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YALE UNIVERSITY OLD CAMPUS RENOVATION

NEW MINNEAPOLIS GOVERNMENT CENTER BY JOHN CARL WARNECKE & ASSOCIATES

ANCHORS AWEIGH ON CHICAGO'S NAVY PIER

BUILDING TYPES STUDY: STORES AND SHOPS

FULL CONTENTS ON PAGES 10 AND 11

ARCHITECTURAL RECORD

MARCH 1977 A McGRAW-HILL PUBLICATION FIVE DOLLARS PER COPY

The Brigantine®
eet vinyl floor from
mstrong.

In the school of
rd knocks, it's the
sy way to keep up
pearances.

The school is West Hardin Elemen-
n Crump, Tennessee. Where the student
from kindergarten through sixth grade,
bers 270. And where the clean,
ional design of the architecture is
nced by the beauty of Brigantine Vinyl
on® on the floor.

School authorities selected
ntine sheet flooring for three sensible
ons: its lively, attractive appearance; its
maintenance; and its will to survive in a
d of active, busy children.

While Brigantine can be found in
y of the classrooms, nowhere are its
acteristics shown to better advantage
in the school's all-purpose "commons"
Here, the students play basketball
ndary lines are painted on) and other
es, eat their lunches, assemble for
ings, watch theatrical performances.
all that activity takes place on
ntine's beautiful face.

Brigantine's beauty lies in its dirt-
g pattern and its wide array of design-
ncing colors—two of which can be seen
Its durability is provided by its tough
vinyl composition that stands up
g to the constant running, jumping and
ing of youthful feet. A composition, by
ay, that prevents spills from soaking in,
the custodial staff clean up in short
.

The fact is, wherever long-lasting,
cleaning good looks are called for,
find Brigantine at the head of the class.
ctical floor covering that comes in rolls
t wide and up to 90 feet long that
nate a lot of seams. A handsome floor
ring that can attend the school of hard
ks and graduate with honors. To learn
, send for a free copy of our "First
ly" booklet which describes Brigantine
other Armstrong commercial floors.
Armstrong, 303 Rock Street,
aster, Pa. 17604.

e data, circle 1 on inquiry card

: H. G. Barnes and Associates, Jackson, Tennessee
Contractor: Markham & Hardin, Jackson, Tennessee

FROM THE ® INDOOR WORLD® OF
Armstrong

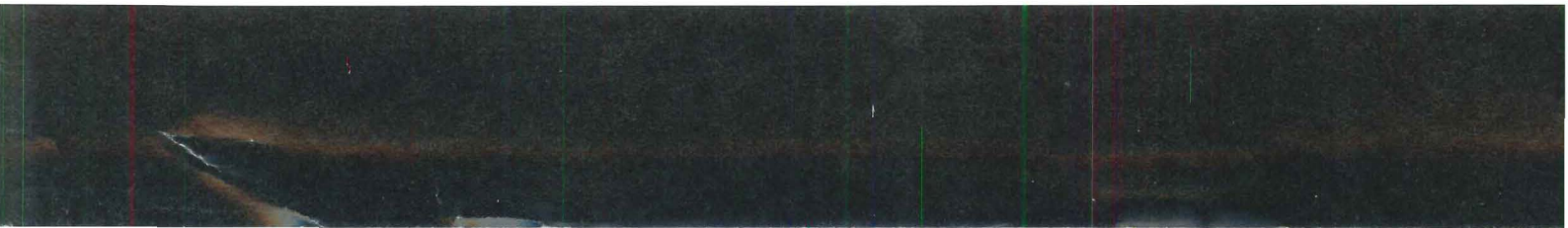
This pendant fixture, movable to many points in the room, provides both quality task lighting and substantial energy savings.

The Synercon™ 60 Ceiling System from Armstrong. A new standard of design flexibility produces a new high in energy savings.

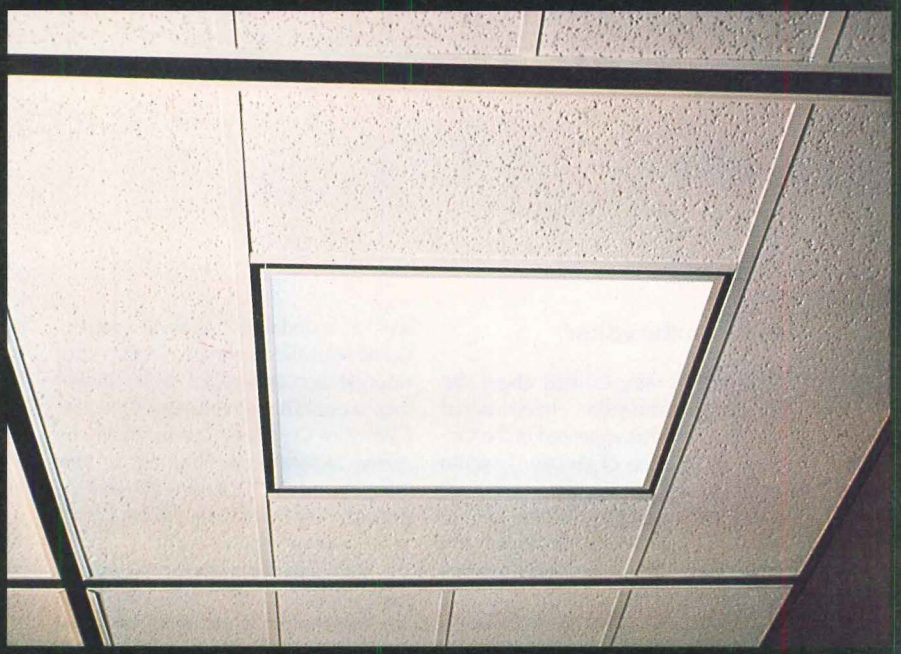
The Synercon 60 Ceiling System from Armstrong is all new from the grid to the board, from the lighting options to the air handling. More important than even its newness, however, is its innovation. Innovation that serves to increase design flexibility, decrease energy consumption, and enhance lighting quality.

The new lighting starts with a pendant fixture designed to provide highly efficient task lighting that can save as much as 65% in electrical costs when compared to conventional-type recessed troffers. It accommodates two 40-W lamps which result in 70 or more footcandles at the work surface and is offered wit special double lens that controls brightness and ef tively beams the light exactly where it's needed. Wh more, with the fixture suspended, the ceiling is 1 acoustical material.

With the Synercon 60 Ceiling System, howe that's only the start. Because there are two other li ing options as well. The newly designed recessed t fer you see above that also saves energy becaus normally requires fewer fixtures than competitive tems. And the energy-efficient sodium fixture has b



ing includes 14″ x 48″ troffer (2- or 3-lamp) with standard
olarized lens; parabolic louvered fixtures (8- or 16-cell).



Further lighting is this 29″-square fixture with high-pressure sodium lamp, offered with standard or polarized lens or parabolic louver.

Air-handling options include air boot and bar for constant-volume systems as well as two variable-volume systems designed for energy savings.

ecially designed to control brightness without seri-
sly reducing the lamps' efficiency. Optional polarized
nses with these fixtures can further lower energy
quirements as well as improve lighting quality by
ducing veiling reflections.

With all three systems, the lighting efficiencies
sult in both immediate and long-term cost reductions.
deliver 70 footcandles, the pendant fixture can re-
ire only .9–1.0 watts per square foot; the high-pres-
re sodium, only 1.4–1.5; the standard troffer, only 1.9–2.0.

The new grid is three inches wide, with a flat
nge, and features a 1⅝″ black reveal that extends
wn the side of the recess and takes partition studs. It
s a five-foot on-center hanging capability and can be
0% slotted for air distribution.

The new board is nondirectional Georgian
nich, combined with the flat grid design, produces a
btle, unobtrusive look. A new super acoustically ef-
ficient board called Silok™, shown in main illustration, is also available for use in open plan spaces.

The new air handling gives you a choice of a high-capacity five-foot-long air bar designed for constant-volume systems as well as two variable-volume systems—each with two options—that save energy in several ways. They require no reheat, thus saving the cost of reheating cooled air. They need no external power to operate either valves or thermostats. And by reducing air quantities, they allow a reduction in the size of ductwork and fans.

With all its newness, innovation, and energy efficiencies, the Synercon 60 Ceiling System gives you a sum total of flexibility you've never had available before. In fact, this new system offers so much, we think you'll want to read about it in depth. Write us now for all the technical details. Armstrong, 4203 Rock St., Lancaster, Pa. 17604.

For more data, circle 2 on inquiry card

FROM THE INDOOR WORLD® OF Armstrong

Letters to the editor

We were all very excited about the Baltimore-Washington International Airport article that appeared in the October, 1976 issue of RECORD. I would like to sincerely thank you for your interest, the professional manner in which the article was presented and for the exposure for the BWI Terminal Expansion Program.

Dean S. Roxanis
Public Affairs Specialist
Baltimore-Washington International
Maryland Department of Transportation

I wish to protest Edgar Tafel's November "review" of John Sergeant's fine book, *Frank Lloyd Wright's Usonian Houses*. It seems to me that a serious journal reporting on a serious book ought to require a serious review. Instead we have a limp essay consisting of tired reminiscences, a defense of Taliesin, a gratuitous remark about the author's nationality, and the suggestion that since he "was not there," Sergeant is unqualified to discuss Wright's career in the 1930s.

The job of a reviewer is to report content, to tell what is in a book, to evaluate its thesis, its scholarship, its style, and to indicate its interest for a particular audience. Tafel does none of this. What he does do is remind everyone that *he* was on the job during the halcyon days. What reason, therefore, does Tafel give for Sergeant's *alleged* unfamiliarity with Usonian building problems? He was not there. With one swipe, research, analysis, and scholarship are dismissed. If one was not there, one cannot know.

It is a sorry fact that the self-appointed guardians of Wright's legacy continue to withhold recognition from deserving "outside" scholars and are still reluctant to share him with the rest of the world. Their attitude has detrimental consequences, and Tafel's "review" is a case in point. Strategically placed readers of this influential journal have probably drawn the conclusion that Sergeant's book is inconsequential. In fact, it is the most important study of Wright to appear in several years. (Could Tafel be clearing the field for his own forthcoming biography?)

Taliesin, which Tafel is quick to defend, is an equally irresponsible "guardian." The claim is made that Taliesin's "private files" are its own, that it is beseiged by researchers. Thus Sergeant and others should not object to Taliesin's closing its doors to scholars. Of course, not everyone is excluded: not those who can afford a $40 an hour research fee for the privilege of seeing what they are allowed to see—a scandalous archival policy. Could not Taliesin donate Wright's correspondence and copies of his drawings to established repositories like the Library of Congress, the Burnham or Avery architectural libraries, or the State Historical Society of Wisconsin, or could it not admit reputable scholars as other private archives do?

I am appalled that RECORD, which gave Wright space many years ago when he had no forum, should now be in the position of publishing petty comments about those that take him seriously. Wright and Sergeant deserve better. Long after Wright's guardians are gone, Sergeant's book will remain as testimony to the architect's genius and to the author's skills.

Robert C. Twombly,
Associate Professor
Department of History
The City College of
The City University of New York

Mr. Tafel suggests that I was not aware of performance failures in some Usonians and that this may have been due to my "not being there" when they were built, or perhaps to my being "a Britisher."

In Chapter 1 there is a section entitled 'Least Successful Aspects of Usonian's (pages 29-30) which specifically discusses the wiring problems. Difficulties with mitre-cut corners and other areas not mentioned by Tafel, such as heating, are discussed on pages 112 and 118, and elsewhere. Mr. Tafel's incomprehension at the inclusion of Bruce Goff in the final chapter is more serious as it relates to the book's sub-title: The Case for Organic Architecture. He only comments on the houses and seems unaware of the chief argument of the book contained in its second half. This sets out Wright's social and political views, and relates them to events in the 1930s and the decentralized context for all his subsequent work. It, also enlarges Wright's definition of 'organic.' All this Mr. Tafel ignores.

So far as conveying an objective view of Wright goes, I think that it is unfortunately an advantage being physically far from Taliesin. To Mr. Tafel's suggestion that to write history you must be there, it must be said that this may be subjective, as the participant sees events through the lenses of his own preconceptions and prejudice. Someone who was not there, even from another generation, is more distanced from events but can interpret them alongside current concerns and relevancies. Both have their value.

John Sergeant
University College
London

In your January 1977 Letters column, Edwin C. Rubin wrote to you expressing concern over the absence of personal credits on the Trio Industries building published in your November issue. Responsibility for any omission lies entirely with us.

This project was produced by a *team* of dedicated professionals on our staff too numerous for individual attention. To have singled out any one (or two, or three) would have shorted all others. Furthermore, the team concept is historical with our firm and we see no reason to change it at this time.

Harvey P. Clarkson, president
Shreve Lamb & Harmon
Associates, P.C. New York, N.Y.

Calendar

MARCH

3-May 23 Exhibition, The Royal Pavilion at Brighton, shown at the Cooper-Hewitt Museum, the Smithsonian Institution's National Museum of Design, New York City.

5-7 The 1977 NHC Annual Meeting and Convention, sponsored by the National Housing Conference, Inc., Statler Hilton Hotel, Washington, D.C. Contact: NHC, 1126 16th St., N.W., Washington, D.C. 20036.

14-16 Conference, "How to Revitalize Your Downtown Through Urban Design Action," sponsored by the Downtown Research and Development Center, Warwick Hotel, New York City. Contact: Ms. Marion Spanbock, Coordinator, Downtown Research and Development Center, 555 Madison Ave., New York, N.Y. 10022.

14-17 NOISEXPO '77, The National Noise and Vibration Control Conference and Exhibition, O'Hare/Kennedy Holiday Inn, Chicago. Contact: NOISEXPO '77, 2711 E. Oviatt Rd., Bay Village, Ohio 44140.

14-25 The United Nations Water Conference, Mar del Plata, Argentina.

19-23 Solar Heating & Cooling Workshop and Product Exhibition, sponsored by the Solar Energy Industries Association, Hyatt Regency Hotel, Atlanta, Ga. Contact: Solar Energy Industries Association, 1001 Connecticut Ave., N.W., Suite 632, Washington, D.C. 20036.

28-29 Museum and Art Gallery Lighting Conference, sponsored by General Electric Lighting Institute, Nela Park. Contact: Manager Lighting Education, Lighting Institute, General Electric Co., Nela Park, Cleveland, Ohio 44112.

APRIL

16-19 Solar Fair, sponsored by the Georgia Solar Energy Association and the Georgia Conservancy, Shenandoah, Ga. Contact: William P. Corley, 2970 Peachtree Rd., N.W., Suite 788, Atlanta, Ga. 30305.

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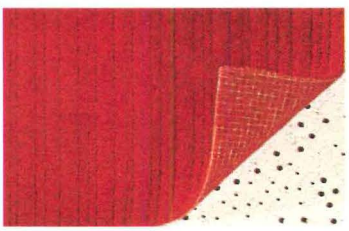

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FROM THE INDOOR WORLD® OF

Armstrong

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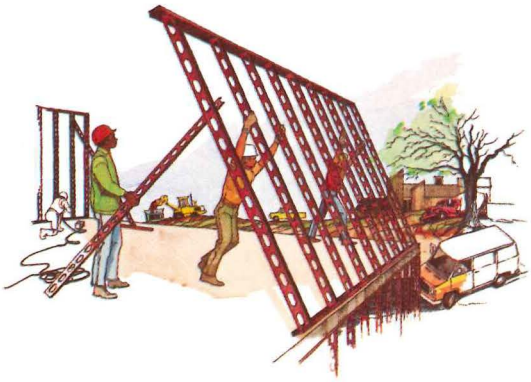
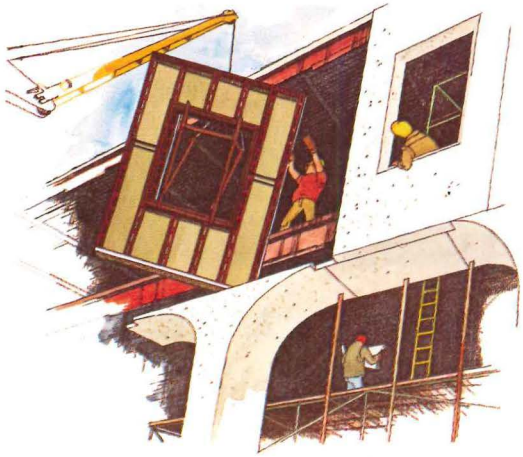


Structural components included in Inryco/Milcor steel framing systems can support the entire weight of buildings up to five stories high. Components are frequently pre-assembled for installation in large sections to save construction time.



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Through longtime involvement in both construction and manufacturing, Inryco has become the recognized leader in the steel framing field. We've worked closely with steel framing contractors to develop system innovations and improvements in fabrication and erection techniques. We stand ready to assist your contractor in developing proper framing construction techniques to help you achieve the maximum benefits of our systems.

Consider our systems and services for your next project.

Other companies manufacture and sell steel studs and joists. None have the experience, capability or desire to provide the extras you get from Inryco. Please review the information on Inryco/Milcor Steel Framing Systems in Sweet's Architectural File (section 5.3/In) or Light Construction File (section 5.3/Inr). Then give us a chance to discuss their application to your projects by contacting:

Milcor Division, INRYCO, Inc.; Dept. C-4033; P.O. Box 393; Milwaukee, WI 53201.

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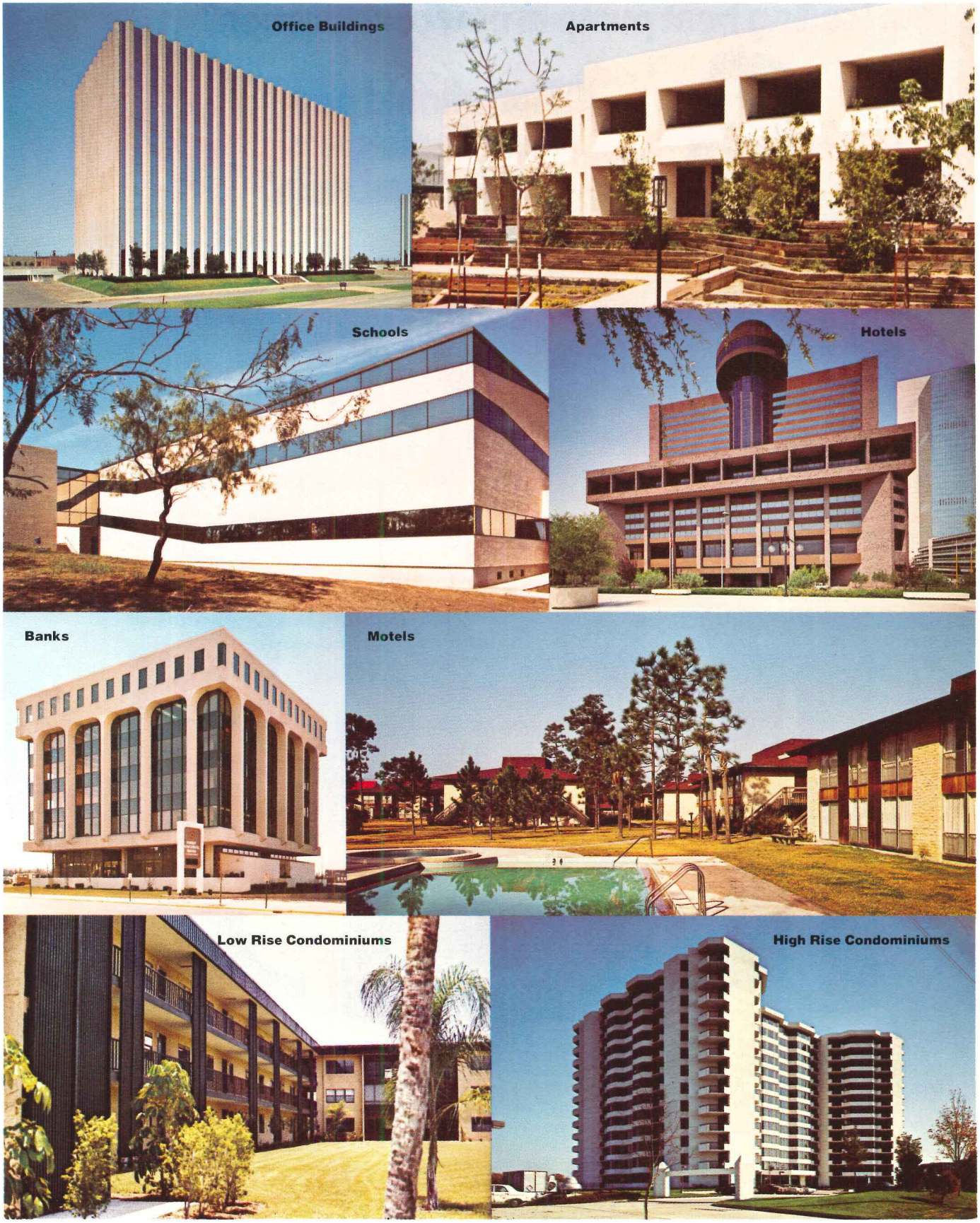

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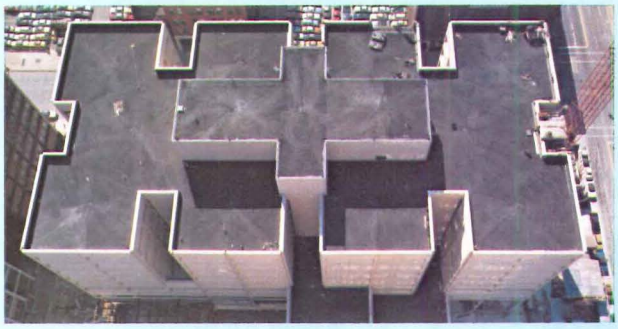

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Center for the Study of Contemporary Art/
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Architects: Sert, Jackson & Associates
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THE RECORD REPORTS

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ARCHITECTURAL BUSINESS

TURES

Homage to Catalonia: a contemporary art museum in Barcelona by Sert, Jackson & Associates

Designed to exhibit the work of Joan Miró, donated to the City of Barcelona by the painter himself, the building is a further development of formal ideas that have long preoccupied architect Josep Lluis Sert.

Yale University Old Campus renovation

Architects Edward L. Barnes and Herbert S. Newman Associates have renovated four late 19th century dormitories in a manner that makes the most of their unique architectural character.

Impressive new Government Center features grand atrium space

A new public building in downtown Minneapolis has been designed by John Carl Warnecke & Associates, featuring a dramatic atrium 350 feet high with exposed structural diagonal braces.

Anchors aweigh on Chicago's latest amenity

Stretching three-fifths of a mile out into Lake Michigan, old Navy Pier, as refitted by Chicago's Bureau of Architecture, is underway once again—a relentlessly nautical mix of commercial, cultural, and recreational pursuits.

Hedrich-Blessing

BUILDING TYPES STUDY 499

ARCHITECTURAL ENGINEERING

NEXT MONTH IN RECORD

Building Types Study 500: Looking back over forty years of building types

In honor of its 500th Building Types Study, RECORD has invited two brilliant "historicizing architects," Charles Moore and Richard Oliver, to assess the studies from 1937 to the present. Their analysis will focus upon the evolution of the form of the traditional building type as found in schools; on new building types such as the drive-in and the recycled building; the evolution of new patterns of living as expressed in the everyday house and the vacation house; and the question of style as best shown in churches, stores, restaurants and bars.

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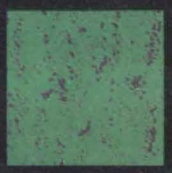
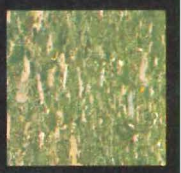
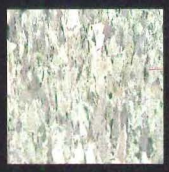
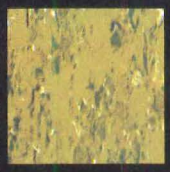
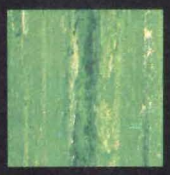
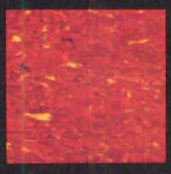
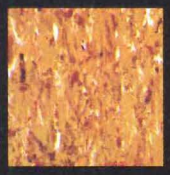
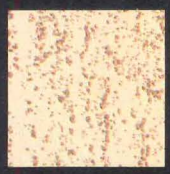
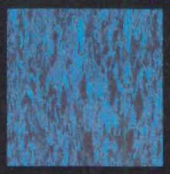
So now, when you decide on  or  you can match with   and  or blend with   or highlight with   or  or decide on   or  and match with   or contrast with   or even  . Whatever. You can create it with the first Architectural Floor Tile Line made to go beautifully with itself. In 45 colors, 26 of them new for 1976.

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n urban mayor offers some sensible strategies searching for a new urban policy

physical problems of our cities are bad ugh—the tragic facts of a decaying housing k, worn-out parks, obsolete schools, va- lots, empty stores and industrial buildings behind as businesses—just like the middle- me taxpayer—leave the cities in search of good life" somewhere else.

We know pretty well how to solve the sical problems—in terms of design and struction, in terms of planning ideas and hard facts of brick and mortar.

What we don't know is where to get the ey to do the work; and how to change the al/economic/political picture so that the erioration and disinvestment doesn't con- e.

Some very sensible thinking on these es was offered to the National Home Im- vement Council last month by the 36-year- mayor of Portland, Oregon, Neil Gold- midt. From his place on the urban firing (before his election he was a Legal Aid at- ey) he offers advice that seems so sound it erewith lengthily excerpted:

"We are left in our cities with a popula- that is predominately lower-income, bro- families, and elderly—a social structure hout the reinforcement of the community anization provided by families. . . . Without opulation of families, we are left without zen participation in the planning of neigh- hood needs and volunteerism of all kinds; hout housing maintained at housing code dards, without support for neighborhood he prevention programs, with low voter outs in school-levy elections, and with un- le school enrollments. In return, we get e demand for police, fire protection, adult juvenile courts, public health clinics, legal garbage, code enforcement, mental health , day care, food stamps, welfare, aid to de- dent children, street cleaning, high-power et lights, park maintenance, school mainte- ce, towing of abandoned automobiles."

Mayor Goldschmidt pointed out with t clarity the Catch: "The implications of disinvestment are overwhelming [because] se neighborhoods where the citizens are t self-sufficient require the most in basic vices. As a result, we have spent the past nty years chasing the results of subsidized nvestment and decay which try to replace llapsed infrastructure of self-help, self-dis- ine, and community self-control with even e subsidies."

Mayor Goldschmidt puts the respon- sibility for this disinvestment in the city at the Federal government: "It is popular to talk about the 'natural' economics of this disinvest- ment from our cities and the flight of families to the suburbs—about the automobile and cheap land. Nothing about it was natural. It was planned and paid for—subsidized—by Federal housing programs [beginning with vet- erans' programs after World War II], Federal highway projects, Federal sewer grants, Fed- eral tax incentives [notably the income-tax de- duction for mortgage interest], and Federal en- ergy non-policies. And at every step the cities picked up the invisible tab."

Mayor Goldschmidt suggested a new beginning based on what we know:

1. "Time is money.

2. "Private land assembly is often diffi- cult and time-consuming.

3. "City governments know what they don't want, but not what they do want.

4. "There is more to housing our people than Federal participation can handle. Local housing efforts have focused too much on the Federal presence, unwilling to admit that there will never be enough Federal money . . .

5. "Psychology is important. Local gov- ernments must attack their problems success- fully, and market their success. A psychology of a positive market attitude will do more than new Federal programs . . .

6. "We have to use Federal, state, and local programs to leverage private funds into the market. 100 per cent subsidies will never do the job.

7. "Housing doesn't exist in a vacuum. Whether cities exploit new opportunities to at- tract families back into the cities will depend on their success in targeting resources to im- prove the environmental features of neighbor- hoods, schools, parks, public transit facilities, trees, clean air, crime prevention—all the in- gredients of neighborhood stabilization.

8. "We have to save what we have. This will encourage new construction next door or down the block. No one builds new apart- ments or homes next to abandoned structures.

9. "The key is targeting: To start with something that will succeed and achieve it. If we can show success, success will spread."

Mayor Goldschmidt had some sound advice for meaningful action on the local level

"If the cities want housing—both new housing and housing rehabilitation—we will have to take the initiative; and that may require us to do any or all of the following:

1. "We can condemn old, substandard, and often vacant dwellings and sell them to re- habilitation contractors . . .

2. "We can cut the time and cost of devel- opment and rehabilitation by aiding with land assembly. We can guarantee water and sewer services to these assembled lots, and ensure that all required development compliances are met when we sell.

3. "We can provide water-rate incentives for sprinklering units where fire codes now make it impossible to build with wood.

4. "We can offer land write-downs, tax in- crements, and tax incentives.

5. "Because time is money, we can and should shorten time for developers and rehab- bers by simplifying our permit procedures.

6. "We can recognize that there is no one right kind of housing. If what we seek is home ownership, the traditional single-family home is not the only way to get it. Condominiums for middle-income citizens should be considered an alternate—and if they meet public objec- tives, we should be devising incentives, tax and otherwise, to make them profitable.

7. "We can 'package' opportunities by aggressively taking the initiative to match in- vestors, lenders, developers and neighbor- hoods with the opportunities.

8. "We can write rehabilitation codes to replace or supplement our housing codes. Our codes were written years after most of our ex- isting housing was built, and their excessive standards now frustrate our avowed conserva- tion objectives. We can write codes that are both safe and supportive of our public pur- poses—with reduced costs and frustration."

Summing up, Mayor Goldschmidt said: "If we want housing, these are the initiatives we can take to get the job started. While it once looked hopeless, we now have new hope. . . . And we have a new sense of localism and a feeling that we have a new opportunity to control the shaping of our cities."

This kind of do-it-yourself and positive at- titude seems not only refreshing—but very practical—at a time when so many problems are pressing upon the Federal government. It is the spirit that initiated all of the successful "hometown" rehabilitations we wrote about in the December RECORD. And it seems to me to be a cause which not just mayors—but archi- tects everywhere—need to put their commit- ment and efforts behind.—*Walter F. Wagner Jr.*

The results are in.

Grueling, independent tests by Bowser-Morner Testing Laboratories—using National Bureau of Standards performance criteria for built-up roofing systems—have proven what we've been saying all along:

When it comes to thermal shock performance, our Fiberglas* Perma Ply-R built-up roofing system is superior to conventional systems.

