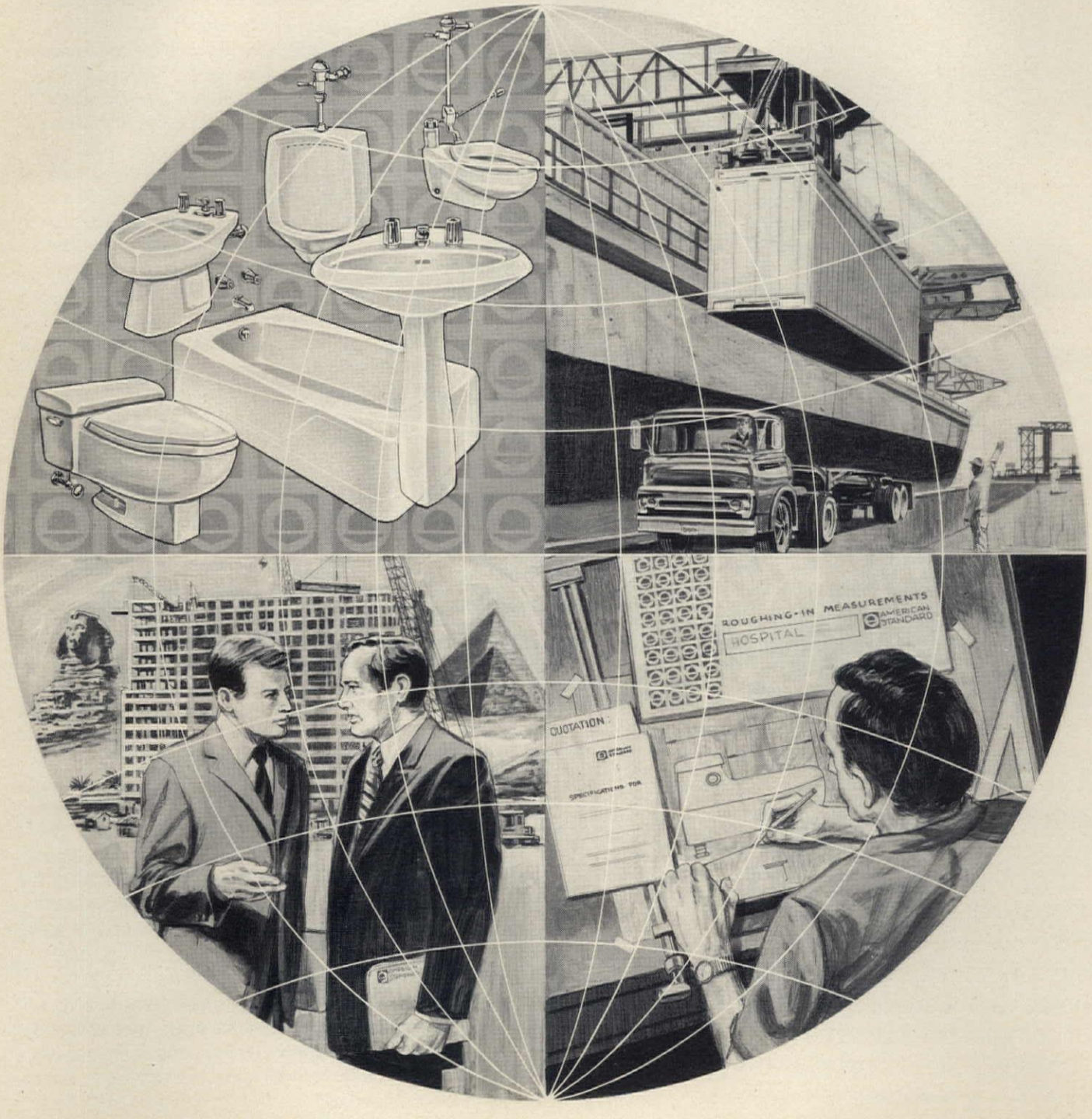

Books continued from page 100

of volumes devoted solely to Aalto make up the total documentation. The volumes discussed here represent a significant increase in the documentation.

Alvar Aalto: Synopsis, one of the most impressive volumes to appear on Aalto, attempts to assemble a body of material "... conceived as a basis for future research. ..." To achieve this aim, *Synopsis* contains a wide selection of material representing the entire breadth of Aalto's oeuvre. In addition to drawings and photographs of projects, design sketches, paintings, furniture, and sculptures, it also contains a selection of Aalto's writings, a comprehensive bibliography, and a chronological list of buildings and projects.

Synopsis is the first major volume to contain a significant collection of Aalto's writings. The seven texts, which are among his best, were assembled from essays and lectures covering his entire career. Aalto, as editor Hoesli states "... is no author; his essays and lectures are casual works in the best sense—interim work reports." These essays illuminate Aalto's thoughts and intentions, and provide a more complete understanding of his creative process and architectural concerns.

Going beyond the usual presentation of architectural projects, *Synopsis* illustrates all aspects of Aalto's work: buildings, planning projects, details, paintings, sculptures, furniture, lighting fixtures, wood experiments, and glass vases. The selection and arrangement of the illustrations creates a matrix that allows one to gain a clearer picture of the synthesis between his art and architecture; his paintings and sculptures are methods for studying architectural relationships, while his wood sculptures investigate the nature and potential of the material.

In total, *Alvar Aalto: Synopsis,* more than fulfills it's attempt to be a compendium of material for future research. In fulfilling this intention, the volume presents aspects of Aalto's work seldom seen or documented before. But it is the inclusion of these aspects that provides for a more comprehensive awareness of the man and his architecture.

Alvar Aalto, edited by Karl Fleig, is a catalog of Aalto's work from 1918 to date. It is a condensation from the two-volume oeuvre complete on Aalto. Over 500 illustrations, consisting of plans, sketches, and photographs, document Aalto's major and best known works. Organized by building types, this small volume makes for an excellent introduction to Aalto's architecture. Because it is a catalog, one gains a concise overview of Aalto's building vocabulary.