As defined by the National Bureau of Standards, "The Thermal Shock Factor (TSF) is an indicator of the roof membrane's ability to withstand the normal temperature changes of its environment. Values of the coefficient of expansion, tensile strength, and load-strain modulus can be used to calculate the TSF."

The heart of our system is the unique, inorganic Perma Ply-R felt. It works two ways to give the system its strength.

First, when daily temperature changes cause a roof to expand and contract, Perma Ply-R is the best reinforcement it can have. That's because the Perma Ply-R felt is made of strong, continuous strand glass fibers. So its physical strength characteristics are similar, both longitudinally and transversely.

Second, Perma Ply-R helps create a monolithic roofing system. The strongest kind of system there is. The reason: Perma Ply-R is a porous felt. So it meshes totally with the bitumen.

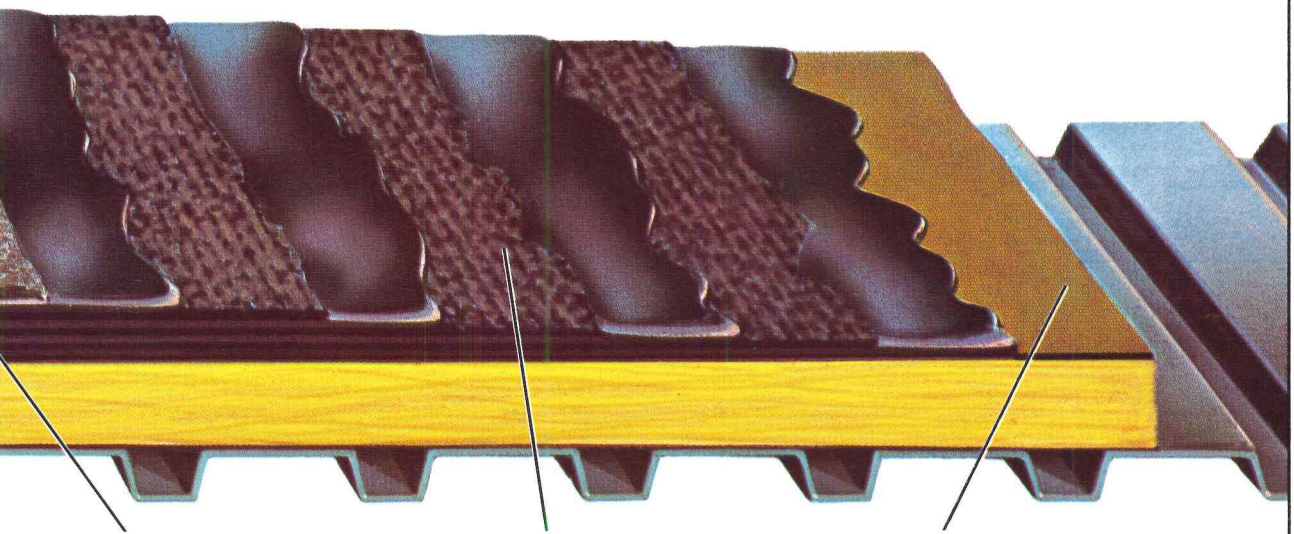
What does all this mean to anyone who's faced with specifying a built-up roofing system?

Simple.

Properly installed, our Perma Ply-R system minimizes the possibility of splitting, blistering, and internal deterioration of membranes. It has the potential to outlast any other BUR system money can buy.

If you want to see the "Thermal Shock Performance Comparisons," please contact your local Owens-Corning representative or write: M.H. Meeks, Owens-Corning Fiberglas Corp., Fiberglas Tower, Toledo, Ohio 43659.

They've got the test results that prove every word.



Our Perma Cap surfacing sheet combines two materials: Fiberglas—so it's tough, won't warp or rot. And inert, non-combustible white ceramic granules that reflect sunlight and help minimize thermal shock.

Our Fiberglas Perma Ply-R is a porous felt. So it can mesh with the bitumen, creating a monolithic roofing system that minimizes interply blistering and adds to the roof's outstanding thermal shock performance.

Our Fiberglas roof insulation has its own Fiberglas reinforced asphalt cover. So the bitumen can be applied directly to it, making the insulation an integral part of the membrane.

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Will your statement endure until they can choose for themselves where to live and work?

The architect is faced with a unique challenge: the buildings he designs are both private as well as public assets that must meet both the economic needs of business and the esthetic demands of the community.

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*Fluropon meets Pennwalt license requiring 70% Kynar 500, Pennwalt's registered trademark for its polyvinylidene fluoride resin.

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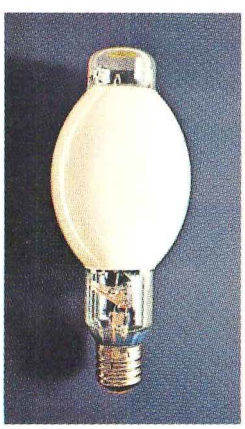
How Robinson's save



Metalarc lamps help cut lighting energy use 41%—and make the merchandise look great.

Department store lighting: if it helps move the merchandise, it's good. If it doesn't, it isn't.

But today, it has to save energy, too.

This is how Sylvania Metalarc lamps helped give the best of both worlds to J. W. Robinson's 158,000-square-foot Westr ster, California store.

Robinson's didn't decide or lighting for this store witho lot of planning and testing fir

The tests took place in a 3,(square-foot lighting lab in t main store. They tested n kinds of lighting for color, en use, dramatics. And, of cou customer reaction.

The winners? Sylvania 175-

45,000 a year on its light bill.

alarc/C lamps for primary il-
nation. Clear Metalarc lamps
corner displays. Incandescent
fluorescent lamps for accent
supplemental lighting.
etalarc lamps' excellent color
dering, point-source illumina-
and efficient energy use
e an unbeatable combination.
ll told, the Westminster store
uires only 2.98 watts per
are foot for lighting. That's
41% less than the average 5.1 watts in the company's older stores.

70% more from every lighting watt...

$45,000 less per year to light this modern store.

To say nothing of the capital saving because of fewer fixtures.

Sylvania Metalarc lamps made a large portion of these savings possible.

How do you light a department store from scratch?

Start with Metalarc lamps...

For more details on these or any other Sylvania HID lamps, see your Independent Electrical Distributor. Or write Sylvania Lighting Center, Danvers, Massachusetts 01923.

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* Our estimate of the number of competitive Walk-Ins being manufactured with 2½" thick urethane . . . or 3" thick urethane . . . or wood frame panels with urethane butted in place . . . or fiberglass . . . or styrofoam . . . or other conventional materials.

Bally®

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"Triangles"—a multi-faceted Steuben Crystal sculpture

Announcing the 1976 winners of the Owens-Corning Energy Conservation Awards

Winner, Institutional category

Allen and Miller, Architects, Santa Ana, California, for the Fremont Elementary School, Santa Ana, California

Winner, Special category

Stephen B. Jacobs & Associates, New York, N.Y., for the Printing House, a former loft building in New York City

Winner, Governmental category

Kansas Architects and Planners Associated, Lawrence, Kansas, for the Federal Office Building, Topeka, Kansas

Honorable Mention, Governmental category

Unthank Seder Poticha Architects, Eugene, Oregon, and Marquess Engineering Company, Springfield, Oregon, for the Lane County Public Service Building, Eugene, Oregon

Honorable Mention, Commercial category

Taylor and Collum, Architects, Atlanta, Georgia, for the Shenandoah Solar Community Center, Shenandoah, Georgia

Honorable Mention, Institutional category

Arthur Cotton Moore/Associates Architects, Washington, D.C., for the Science Classroom at Madeira School, Greenway, Va.

The 1976 Energy Conservation Awards Jury

This year's winners were selected by:

John Street, chief architect, John Portman Associates, Atlanta, Ga.

William C. Louie, vice-president, Smith Hinchman and Grylls, Detroit, Mich.

Charles Schaffner, senior vice-president, Syska & Hennessy, Inc., N.Y.C.

Nathanial Curtis, partner, Curtis & Davis Architects and Planners, New Orleans, La.

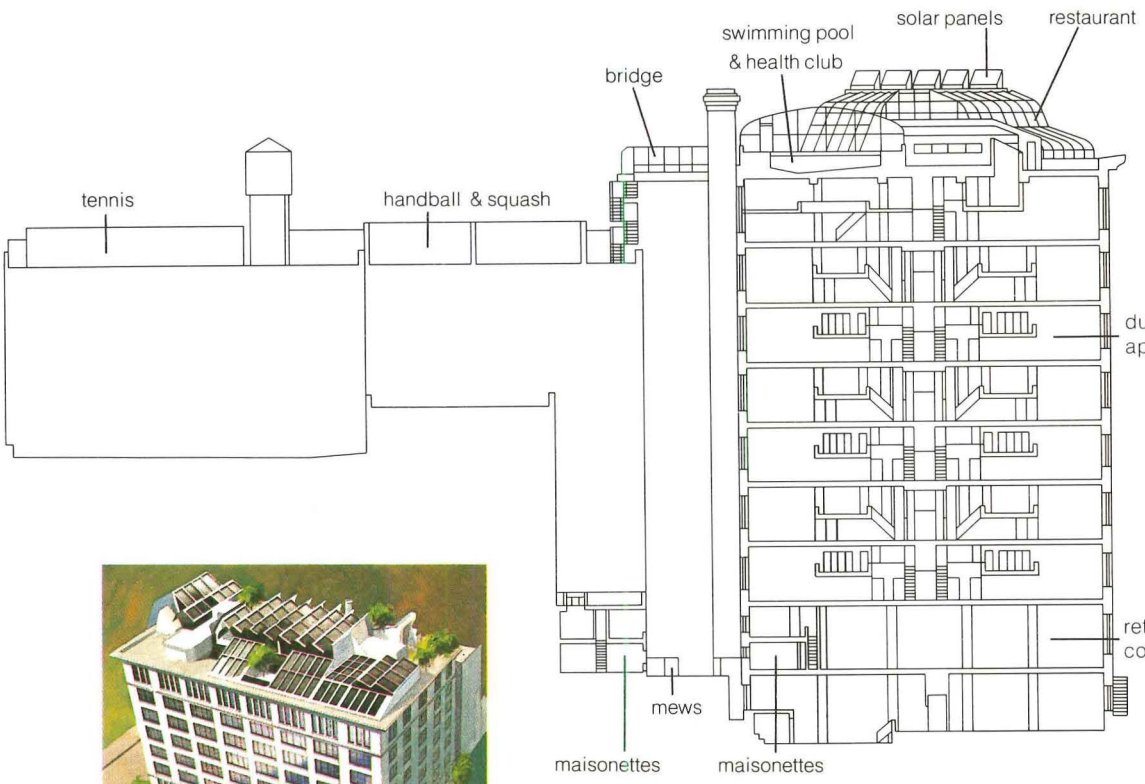
C. Herbert Wheeler, professor of Architectural Engineering, Pennsylvania State University, University Park, Pa.

Samuel Hack, director of facilities and construction management, U.S. Energy Research and Development Administration, Washington, D.C.

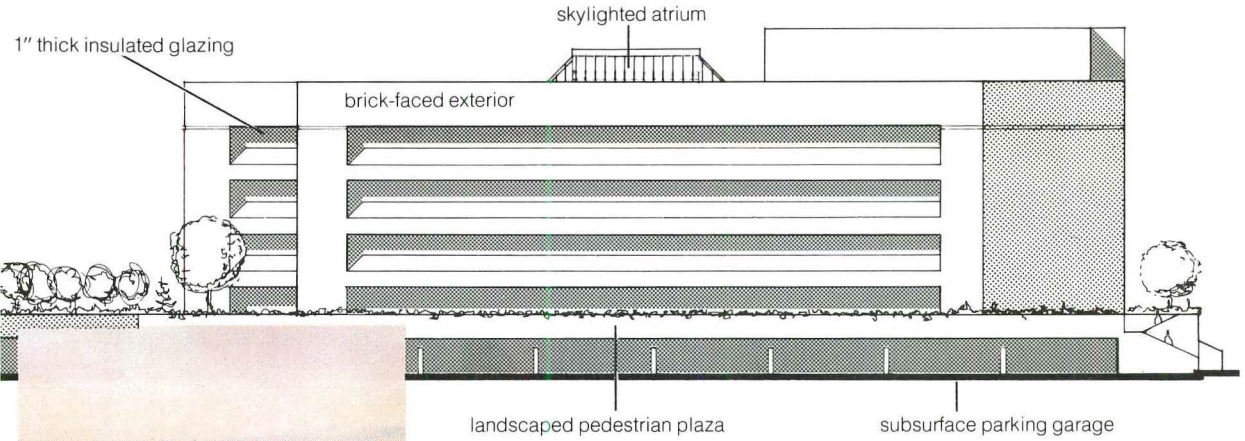
For a look at three of the winning designs, turn the page.

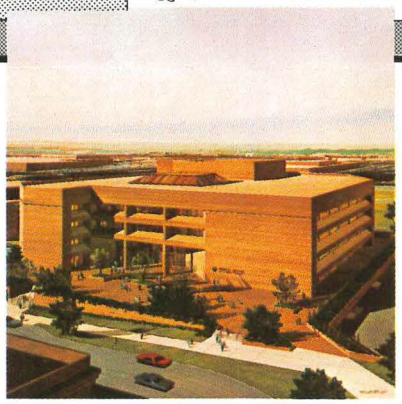
Three winning designs, and why they won

These buildings won top honors in the Owens-Corning Energy Conservation Awards Program for 1976. Look them over. They show how new and not-so-new thinking can produce outstanding energy-saving designs.
For more information about all the 1976 winners, write to K.T. Meeks, Owens-Corning Fiberglas Corporation, Fiberglas Tower, Toledo, Ohio 43659.

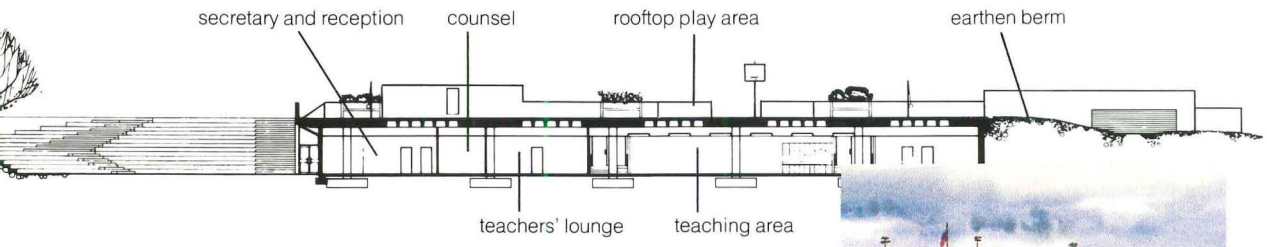


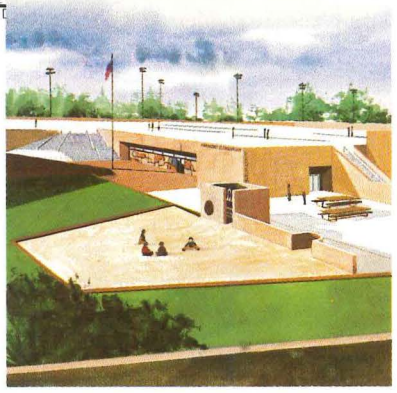
Printing House, New York City. Recycles an obsolete industrial building to create unique urban style housing. A vertical heat pump provides heating and cooling. Solar panels provide energy for domestic hot water. All insulation standards are upgraded. All windows are 5/8-inch insulating glass.





Federal Office Building, Topeka, Kansas. Uses mass plus heavy insulation in walls and roof to create an energy-conserving envelope. Open, skylighted interior atrium allows minimum exterior glazing. Windows comprise only 17% of exterior wall area. Glazing is recessed or shaded to reduce heat gain in summer. Lighting is 2.3 watts/sq. ft. Estimated saving on heating costs: $2,600/year.





Fremont Elementary School, Santa Ana, California. Poured-in-place concrete construction stores heat in the structure, causes a lag in heat transfer to occupied spaces. Subsurface design and earthen berms reduce heat gain and loss through walls. Total cooling load is cut 20%, electrical consumption is cut by 42.5 kw/hr for annual savings of $2,142.

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known for its lastin

Architect: Vincent G. Kling & Partners, Philadelphia, Pennsylvania.
Flooring Contractor: B. Shehadi & Sons, Livingston, New Jersey

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ood looks. At A.T.&T.

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arpet-all 150,000 square yards-is a special
n construction with pile of Antron* II nylon.
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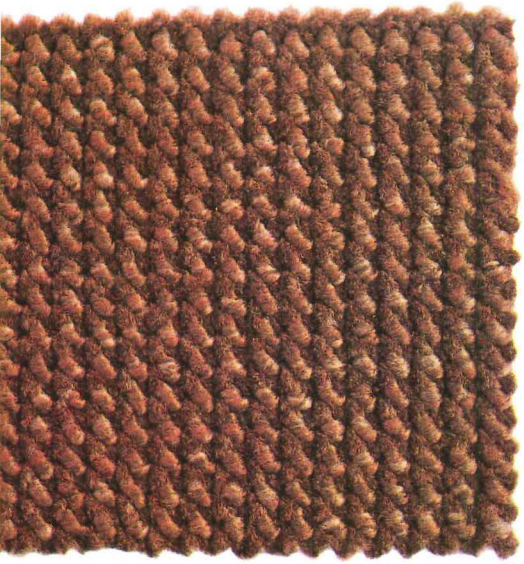

"Antron" II? "Antron" II nylon is designed
ask the presence of soil. And, because it is a nylon, it's the most abrasion-resistant of all carpet fibers. In addition, "Antron" II has a pleasant, subdued luster, unlike bright or sparkle-luster fibers that can dull rapidly in contained high-traffic areas. Cleanability and texture retention are excellent.

These are the properties most specifiers expect from "Antron" II, the fiber known for its lasting good looks. And they are among the reasons why it is the leading contract carpet fiber brand.

How "Antron" II masks soil. Here in this 250X electron micrograph, you can see the remarkable four-hole fibers of "Antron" II. The four microscopic voids scatter light to mask soil and help blend soil concentrations into the overall carpet look. The smooth exterior shape minimizes soil entrapments, making cleaning more effective than irregularly shaped fibers.

"Antron" III nylon for durable, effective static control is available in most styles in "Antron" II.

Specifier's Information Kit. For more information—a carpet manufacturers' resource list, a specification guide for commercial office buildings, and a maintenance manual—write: Du Pont Contract Carpet Fibers, Centre Road Building, Room AR, Wilmington, DE 19898.

*Du Pont registered trademark. Du Pont makes fibers, not carpets.

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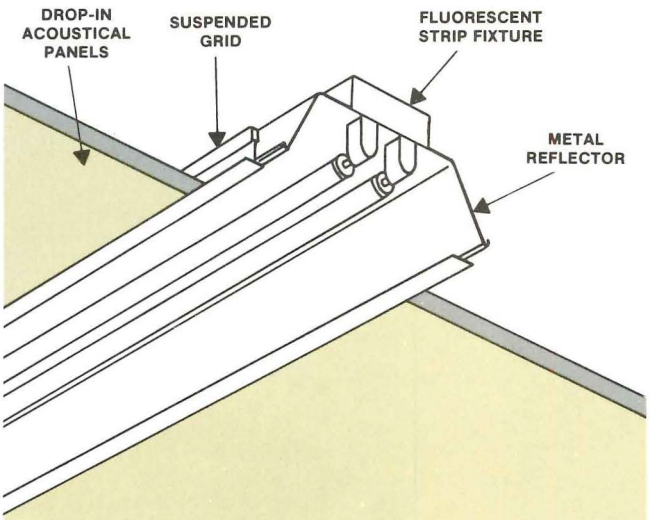

REFLECTEE is a new ceiling system designed specifically for large retail stores. Fluorescent fixtures are recessed above the ceiling plane into highly reflective troffers, throwing the light where it counts the most — down on your merchandise (not glaring into your customer's eyes!)

More efficient than strip lighting, **REFLECTEE** permits you to use fewer fixtures to maintain desired illumination levels. This means fewer fixtures to install, fewer bulbs to replace, and — most important — lower energy bills.!

REFLECTEE . . . an economical and attractive alternative . . . Reflect On It!

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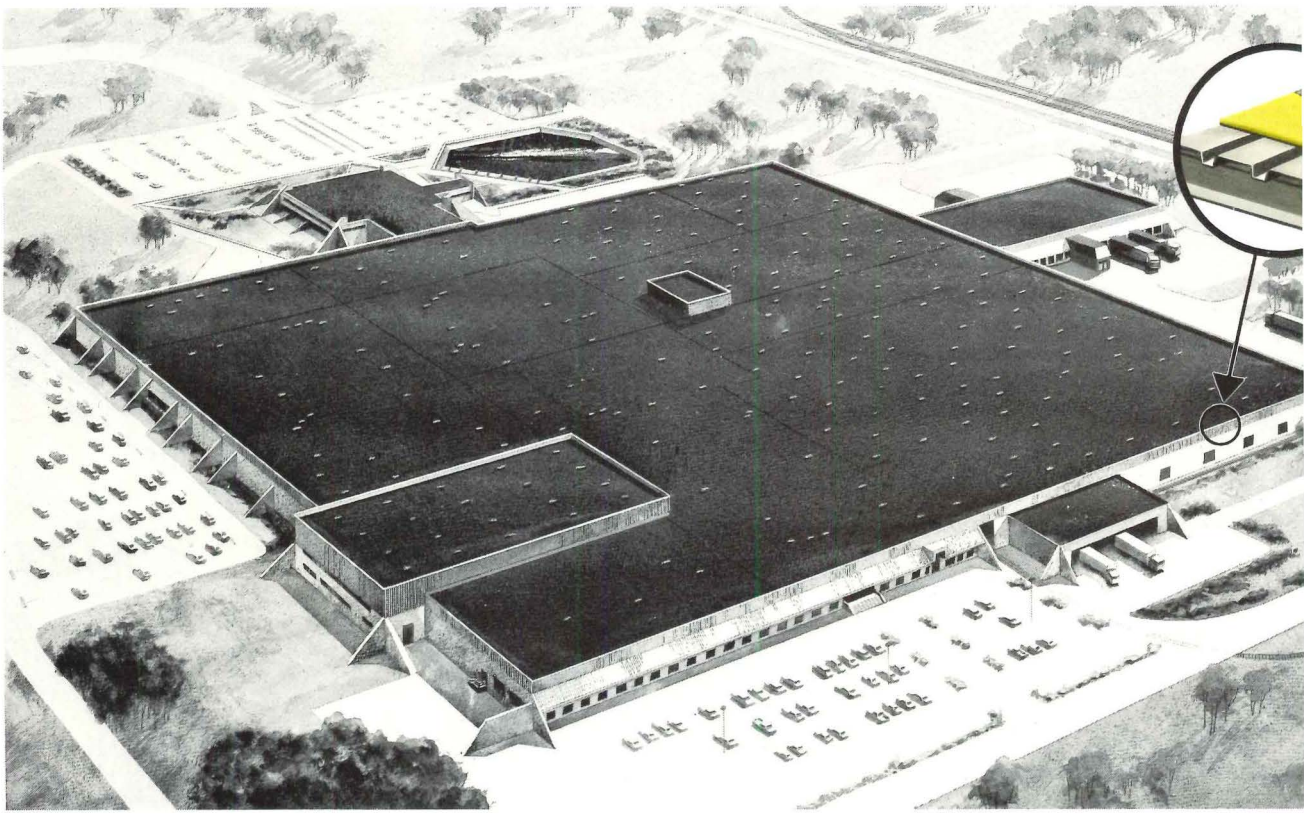
Insulation i

$1,849,996 Projected cost to heat and cool the 46-acre J.C. F warehouse for 20 years with only 15/16-inch Fiber roof insulation.



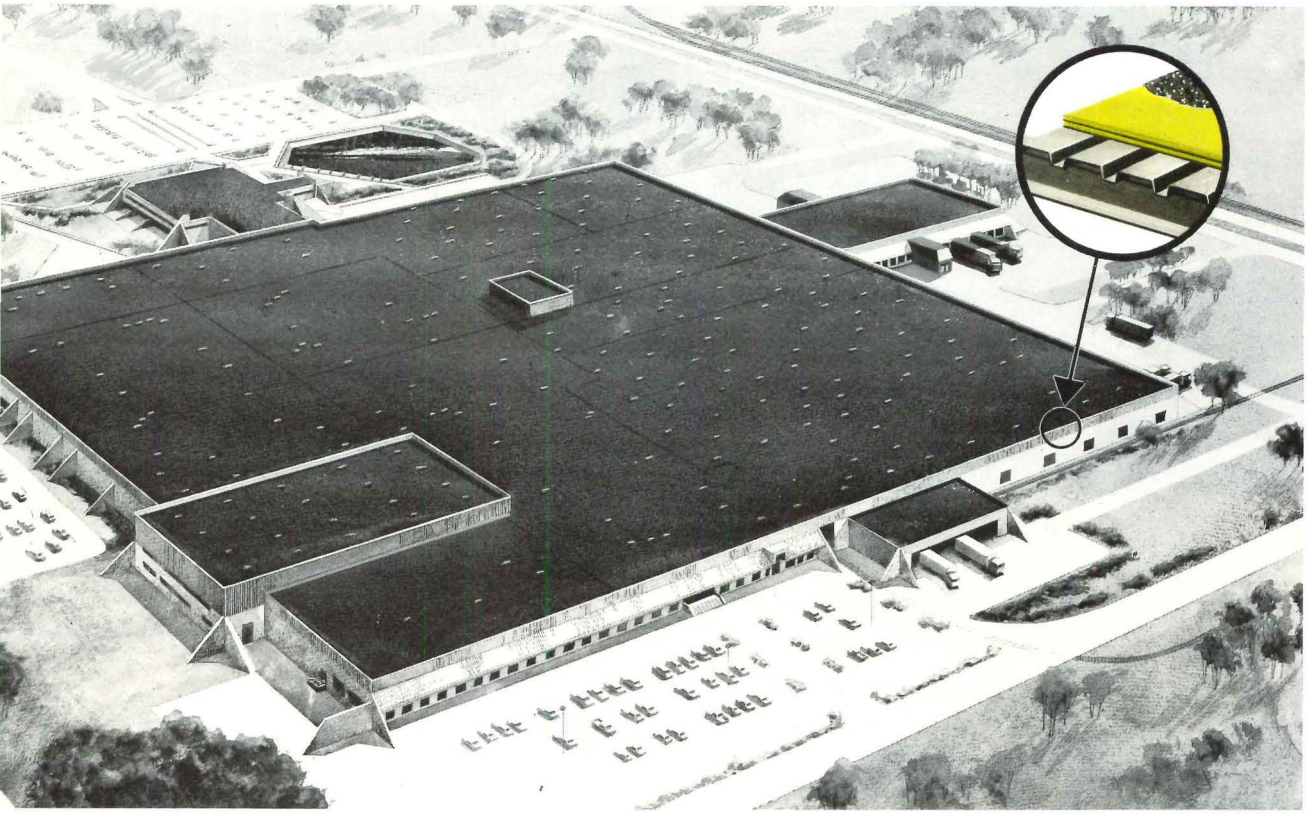
Owens-Corning Fiberglas roof insulation—the only glass fiber roof insulation on the market. Dimensiona stable. Retains thermal value. Easier and less expensiv to apply than organic/mineral boards. For over 30 years the *best* base for built-up roof decks.

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

heaper than oil

377,972

Projected cost to heat and cool the 46-acre J.C. Penney warehouse for 20 years with thicker 2¼-inch Fiberglas roof insulation. (After allowing for the added cost of thicker insulation!)



narkable savings of $972,024! th it, architect Paul Slusarev, Manager of the massive new enney warehouse/office in a, Kansas, is helping to point ay for designers of schools, stores, and other commer- ildings everywhere.

aves money two ways

2¼ inches of Fiberglas* roof ion vs. a conventional thinner aves money two ways:

saves on energy costs. Esti- savings per year, based on eating and electric cooling in s City, Kansas, with a projected increase in energy costs at 7% per year and future savings discounted at 10% per year: $64,160—or $972,024 every 20 years.

(Due to present availability of natural gas, propane and fuel oil are used as additional fuels for heating, and as a result of using these higher-priced fuels, actual savings may vary.)

2. It saves on construction costs. The first cost of this energy-tight warehouse is actually lower than if a less efficient version had been built! Reason: the improved thermal performance of the roof permits use of less costly heating and cooling equipment. The savings are large enough to cover the added cost of the thicker roof insulation *twice* over.

Smart for re-roofing, too

Thicker Fiberglas roof insulation also makes sense when it's time to re-roof *existing* buildings. It should pay for itself within a few years, then go on saving thousands in fuel bills for years to come.

Find out the recommended amount of Fiberglas roof insulation to use to save *your* clients money. Call your Owens-Corning representative or write C.Y. Meeks. Owens-Corning Fiberglas Corp., Fiberglas Tower, Toledo, Ohio 43659.

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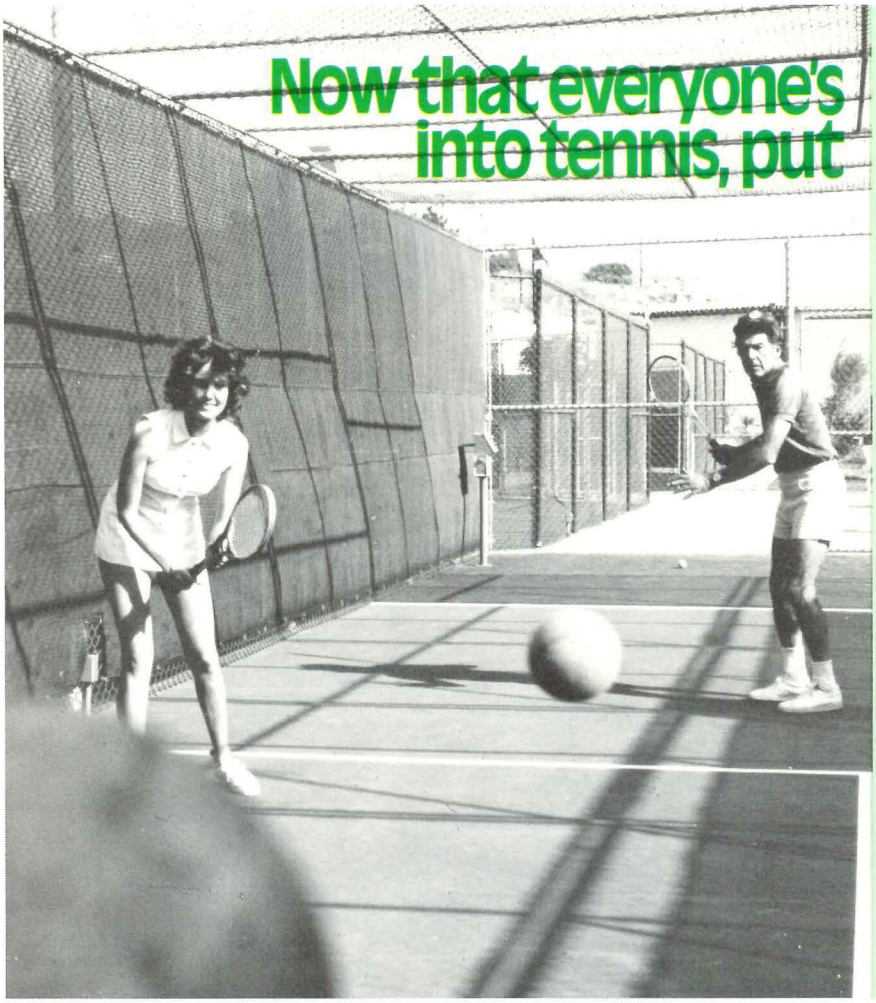

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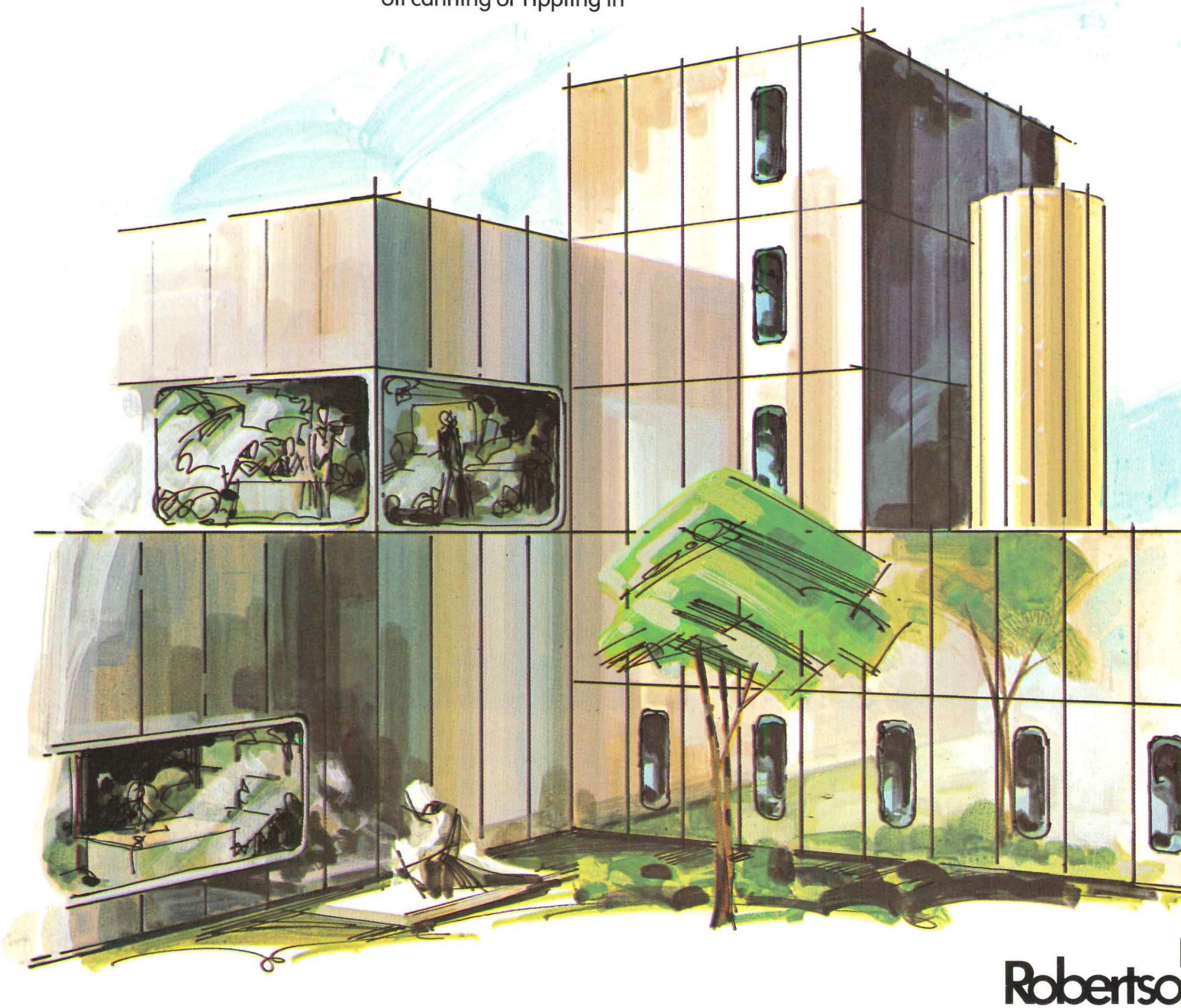

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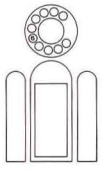

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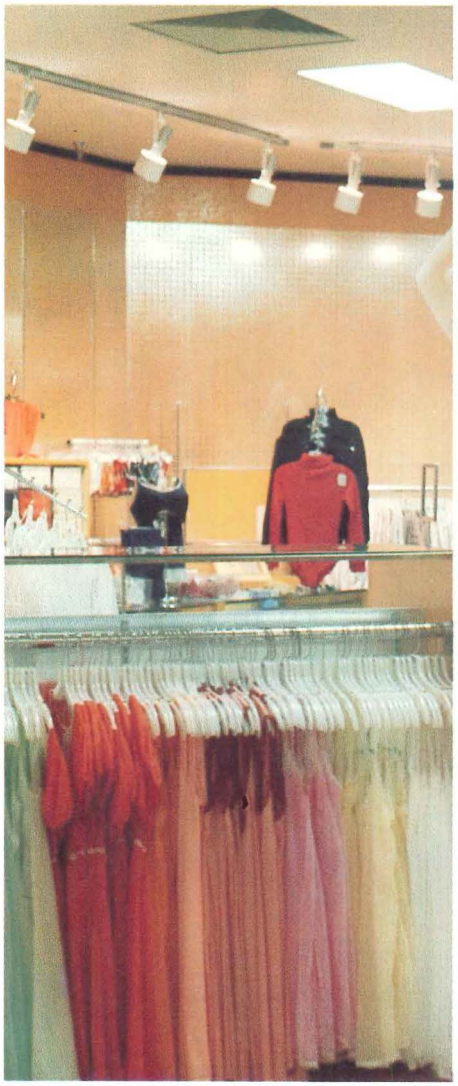

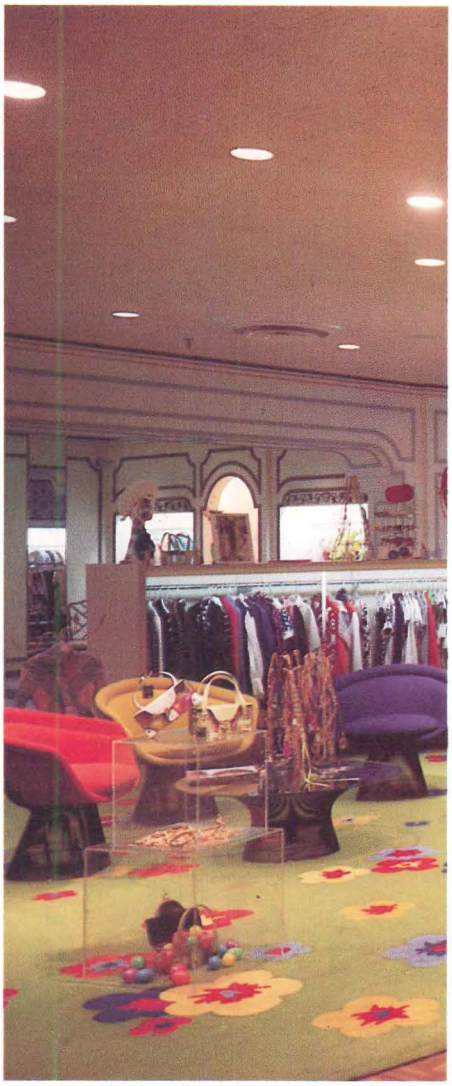

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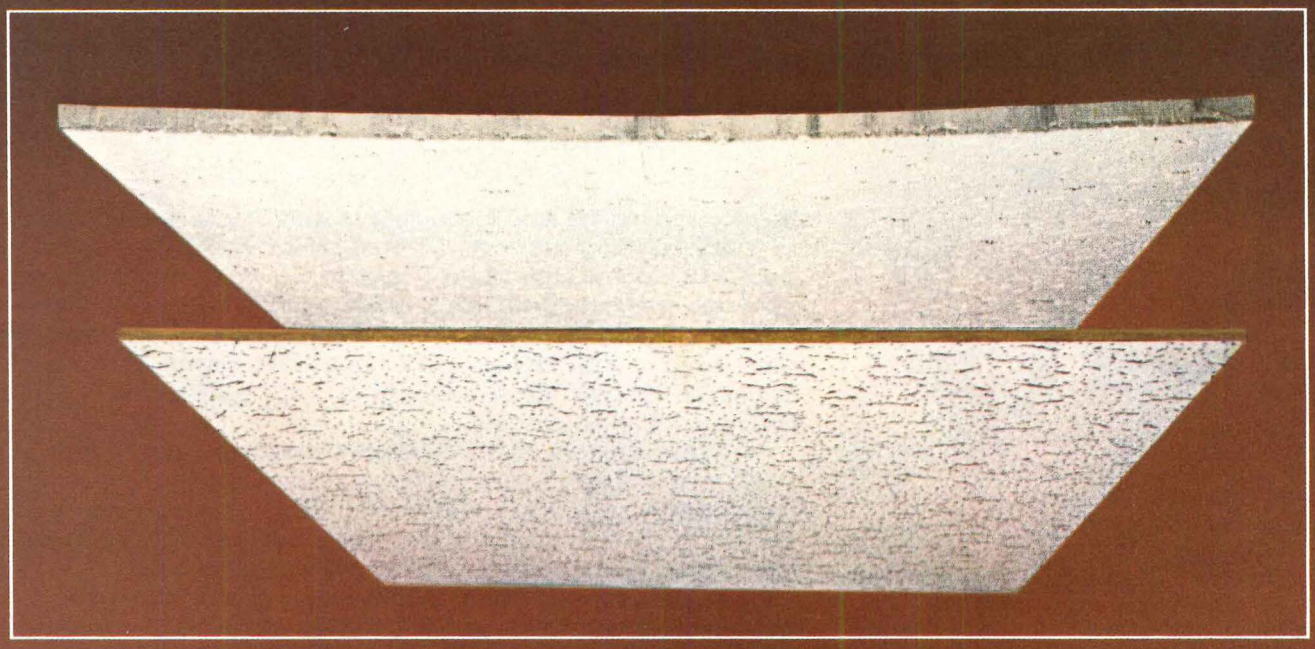

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Year-end figures showed total construction activity in 1976 up 16 per cent from 1975, for a record $107.2 billion, according to the F.W. Dodge Division of McGraw-Hill Information Systems Company. "Since inflation in construction has subsided over the past year," observed Dodge economist George A. Christie, "the 1976 advance of 16 per cent in total construction contract value meant a solid 10 per cent improvement in 'real' volume." But, he added, "the recovery of construction still has a long way to go." Residential building in 1976 was up 40 per cent from 1975, and nonbuilding construction, largely because of energy projects, was up 12 per cent. Nonresidential building, however, though it showed considerable improvement as the year progressed, was off 5 per cent.

Recent changes in tax law threaten to dampen American enthusiasm for design work abroad by disallowing exemptions for overseas earnings. At the same time, IRS has begun to scrutinize employee benefits. Details on page 41.

DOT will study the services architecture and the other arts can offer in the design of transportation systems. The establishment of this task force was one of the last acts of outgoing Transportation Secretary William T. Coleman, Jr. Details on page 38.

AIA has named sculptors Louise Nevelson and Claes Oldenburg recipients of its 1977 Medal "for artistic achievement related to architecture." Other Medalists named by the Institute include Arthur Drexler, Director of the Department of Architecture and Design at the Museum of Modern Art, and the Federal government's Historic American Buildings Survey, for "significant achievement in recording architectural accomplishments." G. Holmes Perkins, FAIA, former dean of the Graduate School of Fine Arts at the University of Pennsylvania, and Barbara Ward, economist and moving force behind the United Nation's HABITAT, will receive medals in recognition of their "achievements in inspiring and influencing the architectural profession."

The National Trust for Historic Preservation has bought a National Historic Landmark for its headquarters. Architects David N. Yerkes & Associates will adapt the Mellon Apartments in Washington, D.C. Details on page 39.

The National Park Service has designated Philadelphia's PSFS Building a National Historic Landmark. According to the designation, the building, designed by George Howe and William Lescaze, "has not aged nor become old-fashioned. PSFS was a great structure from the time of its first conception because the bank was willing to permit the best and it hired a fine architect who had the opportunity, rare in any architect's career, to do his very best."

The American Academy in Rome has appointed Bill N. Lacy its new president. For the last five years, Mr. Lacy has been director of Architecture and Design for the National Endowment of the Arts, and earlier was Dean of Architecture and Fine Arts at the University of Tennessee and at Rice University.

A major exhibit, "Women in American Architecture," opened February 23 at the Brooklyn Museum. The collection of photographs, drawings and models, which spans more than 200 years of examples, will also be seen at MIT and at Colorado Springs. Details on page 38.

The National Solar Heating and Cooling Information Center has begun operations as a clearinghouse for data on design and equipment for solar-energy collection. The center was established by the Department of Housing and Urban Development and the Energy Research and Development Administration. Mail requests for information should be sent to Solar Heating, P.O. Box 1607, Rockville, Maryland 20850, and telephone calls may be made to 800/523-2929 (in Pennsylvania, 800/462-4983).

A series of seminars on the management of architectural and consulting engineering firms will be conducted this spring by the Professional Services Management Journal. The title of the day-long seminars include "Motivation and Compensation of Professional Employees," "Marketing to Public Agencies," and "Negotiating with Public Agencies." The series is scheduled for April 13-15 in New Orleans, April 25-27 in Denver and May 2-4 in Newark. Contact: Michael Hough, PSMJ Editor-Publisher, P.O. Box 11316, Newington, Connecticut 06111.

The 1977 Shinkenchiku Residential Design Competition has as its theme "Comfort in the Metropolis." Architect Peter Cook is judge of the competition, which will award more than $3,000 in prizes. For information: Shinkenchiku-sha Co., Ltd., Attention: Editorial Section of *The Japan Architect,* 31-2, Yushima 2-chome, Bukyo-kue, Tokyo 113.

The Iranian government has announced an international design competition for the Pahlavi National Library, to be built in Shahestan Pahlavi, the future city center of Tehran. First prize will be $50,000 and the commission. Second and third prizes are $25,000 each, and ten additional prizes of $10,000 each will also be awarded. Registrations are due by April 19. Documents are available for $70 from Pahlavi National Library Project, Committee for the International Competition, Aryamehr Square, 9 Bisotun Avenue, Tehran.

DOT seeks to integrate architecture and transport

A task force has been established to look for ways of ensuring that better architecture, art and design are incorporated into Federally funded transportation systems.

Within six months, the task force is supposed to develop a plan to guarantee that all public funds allocated to transportation be spent with "due consideration for their design, artistic and cultural impact."

Former Transportation Secretary William T. Coleman, Jr., established the task force before he left office. Department officials expect the new Transportation chief, Brock Adams, to consider the task force's recommendations.

Mr. Coleman's instructions to the task force were to consider the creation of a National Advisory Board of Design, Art and Architecture in Transportation (NABDAAT). He also wanted the panel to look into ways of financing the architectural enhancement of transportation systems, at the same time pointing out that Federal grants are available to communities for the esthetic environmental enhancement of transportation facilities.

"As a matter of policy," Mr. Coleman said, "we believe that a concern for good design is an integral part of responsible planning for safe, efficient and economical transportation systems." He added, "High-quality design will accomplish the broadest transportation objectives and may generate benefits which far outweigh any additional costs." Therefore, he said, emphasis must be placed on the choice of plans "which embody the finest American architectural, design, and artistic thought."—*William Hickman, World News, Washington.*

White paper calls New Town program "poorly designed"

The Federal New Town program launched by the Democrats in Congress in 1968 was "poorly designed and never given the support it needed" during the eight years of the Nixon and Ford Administrations, in the judgment of a white paper produced by New Communities Administrator James A. Dausch and handed on to incoming Housing Secretary Patricia Roberts Harris.

The 100-page white paper, supported by three appendices, concludes that the New Town program—backed by nearly $300 million in bond guarantees and another $144 million in grants and other commitments—was doomed to failure from the start.

The report took several months to prepare and cost $270,000, including a $244,826 report from management consultants Booz, Allen & Hamilton titled "An Assessment of Past Problems and Alternatives for Future Actions."

The major flaw, according to the report, was that the program overloaded the projects with monthly bond interest costs that soaked up, for many of the 13 developers, several times the annual cash flow they were able to generate by lot sales to homebuilders. The report recommends that in future states and localities assume the initiative and responsibility for any government-backed New Towns. The Federal role should be limited to that of catalyst and provider of grants, the report suggests.

While the housing depression dealt a severe blow to the New Town projects, Mr. Dausch concluded that "most of the projects . . . would have encountered serious financial difficulties [which] would have occurred in any event." The white paper points out that HUD required "unrealistically low cash equity investments" by developers; that "land speculation, based on a developer's existing landholdings, dictated site selection"; that HUD's staff "accepted unrealistic projections [of] the developers' potential rate" of lot sales; and that "few experienced large-scale developers were willing to undertake" a Federal New Town project.

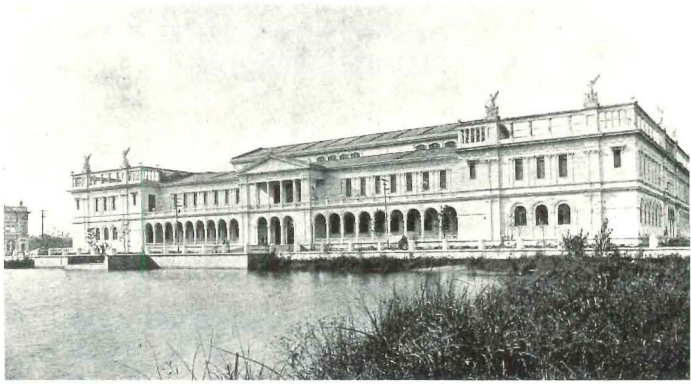
Citing the effects of the heavy debt burden on developers, the white paper gave some illustrations, such as Flower Mound, near Dallas, which paid for 27 per cent of its land when less than one per cent of its projected revenues had been received, and Park Forest South, near Chicago, where land purchases of $18.9 million "exceeded projected costs by 89 per cent, while the $4.5 million in sales revenues through 1974 was 58 per cent lower than projected."

According to the report, the HUD staff "accepted the untested hypothesis that a new community was a unique product that would receive an unusually high degree of buyer acceptance"—leading to the uncritical belief that Flower Mound, for example, would capture more of its market than was achieved by successful privately financed new towns like Columbia, Reston and Irvine.

The report says that "most Title VII developers were entrepreneurs in other business, including, *e.g.*, shopping center development and oil and natural gas production, or were local civic and religious leaders. In a few cases, such as Riverton, Park Forest South and Shenandoah, the development entity was owned by an experienced large-scale developer—*e.g.*, Robert Simon (Riverton), who had begun Reston, Nathan Manilow (Park Forest South), who had developed Park Forest, and Scott Hudgens (Shenandoah), a major large-scale Georgia builder.

"However, the operational staff of the development entities, like the HUD New Communities staff, was thin or altogether lacking in such experience. Only in St. Charles did the owner and key development staff have team experience in the complexities of large-scale or community-scale development."—*Donald Loomis, World News, Washington.*

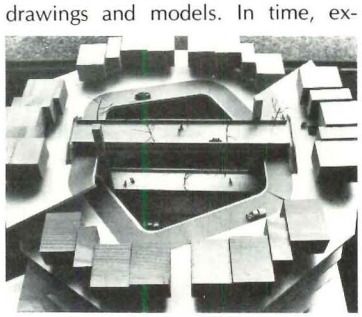
Major exhibition on women in architecture opens at Brook



An idea of the Architectural League of New York and its Archive of Women in Architecture, and two and a half years of research and design by architect Susana Torre has culminated in the exhibit "Women in American Architecture." The show, which opened February 23 at the Brooklyn Museum, was funded by the National Endowment of the Arts and the New York State Council for the Arts, as well as by contributions from a number of corporations and foundations.

In addition to examining the work of academically trained architects, the exhibit will encompass women's other contributions to the built environment as designers and theorists of domestic space, as creators of "spatial symbology," and as architectural critics.

The exhibition includes about 100 boards, as well as architectural drawings and models. In time, ex-



amples begin with Lady Deb Moody's 1645 plan for an Anab community at Gravesend, New and considerable space is given t influence of women's magazines utopian communities on residenti chitecture.

By far the largest part of the lection, however, focuses on the of women as professional archite this section covers a period exten back at least as far as the 1880s, Louise Bethune opened an offi Buffalo. Among examples shown phia Hayden's competition-wi design for the Woman's Building Columbian Exposition in (above), Julia Morgan's St. John's byterian Church, built in Berk California, in 1908, and Anne T continuing investigations of "metamorphological" ordering chitectural elements (at left). (Full erage is also given to ARCHITEC RECORD's 1948 series "A Thou Women in Architecture," a s conducted by editor Elisabeth Ke Thompson.)

The exhibition will remai Brooklyn Museum until April 15 thereafter will be seen at the M chusetts Institute of Technology den Gallery and the Colorado Sp Fine Arts Center.

HEW rejects Congressional rules for architectural barriers

A regulatory package to end "discrimination" against the handicapped and remove architectural barriers that hamper their access to schools, hospitals and other public institutions is bouncing back and forth between Congress and the Department of Health, Education and Welfare for want of a signature giving it the force of law.

HEW formulated the regulations, called for by the 1973 Rehabilitation Act, but HEW Secretary David Mathews refused to sign them before leaving office with the rest of the Ford Administration. Indeed, he ignored a Federal court order to sign the regulations and narrowly escaped a contempt citation for that refusal.

Mr. Mathews maintained that more clarification was needed from Congress on such issues as discrimination against drug addicts and alcoholics, and asked Congress for its opinion on these questions.

A spokesman for Mr. Mathews' successor, Joseph A. Califano, Jr., the new secretary has not had tir study the issue or to deter whether the regulations shoul signed.

One of the major provisions package calls for the removal of riers that hamper access by the h capped to buildings operate schools, health agencies or any institutions that receive Federal f That regulation, opponents say, cost affected institutions millio dollars to renovate or remodel and other barriers.

Secretary Mathews sent the lations to Sen. Harrison A. Will Jr. (D-N.J.), chairman of the Se Labor and Public Welfare Comm asking him to clarify whether Con intended the bill to be as far-rea as the HEW regulations call for. regulations will now bounce ba Secretary Califano after Congress review.—*Michael Mealey, W News, Washington.*

ɔnal Trust will recycle tional Landmark

lational Trust for Historic Preser-ı, practicing what it preaches, :quired a National Historic Land-for adaptive re-use as its national quarters in Washington, D.C.

he five-story Beaux Arts build-vhich was completed in 1917, lesigned by architect J.H. DeSi-for luxury apartments, with one ment per floor (see RECORD, April). Called the Mellon Apartments landmark listing—Andrew Mel-eld the fifth-floor apartment from until 1937—it was known origi- and is still familiar to many ingtonians, as the McCormick ing for its developer, Stanley Mc-ick. Other notable residents in-d Sir Joseph Duveen, Sumner es, Thomas Fortune Ryan, Perle a and Robert W. Bliss, a founding e of the National Trust.

since 1941, the building has been can Institute of Architects was a tenant during the construction of its headquarters on New York Avenue.)

The Washington architectural firm David N. Yerkes & Associates has been commissioned to adapt the building. According to Nicholas A. Pappas, the partner-in-charge, early plans call for the rehabilitation of family rooms, including the removal of partitions that have been installed higgledy-piggledy over the years, and the repair and replacement of ornament. The firm hopes to use a combination of office landscape with task lighting and uplighting so as to avoid the necessity for partitioning the 14-ft-high rooms or hanging fluorescent fixtures. Kitchens and service areas, which have been extensively remodeled, may be converted to more conventional office space.

The Trust hopes that present tenants will all vacate the building by October 1, and that it will move in around October 1978. Estimated cost of purchase and adapting the space is $3 million. The trust now seeks funds for what it intends to make a "model" adaptive re-use.

The present headquarters of the Trust are in Decatur House—an early 19th-century building near the White House—although about 65 per cent of its staff is now scattered in four other nearby locations. The Trust will maintain Decatur House, which contains collections of Federalist and Victorian furnishings, as a museum.

LA studies ways to increase seismic safety of old buildings

The Los Angeles City Council has softened its approach and voted to emphasize rehabilitation in dealing with an estimated 14,000 unreinforced masonry structures that are considered potential earthquake hazards.

In approving a new seismic safety program, the Council disregarded a proposed ordinance that would have required the owner of a structure determined unsafe (except single-family residences) to post a warning sign of earthquake hazard until the building was brought up to code, or demolished. The deadline for such posting or demolition would have been January 1, 1987.

Instead, the new Council plan calls for unreinforced buildings to be identified and cataloged, a special study made to develop an ordinance detailing how they can be improved to meet minimum safety standards, and preparation of an environmental impact report.

The city also will seek financial assistance from the Federal government, along the lines of rehabilitating buildings prior to a disaster rather than after the fact. And it will sponsor legislation to provide long-term, low-interest loans for repairs.

The 14,000 structures—mostly in the central downtown area—were built before 1933, when the Long Beach earthquake occurred. After the quake, new seismic codes were developed to increase structural safety.

Among the 14,000 structures are about 300 public-assembly buildings, including restaurants, theaters and churches, as well as commercial structures and residences. While no dollar figure is available for bringing the buildings up to code, the city's Department of Building and Safety estimates it would run about 80 per cent of what new ones would cost.

For years, organizations such as the Southern California Structural Engineers Association, the Southern California Chapter of the American Institute of Architects, the Los Angeles Section of the American Society of Civil Engineers, and the Earthquake Engineering Research Institute have called for legislation that would require rehabilitation or demolition of the pre-1933 buildings which do not meet modern lateral force requirements.

According to Councilman David Cunningham, chairman of the Council's Building and Safety Committee, which recommended the new approach, the committee fully recognizes the magnitude of the problem that could result from collapse of 14,000 structures. However, Cunningham said, it believes a balance should be maintained between concern for public safety and the economic survival of a segment of the public.—*Barbara Lamb, World News, Los Angeles.*

ge-reduction plan for urban rehab catches on in 22 cities

innovative housing program d at rehabilitating inner-city es and apartments (see RECORD, ary 1977, page 36) has now ed out to 22 cities, where work-ry construction unions have n some willingness to take a cut y. Carla Hills approved the plan efore she left office as Secretary ousing and Urban Development. he success of the $50-million pro-, involving the rehabbing of housing units, hinges upon her the building trades unions in of the cities can agree on a less-Davis-Bacon wage scale—an es-al ingredient in getting the rehab-done at lower cost, as HUD re-s.

The top building trades leaders, headed by AFL-CIO's Robert A. gine, agreed to the program more a year ago. They see it as a kthrough that will produce ed jobs for unemployed building es workers, as well as badly ed inner-city housing. The pro- would be financed under the on 8 subsidy program. Each city ubmitted a successful application is demonstration program would iven an additional allotment of on 8 units as a bonus.

The 22 cities whose applications approved by HUD, and the num-of housing units approved for , include:

- In Massachusetts—Boston, 1,150; Lowell, 200; Newburyport, 100; Lawrence, 100; Brockton, 140; Waltham, 150.
- In New York—Yonkers, 200; Westchester County, 250; New York City, 2,500.
- In New Jersey—Newark, 400; Hoboken, 200; Jersey City, 300.
- In Ohio—Cleveland, 354; Cincinnati, 500.
- In California—Oakland, 500; Los Angeles, 1,000; Eureka, 180.
- In Missouri—St. Louis, 400; Kansas City, 250.
- Elsewhere—Omaha, 200; Philadelphia, 450; Atlanta, 920.

Final approval of these applications is contingent upon the mayors' submitting employer-union wage agreements that generally must fall about 25 per cent below the so-called "prevailing wage" levels required up to now by the Davis-Bacon law on all Federally financed construction in a given city.

Those cities that fail to come up with such a wage agreement will lose their approvals, and the money will be allocated to other cities—either to already approved cities that meet HUD's requirements, or to cities on a back-up list that includes such places as Syracuse, Pittsburgh, Rochester, Washington, D.C. and Dade County, Florida.—*Donald Loomis, World News, Washington.*

William L. Pereira Associates, Architects; Stephanie Maze photo, San Francisco Chronicle

Assault on Transamerica peak fails on lower slopes

On January 30, alpinists Edwin Drummond and Jeff Long made the first recorded attempt on the north face of San Francisco's Transamerica Pyramid. The ascent failed at the seventh floor, where the fire department turned the climbers back at the end of a six-hour effort. Although a window was removed to allow the mountaineers to enter the building and return by elevator, they rejected this rescue and made their descent conventionally.

Interviewed later by television newsmen, the climbers said they had been moved to the attempt by the technical difficulties presented by the slope—as challenging as some of the better known faces at Yosemite—and by its unusual urban setting. The climb was intended as an exploratory effort toward a more ambitious assault by Drummond, Long and Mrs. Drummond: a two-day ascent of the tower during which the three would converse with office workers.

Though permission for the climb had not been granted, neither Transamerica nor the authorities plan to press charges; fire officials remarked that the climbers were clearly expert.

Drummond and Long are seen here at their first base camp.