It becomes apparent from *Alvar Aalto* (as well as from the other volumes in this review) that Aalto has never allowed his architecture to freeze into a self-satisfied or stylized mold. Therefore, attempts to categorize his work into periods—the white or heroic period, the red brick period, or the new or second white period—prove inadequate since this categorization is solely based upon external appearances. Such labels fail to explain, as this and the other volumes clearly expose, the consistency of certain architectural concerns that form a continuity throughout his buildings. These concerns, which include light, response to context, space, the undulating surface, texture, and human scale, appear throughout the entire body of his work.

[continued on page 104]

Wood: products and literature

Work chair

Parquet flooring

Butcher block paneling in either teak or Brazilian rosewood is available in 4'x8' sheets approximately ¼-in.-thick. Teak paneling comes in a standard brick pattern; rosewood in miniature brick or standard brick pattern. Both can be installed vertically or horizontally. Bangkok Industries Inc.
Circle 101 on reader service card

Work chair. Child's chair with casters has seat and back in veneers or lacquered colors with the base available in polished aluminum or colors to match the seat and back. Secretarial chair is available with seat and back in oak or teak, or lacquered colors, or completely upholstered. Base is in polished aluminum or a choice of six colors; a choice of casters or glides is available. Stendig, Inc.
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Particleboard which has been awarded a Class I fire rating is available nationally in thicknesses of ⅜ in. through ¾ in. It is anticipated the board will be produced in thicknesses up to 1¼ in. The Duraflake board can meet all existing building requirements for minimum flame spread, fuel and smoke contribution based on a Class I product. It is designed for the application of laminates and veneers and anticipated uses will be in public buildings, institutions, and commercial structures which require fire preventive materials. Duraflake Div. Willamette Industries, Inc.
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Structural flakeboard is manufactured from redwood and Douglas fir flakes bonded with exterior phenolic resin. Panels are 4'x8' in ⅜ to 1⅛ in. thicknesses with square edge or tongue and groove and are designed as flooring, roof overhangs, or roof sheathing for conventional on-site construction or factory-built modular housing units. Carpeting, tile, and vinyl can be applied directly to single panel subfloor and underlayment construction. Accepted by the FHA and Uniform Building Codes, it meets Underwriter's Class 3 Fire Code requirements and conforms to U.S. Dept. of Commerce Standards LCS-236-66, Type 2-B-2, minimum averages. L-P Redex, Louisiana-Pacific Corp.
Circle 104 on reader service card

Bentwood chairs feature steam-bent hardwood frames with natural cane seats and backs. Arm and side chair models are offered in a choice of natural or walnut cane finish. Contract Div., B. Brody Seating Company.
Circle 105 on reader service card

Wall panels that are designed for the mobile home manufacturers as well as mass merchandisers are available in three distinct color tones to blend or match manufacturer's other decorative and wood grain panels. Makers printing process reproduces subtle shades and tones inherent in the Roman arches, pillars, balconies, and floral arrangements inscribed in the panels' design. Plywood base panels are available in popular lengths and thicknesses. DG Shelter Products.
Circle 106 on reader service card

Acrylic wood flooring. Perma Grain is a composite material that enhances hardwood's natural properties with acrylic. Liquid plastic is forced into the porous wood structure and permanently hardened by gamma radiation. The resulting composite bears heavy pedestrian traffic with an occasional spray-buffing. Arco Chemical Co.
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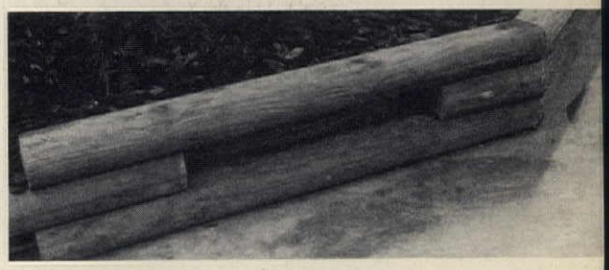
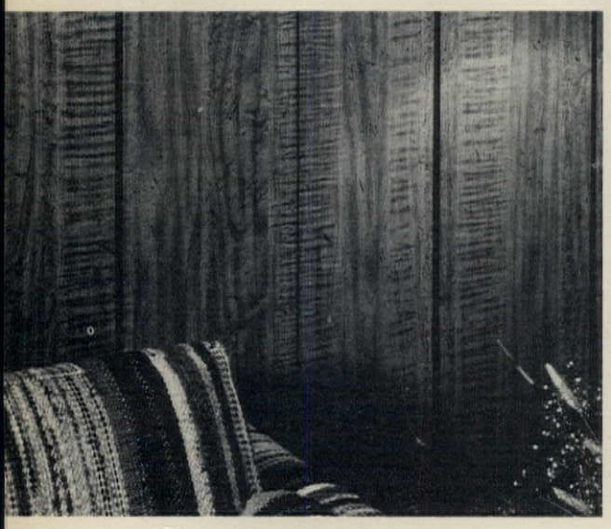
Particleboard



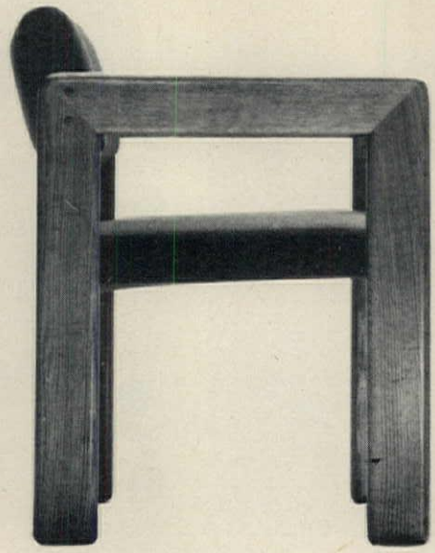
Landscape timbers. Product is designed as replacement for hard-to-get railroad ties. Weighing only 46 lbs, timbers are pressure-treated with Chromated Copper Arsenate preservative, which, according to maker, does not impair natural beauty of the wood. The 8-ft-long timbers can be mitered to conform to irregularly shaped yards or borders and are suitable for residential, commercial, or recreational applications. Weyerhaeuser.
Circle 108 on reader service card

Parquet flooring. A laminated 9"x9" block has a double scoring on each tile to give a patterned effect when laid perpendicular. It is prefinished in mellow brown and durable enough to withstand high traffic areas, according to maker. Also a smooth natural grained oak block is available in a variety of finishes. Both can be installed over almost any subfloor, including concrete. E. L. Bruce Company, Inc.
Circle 109 on reader service card

Wood products



Plywood paneling



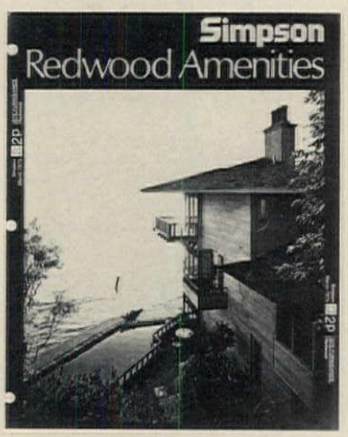
Chair

Modular wood furniture that may be used alone in private offices or combined with movable walls in open plan layouts includes desks, credenzas, executive L units, and secretarial returns. In addition to the case goods, 350 Series includes wood work surfaces, binder bins, book and display shelves which are available as panel hang-on units. Steelcase.
Circle 110 on reader service card

Plywood paneling with grooving simulates the effect of butting one board against another to form a paneled wall and letting time separate the boards forming a variety of groove widths. Varied groove widths of Maplebrook paneling range from 1/8 to 3/8 in. and 3/16 to 5/16 in. Standard 16-in. groove centers have been retained. Available in full 5/32-in.-thick panel in five colortones. Georgia-Pacific Corp.
Circle 111 on reader service card

Chair. Legs and armrests are constructed of solid oak or walnut and have hand rubbed oil finish. Back is foam over webbing; seat, foam over springs. Choice of upholstery is available. Cumberland Furniture Corp.
Circle 112 on reader service card

Custom woodworking. A wide selection of decorative panels, exterior and interior doors, dividers, shutters is available in a wide choice of designs and patterns, or can be custom made to designers' specifications. Company's El Dorado collection consists of hand-carved doors, each done by one craftsman. Pinecrest Inc.
Circle 113 on reader service card



Literature

Redwood. A full-color brochure presents many end use ideas for redwood, such as decks, outdoor furniture, fencing, signing, lighting standards, open and closed courtyards in apartment and townhouse complexes, office buildings, hospitals, and commercial and residential structures. Properties, grades, patterns, and sizes are described in detail. Request *Redwood Amenities* brochure from Simpson Timber Company.
Circle 201 on reader service card

Hand-carved doors in solid mahogany and rosewood, with matching side panels, if desired, are shown in catalog from Elegant Entries, Inc.
Circle 202 on reader service card

Plywood guide. *Plywood Diaphragm Construction* has been updated to include the latest information for design of plywood diaphragms. Technical brochure contains guidelines for the design of structural diaphragms, including such information as the calculation of loads and shears, determinations of plywood panel layout, recommended nailing schedules, required chord dimensions, calculations of deflection ratios, and anchorage recommendations through the use of design examples and discussion, tables, and formulas. Request Form U310. American Plywood Association.
Circle 203 on reader service card

Cedar siding and paneling installation recommendations and product specifications are presented in six-page booklet which includes technical and practical tips on the proper use of product. Helpful to architects, designers, builders, and specifiers, text and drawings cover application and nailing recommendations for various patterns of siding and paneling, gives properties of insulation, weight, and flame spread rating, describes exterior and interior finishing, and coverage estimating. Western Red Cedar Lumber Assn.
Circle 204 on reader service card

Wood lighting standards for recreational, street and highway, interstate exchanges, commercial and industrial applications are described in brochure *The Koppers Collection of Wood Lighting Standards.* The 16-page booklet details four engineered lighting products: laminated light standard; center-bored poles; prewired standards; and traditional solid round poles. Treated with preservatives, surfaces range from plain or sanded to straited, in natural wood tone, painted, or stained finishes. Forest Products Div., Koppers Company, Inc.
Circle 205 on reader service card

Hard maple flooring full-color 20-page booklet titled *MFMA Hard Maple—the Finest Floor that Grows* features use of flooring for recreational purposes. Maple Flooring Manufacturers Assn.
Circle 206 on reader service card

Specifications and Buyers Guide for all pressure treated wood products and services includes addresses of all members of Society of American Wood Preservers, their products and services, and specifications and recommendations for all type of water-borne and oil-borne preservatives and their minimum net retention levels. It also contains samples for specifying pressure-treated and fire-retardant lumber, timbers, landscape timbers, guardrail posts, crossties, fence posts, building and utility poles, and land and fresh water piling, marine piling, marine lumber, plywood and all-weather wood foundations, as well as many special products and services. Society of American Wood Preservers.
Circle 207 on reader service card

Crossties. *Enliven Your Landscape* describes applications, offers hints for installing, and illustrates several ways in which ties can enhance the natural beauty of property. Available in a variety of sizes and lengths in log cut or square cut. Forest Products Div., Koppers Company.
Circle 208 on reader service card
[continued on page 112]

BOLD and *Beautiful* that's copper.

One of the most eye-appealing materials at your command is copper. It ages beautifully, lasts for decades and is easy to work with.

The Revere system* of Laminated Panel Construction lowers the cost of installing copper because both the metal and the supporting deck can be put down in one operation. You enjoy additional savings because Revere laminated panels use light weight copper which is considerably less expensive than standard 16 ounce copper.

These versatile, 2′ x 8′ panels are ideal for roofing, fascias, mansards, siding, ceilings and a host of other applications. For the full story, along with detailed drawings and specs, send for our free brochure on the Revere System of Laminated Panel Construction. Revere Copper and Brass Incorporated, 605 Third Avenue, New York, N.Y. 10016.

*Patent pending.