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ding industry asks easing ıxes on foreign earnings

ɜn design work, mainly in the le East, which held promise as a or some architects to take up the in their business slumps, may not panacea for the profession after he reason: tax law changes last are effectively undercutting ican firms and bettering the com- ve chances of architects from ɒe and Japan.

There is hope that Congress will the damage with a new law this If it does not, American firms will asingly find that they cannot meet ɔrices for design work set by less mbered overseas operators from countries.

The tax law change in question back much of a tax exemption enjoyed by Americans employed ad. The law increases the amount patriate income that is subject to taxes, and employers find that must make up the difference in home pay—a substantial amount must be counted as overhead.

To make matters worse, Congress e the change retroactive and eby socked many individuals with pected tax bills. At the same time, nternal Revenue Service started ng cranky about some of its regu- ns, too. Specifically, IRS started ning further into employee "bene- ackages." It seems likely that IRS consider the costs of home-leave l, educational allowances, shelter and health care as income sub- to taxation. A number of court s are pending.

Organizations of construction de- ers and contractors are working to convince Congress that the law ld be changed and IRS should let They remind the lawmakers that ation benefits in many ways from ricans working on construction ts abroad. American designers lead to American contractors, rican materials and American ɒment, they argue.

This message may be getting ugh. Sens. Abraham A. Ribicoff onn.) and Robert P. Griffin (R- .) have instructed their staffs to with construction industry trade ps with an eye toward introducing lation to return the law to its old uage.—*William Hickman, World s, Washington.*

ɔrgia AIA loses challenge tate registration laws

Georgia Supreme Court has re- d the contention of the state chap- f American Institute of Architects the design and supervision of the truction of a fire station by a regis- l engineer employed by Gwinnett nty constituted unlawful practice chitecture.

Although the judges concurred engineers "may not freely practice itecture," they also agreed that the rgia code, which defines "engi- " and "architect" in broad terms, needs to be more definitive. The judges felt, however, that such definition must come from the Legislature, where the AIA now will seek redress.

The question arose last summer when Gwinnett County began the construction of its 11,000-sq-ft fire station headquarters. The AIA filed for a permanent injunction against the county because it claimed the drawings for the $189,000 structure did not have the stamped approval of a registered architect or engineer. After the drawings were stamped, the AIA questioned the registration laws. John A. Busby, Jr., of the architectural firm, Jova Daniels Busby, and president-elect of the Georgia chapter, AIA, says, "It's a test case. The broad interpretation of the registration law now in Georgia does permit architects and engineers to similar practices. . . ."

Gwinnett County Fire Chief Ray Mattison explains that in designing the county's fire stations, he and other fire department officials customarily draw a rough sketch of the proposed building, present it to a fire prevention inspector (also a draftsman) who polishes it, and hand it over to the county engineer, M.J. Seeley. Mr. Seeley, a registered engineer in Georgia, redraws the plans, writes specifications and supervises construction. County officials estimate that this practice has saved the taxpayers about $50,000 on the fire station headquarters because persons already on the payroll helped design the building.

The Georgia AIA, according to a spokesman, "has run its course in the courts" and now plans to present a bill to the Georgia Legislature next year. It hopes to have the approval and support of engineers, architects and registration boards in the state.—*Brenda Lloyd, World News, Atlanta.*

NCIC lifts ban on labor issues to lobby against situs pickets

Construction's "single voice" group—the National Construction Industry Council—now has the authority of its members to take positions on labor legislation issues.

Heretofore, the Council banned deliberation on labor issues in the interest of preserving solidarity—both union and non-union contractor groups participate in NCIC affairs. The ban was lifted, however, because all members oppose common-situs picketing legislation that is being pushed in Congress by organized labor.

Immediately after repealing the ban, the Council voted unanimously to go on record as opposing situs legislation, and authorized its legislative committee to contact lawmakers to urge defeat of any situs-picketing bill.

Under the Council's new rules, a specific labor issue must have the concurrence of 90 per cent of the Council members present and voting before a position can be considered. Positions on non-labor legislative issues can be taken with 75 per cent concurrence.—*William Hickman, World News, Washington.*

Nigeria's Court of Appeals will have six regional centers

The present government of Nigeria, a military regime led by Lt. Gen. Olusegun Obasanjo, has promised to return the country to civilian rule by 1979 and has drafted a new constitution to this end. A major aspect of the constitution is the establishment of a Federal judicial system, of which the most important part is the introduction of machinery for judicial appeals.

At present, Nigerian law, which is modeled on English law, is administered by local civil and criminal courts from whose judgments there is no appeal. The government has named Dan Ibekwe, a former Attorney General, president of the new system of Federal Courts of Appeal, and has also appointed 12 appellate judges.

At the same time, architects P.I. Nwamu Associates, a firm practicing in both Nigeria and the United States, and Litchfield Grosfeld Associates of New York City have been commissioned to develop designs for a network of six regional appellate court centers.

Although the buildings will vary slightly in exterior appearance and ornament—the northern districts of the country are strongly influenced by Moslem culture—they will otherwise be virtually identical (see above), each containing about 33,000 sq ft of air-conditioned space.

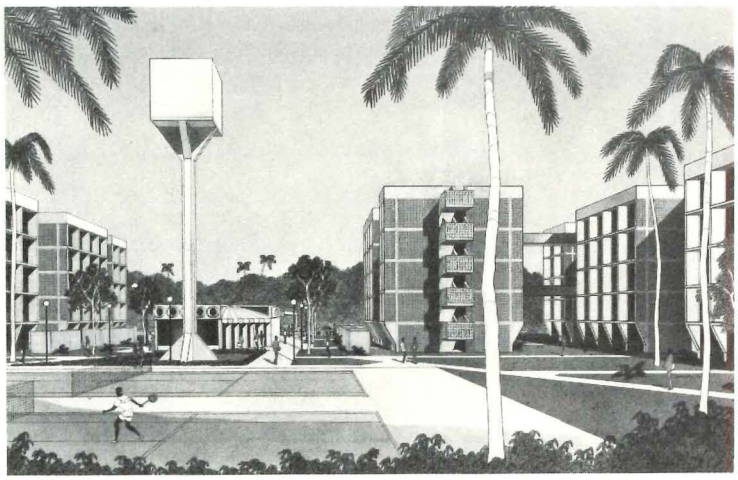
The structural system will be poured-in-place concrete, with a barrel-vault roof for large open spans in the court rooms and public areas. Exterior walls, in contrast to the exposed concrete superstructure, will be white marble. Large expanses of glass wall will be set well back of the building line to provide shade and a reduction in air conditioning load. Buildings will face entrance courtyards, with fountains and formal landscaping.

Because appellate courts are a new building type in Nigeria, the designers have emphasized interior flexibility, with such devices as demountable partitions, so that the plan can be adapted as the users better understand their space requirements.

In another area of legal administration, the government has moved to improve the conditions of legal training by providing housing at the Nigerian Law School in Lagos. Because there is no undergraduate law school in the country, Nigerian attorneys take their law degrees abroad—mostly in Great Britain—and return to Lagos for a year's study of Nigerian law before being admitted to the bar.

There is at present no student housing on campus, and N.B. Graham-Douglas, Chairman of the Council of Legal Education, has commissioned P.I. Nwamu and Litchfield Grosfeld to design a group of six hostels (see below). The buildings will contain 432 single rooms arranged in pairs to share a common bathroom.

The buildings will be oriented to catch the prevailing winds from the adjacent bay. Each room will be cross-ventilated, and will face the bay through louvered window walls shaded by brise-soleil. Four two-story lounges are located strategically at building ends, and the six hotels are connected by bridges to allow sheltered passage between units. The complex will also include a centralized Student Union building. The concrete structure will be enclosed by concrete block and brightly colored local ceramic tile.



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ı/Burgee design a crystal cathedral for California

ıday, the Rev. Robert
ıf Garden Grove, Cali-
nducts five services for
gation seated in the
ity Church and parked
ve-in sanctuary"; one
ervices is broadcast on
television as "The
Power." Because the
as 8,000 members in
Grove, while its build-
ing seats only 1,700, Mr. Schuller has commissioned Johnson/Burgee Architects to design a new cathedral. The faceted building—the star-shaped plan has eight sides, each set at a different angle, and the roof has three different slopes—will be supported by a steel-pipe space truss. The entire building envelope, including the roof, will be glass. The sanctuary, with 25,000-30,000 sq ft, will accommodate 4,000 worshippers on the ground floor and on concrete balconies. The plan provides a parking area at the back of the church for the drive-in congregation. Near the pulpit, a door will allow Mr. Schuller access to a balcony overlooking the parking area.

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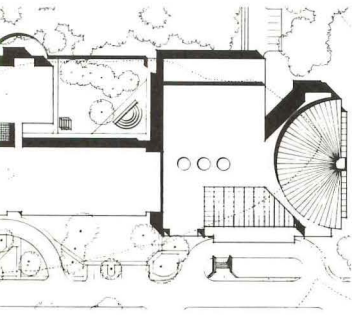
r/Nathan site a synagogue along a wooded ridge near Memphis



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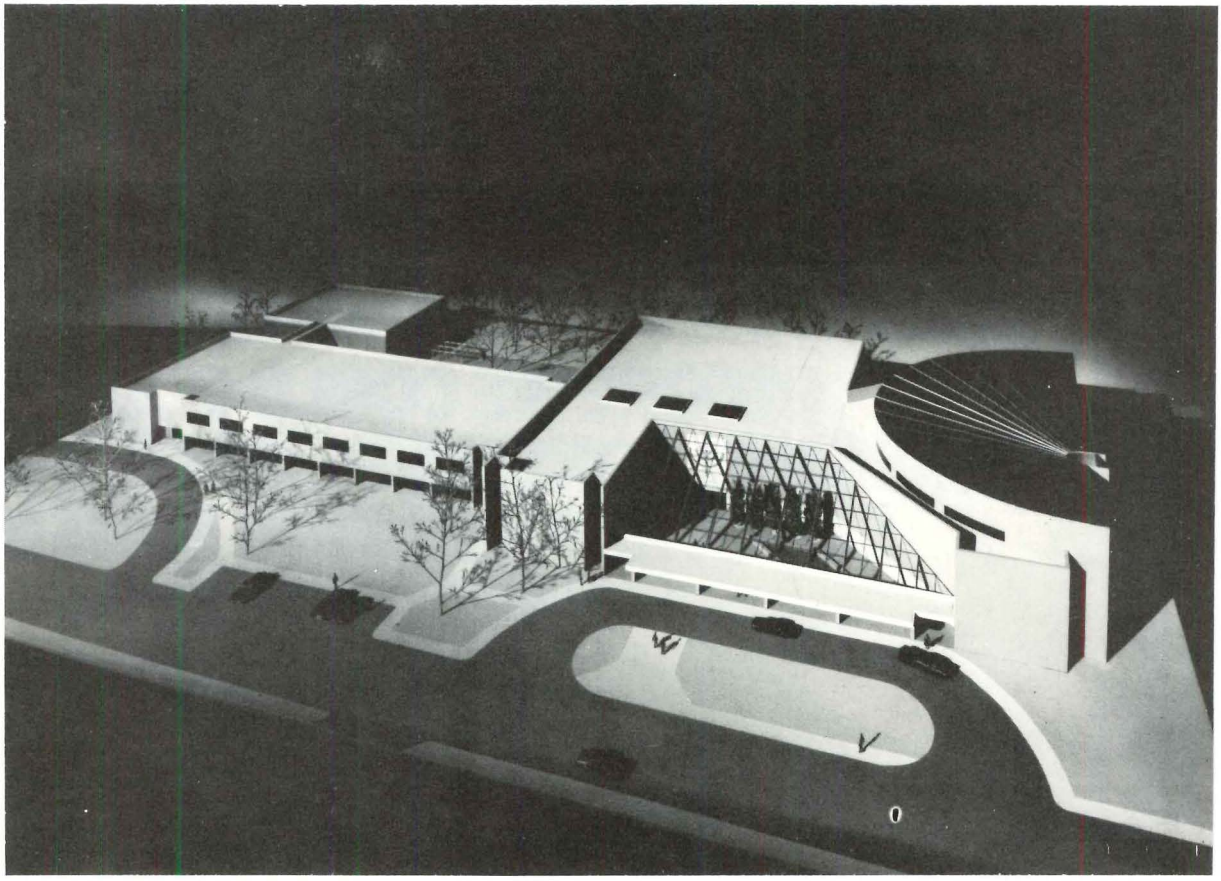


The gap between knowledge and documentation had to be closed.

And building designers and others had to be provided with a way to easily use the new proof.

Not easy tasks. But critical ones in an era when the energy performance of buildings is a matter of the highest priority.

For thousands of years people have *known* that buildings with masonry walls were more easily kept warm in winter and remained cooler in the summer. The reason was obvious: masonry walls both stored and slowed down the passage of heat, making interior climates more stable. A simple, observable fact. But no longer sufficient.

Designers and owners needed to know *how much better* masonry conserved energy than did competitive materials and systems. And they needed a simple way to calculate the differential.

Only then could masonry's superior thermal performance be reliably taken into account in meeting energy conservation goals and requirements. Only then could heating-cooling equipment be more accurately sized to save money on both initial and operating costs.

Disdaining "claims" without documentation, the masonry industry began a broad research project to quantify the relationship of the mass or weight of masonry walls to the transmission of energy. The masonry industry engaged a highly qualified firm of consulting engineers (Hankins & Anderson, Inc.) to conduct the study. Ten different walls ranging in weight or mass from four pounds (19.5kg/m^2) to 116 pounds (567.5kg/m^2) per square foot were specified for analysis in 10 widely varying climatic conditions. And in eight solar orientations.

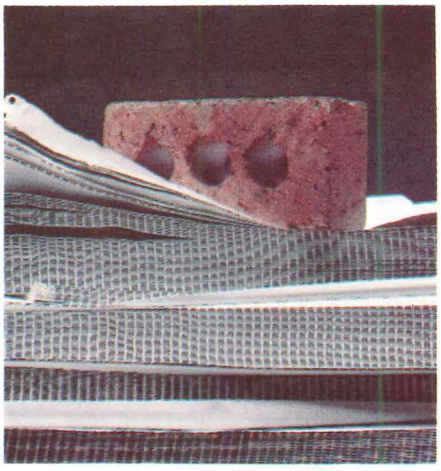
Researchers used a special computer program built around the "response factor" method adopted by the National Bureau of Standards Load Program along with other computer programs. They analyzed U.S. Weather Bureau data and considered the effects of many variables, including the weight of walls, on thermal performance.

Results of the computer analysis showed:

- Traditional "U" value measurements of the thermal performance of walls are inadequate. They are based on the incorrect assumption that energy transmission occurs in a "steady state". Contrarily, the process is dynamic and varies greatly in relation to many factors, one being the weight of walls.
- Steady-state "U" value measurements therefore may often result in the oversizing of heating equipment for buildings with masonry walls (and the undersizing of such equipment for buildings with lightweight walls).
- The difference between steady-state and dynamic measurements can be accounted for by the use of a *correction factor*—the "M" factor—in making heat gain and loss calculations.

The consulting engineers' report and data consisted of 460,800 numbers on 1,200 pages of computer print-out. Important as this proof of the superior thermal performance of masonry walls was, it was not enough.

The task of developing a tool for the easy use of the findings remained. Masonry industry engineers began studying and correlating the data to provide a simple *correction factor* for dynamic analysis.



The result: An easy-to-use "M" factor graph or curve.

Only two numbers are required in order to use the graph: the number of "degree days" in the locale (obtainable from the U.S. Weather Bureau) and the weight per square foot of the wall. The graph can then indicate the appropriate "M" factor modifier, or correction factor, to be applied to steady-state "U" value measurements. A more accurate measurement of the dynamic thermal performance of walls results.

The graph shows that in all cases, masonry walls perform better than lighter weight walls with the same "U" value rating. The heavier the wall, the greater the differential.

Results of the masonry industry study and the "M" factor graph have been submitted to the Conference of American Building Officials (CABO). And CABO has agreed that the effect of mass should be considered in making heat gain/loss calculations.

The "M" factor study findings are contained in a new Masonry Industry Committee publication, *Mass, Masonry, Energy.* With the findings are graphs and charts, and an explanation of how to use them. An all-in-one booklet—everything you need to know in order to take advantage of the superior thermal performance of masonry walls.

We're proud of the new proof that masonry walls save more energy than walls of competitive materials with the same "U" values.

We're proud of the fact that the masonry industry decided to produce this proof, rather than simply make a claim.

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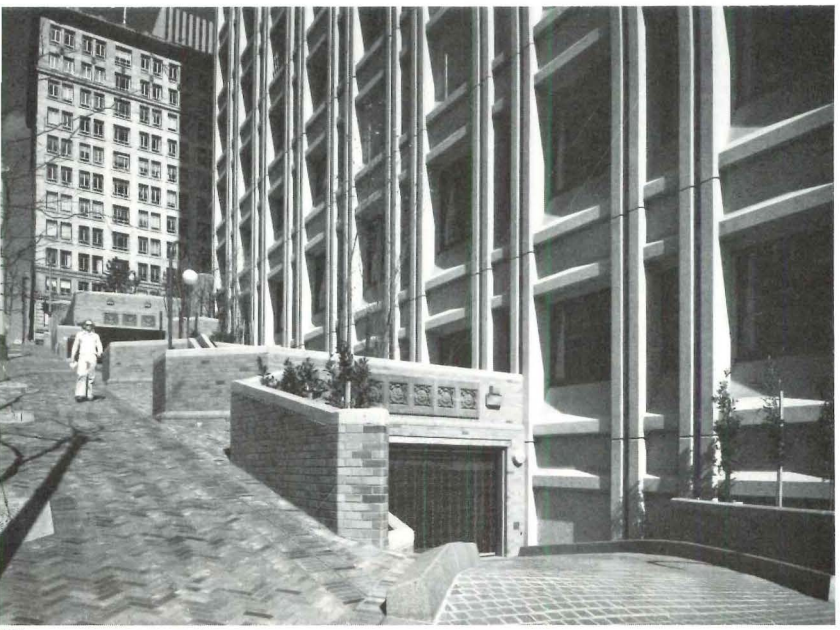

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Dick Busher

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Marsha and Michael Burns

25th anniversary of its honor awards program, the Seattle Chapter, AIA, commends 11 buildings

tle Chapter, American of Architects, named ings in its 1976 Honor Program. For the first chapter extended the to include groups of forming single com- nd such non-buildings and plazas. Winners of Honor Awards were: ness Space Design, ar- –law offices for Reed McClure Moceri & Thomm, Seattle; **(2)** Olson/Walker Associates, architects—Maynard Building restoration, Seattle; **(3)** John Graham & Co., Fred Bassetti & Co., architects—Federal Office Building, Seattle; and **(4)** The Richardson Associates, architects—Metro Transit passenger shelters, Seattle. Merit Awards went to: **(5)** John Graham & Co., and Linn A. Forrest, AIA (of Juneau), architects—State Office Building, Juneau; **(6)** R. James Dersham, AIA, architect—Third & Battery Building, adaptive re-use, Seattle; **(7)** Kirk, Wallace, McKinley, AIA & Associates, architects—Alaska Airlines Headquarters, Seattle; and **(8)** The Mithun Associates, architects—Towerhouse recreation building for the Meadows, Redmond, Washington. In addition, Citations went to Jean W. Fraley/Associates for Bloch's Restaurant in Seattle, to Wright Gildow Hartman & Teegarden for Pacific Northwest Bell communications building in Spokane, and to Hobbs/Fukui Associates for the Hobbs residence in Seattle. The chapter gave special commendation to the city's Department of Community Development for its "Bhy Kracke Gift Program" designed to encourage citizens to make "functional and attractive gifts" to the city. Jurors were Ken Brooks, FAIA, of Brooks, Hensley and Creager, Spokane, Washington; James Harris, AIA, of Harris, Reed and Litzenberger, Tacoma, Washington; and Robert Frasca, AIA, of the firm Wolff, Zimmer, Gunsul, Frasca, Portland, Oregon.

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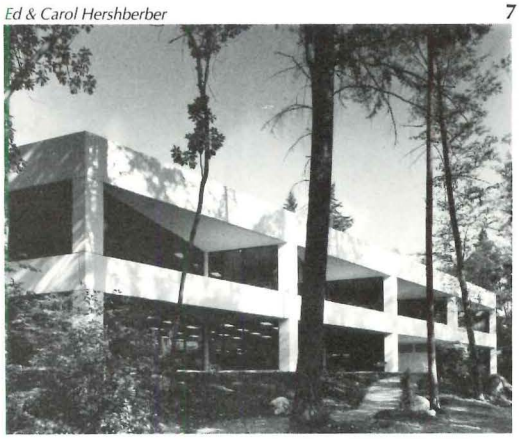
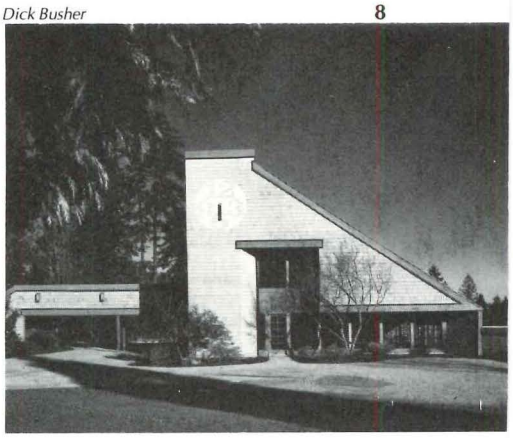


Dick Busher 8



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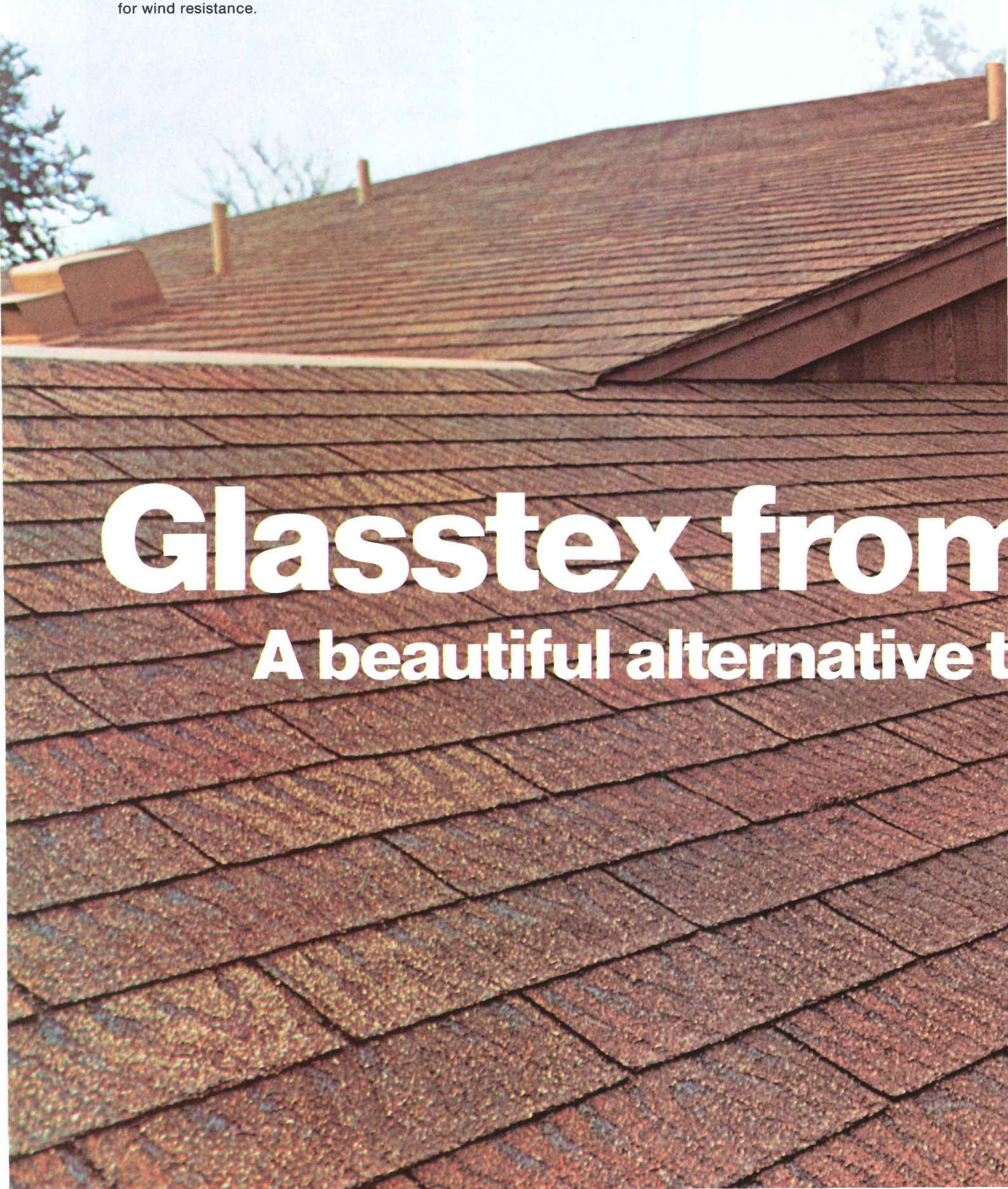

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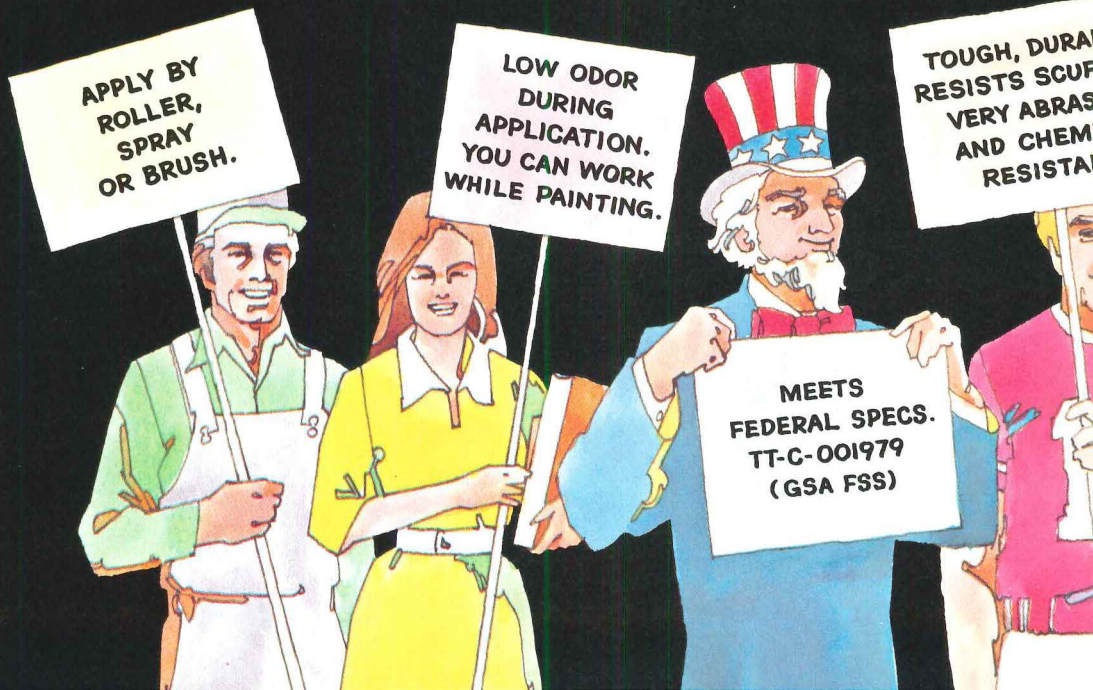

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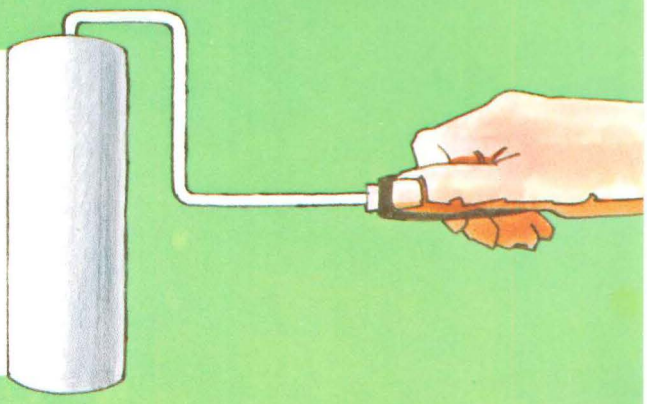

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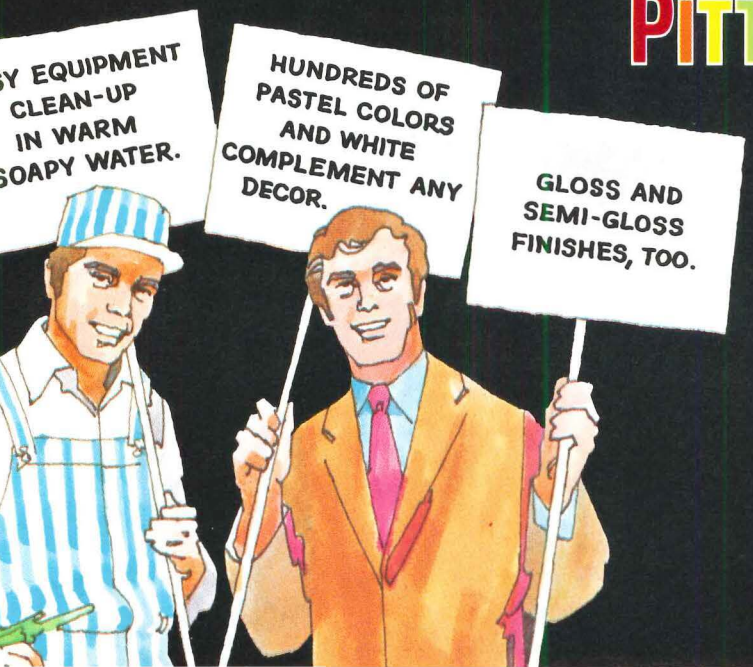

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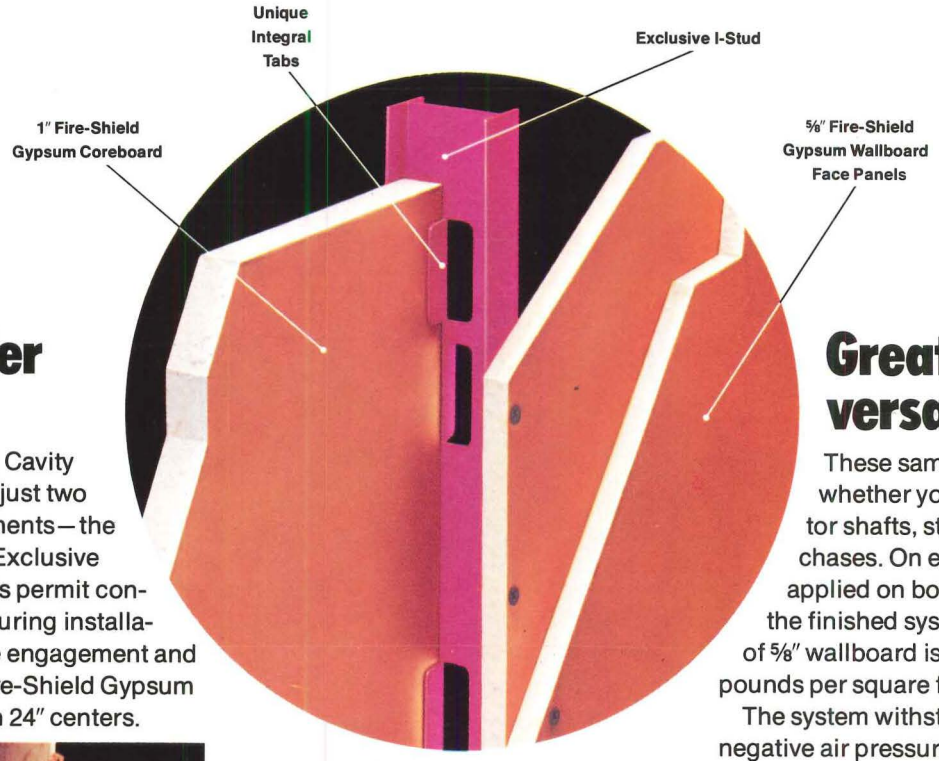

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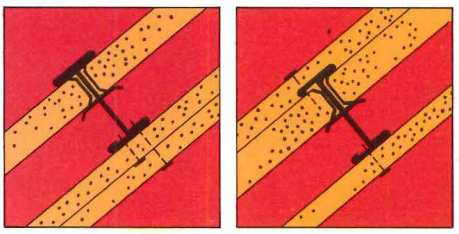

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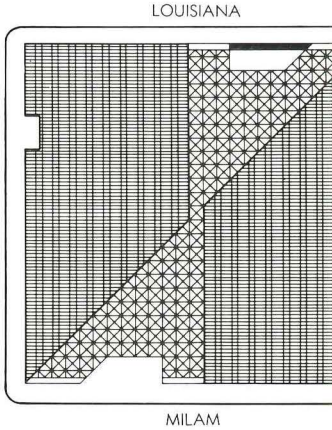
"We have chosen not to cut the top of the buildings off in the usual fashion against the sky, but rather to silhouette a counterpoint of strong diagonal massing."
—Philip Johnson, Architect.

(1) The use of stub-girders enables the air-conditioning ducts to be carried through the built-up girder system without requiring any web penetrations. The stub sections act compositely with the 3-1/4-in.-deep concrete topping placed over the galvanized steel floor deck.

Each trapezoidal tower measures 120 ft wide, a maximum of 250 ft on the long side, and 130 ft on the short parallel side. The fourth side is angled 45 degrees to the parallel sides.

(2) An eight-story, glass-enclosed courtyard connects the towers at their base. The see-through enclosure provides continuity of design, as well as an airy, visual experience for persons entering the building.



ENNZOIL PLACE...showcase for steel construction

b-girder" design provides construction economies; reduces overall story height.

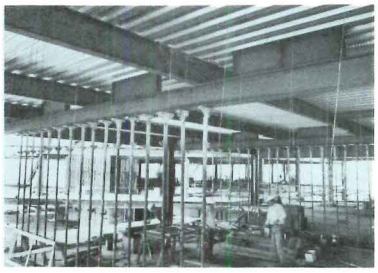
zoil Place, designed by Johnson/Burgee and S. I. Morris ciates, adds a bold, new architectural dimension to the ston skyline. Rising 516 ft above grade, the twin, 37-story zoidal towers of Pennzoil Place contain a total of 1.8 on sq ft, making it the city's largest office complex. A retail and a three-level garage are located below the plaza level.

l speeds construction. The project's building program was d on a 24-month construction schedule. Several basic tural systems were considered during the early design e, but steel was selected because of its ability to be ted more rapidly.

system adopted utilizes a welded rigid steel frame on the meter, and concrete shear walls in the core. Three addi- l welded bents, located near each 45-degree corner, mize torsion.

rding to the engineers, "The steel frame was erected kly and was well coordinated with the construction of the ."

-girder system cuts material s. The stub-girder floor- ystem, a relatively new de- pment in structural design, s a number of advantages uildings with a minimum n of 100 ft and clear spans in ange of 35 to 40 ft.



(1)

The stub-girder concept resembles a Vierendeel truss system. The composite concrete and steel floor deck system forms the top compression chord of the Vierendeel and a high-strength steel section forms the bottom tension chord. Stub pieces, shop-welded to the bottom tension chord and connected to the composite concrete and steel floor deck system by welded stub-type shear connectors, serve as the verticals of the Vierendeel.

The unusual floor-framing system enables the air-conditioning ducts to be carried through the built-up girders without requiring any web penetrations. This increases the structural depth of the girder without adding a penalty for increased height. Result: significant economies in structural steel. It's estimated that stub-girders reduce structural steel quantities by approximately 2.5 lb per sq ft compared to conventional framing systems.

And because building height is reduced, savings result in other construction items, such as curtain walls, elevator ropes, and electrical and mechanical equipment.

What's more, because the continuous floor beams can be easily positioned atop the girders, erection proceeds more rapidly than usual.

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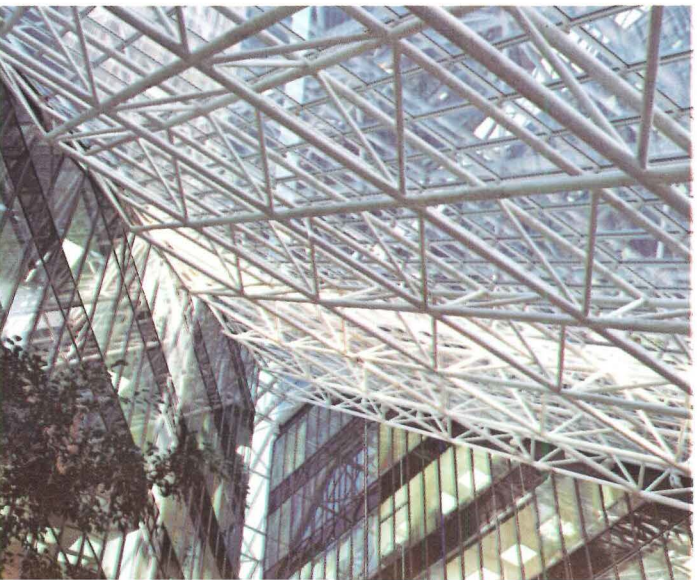


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spite of the controversy, A201 basically reaffirms traditional practices

thur T. Kornblut, Esq.

ıe past 89 of its 120-year history, The American Institute of Architects has been intimately ved in the publication of standard contract documents for architects and others in the con- ion process. The structural spine of this documents program is the most widely used stand- ɔrm contract in the construction industry—the AIA General Conditions of the Contract for ruction (commonly known as document A201). The importance of this single document sted to by the hundreds of thousands of copies distributed annually by AIA.

n late 1976, AIA issued the 13th edition of its General Conditions. The new version contains us revisions and changes developed during the six-year interval since publication of its cessor. While there are relatively few major differences of substance between the 12th and editions, a step-by-step review reveals that the new document contains numerous technical tments that better organize and clarify the relationships, rights, responsibilities and duties e parties involved in construction projects. This is the first of two articles on the major fications made to the A201 document.

n the penultimate draft of the 13th edition 201 appeared during the summer months 976, AIA and CSI chapters around the try and numerous construction industry cations became forums for discussing the s of the proposed changes to a document nas served the construction industry well any years. Having participated in a num- f these meetings, as well as having read ady stream of reviews and analyses of the version of A201, it is safe to say that the A201 is improved, the more controversy ms to generate. As with the fundamental of physics, every action (resulting in a ge, however minor) has its own reaction: umerous provisions found in the 13th edi- have been singled out by various com- ators as evidence of "major changes" in rchitect's role. Ironically, most of these exactly the same provisions, word for , as can be found in earlier editions.

other instances, minor clarifications in- ed to better delineate responsibilities and edures considered by the drafters to be construction industry practice have been n out of context and interpreted as further ngers of significant change.

d, most notably, the relatively few *major* fications made to A201 have been practi- ignored.

Although space limitations preclude a graph-by-paragraph review of all changes aring in the new edition of A201, the fol- ng will highlight some of the more impor- passages. (A detailed, side-by-side com- on of the 12th and 13th editions showing hanges is available from the Documents sion of AIA. All numerical references are ovisions in the 1976 edition of A201.)

ornblut is a registered architect and a practicing attor- Washington, D.C.

On the definition of contract documents . . .

In Article 1, a technical change was made to Subp. 1.1.1 containing the definition of the contract documents. Previously, only those items that were contract documents by definition were enumerated. Now, certain items such as the bidding documents are specifically excluded from the definition of the contract documents. This approach should eliminate confusion about the status of all documents so listed. Documents not listed as either being included or excluded from the Contract Documents are covered by the catch-all phrase "or any other documents" appended to the list of *excluded* documents. Therefore, any item—such as the shop drawings—not designated a contract document is not, by definition, to be considered a Contract Document.

Para. 1.3, which relates to the architect's ownership of the documents, has been improved considerably. Language has been added to protect the architect's common law copyright in the documents he prepares when they must be submitted to regulatory authorities in the course of securing approvals for the project. The case law had been divided on this particular issue, and the inclusion of this new contract language will be helpful in preventing unauthorized use of the documents.

On the architect's role during construction . .

In Article 2 relating to the architect's role during the construction phase, a minor semantic change was made in Subp. 2.2.3. Rather than being required to make "periodic" visits to the site as before, the architect now must make visits "at intervals appropriate to the stage of construction." The impetus for this change was nothing more than a recognition that the common dictionary definition of "periodic" could be interpreted to mean visits at regularly recurring intervals. In accordance with normal practice, most architects visit the site whenever they feel it is necessary, in their professional judgment, to perform their required duties, rather than on some arbitrarily set schedule as would be imposed by a literal interpretation of "periodic." Thus, this change simply brings the written contract into conformance with customary practice and does not lessen in any way the architect's responsibility.

Subp. 2.2.4 has been singled out by some as an abrogation of the architect's responsibility because it states that he is not responsible for construction means, methods, techniques, sequences or procedures, and so forth. In line with the philosophy that the architect designs and the contractor builds, this provision, which has appeared in almost identical form in numerous prior editions, merely sets forth a contractual recognition by the owner and contractor that the architect is not responsible for the contractor's functions.

Subp. 2.2.12 relates to the architect's duty to render a decision when claims or disputes are submitted to him by either the owner or the contractor. This provision has been modified as a result of a couple of recent court decisions to make it clear that any decision by the architect must be in writing, and it must state that it is final but subject to appeal and that arbitration must be demanded within 30 days. Unless the architect conforms to these requirements, the owner or contractor may not be barred from demanding arbitration more than 30 days after the architect renders his decision.

On the owner's obligations . . .

Article 3 relating to the owner contains two major changes—one beneficial and one highly dubious. The questionable change appears in Subp. 3.2.1, a brand new provision that requires the owner to give the contractor "reasonable evidence" of his financial arrangements for the project. Failure by the owner to provide this evidence will excuse the contractor from entering into the contract. While it may seem reasonable for contractors to want financial assurances, there is considerable doubt about the willingness of owners to voluntarily proffer this information as a condition of the contract. This new provision has not

continued on page 57

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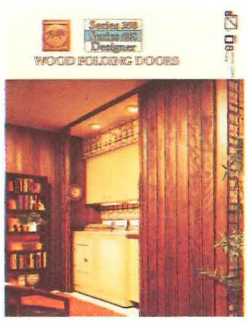

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drafted as a condition precedent, so there ıe some problem in enforcing it as part of tract that will not have been executed by parties at the time the contractor makes emand and has the right to refuse to sign ontract. However, assuming that Subp. is construed to be a valid condition prec- to the contract, and the owner volun- his financial information, it would enable ontractor whose bid is accepted to avoid ng into the contract by claiming that the r's financial evidence is unreasonable.

The trouble is, this could occur not only the evidence is in fact unreasonable, but when the low bidder leaves too much ey on the table, or when more lucrative comes up elsewhere, or for a myriad of ns valid or otherwise. As a minimum, the r will have an argument on his hands. if court or arbitrator orders the contractor gn the contract, the project will be com- cing on a bad note.

Contractors' representatives argue that . 3.2.1 is necessary and fair in light of the actor's financial investment and eco- c exposure in the project prior to being To that, an appropriate response can be d elsewhere in A201—in those provisions intend the contractor to be paid, less re- ges, on a monthly basis for work per- ed or procured each month. If a contractor loubts about an owner's ability to meet his thly payments, some type of an escrow ac- t could be established. The owner, assum- e is willing to go along with this (if not, ertainly would not reveal his entire financ- either), can pay in advance into the ac- t on the basis of the contractor's estimated cation for payment each month, with thly disbursements based on actual work . In this way, the contractor's financial ex- re can be protected without requiring the er to reveal his financial arrangements or ing a way for the contractor to renege on ng the contract for reasons allegedly d on inadequate finances. In light of these ntial problems, it is suggested that archi- bring this new provision to the attention e owner and request specific instructions him or his attorney about retaining it in roposed construction contract.

In Subp. 3.3.1, an important change was e to clarify the owner's right to stop the based on non-performance by the con- or. This right of the owner is separate and ct from the architect's right to reject work does not conform to the contract require- s (found in Subp. 2.2.13). In 1970, A201 changed to delete the provision that gave rchitect the right to "stop" work. The doc- nt retained the "right to reject work" ter- logy so that the architect, within the e of his contract, could properly protect wner's interests during the construction e. The reason for this was the propensity ertain courts to interpret the architect's ractual right to stop work as creating a to detect safety hazards and stop work be- fore someone was injured—despite the explicit contract language making the contractor liable for safety at the site. In addition to the liability problem, there was an obvious practical problem. Neither the owner nor the contractor—the two parties to the contract—normally wanted the architect to stop the work unilaterally, because of the economic detriment it could cause them. The wisdom of this change already has been borne out in recent cases absolving architects from liability for construction workers' injuries because the design professional had no contractual right to stop the work.

The new language in Subp. 3.3.1 makes it clear that the owner himself must personally sign the order, or must give specific written power to an agent to do so, in order to take the drastic step of stopping the work. Again, this provision further clarifies an important change made six years ago so that the proper roles of the owner and architect will be clearly understood. In no way, however, is the architect's power diminished to reject work that does not conform to the drawings and specifications.

Next month, the second part of this two-part article will discuss changes in the remaining 11 articles of A201.

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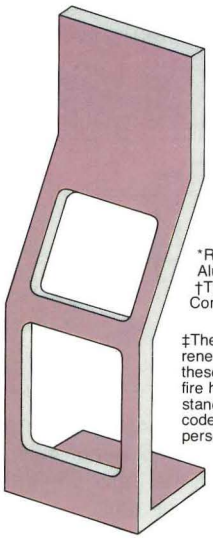

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nning your personal financial strategy

ark Pollard

n interviewing a number of architects around the country, the author learned—not unex-dly—that their paramount personal financial concern is to become more financially inde-ent. In addition, younger architects often cannot initially afford to take the risks associated investing in common stocks. This article—the first of two on personal investment—is one tment counselor's opinion of how a hypothetical architect* could begin amassing the capi-quired to take the bigger step into sophisticated investment programs. The strategy: a combi-n of conservative investments that will allow capital growth at a greater rate—with a mini-i of risks—than if the architect had all of his discretionary income in a savings account. Next :h, we will examine the investment programs available to the senior architect who has ;sed capital and is saving on a regular basis.

y Cooper (our hypothetical subject) is a ear-old architect who is married and has e children. Like most architects, Andy's or concern is to become more financially pendent. In this regard, he is certain about things: 1) he wants to add to his current tal, and 2) he wants to maximize the return he $15,000 he recently inherited.

First, let's look at his current situation. In 5 Andy and Linda earned $31,000. The of their income, $26,000, comes from y's position with an eight-person firm, re he has a small interest (3 per cent). a earns $5,000 per year.

The Coopers don't know why, but despite substantial income, they cannot seem "to ahead." Fortunately, they are able to meet ent fixed obligations, including mortgage automobile payments as well as a small le-life insurance policy of $35,000. How-, after the Cooper's pay their current ex-es, what they think of as "savings" (the retionary income of $100-150 a month) not go into a savings account.

, open a savings or a retirement account

first problem for Andy and Linda to solve eir inability to save money on a regular s. The solution to their problem is to learn discipline of an organized investment pro-n. By organized, I mean the saving of a l sum on a monthly basis. Should Andy Linda begin saving $100 per month in a ngs account at a 5¼ per cent interest rate pounded daily, they will have put aside 31.50 in the first year alone, and will have 881 at the end of 10 years. Table I shows amounts they are able to save over a period 0 and 20 years.

An extension of the savings principle is an Individual Retirement Account (IRA) for both Andy and Linda. Fortunately, Linda has an IRA account in her local savings and loan where she initially deposited $500 at the end of 1976. Since a contribution of up to 15 per cent of your earned income (to a maximum of $1,500) is allowed in an IRA, Linda could have contributed $750 to her program. One of the major advantages of an IRA is that the taxes on any earnings or gains accumulated through the IRA are deferred until your retirement, when you will probably be in a lower tax bracket.

TABLE I

Monthly Savings	Savings Compounded Daily at 5¼ %	
	10 years	20 years
$ 50.00	$ 7,940.00	$21,453.00
100.00	15,881.00	42,926.00
125.00	19,852.00	53,657.00

TABLE II

	Interest Rate	1976 Age 38	1988 Age 50	1998 Age 60
Savings certificate	6¼%	$ 5,000	$10,000	$18,976
AA corporate bond (5-year maturity)	7.0%	5,000	11,261	22,152
AA corporate bond (10-year maturity)	8.2%	5,000	12,873	28,311
Totals:		$15,000	$37,629	$69,439

A division of capital investment can yield well without risks

The other conservative discipline required in successful asset management is to maximize your investment return within the guidelines of the risks you are willing to assume. In Mr. Cooper's case, the most important objective is to preserve his $15,000 in capital and earn a better rate of return than is currently available in his savings account. Andy agrees he doesn't want to get rich quick or take the risks associated with investments in commodities, options or real estate. Due to the limited amount of capital, I suggest that he defer buying common stocks until his investable capital is about $25,000.

To meet the objectives of preservation of capital and maximization of yield, I recommend that Andy divide his commitments into thirds. Using this approach he can invest one-third of his capital ($5,000) in savings certificates at his local savings and loan. The certificates are purchased in $1,000 denominations and would best be bought with staggering maturities from six months to 2½ years. In this way Andy will always have $1,000 available for re-investment and/or, if required, to meet a family emergency. At current rates Andy will earn an average of approximately 6¼ per cent or $317.50 annual income. Table II shows the effect of compounding Andy's investment returns for 12 years and 22 years.

Another third of Mr. Cooper's investable assets or $5,000 should be invested in a five-year quality corporate bond. This investment should be guided by the major rating services—Moody's and Standard & Poor's—and should not carry a rating below AA. These are bonds of the highest quality and will allow for the timely payment of interest and principal. Currently these intermediate term bonds pay approximately 7 per cent on an annual basis.

The last third of Andy and Linda's money should be placed in a 10-year corporate bond. This bond should also carry an AA rating or better, but it should not be issued by the same company as the five-year bond. A 10-year corporate bond issued by a major industrial company is currently yielding approximately 8.20 per cent or $410.00 per year.

Two points should be made here: 1) diversity of conservation assets is important to a person in Andy's position, and 2) any program of this nature should be reviewed at least once every two years.

ollard is a senior account executive with Merrill Lynch, e, Fenner & Smith, Inc., New York.

* Our profile is based in part on the 1974 Case and Company, Inc. report, "Survey of the Membership," commissioned by The American Institute of Architects. The report states that the typical AIA member is a white male about 46 years old and married, with an average of three dependents. The average salary received by AIA members in 1973, including profit sharing, was $26,630. The author's research revealed that the wives of most of the interviewed architects work either part- or full-time.

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n automated project control system aims for improved profitability

. Neil Harper

e early fifties, just over 20 cents of every dollar of gross billing was retained as before-tax t by architectural firms. This profit margin has steadily decreased over the past twenty years, that today *profitable* firms estimate the margin closer to 5 to 10 per cent. Rising labor costs outpaced limited increases in professional fees, and the scope of services offered to clients ıe last two decades has grown enormously—without corresponding adjustments in compen-ın. These two factors alone—increased costs and scope of services—have placed with the gn professions the burden of developing improved compensation negotiation techniques and gn cost controls, if profitability is to be preserved.

ı its April 1975 publication of *Compensa-Management Guidelines for Architectural ices,* The American Institute of Architects ided a rational and equitable basis—ac-able to both architects and clients—for de-ining *cost-based* compensation. This ac-in effect, emphasized the comprehensive re of architectural services, while offering siness-like alternative to the fee-schedules em abandoned under Justice Department sure in 1973. (A revised AIA manual devel-d with the American Consulting Engineers ncil and being readied for this spring, will itled *Compensation Guidelines for Archi-ural and Engineering Services.)*

Implicit in this compensation develop-t format is a format for monitoring design s, and over-all firm profitability. Further, whole process can be automated.

The Computer-Based Financial Manage-ment System (CFMS) operated by the Cambridge, Massachusetts, consulting firm of Harper and Shuman, Inc., is a national computer accounting system that has been recently programmed to accept the cost-based compensation budget data, and provide the architect with periodic "Project Progress Reports" to compare actual expenditures with the budgeted amounts. The report is based on input supplied by the architect—by mail or through a computer terminal—according to the formated worksheets found in the compensation guidelines manual. Figure 1 represents a report for a prototypical City Hall project, summarized by department and phase.

Both hours and dollars are presented, for the current period and for the project-to-date. The report includes direct labor, overhead allocation, and direct and reimbursable costs. The estimated per cent of work completed, as reported by the project manager, is used to prorate the total budget to give the "Earned Budget" column. This Earned Budget can then be compared to the "Spent to Date" column to provide a ready assessment of each labor or expense item (see boxed areas). An alternate comparison is also offered in the column, "Expended ($) vs. Reported (hours)" per cent of work completed. When the expended amount exceeds the reported amount significantly, corrective action of some sort is required.

An optional feature of the Project Progress Report is the presentation of financial data at the bottom of the report. The top part of the report shows the *costs* of services provided; the bottom part adds information dealing with *compensation:* commission size (compensation), earned income, billing, and profit or loss.

A second report monitors firm-wide profit plan

Principals and project managers in most firms tend to think of their firm's activities and performance as a series of projects. It is also true, however, that firm-wide performance is often presented in terms of an income/expense statement which is based on a general ledger formulation of data; rather than based on a project-by-project formulation.

Figure 2 is such a presentation: a "Profit Planning Monitor" report showing a firm-wide profit plan in terms of income and expense items. In the example shown (see boxed areas), the Annual Plan has budgeted $860,000 for income, $688,000 for total expense, and $172,000 for profit for the total year. Through March 31, this should have resulted in a $34,400 profit, but only $24,147 was actually generated, due primarily to overruns in the indirect expenses (by $7011).

Harper is a registered professional engineer and a former iate partner in the Chicago office of Skidmore, Owings rrill. He edited *Computer Applications in Architecture Engineering,* McGraw-Hill, 1968. His firm consults on cial management computer systems.

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PROJECT PROGRESS REPORT
FOR THE PERIOD 03/01/77-03/31/77

PRINCIPAL PROJ MGR: SMITH JONES

	SPENT THIS PERIOD HOURS	SPENT THIS PERIOD DOLLARS	SPENT TO DATE HOURS	SPENT TO DATE DOLLARS	PERCENT COMPLETE EXPENDED	PERCENT COMPLETE REPORTED	EARNED BUDGET HOURS	EARNED BUDGET DOLLARS	TOTAL HOURS	TOTAL BUDGET DOLLARS
HITECTURAL DEPT										
SCHEMATIC DESIGN	170	2230	470	6310	76	78	480	6510	600	8300
DESIGN DEVELOPMENT	40	530	160	1980	20	19	160	1900	1100	10000
CONSTRUCTION DOCUMENTS	220	1940	700	6300	20	16	500	5000	3500	32000
TOTAL ARCH DEPT	430	4700	1330	14590	29	27	1140	13410	5200	50300
ERIORS DEPT										
SCHEMATIC DESIGN	40	440	350	2750	69	65	200	2600	300	4000
CONSTRUCTION DOCUMENTS	20	300	80	1200	8	5	100	800	2000	16000
TOTAL INTERIORS DEPT	60	740	430	3950	20	17	300	3400	2300	20000
AL LABOR	490	5440	1760	18540	26	24	1440	16810	7500	70300
RHEAD ALLOCATION		7072		23175				20172		84360
AL LABOR AND OVERHEAD	490	12512	1760	41715	26	24	1440	36982		154660
ECT COSTS										
611.00 STRUCTURAL CONSULTANT		3000		9000	25	25		9000		36000
612.00 MECHANICAL CONSULTANT				16000	25	25		16000		64000
TOTAL DIRECT COSTS		3000		25000	25	25		25000		100000
AL LABOR, OVERHEAD, DIRECT	490	15512	1760	66715	26	24	1440	61982	7500	254660
MBURSABLES										
516.00 TRAVEL		100		1500	38	50		2000		4000
517.00 REPRODUCTIONS		200		686	11	10		600		4000
518.00 MODELS & PHOTOGRAPHS				8000	100	100		8000		8000
TOTAL REIMBURSABLES		300		10186	57	59		10600		18000
AL LABOR, O/H, DIRECT, REIMB	490	15812	1760	76901	28	27	1440	72582	7500	272660

FINANCIAL ANALYSIS

	TOTAL COMP	BILLED	A/R	EARNED INCOME	SPENT	PROFIT (LOSS)	PCT PROFIT
CURRENT		16216.25		16216.25	15812.00	404.25	2.5
YEAR-TO-DATE		46000.00		46000.00	40000.00	6000.00	13.0
JOB-TO-DATE	336325.00	89767.25	16423.00	89767.25	76901.00	12866.25	14.3

Figure 1

INCOME

ACCT NUMBER	ACCT NAME	CURRENT PERIOD ACTUAL	CURRENT PERIOD PLAN	CURRENT PERIOD VARIANCE	YEAR TO DATE ACTUAL	YEAR TO DATE PLAN	YEAR TO DATE VARIANCE	ANNUAL PLAN
401.00	BILLED FEE INCOME	60000.00	66666.67	6666.67-	210000.00	200000.00	10000.00	800000.00
404.00	UNBILLED INCOME	6211.07	4166.67	2044.40	2052.73	12500.00	10447.27-	50000.00
	SUBTOTAL	66211.07	70833.34	4622.27-	212052.73	212500.00	447.27-	850000.00
499.00	REIMBURSABLE INCOME	300.00	833.33	533.33-	1400.00	2500.00	1100.00-	10000.00
	SUBTOTAL	300.00	833.33	533.33-	1400.00	2500.00	1100.00-	10000.00
	TOTAL INCOME	66511.07	71666.67	5155.60-	213452.73	215000.00	1547.27-	860000.00

REIMBURSABLE EXPENSES

ACCT NUMBER	ACCT NAME	CURRENT PERIOD ACTUAL	CURRENT PERIOD PLAN	CURRENT PERIOD VARIANCE	YEAR TO DATE ACTUAL	YEAR TO DATE PLAN	YEAR TO DATE VARIANCE	ANNUAL PLAN
516.00	TRAVEL	100.00	166.67	66.67-	500.00	500.00	0.00	2000.00
517.00	REPRODUCTIONS	200.00	500.00	300.00-	1000.00	1500.00	500.00-	6000.00
	SUBTOTAL	300.00	666.67	366.67-	1500.00	2000.00	500.00-	8000.00
	TOTAL REIMBURSABLE EXPENSE	300.00	666.67	366.67-	1500.00	2000.00	500.00-	8000.00

DIRECT EXPENSE

ACCT NUMBER	ACCT NAME	CURRENT PERIOD ACTUAL	CURRENT PERIOD PLAN	CURRENT PERIOD VARIANCE	YEAR TO DATE ACTUAL	YEAR TO DATE PLAN	YEAR TO DATE VARIANCE	ANNUAL PLAN
602.00	DIRECT LABOR	19995.78	18333.33	1662.45	58144.84	55000.00	3344.84	220000.00
604.00	TEMPORARY HELP	39.20	83.33	44.13-	333.20	250.00	83.20	1000.00
	SUBTOTAL	20034.98	18416.66	1618.32	58478.04	55250.00	3428.04	221000.00
	TOTAL DIRECT EXPENSE	41322.28	40000.00	1322.28	118193.93	116000.00	2193.93	416000.00