REVERE

COPPER · BRASS · ALUMINUM

Literature continued from page 110

Industrial hardboard. It's versatility and specifications are described and full-color and black and white photos illustrate products and their uses. Included are industrial hardboard used for signs, displays, and paneling; laminated standard hardboard with applications in furniture manufacture and as platform stock and industrial reel ends, and hardboard on fir laminate which, maker states, is smooth enough for use as slate substitute. Publishers Forest Products.
Circle 209 on reader service card

Latex stains. An illustrated full-color booklet gives types of stains, how to apply, color effects and more. Samuel Cabot, Inc.
Circle 210 on reader service card

Aluminum railings. Pamphlet illustrates and describes product which is offered in two standard heights and has wide choice of post locations. Pivot plate on the bottom adjusts to variations in surface levels, no field welding and no grouting are required. Architects may choose any cap rail design they want. Mounting is accomplished with expansion bolts; cast-in anchoring devices need not be included in the architecture prior to installation; pamphlet also includes product specifications. Finish of extruded railing sections is clear anodic coating (color hardcoat in wide color range is available subject to inquiry). HorizAL Offenhauser, Inc.
Circle 211 on reader service card

Glass. Color brochure describes float glass, sheet glass, tempered insulating, and decorative grid glass. It also includes technical data, standard specifications, and tolerances. Fourco Glass Co.
Circle 212 on reader service card

Copper embossed laminates are offered in 4'x8' panels and are available in 40 hand finished patterns in copper, and aluminum, embossed or brushed, antiqued or natural finish. Pewtertones, brasstones, and steeltones are also available. Cuts and glues like high pressure laminates and can be miter folded or bent to virtually any radius, states maker. Color brochure is available. The Diller Corporation.
Circle 213 on reader service card

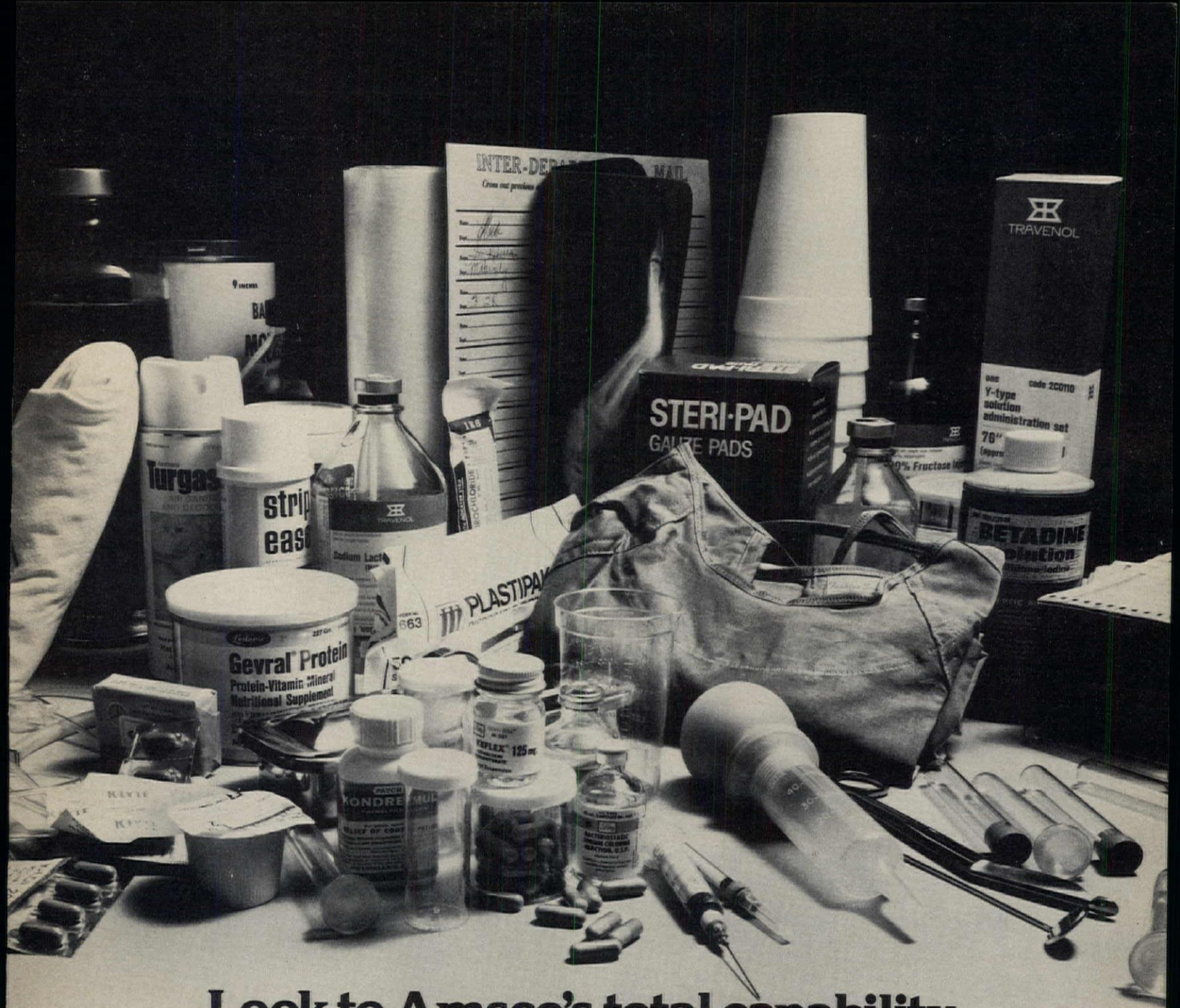
Gypsum wallboard. Brochure contains 30 swatches showing standard and special order colors, textures, and woodgrains for complete line of vinyl surfaced Eternawall. Designed for interior partitions and high traffic areas of commercial and institutional constructions, its vinyl film facing is factory laminated to either a regular or Firestop gypsum board backing. Product specifications and technical data are also given. Georgia-Pacific Corp.
Circle 214 on reader service card

Pre-engineered buildings. Subjects covered in brochure include structural integrity, dimensional data, accessories, and warranties. Butler Manufacturing Co.
Circle 215 on reader service card

Elevators. 21-page four-color brochure describes Americana series and features four different hydraulic elevator types based on pre-engineered, assembly line methods. Available in three coordinated interiors, and four different cab styles of plastic laminate removable wall panels in choice of wood or leather grain patterns. Literature details controls, gives dimensioned outline drawings, complete specifications, and power requirements for each style, plus a large selection of photographs and sketches of the system in use. U.S. Elevator.
Circle 216 on reader service card