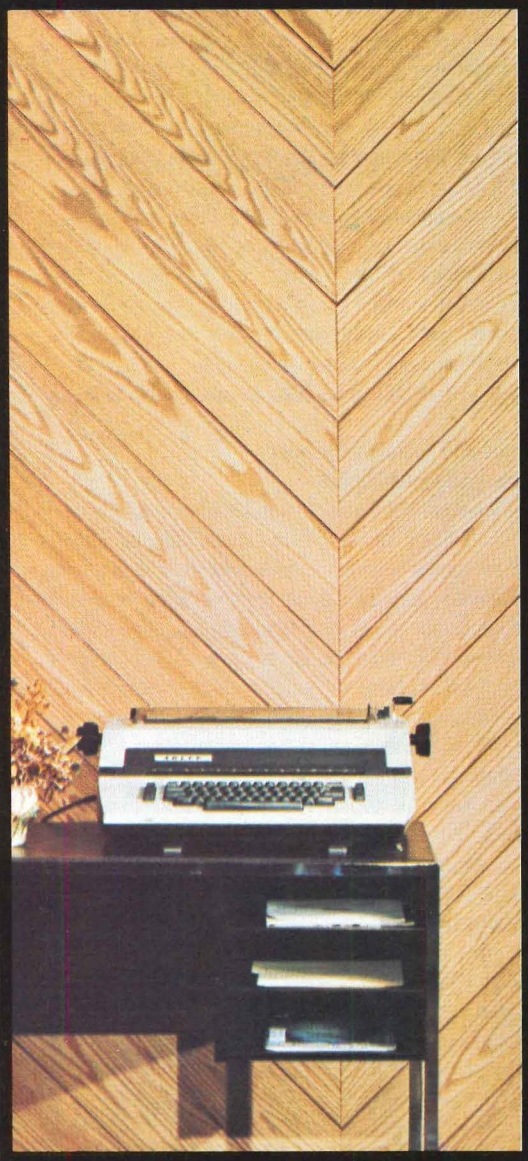
INDIRECT EXPENSES

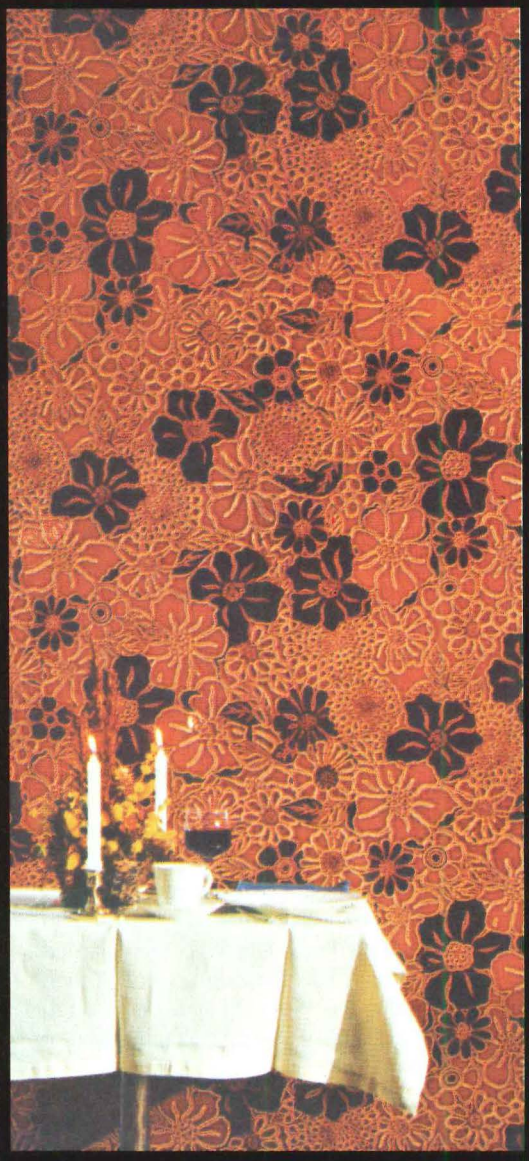
ACCT NUMBER	ACCT NAME	CURRENT PERIOD ACTUAL	CURRENT PERIOD PLAN	CURRENT PERIOD VARIANCE	YEAR TO DATE ACTUAL	YEAR TO DATE PLAN	YEAR TO DATE VARIANCE	ANNUAL PLAN
702.00	INDIRECT LABOR	9818.53	10000.00	181.47-	29334.90	30000.00	665.10-	120000.00
703.00	JOB COST VARIANCE	292.50	333.33	40.83-	963.38	1000.00	36.62-	4000.00
	SUBTOTAL	10111.03	10333.33	222.30-	30298.28	31000.00	701.72-	124000.00
711.00	EMPLOYER'S FICA TAX	5400.00	5400.00	0.00	18000.00	17000.00	1000.00	50000.00
	TOTAL INDIRECT EXPENSE	20663.64	26000.00	5336.36-	69611.08	62600.00	7011.08	264000.00
	TOTAL EXPENSES	62285.92	66666.67	4380.75-	189305.01	180600.00	8705.01	688000.00
	PROFIT/LOSS (-)	4225.15	5000.00	774.85-	24147.72	34400.00	10252.28-	172000.00

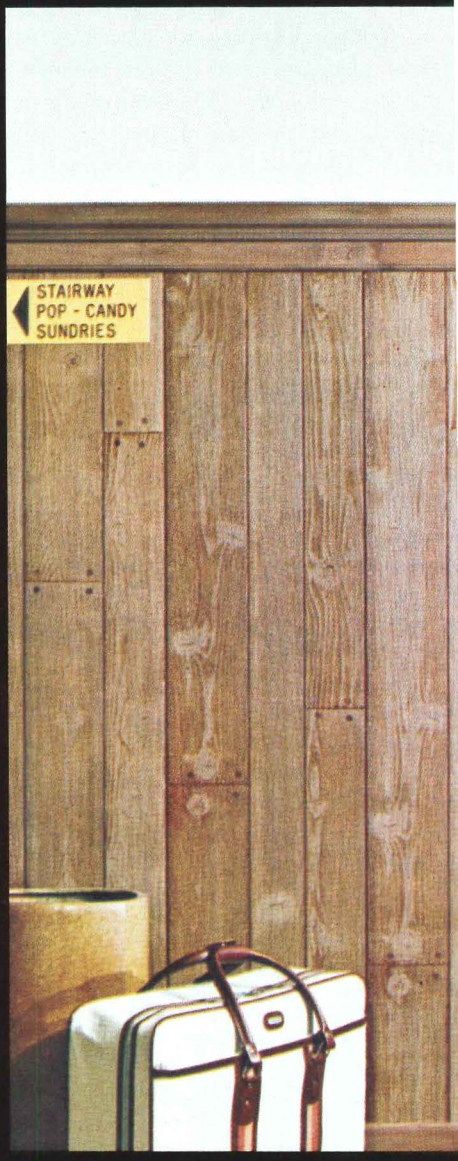
Figure 2

The Wall.

Look at it from a commercial point of view.







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DOVER, OHIO 44622

MEETING THE CHALLENGE OF CHANGE

odge/Sweet's construction outlook, 1977: first update
s looking bigger by the minute

outlook for total construction contract value for 1977 is now even stronger than it was just w months ago: a record $123 billion—up 15 per cent, with gains in nonresidential, residential nonbuilding construction. Public works spending, the time-honored means of creating jobs ng recessions, will be escalated. With $2 billion already granted under the Local Public rks Act of 1976, Mr. Carter would add another $2 billion to the current year's authorization, also extend the program through fiscal 1978. (Otherwise, it would expire September, 1977.) sing is an area where the Carter Administration hopes to accomplish two goals at once: ulating economic activity while improving urban living conditions. Specifics have not been ounced as yet, but some form of inner-city housing aid is a good bet.

ational Construction Contract Value illions of dollars)		1976 Actual	1977 Forecast	Per Cent Change
onresidential uildings	Office Buildings	$ 4,122	$ 4,550	+10
	Stores & Other Commercial	6,315	7,600	+20
	Manufacturing	4,058	4,450	+10
	Total Commercial & Manufacturing	$ 14,495	$ 16,600	+15
	Educational	$ 4,980	$ 5,450	+ 9
	Hospital & Health	4,590	5,050	+10
	Other Nonresidential Buildings	5,980	6,500	+ 9
	Total Institutional & Other	$ 15,550	$ 17,000	+ 9
	Total Nonresidential	$ 30,045	$ 33,600	+12
esidential uildings	1- & 2-Family Homes	$ 35,958	$ 39,200	+ 9
	Apartments	6,550	11,800	+80
	Total Housekeeping	$ 42,508	$ 51,000	+20
	Total Nonhousekeeping	$ 1,142	$ 1,400	+23
	Total Residential	$ 43,650	$ 52,400	+20
onbuilding onstruction	Highways & Bridges	$ 7,884	$ 9,300	+18
	Utilities	15,610	16,500	+ 6
	Sewer & Water	6,159	7,000	+14
	Other Nonbuilding Construction	3,810	4,200	+10
	Total Nonbuilding	$ 33,463	$ 37,000	+11
otal Construction odge Index (1967 = 100)		$107,158 194	$123,000 223	+15

oor Area of New Buildings illions of square feet)		1976 Actual	1977 Forecast	Per Cent Change
onresidential uildings	Office Buildings	108	115	+ 6
	Stores & Other Commercial	343	390	+14
	Manufacturing	151	175	+16
	Total Commercial & Manufacturing	602	680	+13
	Educational	120	130	+ 8
	Hospital & Health	74	80	+ 8
	Other Nonresidential Buildings	173	180	+ 4
	Total Institutional & Other	367	390	+ 6
	Total Nonresidential	969	1,070	+10
esidential uildings	1- & 2-Family Homes	1,505	1,530	+ 2
	Apartments	307	540	+76
	Total Housekeeping	1,812	2,070	+14
	Total Nonhousekeeping	34	40	+18
	Total Residential	1,846	2,110	+14
otal Buildings		2,815	3,180	+13

Taking our first cut at a 1977 construction forecast late last year (RECORD, November 1976, page 65), we came up with a rather optimistic outlook (+12 per cent over 1976)—but with more than the usual qualifications. There didn't seem to be much doubt about the direction that construction markets were heading, but the strength of the further expansion of construction's already-established recovery depended on three things: 1) a reversal of the mid-1976 "pause" in general economic activity; 2) a change in national priorities and programs; and 3) relatively dormant inflation.

Since October 1976, we've moved along nicely in all three areas. Last year's spasm in the economy's recovery worked itself out before year-end, giving 1977 a new start in the right direction. Leadership passed to Mr. Carter who proposes to encourage rather than restrain the recovery from here on. And inflation, after three horrendous years, finally receded to its pre-energy crisis rate. With all three major conditions of our earlier forecast for 1977 satisfied at the start of the year, there's little left to do now but raise our sights.

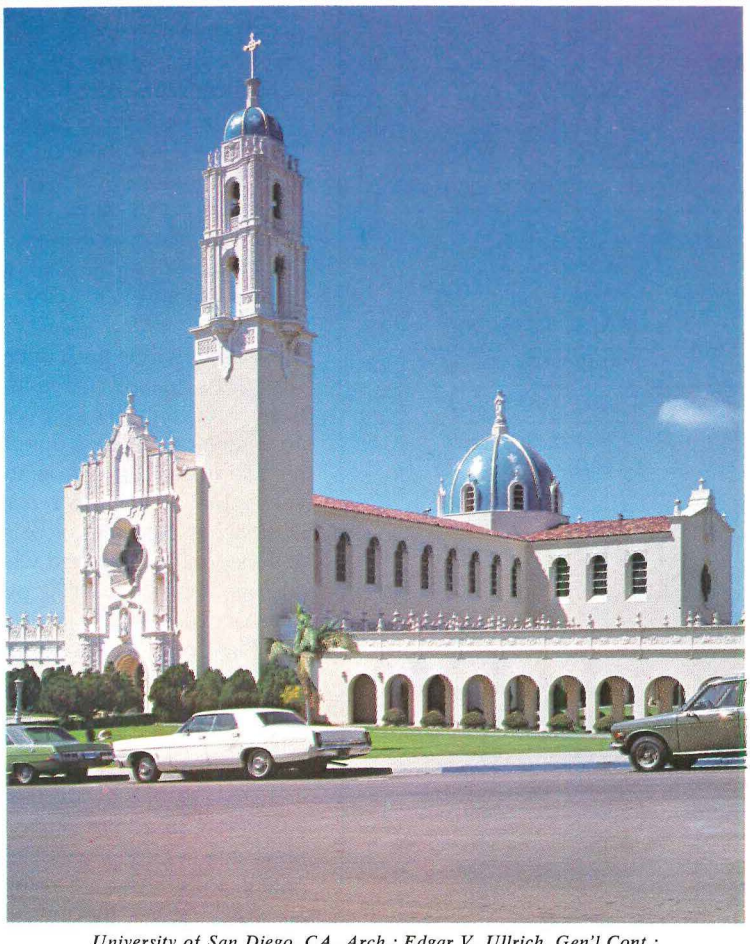
The economy: the push after the pause

Last year's "pause" made its point very effectively: you can't take recovery for granted. For an uncomfortably long time, a recovery is vulnerable to stalling out, as this one did. Such vulnerability continues to exist until the recovery reaches the point of being self-sustaining, and that point is reached when business capital spending finally takes over as the driving force of expansion.

Right now, with considerable excess capacity throughout most industries, we're still quite a bit short of the self-sustaining point, and the case for stimulative monetary and fiscal policy in 1977 is every bit as valid as it was in 1975 and 1976. In fact, with inflation at its lowest rate in a long while, this could be the ideal time to close the gap between actual and potential production. Closing that gap is, after all, what creates the incentive for increased capital spending, which is, in turn, the key to growth, productivity, and price stability.

The President's package: modestly activist

Only time will tell whether Mr. Carter's $30-plus billion package of economic measures, which includes a variety of taxation and spending stimuli, will be too much, too little, or just enough prodding to guide the economy back toward full use of our resources. It cer-



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y wasn't the most activist course the Carter inistration could have taken (particularly its heavier reliance on tax reduction than pending), and it may even be slated for e beefing up by Congress before taking shape.

The intangibles that go along with this ge of Administration—a realignment of nal priorities that puts economic growth d of anti-inflationary restraint, and a coop- ve relationship between the White House Congress—could turn out to be even more rtant than specific programs. They strong- ggest that things will start happening in hington—a place where not much has happening lately. And history shows s when things happen in construction, too.

residential building: the indirect boost

racting for commercial and industrial dings is more likely to benefit *indirectly* directly from efforts by government to ac- rate the economy's recovery. Neverthe- the indirect benefits to such privately-fi- ced business construction from an expand- economy (as opposed to one under re- nt) can be considerable.

The gyrations of the nonresidential build- ndex during 1976 show how sensitive this of construction can be to changes in the nomic climate. This seasonally-adjusted x, which reached its cyclical low point in 1975, was making a good recovery ugh the first two quarters of last year. It fell back in the third quarter when the se" in business activity occurred, but re- vered in the final quarter.

Maybe that close quarter-by-quarter par- ism between nonresidential building and ral business activity is just a bit too good e true, but it strongly suggests that the ving in commercial and industrial build- which was interrupted in 1976, will be re- d in 1977 as the economy expands and ss capacity is taken up. A 15 per cent gain mmercial and industrial building value— 16.6 billion—still looks on target for 1977, more to come in 1978.

Institutional building, handicapped by the dily shrinking educational building market, shown little potential for growth in recent s. However, analysis of 2000 grants from irst $2 billion special appropriation under Public Works Act of 1976 indicates a tem- ry change in this situation. Instead of the ic works money running heavily to the tra- nal road and sewer projects, a surprisingly e share (60 per cent) is being used for con- ction of nonresidential buildings. And of share, nearly one-third involves school ding or remodeling. In both 1977 and 8 these public funds will temporarily pump e life into the sluggish institutional build- market, and so we're increasing this year's nate to $17 billion.

dential building: 2 million units soon?

e October, the "standard" forecast of sing starts for 1977 has escalated from 1.7 on units to 1.8 million. One reason: the onally-adjusted rate of housing starts ac- y averaged 1.8 million during the final quarter of 1976. Another reason: the Carter Administration is expected to take a continuingly active role in housing markets.

Depending on how much shelter demand is satisfied by mobile homes, the optimum annual rate of site-built residential construction for the rest of the decade lies in the range of 1.8 to 2.0 million units. Considering the low output of the past two years, this potential demand implies a good probability of a 2 million-unit housing year in the near future—most likely in 1978, following this year's advance to 1.8 million. However, the mix of the housing supply will change in 1977 to include approximately 600,000 apartment units—up sharply from less than 350,000 in 1976.

Nonbuilding construction: it goes up too

In 1976 it was energy, not anti-recessionary spending, that gave rise to the strong gain in nonbuilding construction. In 1977, however, it will be highways, sewers, and other public works—supported by increased Federal spending—that will keep things moving ahead.

Last year brought a record number (30 vs. 25 in 1975) of increasingly costly (averaging $500 million each vs. $325 million) electric generating projects. The result: contract value nearly doubled last year to $15 billion, and that's even more than we had been expecting for 1977. This year's utility forecast has been duly expanded to $16.5 billion.

As 1976 drew to a close, public works construction was just beginning to respond to last October's special appropriation of $2 billion to increase employment in construction, and our earlier expectation of a strong rate of contracting for roads and sewers during the first half of 1977 still holds. However, the previously expected second half decline has to be postponed in view of the Carter Administration's intent to extend Congress' "quick fix" through all of 1977 and into 1978 as well. Roughly one-third of these special public works funds are being directed into highway and sewer construction, raising 1977 totals to $9.3 billion and $7 billion respectively.

George A. Christie
vice president and chief economist
McGraw-Hill Information Systems Company

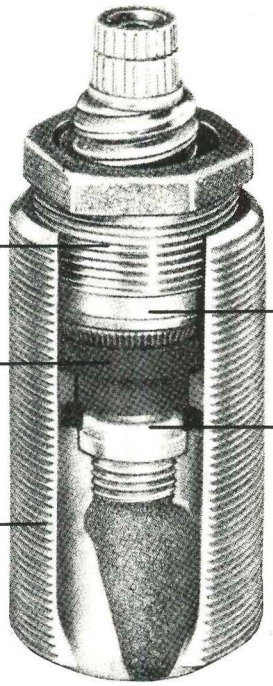
Regional Construction Contract Value
(millions of dollars)

	Northeast Conn., D.C., Del., Mass., Md., Maine, N.H., N.J., N.Y., Eastern Pa., R.I., Va., Vt.			Midwest Northern Ill., Ind., Iowa, Ky., Mich., Minn., N.D., Ohio, Western Pa., S.D., Wis., W. Va.		
	1976 Actual	1977 Forecast	Per Cent Change	1976 Actual	1977 Forecast	Per Cent Change
Nonresidential Buildings						
Commercial & Manufacturing	$ 2,213	$ 2,500	+13	$ 3,848	$ 4,500	+17
Other	3,564	3,700	+ 4	4,025	4,300	+ 7
Total	$ 5,777	$ 6,200	+ 7	$ 7,873	$ 8,800	+12
Residential Buildings						
1- & 2-Family Homes	$ 4,911	$ 5,400	+10	$ 8,465	$ 9,200	+ 9
Apartments	1,345	2,000	+49	1,678	3,200	+91
Nonhousekeeping	168	200	+19	291	350	+20
Total	$ 6,424	$ 7,600	+18	$10,434	$12,750	+22
Nonbuilding Construction						
Highways & Bridges	$ 1,392	$ 1,800	+29	$ 2,206	$ 2,600	+18
Other	5,091	5,600	+10	6,447	7,000	+ 9
Total	$ 6,483	$ 7,400	+14	$ 8,653	$ 9,600	+11
Total Construction	$18,684	$21,200	+13	$26,960	$31,150	+16

Regional Construction Contract Value
(millions of dollars)

	South Ala., Ark., Fla., Ga., Southern Ill., Kan., La., Miss., Mo., N.C., Neb., Okla., S.C., Tenn., Tex.			West Alaska, Ariz., Cal., Colo., Hawaii, Idaho, Mont., Nev., N.M., Ore., Utah, Wash., Wy.		
	1976 Actual	1977 Forecast	Per Cent Change	1976 Actual	1977 Forecast	Per Cent Change
Nonresidential Buildings						
Commercial & Manufacturing	$ 5,213	$ 5,900	+13	$ 3,221	$ 3,700	+15
Other	4,903	5,500	+12	3,058	3,500	+14
Total	$10,116	$11,400	+13	$ 6,279	$ 7,200	+15
Residential Buildings						
1- & 2-Family Homes	$12,706	$14,100	+11	$ 9,876	$10,500	+ 6
Apartments	1,464	2,900	+98	2,063	3,700	+79
Nonhousekeeping	316	400	+27	367	450	+23
Total	$14,486	$17,400	+20	$12,306	$14,650	+19
Nonbuilding Construction						
Highways & Bridges	$ 3,022	$ 3,400	+13	$ 1,264	$ 1,500	+19
Other	7,628	8,100	+ 6	6,413	7,000	+ 9
Total	$10,650	$11,500	+ 8	$ 7,677	$ 8,500	+11
Total Construction	$35,252	$40,300	+14	$26,262	$30,350	+16

You'd think we just got into the jewelry business.



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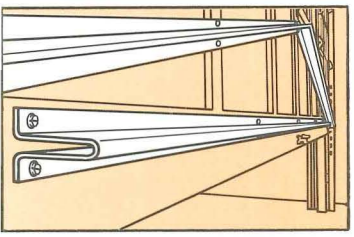

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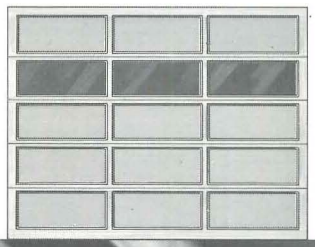

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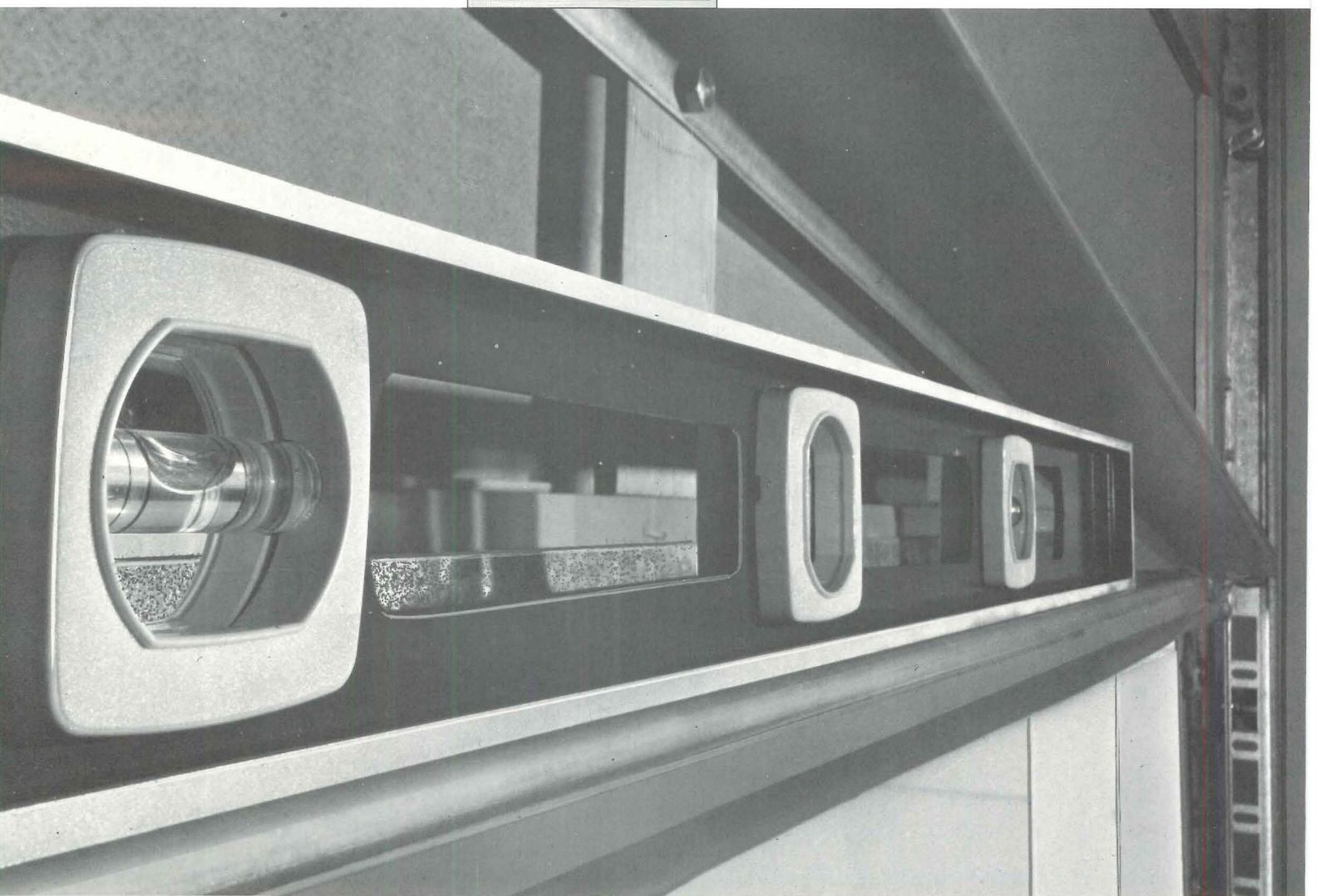

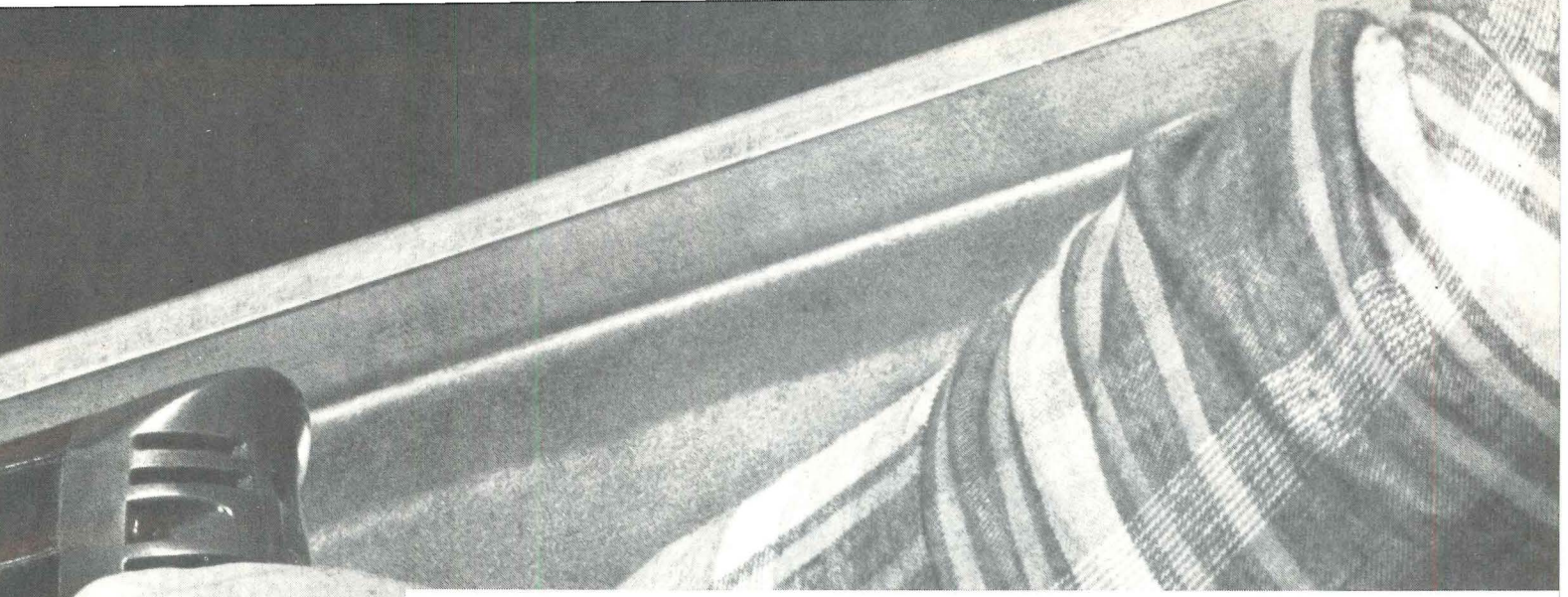

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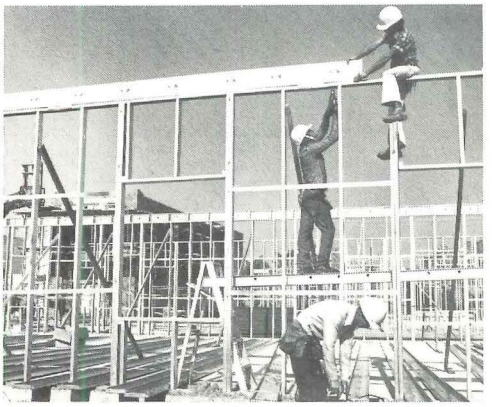

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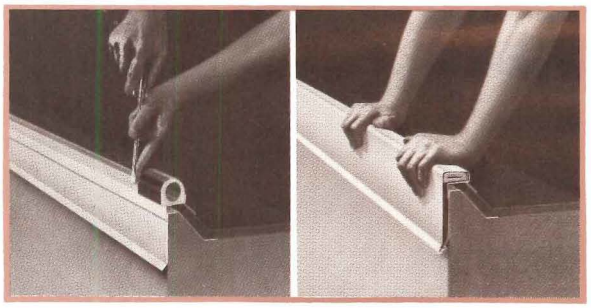

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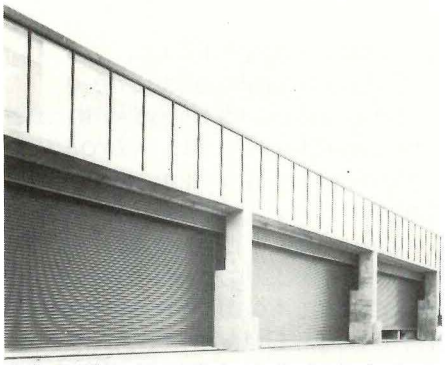
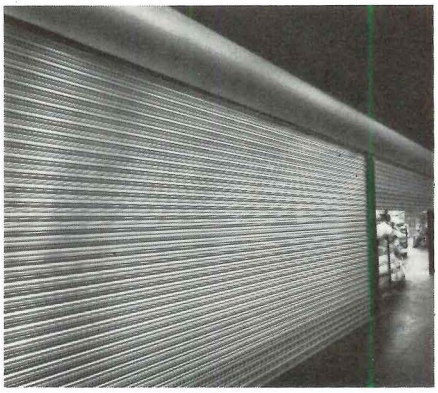
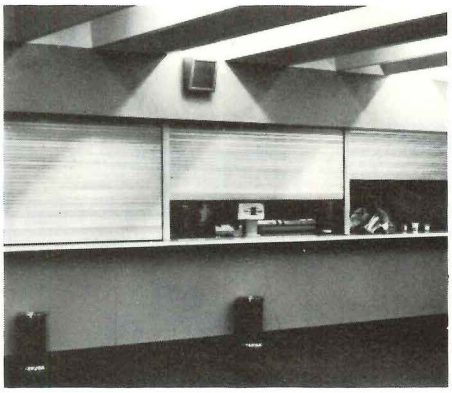


Rolling Fire Doors. U.L. listed, automatic closing by fusible link or electro-magnetic release, with smoke detector.

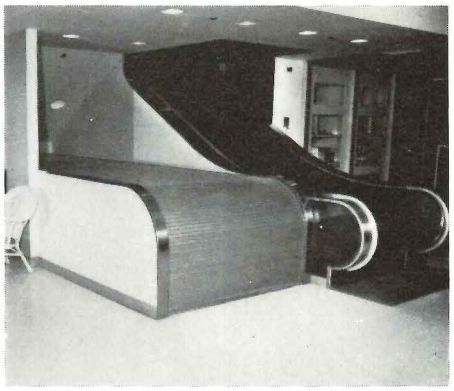


Rolling Shutters, Fire Shutters and Shutter/Frame Units. U.L. listed in 300 series stainless steel, with or without four-sided frames. Automatic closing by electro-magnetic release.



Rolling Grilles. Choice of finishes includes Duranodic bronze and black.

Sliding Chain Link Grilles. Economical, side-storing traffic control closures.



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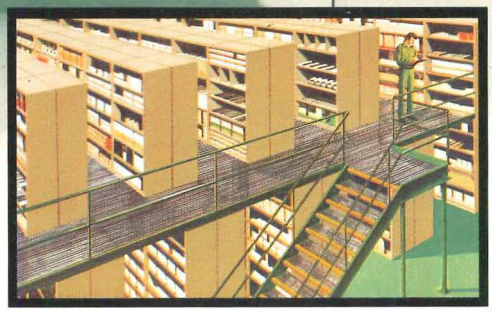

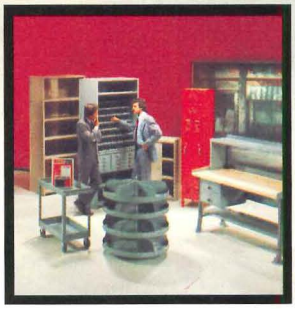

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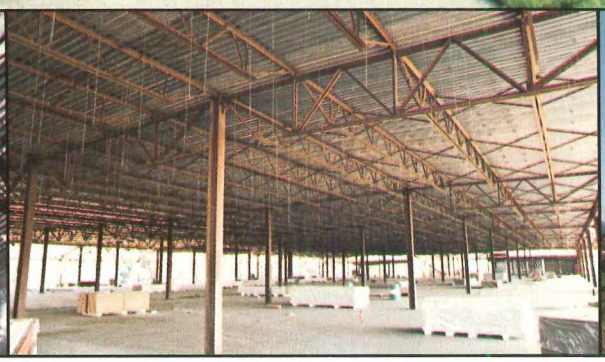
It started with a building in Cupertino, California. Hewlett-Packard combined Vulcraft's computer designed steel joists and joist girders with a fast-track construction schedule, and helped shave two months off the construction time of the building.

This shaved the costs. Not just because the lightweight nature of steel joists and joists girders makes them easier and faster to erect than other, heavier systems. But also because supporting columns can be placed further apart. And foundation size can be decreased.

All of which makes the Vu system more economical than a itionally fabricated structural s system. Simply because it's lig And faster.

So much faster, that build like those constructed for Hew Packard can be delivered to th

Because electrical and mechanical systems can pass through the open web of the joists and joist girders, installation goes quicker. And changes can be made more easily when needed.



The high strength to weight of steel joists and joist girders can provide increased clear span areas, because supporting columns can be spaced further apart.

Although the Hewlett-Packard buildings Vulcraft system have basically the same design, the exterior features var

Architects: Ehrlich, Heft & Rominger. Structural Engineers: Rinne & Peterson. General Contractors: Rudolph & Sletten, Inc., Jacobsen Construction Company, Vik Construction Company, E.A. Hathaway, Nielson Construction Company. Steel Contractors: McLean Steel, Inc., Western Steel Mfgr., Bannister Steel, Inc.

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an if a traditional structural
ı were used. And the Vulcraft
ı has since been used in five
Hewlett-Packard buildings: a
l in Cupertino; two in Corval-
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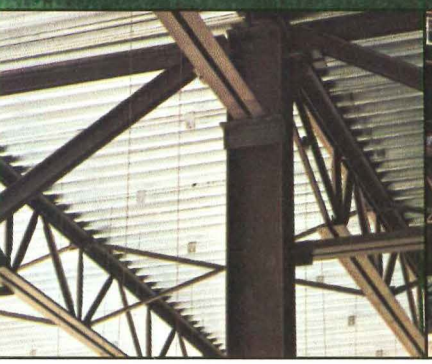
The Hewlett-Packard facility in Cupertino, California, the first of six to use the Vulcraft system.



ciency of Vulcraft's standardized column
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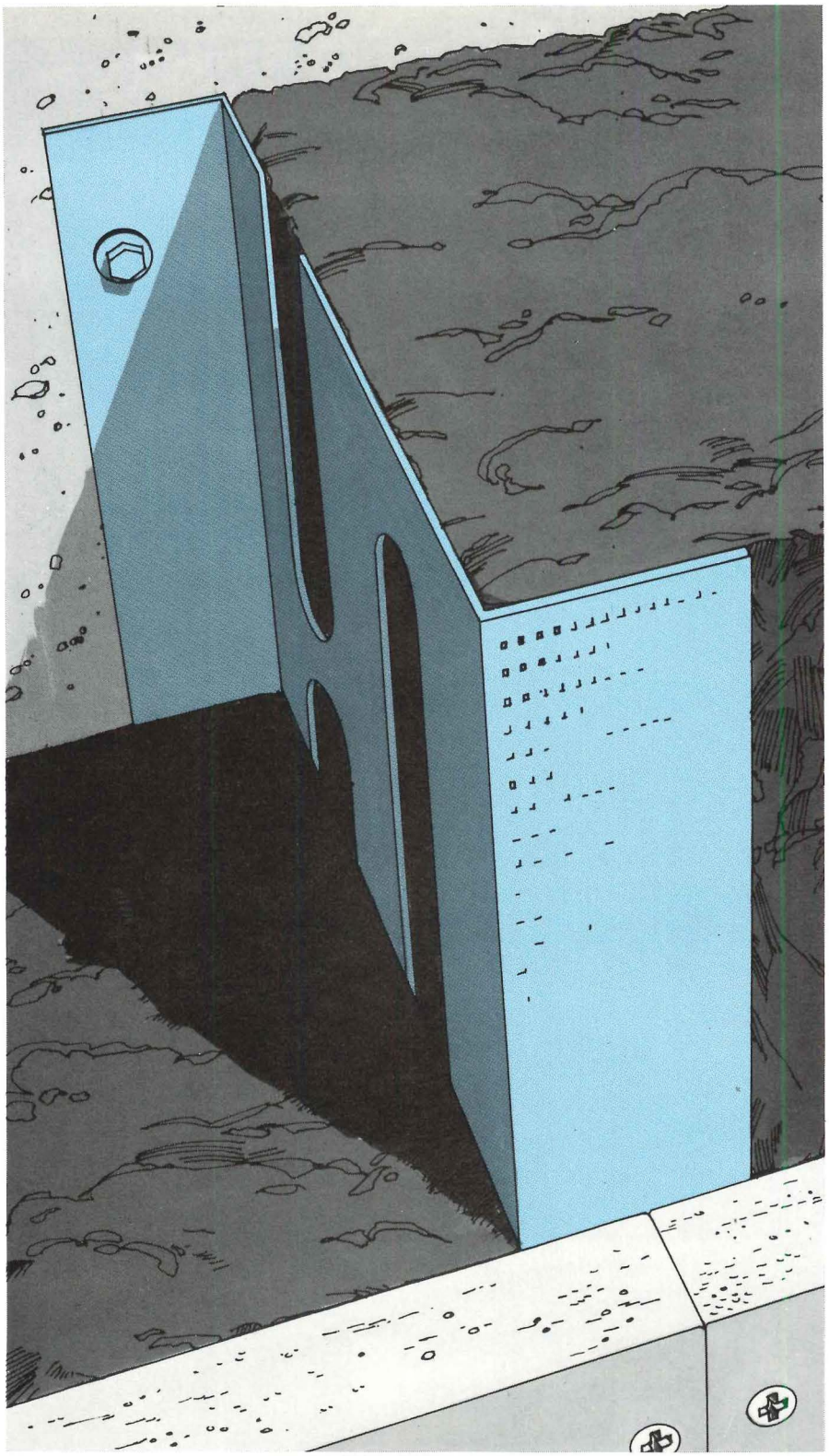

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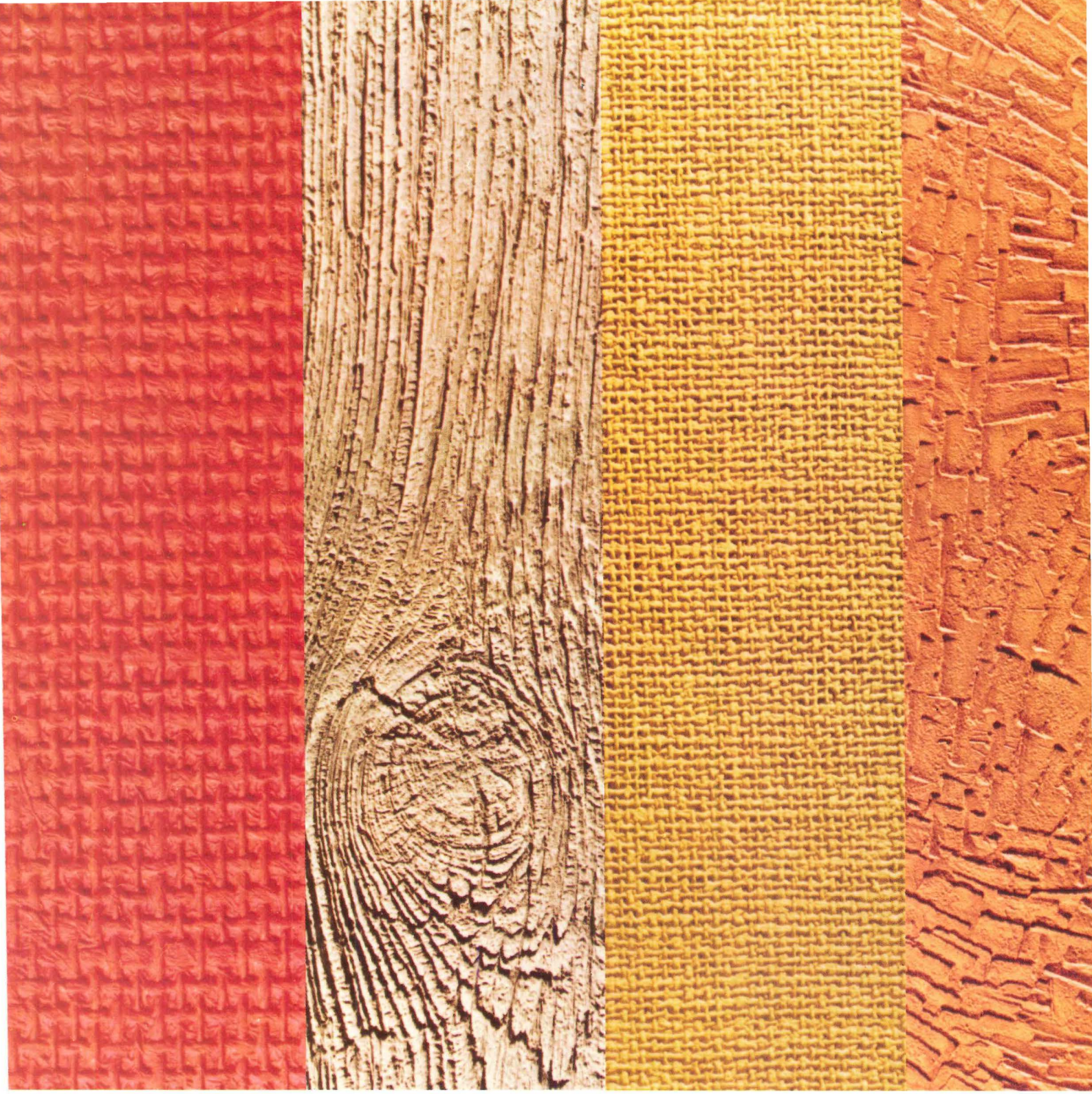

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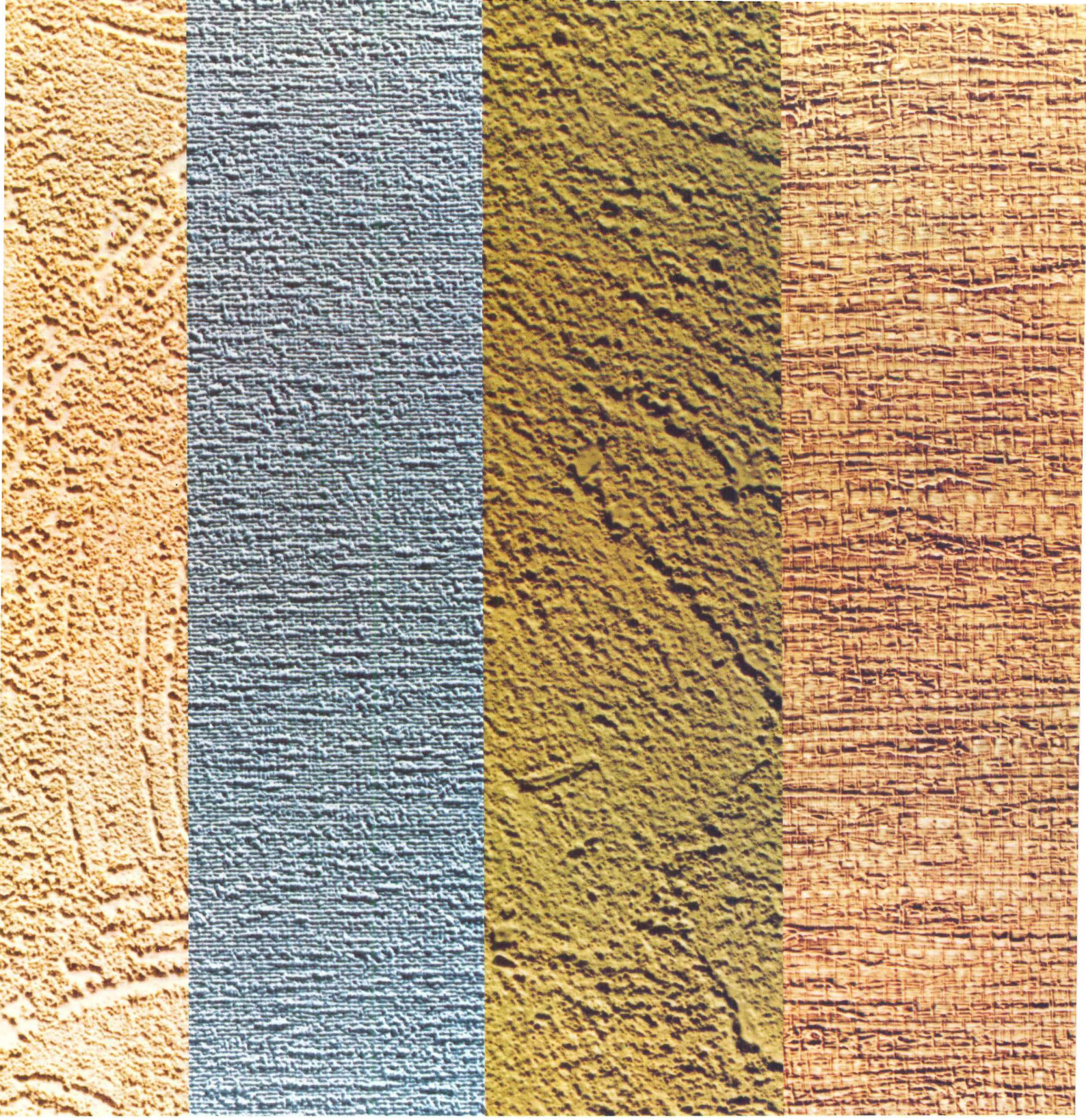

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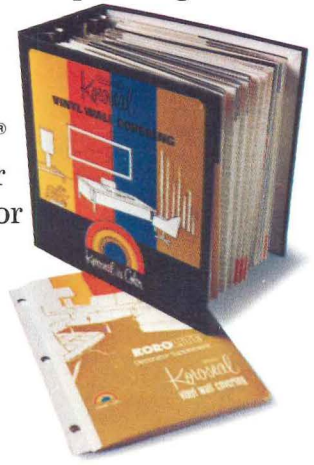

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The beauty of Alcoa Coilzak ir parabolic luminaires is the beautiful way it controls light.

Parabolic luminaires are esthetically pleasing, in the design of the fixture and in the type of light they dispel. This is particularly important where people work, read or shop, where low visual brightness contributes to a comfortable atmosphere. The secret is precise light control, made possible because the reflective material in quality parabolic systems is Alcoa* Coilzak lighting sheet. Note that we said *lighting sheet.* In a properly designed luminaire, reflectivity is only part of the story. Controlled image clarity and reflective diffusion are just as important. Alcoa Coilzak sheet is an Alzak®-finished reflector material that meets precise reflectivity and gloss standards.

Operating costs of a parabolic lighting system can be low. Because of its efficient light distribution, a properly planned system may require fewer luminaires, resulting in low electrical loadings. Savings in cleaning ma tenance are possible also. Parabolic lumina do not require a lens and the unique design plus the static-free Coilzak louvers, resists soil and dust accumulation.

For more information on the many advant of Coilzak lighting sheet in parabolic luminaires, write Aluminum Company of America, 310–C Alcoa Building, Pittsburgh, 15219, or see us in Sweets under 16.10a/AL

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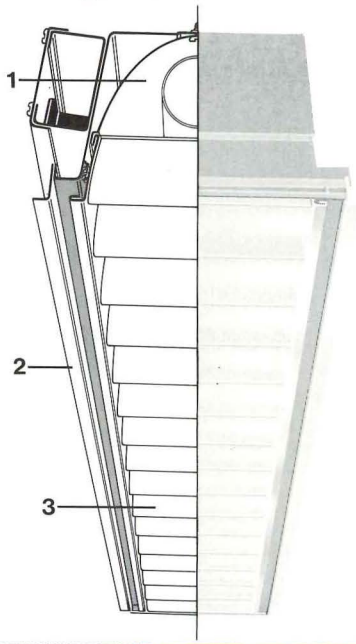

1. One-piece constructed Coilzak reflector with accurately controlled parabolic shape.
2. Extruded aluminum trim.
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Photo courtesy of Columbia Lighting, Inc.


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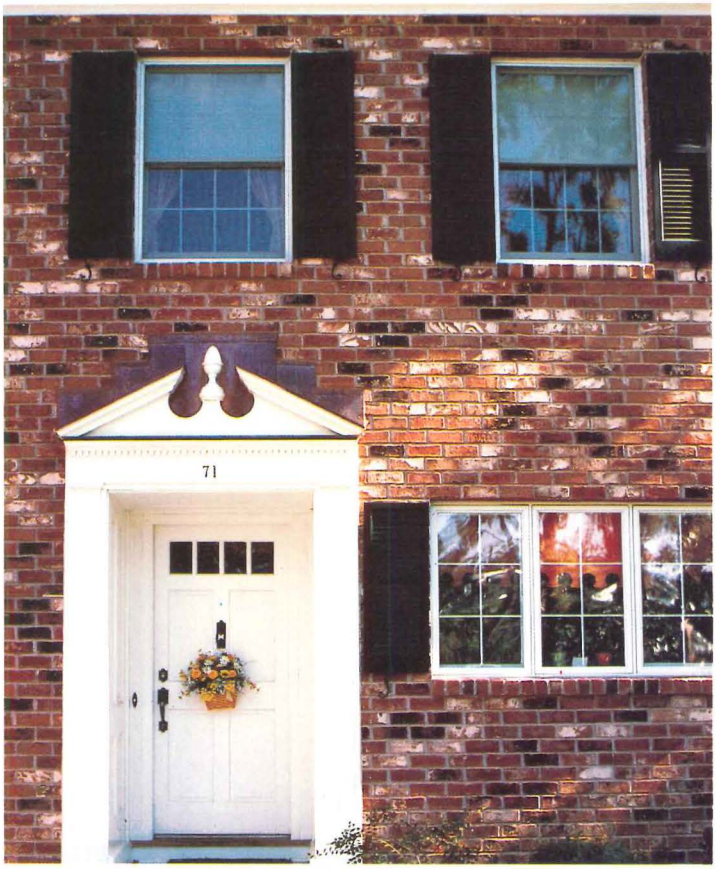
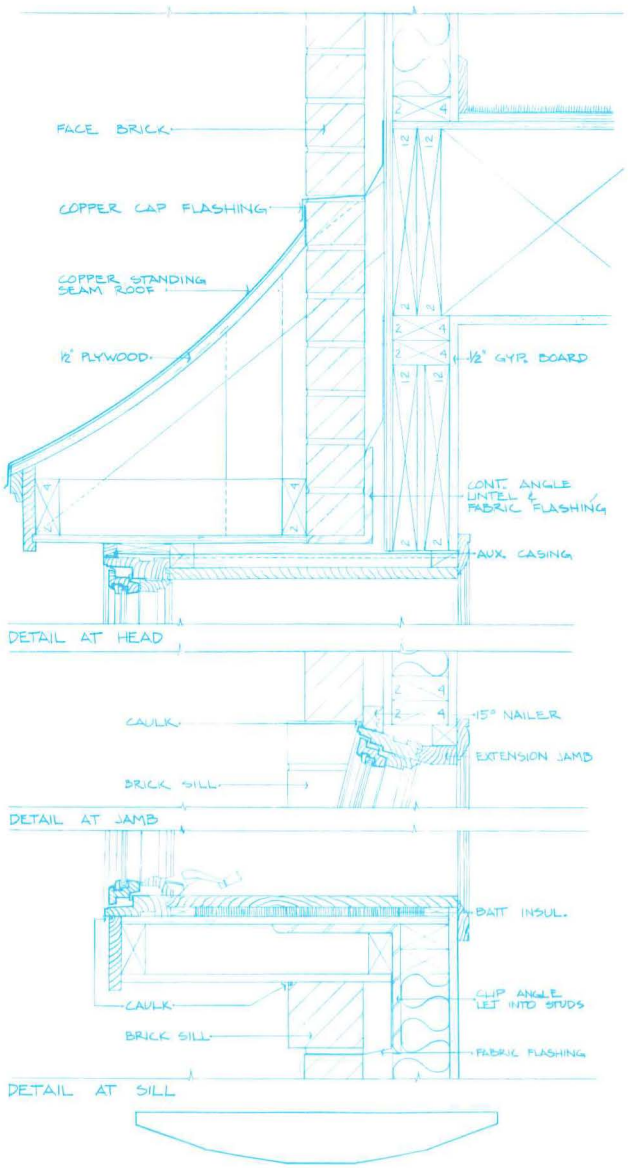

71

The Connecticut Connection.

Andersen joins character with convenience at a New England townhouse complex.



Joining the character of the traditional look with the convenience of the contemporary life was a primary objective of this project.

That's why Andersen® Perma-Shield® casement and Narroline® double-hung windows were chosen.

The inviting nature of the casements... the classic styling of the Narroline units ... the charming angle bay and bow arrangements... all helped in establishing a warm, pleasant, traditional appearance.

But even more importantly, these Perma-Shield windows helped link the Connecticut townhouses to carefree living.

Because all Perma-Shield window surfaces exposed to the weather (except the Narroline sash) are protected by a rigid vinyl sheath.

A durable, long-lasting shield that provides convenience by virtually eliminating maintenance—it's designed not to rust, pit or corrode. Not to chip, flake, peel or blister. (The Narroline sash is safeguarded by a weather-resistant polyurea finish.)

And with double-pane insulating glass, these snug-fitting windows offer a major part of the fuel-saving benefits of single-glazing with storm windows, plus the convenience of no storm window cleaning.

Are you working on a project that'll bridge the look of yesterday with the life of today?

Bring it together with Perma-Shield casement and double-hung windows.

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The Airfield Eatery: making history comes easy to Trus Joist

The place: Knott's Berry Farm Airfield Eatery. The assignment: recreate a 1920's hangar . . . and with it, all the fun and excitement of that most flamboyant of eras. For assistance with the restaurant's spectacular barrel arch roof, architects called on Trus Joist engineering.

Our advanced engineering technology accomplished easily what other systems couldn't. MICRO4LAM® chords were brought to a taut 35′ radius curvature through an arc of 90° in a 50′ span. Our lightweight, rapidly-installed wood-and-steel trusses are tough enough to handle the load, yet open enough to keep the old hangar aura.

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Architect: Ronald D. McMahon & Associates
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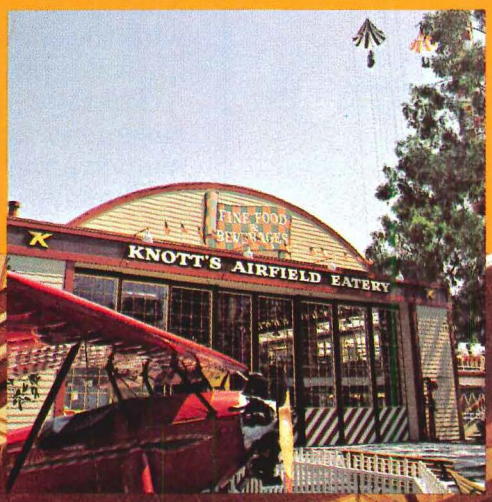

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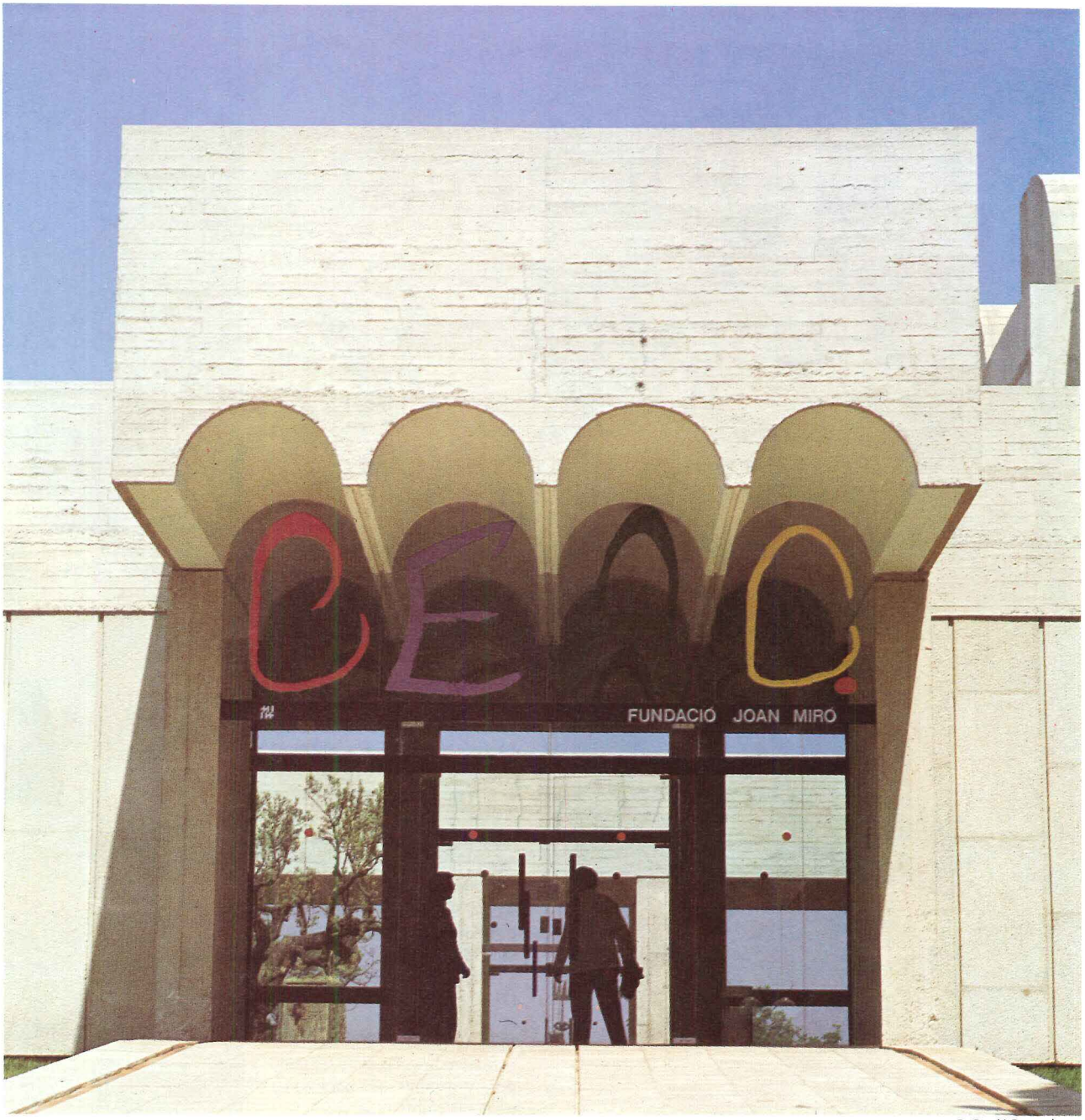
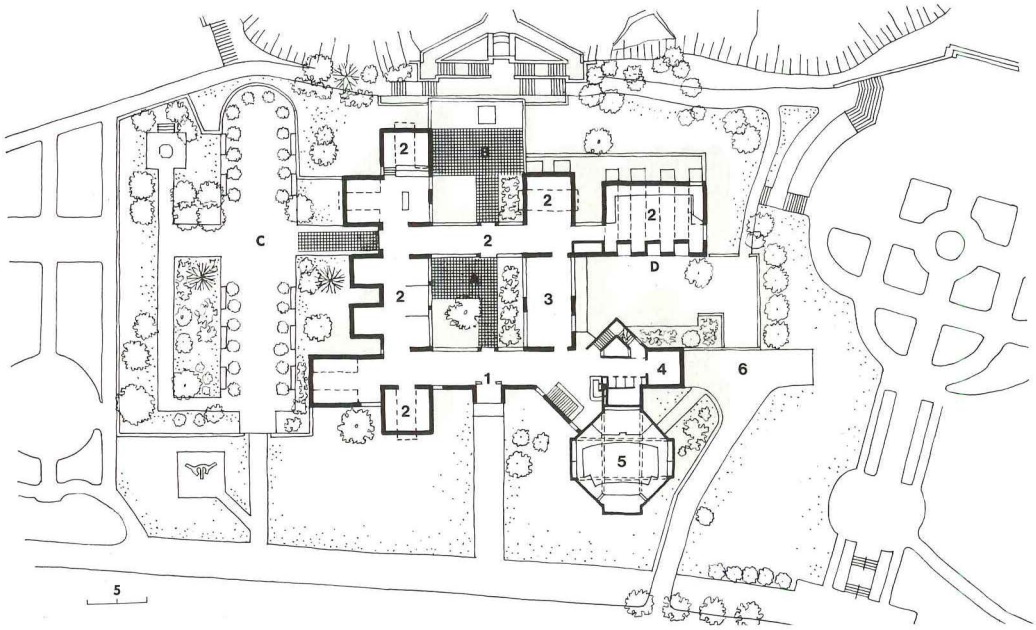