H.I.D. lighting products are detailed in full-color catalog. Over 250 individual H.I.D. lighting luminaires are featured including a broad selection of recessed, surface-mounted, and post-top styles in mercury vapor, metal halide, and high pressure sodium. Photometric data as well as information on lighting design procedures is also included. Discussed are energy-saving and lighting efficiencies of H.I.D. lamp operation, ballasts, and general luminaire design features. Markstone Mfg. Co.
Circle 217 on reader service card

Plumbing fixtures. Water-conserving products include toilets, showerheads, and faucets for lavatories and kitchen sinks designed for residential, commercial, and institutional use where reduced amounts of fresh water and waste water are important. Brochure. Kohler Co.
Circle 218 on reader service card
[continued on page 114]



Look to Amsco's total capability in pneumatic distribution systems for your tube transport requirements.

AMSCO's total capability is the successful blend of products, installations, experience, and service at work in hospitals throughout the country.

It's pneumatic distribution the way you want it. One-line or two-line systems. Relay and computer controls designed to suit your particular requirements. An array of sizes to accommodate whatever your needs dictate. Installation by qualified specialists. And our PMA agreement to maintain your system at top efficiency.

In short, we've got whatever it takes to take whatever you've got wherever you want it. Check the chart for specifics, and then get in touch so we can get things moving.

	SYSTEM TYPE			
ITEM	MESSAGE 4″—4″ x 7″	TRANSPORT 6″ antiagitation 8″ antiagitation	PHARMACY 6″ & 6″	MEDICAL RECORDS & MAIL 4″ x 12″
Paperwork, data, reports, requisitions, charges, etc.	•	•		•
X-Rays	•	•		•
Medications (Stat)		•	•	•
Unit Dose Medications		•	•	
Narcotics			•	
I.V. Admixture		•	•	
Medical Records		•		•
Lab Blood Samples		•		
Instrument Kits		•		
Dietary Items		•		
Mail, Documents, Books, Magazines		•		•
CPD and General Stores Items		•		
Stat Deliveries		•		•

AMSCO
American Sterilizer Company
ERIE · PENNSYLVANIA

Pneumatic Distribution Systems

Circle No. 315, on Reader Service Card

Literature continued from page 112

Flying fiberglass long forms produce a concrete surface needing no finish and are lighter weight than typical gang forms, states maker. Brochure also includes sizes and shapes of long forms and special sizes and shapes to architectural specifications. Molded Fiber Glass Concrete Forms Company.
Circle 219 on reader service card

Glass block. Brochure describes and illustrates some of the many patterns and textures, gives specifications and selection and application data. Pittsburgh Corning Corporation.
Circle 220 on reader service card

Ceilings. Four-page brochure describes Minaboard ceilings which are made in acoustical lay-in panels for exposed-grid ceilings. A second brochure describes Travertone ceilings, includes product descriptions, and specifications for six patterns. A mineral wool in tile, regular lay-in and lay-in panel form, product is available in a variety of surface designs, sizes, and edged details. Armstrong.
Circle 221 on reader service card

Energy management. Booklet EM-100 describes need for owners and managers of buildings to make more efficient use of existing energy sources, contains charts and illustrations. Powers Regulator Company.
Circle 222 on reader service card

Luminous skylights are fluorescent lighting forms that give the feeling of a natural skylight. Twelve-page booklet, *Ceiling Design Ideas/ Luminous Skylights* illustrates some of its uses and is available from Integrated Ceilings Inc.
Circle 223 on reader service card

Technical data. Underwriters Laboratories Service has been developed for engineering, quality control, design, research, and safety evaluation personnel as well as others concerned with safety. Available in two sections—electrical and non-electrical or as a full package. Revised documents are updated every 60 days. Documents are filmed on 16 mm microfilm and 24x microfiche. Information Handling Services.
Circle 224 on reader service card

Office planning guide. A 98-page guide describes and illustrates open office systems furniture using lateral files, desks, and 2 in. movable walls. Brochure includes data on wiring, acoustics, and color, presents 28 workstation ideas and suggests job functions they work best with. Also included in the guide are three-dimensional drawings of the 28 workstations and a planning grid. Steelcase Inc.
Circle 225 on reader service card

Lighting panels. A 12-page color brochure contains a selection of functional and aesthetic lighting and ceiling panels in many types and sizes in clear, translucent, and colors; gives lighting data. Scientific Lighting Products.
Circle 226 on reader service card

Composite Construction system. Standard structural long space steel girders, beams, and columns are used. Precast concrete floor joists and poured-in-place composite monolithic concrete slabs are used where compression occurs. System makes use of aluminum form struts and reusable plywood panels in the pouring process. A brochure is available from Composite Construction System, Inc.
Circle 227 on reader service card

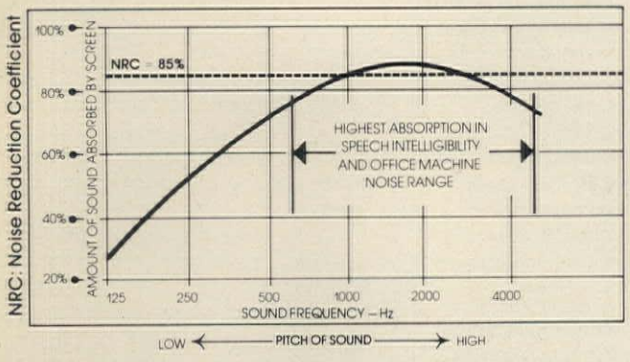
Panel products for architectural cladding and interior paneling are illustrated in brochures which include physical properties, appearance characteristics, and typical applications of inorganic fiber-reinforced panels. Glasweld flat panels are lightweight sheets for interior and exterior use. Facad sculptured exterior panels can be used as the major cladding in curtain wall systems. Qasal flat, integrally white colored panels have polished or lightly textured surfaces. Request "Mineral Panels." PPG Industries.
Circle 228 on reader service card

Baseline Solar Collector is the name of a brochure which gives schematic diagrams, unit descriptions, and field test data. PPG Industries.
Circle 229 on reader service card

Translucent sandwich panels for skylighting and sidewall glazing applications are illustrated, and detail drawings, data, and short specifications are included in literature available from Cemcel Corp.
Circle 230 on reader service card

Some People Buy Our Screens Because They're BEAUTIFUL.

They're attracted by the rich-looking, heavy nylon velvet coverings (available in 14 colors) and mirror stainless or elegant wood grain trim. While they *are* good looking, the real reasons for choosing one of our PLANSCAPE™ Screens are the things you can't see: A superb sound absorbing quality that meets or surpasses State and Federal requirements (.85 NRC), and a rigid, long lasting construction.

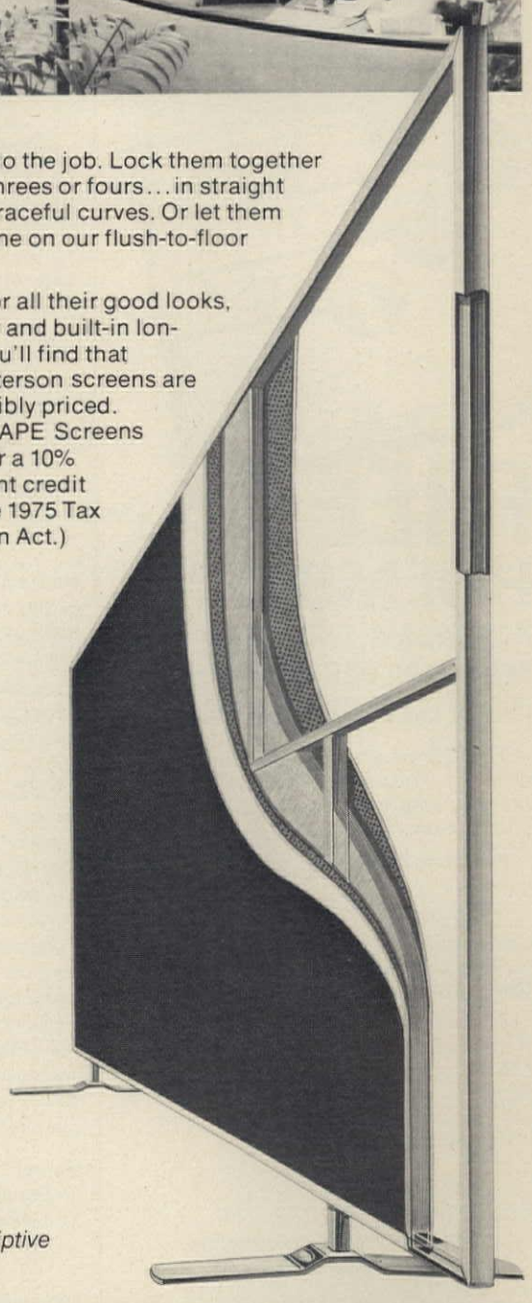


We build our screens on a welded, tubular steel frame. It's strong, yet light weight, and will never get loose and wobbly, no matter how many times you move it. The core is filled with a high-density fiberglass sponge that traps and smothers sound. A perforated hardboard sheet over the core allows maximum passage of sound waves into the fiberglass, yet provides firm support for the outer cover. We laminate a porous foam sheet on the hardboard to give the nylon cover its padded look and feel. The cover (besides looking great) is itself an excellent acoustical material.

Technical and appearance considerations aside, you might want to choose a PLANSCAPE Screen for its versatility. Whether you're defining a traffic pattern or screening a conference area, you'll find a height and width to do the job. Lock them together in twos, threes or fours... in straight lines or graceful curves. Or let them stand alone on our flush-to-floor bases.

Finally, for all their good looks, versatility and built-in longevity, you'll find that Vogel-Peterson screens are very sensibly priced. (PLANSCAPE Screens qualify for a 10% investment credit under the 1975 Tax Reduction Act.)

Screens are easily and positively coupled together with square or triangular steel posts.



Write for our descriptive catalog.

VOGEL-PETERSON COMPANY
Rt. 83 & Madison St. • Elmhurst, Illinois 60126 • 312/279-7123
The Merchandise Mart, Chicago, Space 1689

Building materials

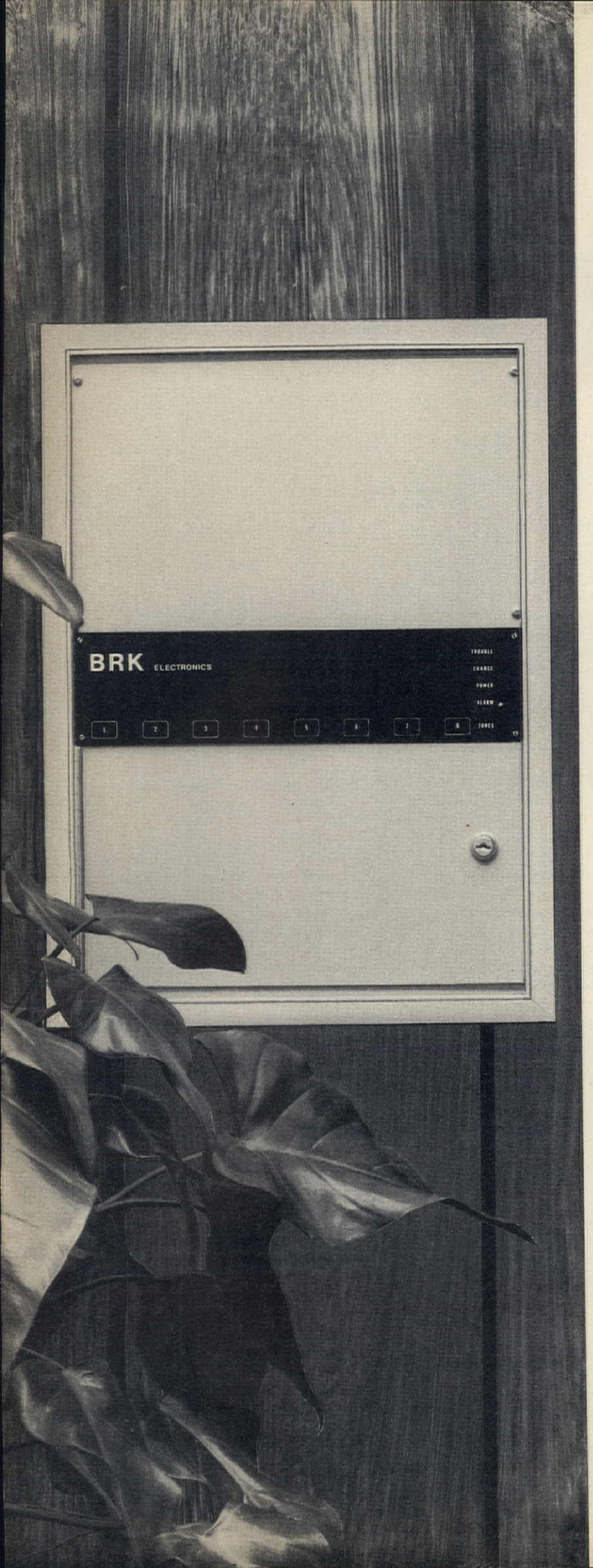
Major materials suppliers for buildings that are featured this month, as they were furnished to P/A by the architects

Myott Park housing, Omaha, Neb. (p. 70). *Architects: Neil Astle & Associates, Omaha, Neb.* Exterior western red cedar plywood siding: Weyerhaeuser. Gypsum board: U.S.G. Carpet: Mohawk. Vinyl asbestos tile: Armstrong. Asphalt shingles: G.A.F. Insulation: Owens Corning. Double-hung aluminum windows: Weathertite. Interior birch doors: Sedorco. Solid core entrance doors: U.S. Plywood. Interior latex spray-on paint: Pittsburgh Paints. Kitchen equipment: Hotpoint. Plumbing: Crane. Heating/air conditioning: Fedders. Electric distribution: I.T.E.

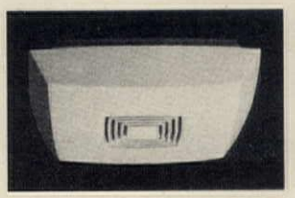
Robert Crown Center, Hampshire College, Amherst, Mass. (p. 86). *Architects: Davis, Brody, Associates, New York, N.Y.* Floor surfacing: Armstrong. Poured gym flooring: Chemturf. Suspended acoustical ceiling (2'x4' lay-in): National Gypsum. Built-up tar and gravel roofing: Barrett. Trowelled-on foundation and dampproofing: Miniwax. Cavity wall insulation: Dow. Styrofoam S.M. Roof insulation: Celotex Urethane. "Greenhouse" and other window walls: Chandler Glass/EPIC. Projected aluminum windows: Wausau Metals. Hollow metal door: E.H. Friedrich Co. Monumental sliding aluminum doors: EPIC. Hardware (locksets, closers, hinges): Corbin. Paint (interior) PPG. Swimming pool: Whitten Corp. Stainless steel gutter and filter for pool: Ducharme Corp. Mercury vapor lighting: Holophane. Recessed downlighting: Omega. Plumbing fixtures: American Standard. Air conditioning rooftop units: I.T.T. Incremental units: Singer.

Native American Center, Minneapolis, Minn. (p. 66). *Architects: THE Hodne/Stageberg PARTNERS, Minneapolis, Minn.* Glass and wood infill walls: Kawneer. Laminated glue lam and deck: Weyerhaeuser (beams and purlins): Bond-Deck (lam-decking). Carpeting: Royal Scott. Quarry tile: Murray. Cedar siding: Steward Lumber. Roof surfacing (Hem-fir Bond-Deck): Bond-Deck. Waterproofing and dampproofing: Tremco. Burnished concrete block partitions: Spectra Glaze. Aluminum sliding windows: Kawneer. Custom laminated interior doors: Paul's Woodcraft. Fir roll-up doors: Wilson. Hydraulic elevators: R&O Elevator. Entrance door: Paul's Woodcraft. Black lever metal locksets: General. Door closers: LCN. Hinges: General. Clear wood exterior sealer: Olympic Stains. Gloss enamel paint (interior) Glidden Paints. Kitchen equipment: Hobart. Sound: J.B.L. Sound system. Seating in gym: Universal Bleachers. Eight in. Bollard lighting: Sterner. Track and spot lighting: Lightolier.

Market Place, Glastonbury, Conn. (p. 63). *Architect: Callister, Payne & Bischoff, Tiburon, Calif. and Amherst, Mass.* Laminated wood beams and decking: Unadilla Laminated Products; Copper roof and skylight system: Fishman Industries; Glass at skylights: Chase Glass through Globe-Amarata Co.; Vertical glass: Chase Glass through Guardian Industries; Stained glass: Jerry Alexander; Paint: Benjamin-Moore.



Unique answer to multi-family fire detection.



BRK's new MCP741 Master Control Panel and advanced ionization detectors solve many of the special problems of apartment house fire detection.

Basically, a BRK system consists of at least one ionization detector in each apartment, and a centrally located Master Control Panel, to which the ionization units are connected by a simple 2-wire circuit. The ionization detectors will sound an alarm in the affected apartment, as well as a general alarm at the Panel and throughout the building.

Each ionization detector has terminal strips to which heat sensors and rate-of-rise detectors can be connected. There's a *battery conversion* feature, too, allowing the ionization detector to be cut out of the building's system and operated on battery power alone. If an apartment has too many nuisance alarms that disturb the whole building, its detector can be placed on battery operation, confining alarms to that apartment only.

To insure each apartment's privacy, while allowing tests of its detector, BRK has key-operated test stations for hallway location. The key not only tests for "power on", but also checks the unit's circuits and sensitivity. Hallway pull boxes are also part of the BRK system, and are connected to the MCP741 Control Panel. This advanced solid-state panel accommodates up to 8 zone modules, each capable of handling up to 60 detectors. Overall, the system can accommodate hundreds of ionization detectors, plus an almost infinite number of heat and rate-of-rise detectors and pull boxes.

Other features include remote annunciation, battery backup power and float recharge system in the control panel, UL listing of detectors and panel, easy installation, and reliable operation. For more facts write or phone BRK Electronics, Div. of Pittway Corp., 525 Rathbone Ave., Aurora, Ill. 60538. Phone: (312) 892-8721.

BRK ELECTRONICS

First in Fire Warning

Circle No. 321, on Reader Service Card

Job mart

Situations open

Architects (Designers): With significant experience as project designer for major commercial or institutional projects urgently needed to join fast growing, professionally orientated national design-build firm headquartered in Milwaukee, Wisconsin. This is a key position with extensive client contact and total design responsibility. Top salary, profit sharing and fringes. An excellent opportunity for a mature, talented designer who can handle total project design responsibilities. Outstanding potential for rapid advancement and professional growth. For details and to arrange confidential interview write to Jerry W. Spencer, AIA, American Medical Buildings, Inc., 515 West Wells Street, Milwaukee, Wisconsin 53203 or call collect 414/276-2277.

Architectural Production Manager: Our Midwest client, a leading medical building construction management organization providing "turn-key" service in designing and building seeks a mature professional with architectural/engineering management experience for this newly created position reporting to Architectural Vice President and supervising staff of twelve including Project Architects and Drafting Personnel. Responsibilities include production drawings, technical design standards, project specifications, outside engineering consultant aspects and administering procedures and control systems. Graduate architect, with exam registration, experienced in commercial, office or institutional buildings in $10 millon plus category necessary. Fee Paid. Send resume to: JOHN W. SILER & ASSOCIATES, INC., Management Consultants, 5261 N. Port Washington Road, Milwaukee, Wisconsin 53217. Phone: 962-9400, Area Code: 414.

Building Commissioner, City of St. Louis: Starting salary $22,975 with $25,000 maximum. Administer the City building ordinances and regulations. Direct the inspecton of all structures and equipment in the City of St. Louis for compliance with the several codes relating to construction, plumbing, mechanical and electrical equipment. Also responsible for the enforcement of zoning and minimum housing standards ordinances. Must have a Bachelor's degree in engineering or architecture from a nationally accredited four year college or university *and* registration as a professional engineer or architect in the State of Missouri. At least eight years of professional engineerng or architectural experience including at least five years in a high level supervisory capacity in building regulation and code enforcement. Write for application to Department of Personnel, 235 Municipal Courts Building, St. Louis, Missouri 63103, or call Mr. Schenk at (314) 453-3571. Applications accepted thru November 10, 1975.

Cost Engineer: For Construction Management Division. Must have experience in construction administration, cost control and estimating, and general knowledge of computers in connection with architectural-type projects. Daverman Associates, Inc., Architects-Engineers-Construction Managers, 200 Monroe Avenue, N.W., Grand Rapids, Michgan - 49502 - 616/451-3525. An equal opportunity employer, M/F.

Electrical Engineer: Immediate opening for Project Design Engineer to accept responsibility for design of electrical systems for major building projects. Daverman Associates, Inc., Architects-Engnieers, 200 Monroe Avenue N.W. Grand Rapids, Michigan - 49502 - 616/451-3525. An equal opportunity employer, M/F.

Faculty: The Department of Architecture, University of California at Berkeley, is seeking candidates for a faculty position in the area of building technology. The applicant must be able to assume the diverse responsibilities of teaching at the undergraduate, graduate and doctorial levels and administering and conducting research programs. Previous teaching experience, research work, and professional achievement is essential. The applicant should have had extensive experience in building technology and/or building science and/or building construction. The person selected should be able to relate the issues of building technology to the achievement of architectural objectives in limited resources, limited capital and community organized contexts. It is anticipated that this will be a tenured appointment. Minority and women candidates are encouraged to apply. Interested persons should contact: Secretary of the Faculty Search Committee, Department of Architecture, University of California, Berkeley, California 94720 for further information and application forms. The final date for filing completed applications is *NOVEMBER 1, 1975*. AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER.

Head - Department of Architecture: Position to be filled December 1, 1975. Combines administration, teaching and counseling, Masters of Architecture or equivalent, licensed, N.C.A.R.B. Certification. Ten years experience, some teaching experience desirable. Cut off date November 1, 1975. Apply to: Jack Beard, Acting Director, School of Art and Architecture, Louisiana Tech University, Ruston, La. 71270. An Equal Opportunity Employer.

Situations wanted

Architect: Egyptian-American, 32, fluent in Arabic, German and French, seeks Middle East assignment with American Firm. Registered New York and NCARB. American College education, well rounded office experience. Moslem background. Box 1359, Grand Central, New York 10017.

Architect/AIA/NCARB: Would like to associate with a larger firm to enhance sales potential for larger scale work. Background: several years with prestige NY design firm + 12 years architectural practice in Airline, Telco, and Interiors. For family reasons, prefer NY metropolitan region at this time. Write Box #1361-870, *Progressive Architecture*.

Architect: A.I.A., NCARB, 18 years experience, strong in administration and project coordi-

[continued on page 120]

E CUBE 75

THE COMPUTER PROGRAM THAT NOW DOES MORE TO SAVE ENERGY AND MONEY.

The new, improved E CUBE '75 produces an accurate, three-part Life Cycle Energy Analysis at low cost. With many new features it computes the hour-by-hour energy requirements of your building or planned building for an entire year—taking into account all weather, design, operation, and occupancy factors.

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E CUBE '75 can now handle Variable Air Volume (VAV) systems directly. It also offers expanded treatment of Multizone, Dual-Duct, and Reheat air distribution systems. The energy consumption of various air side systems can be predicted—you can compare their performances and costs, and pick the one that's best. Other improvements make E CUBE '75 more complete and easier to use.

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E CUBE '75 is Accurate. That's what it says in HUD Report "Study of Computer Utility Analysis." E CUBE is the most advanced program in this field with thousands of runs made by people in private practice, industry, American Gas Association member companies, and the U.S. government.

E CUBE '75 is Private. You give your information directly to the computer. Your project data and the results are never seen by any third party. Of course, we stand ready to provide assistance at your request.

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ENERGY CONSERVATION UTILIZING BETTER ENGINEERING

AGA American Gas Association

Job mart continued from page 118

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