F. Catalá Roca photos

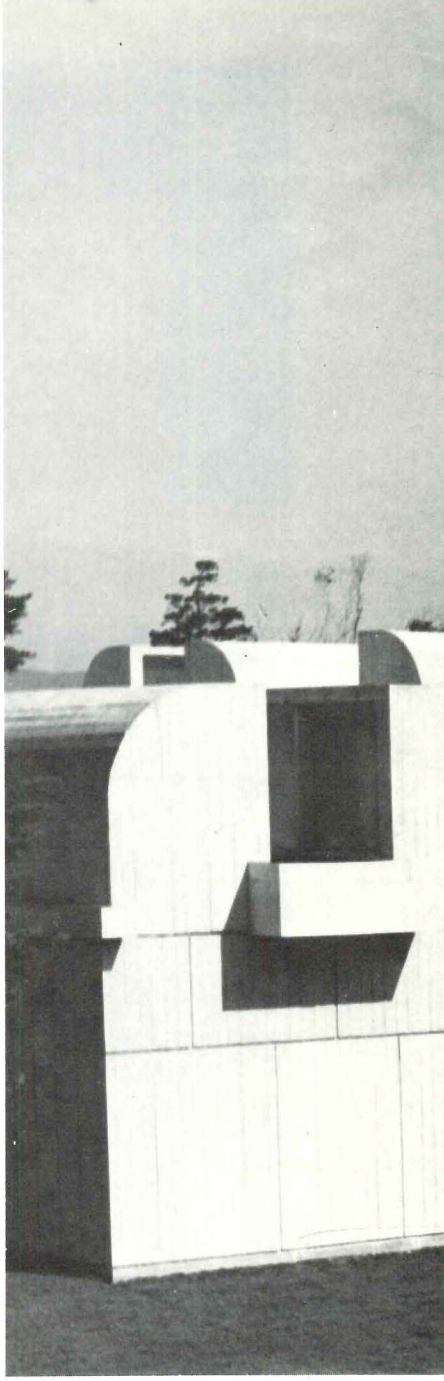
HOMAGE TO CATALONIA

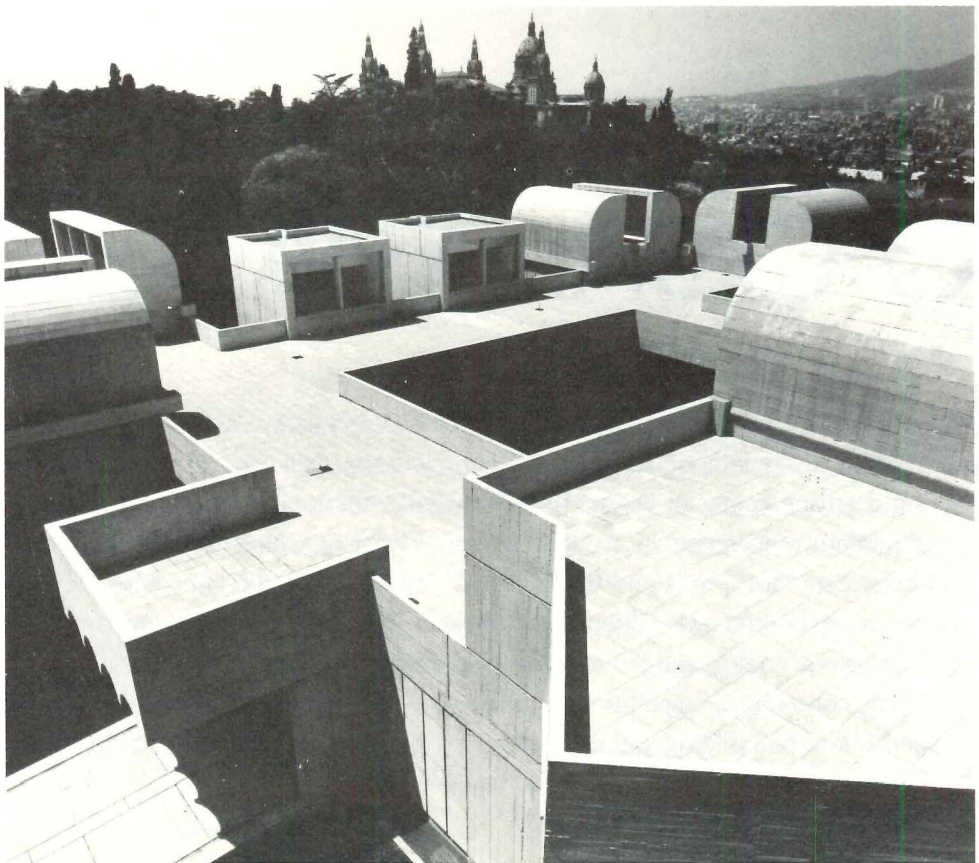
Josep Lluis Sert and Joan Miró were both born in the Catalan city of Barcelona and knew each other when they were young. Barcelona has nurtured other contemporary artists including Picasso, Dali and Tapies; and indeed Catalonia is still the intellectual and artistic center of Spain. To acknowledge the long-time importance of his birthplace in the development of modern movements in art, the eighty-four-year-old Miró has donated a large collection of his paintings, sculpture, ceramics, prints and books to the city of Barcelona. Friends of the artist helped raise fifty per cent of the money to build a one million-dollar museum to display this collection and other contemporary art, and the city of Barcelona contributed the rest. And Sert donated his architectural services.

Because Sert's eminently rational, conscious architecture is in powerful juxtaposition to the joyfully irrational subconscious effusions of his friend Miró, the building and its contents are excitingly dissonant. Sert has dramatized this fundamental esthetic polarization, and the effect is wonderful.—*Mildred F. Schmertz*



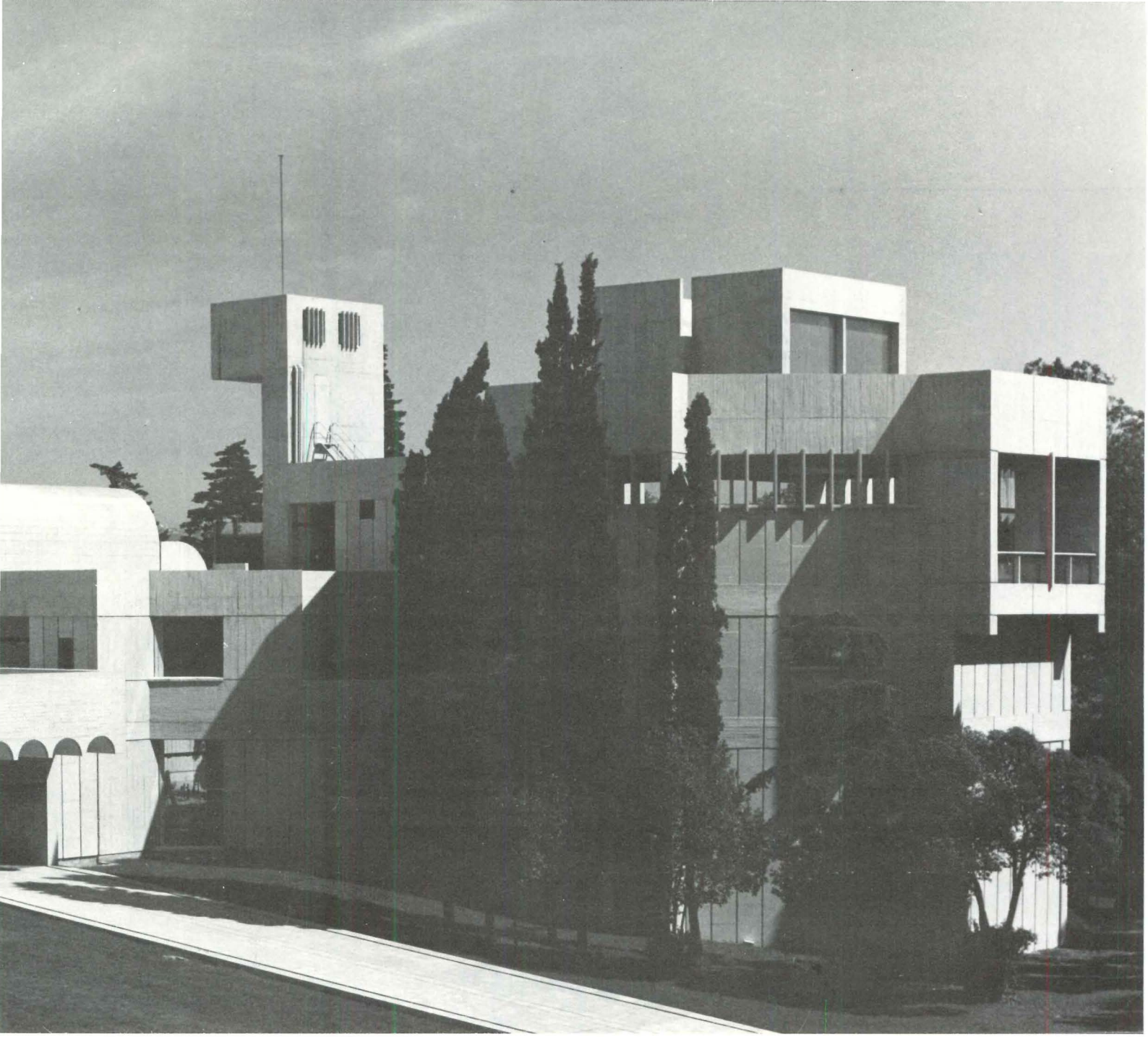
The use of the outdoor areas and roof terrace (below) for exhibitions more than doubles the available exhibit area. The landscape design makes good use of the existing features and planting of the old park in which the building is located (photos right). There are four courtyards, each of which has a different character and use: (a) central courtyard; (b) court with Miró sculpture (left) serving as a balcony to the city below and the mountains beyond; (c) the old walled garden with its cypress trees and cypress hedges; (d) the multi-use court space for happenings, directly linked to the Center for the Study of Contemporary Art and leading to the bar and auditorium. The first floor plan includes (1) entrance; (2) exhibit rooms; (3) room for temporary exhibits; (4) bookstore; (5) auditorium; (6) service.





Montjuich, a hill overlooking the old city Barcelona to the north and the harbor to south, is crowned by a castle built in 16 Once wild, the hill is covered by a beau old park, much of which was designed Forestier for the International Exhibition 1929—the exhibition everyone remembers Mies van der Rohe's Barcelona Pavilion. landscaped gardens include a number of portant museums and palaces, an amusem park, restaurants and cafes. The hill is c nected to the city below by winding drives a funicular. The new Center for the Study Contemporary Art/Joan Miró Foundation is perbly located below the castle, near the nicular and not too far from the Archaeolog Museum, the Ethnological and Colonial seum and the Palacio Nacional, visible in photo at left, which houses the Museum of of Catalonia.

This magnificent site was selected by M and Sert from several offered to the Miró Fo

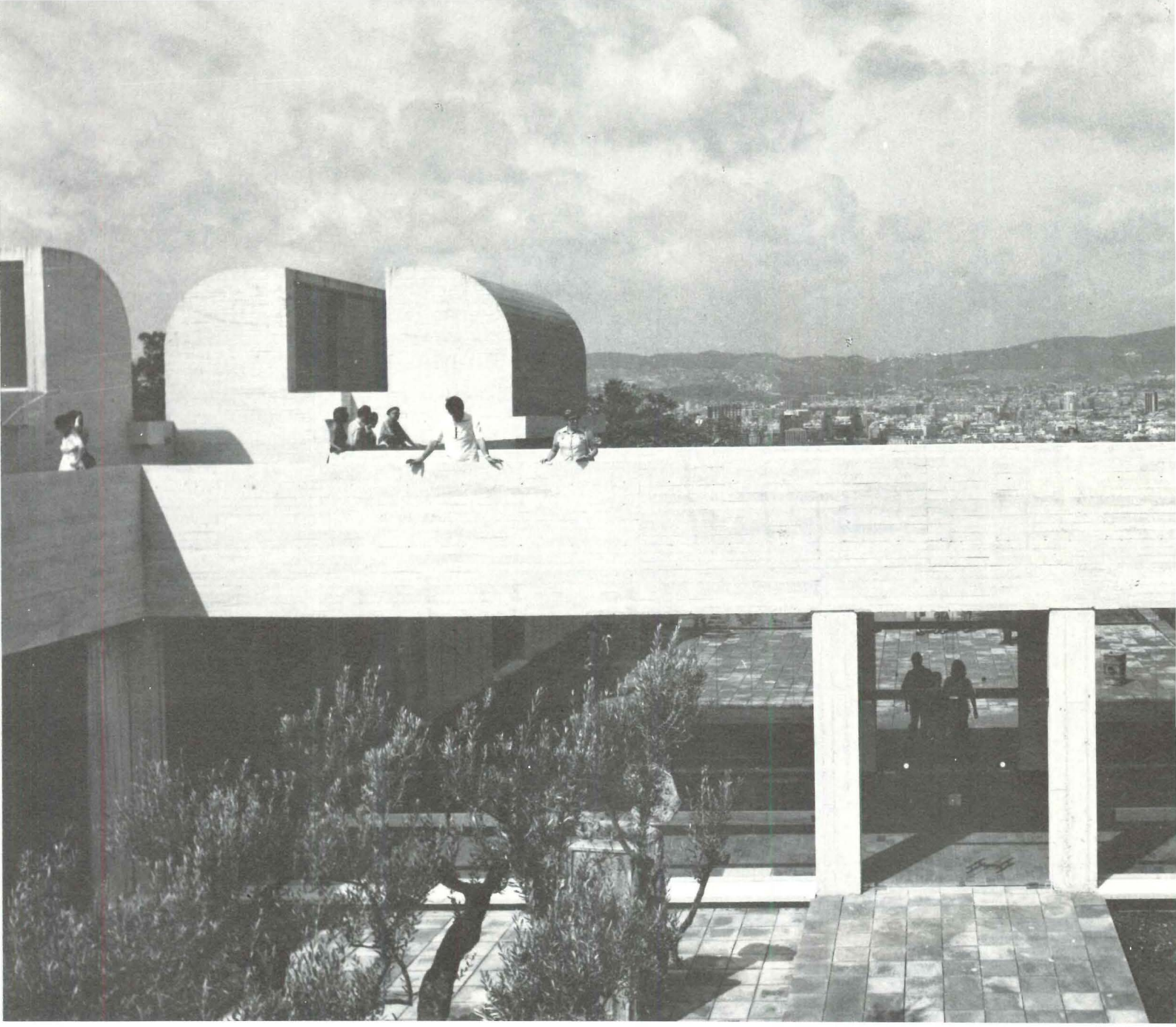


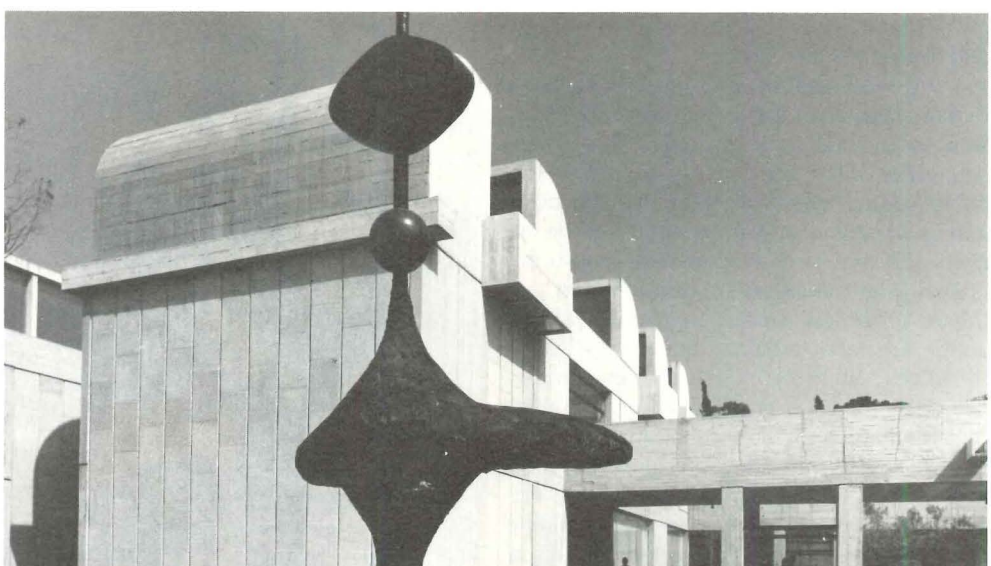
on by the City of Barcelona. It is an ideal tion for the purposes of the Foundation ding as a place for the study and display of emporary art; a place to attract confer-s, meetings and happenings; and a place re people can contemplate art, which at same time offers facilities for a study of niques.

The program for the complex was the k of a board of trustees appointed by Miró, and the late Joan Prats, a noted patron of arts and an early collector of his friend's k.

The Foundation Maeght in St. Paul de ce, designed by Sert and built in 1964, ed as a pattern for this programming. Sert its Aimé Maeght with having taught him h about the programmatic, display and ge needs of museums for contemporary Sert points out that, like the Foundation ght, this new building is composed of fully proportioned spaces that have a variety of shapes, ceiling heights, sources of light, and degrees of openness.

The work and research spaces have been differentiated from the gallery space by inclusion in a three-story octagon. This shape strongly articulates the active as opposed to the contemplative side of the building. The octagon as a shape is very much a part of the architectural tradition of Catalonia—appearing often in the monasteries, churches, and fortresses of the Romanesque and Gothic periods and in the various Islamic monuments left by the Moors. While Sert's use of the octagon partakes directly of this grand tradition, the building also draws from the Mediterranean vernacular. It is white, vaulted, lit by clerestories, and oriented toward tiled patios and gardens. For all its subtle eclecticism, however, the building is not nostalgic. It is as intellectual and disciplined as Miró's work is deliberately not. The painter wisely chose as architect a fellow Catalan-become-cosmopolitan, whose work by

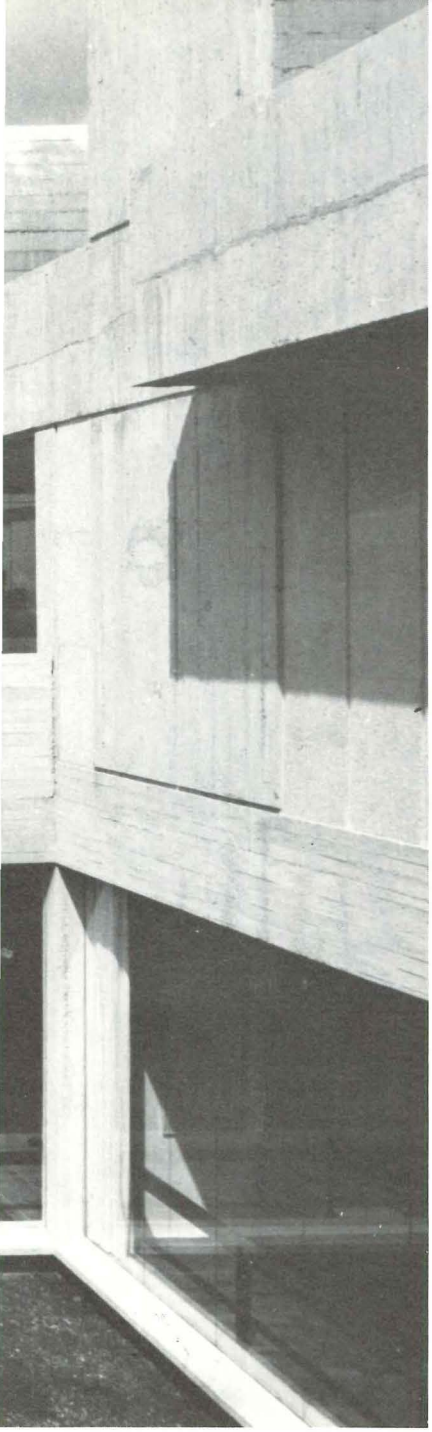




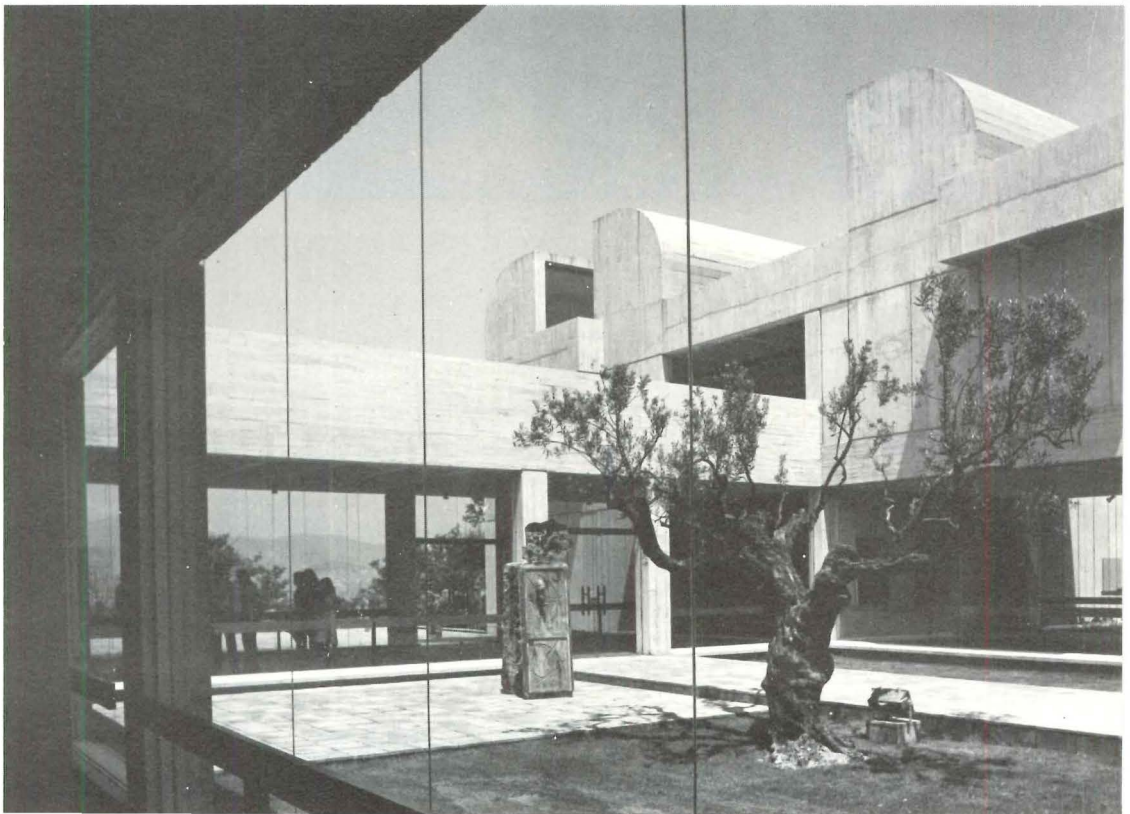
contrast enhances his own and whose kn
edge of the culture of their birthplace is sh

Sert sees the building as a series of v
volumes linked by a continuous, well de
circulation pattern. The way people m
through these spaces is the key factor go
ing the plan. Circulation is strongly orient
one direction so that people need not go t
through the same spaces unless they choos
The courtyards, gardens and roof terrace
part of this circulation pattern and are use
the display of sculpture, ceramics, mos
and for gatherings of people on special o
sions. In everyday use they are quiet sp
with benches permitting restful enjoyme
the gardens and art.

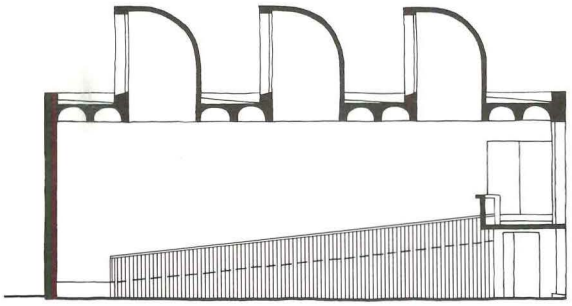
The plan has been devised so that son
the rooms are to be used principally for the
play of the Miró collections. This display
be changing continuously because muc
the work donated by the artist will be ke
storage or in traveling exhibits. The plan o



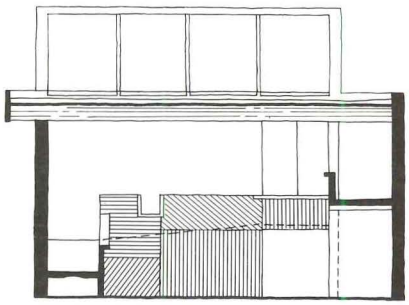
The roof terrace for sculpture display (above left) overlooks two courtyards including the central court and its ancient olive tree (bottom right and cover), the focal point of the plan, and a court (below) for which a Miró sculpture is the focal point. The city of Barcelona and its bordering mountains can be seen from these courts. The stairway (above) is part of the old gardens of Montjuich, the 700-foot-high hill overlooking the city. The principal entrance to the Miró Foundation building is across the road from this stair. The study center is to the right.



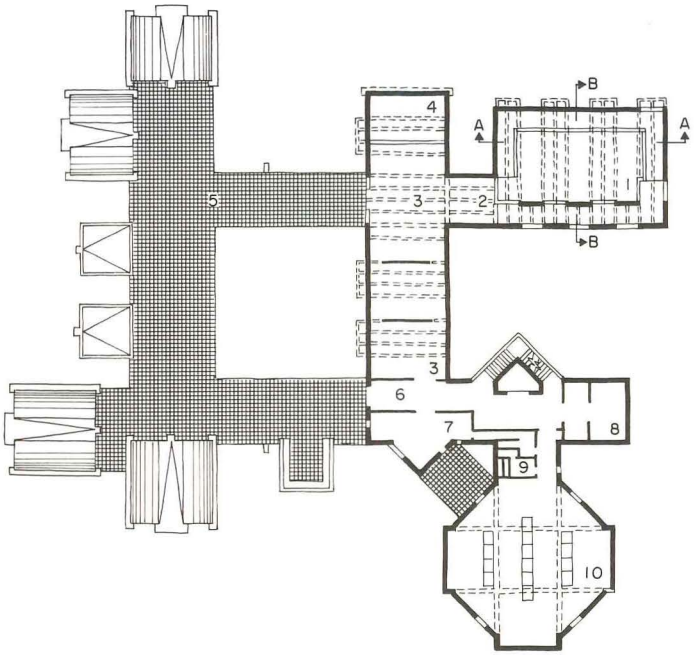
isitor two main circuits. The first begins at eft of the entrance and interconnects the ry rooms at the lower level with the gar- and courtyards. At the climax of this route e two-story-high sculpture room, which contains ceramics, mosaics and tapestries. mp starting at the lower level of this room es the visitor around the space and on to second floor where he gains access to the y center. Here the rooms for the display of s open to the roof. Adjacent to the print ives are study rooms, administrative facili- and a connecting stair leading to the li- y on the top floor. At the end of his route, visitor goes down this stair into the study- er foyer adjacent to its 200-seat audito- and from there back to the main entrance. portion of this circuit through the court- s, galleries and roof top terraces can be ed off during the hours when only the y center is open. The other circuit takes the or to the right directly to the study center,



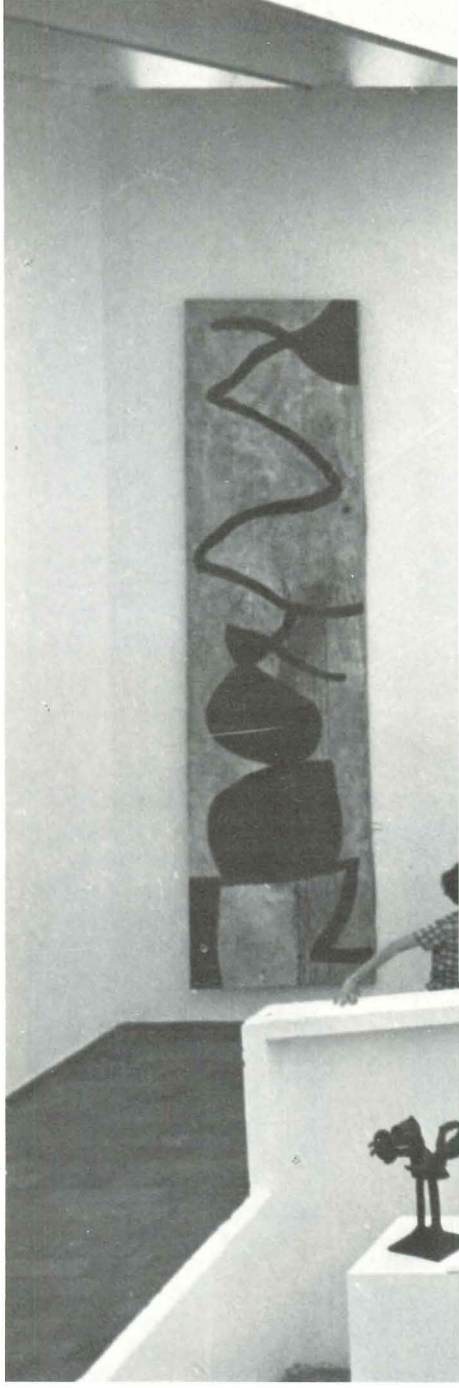
SECTION A-A

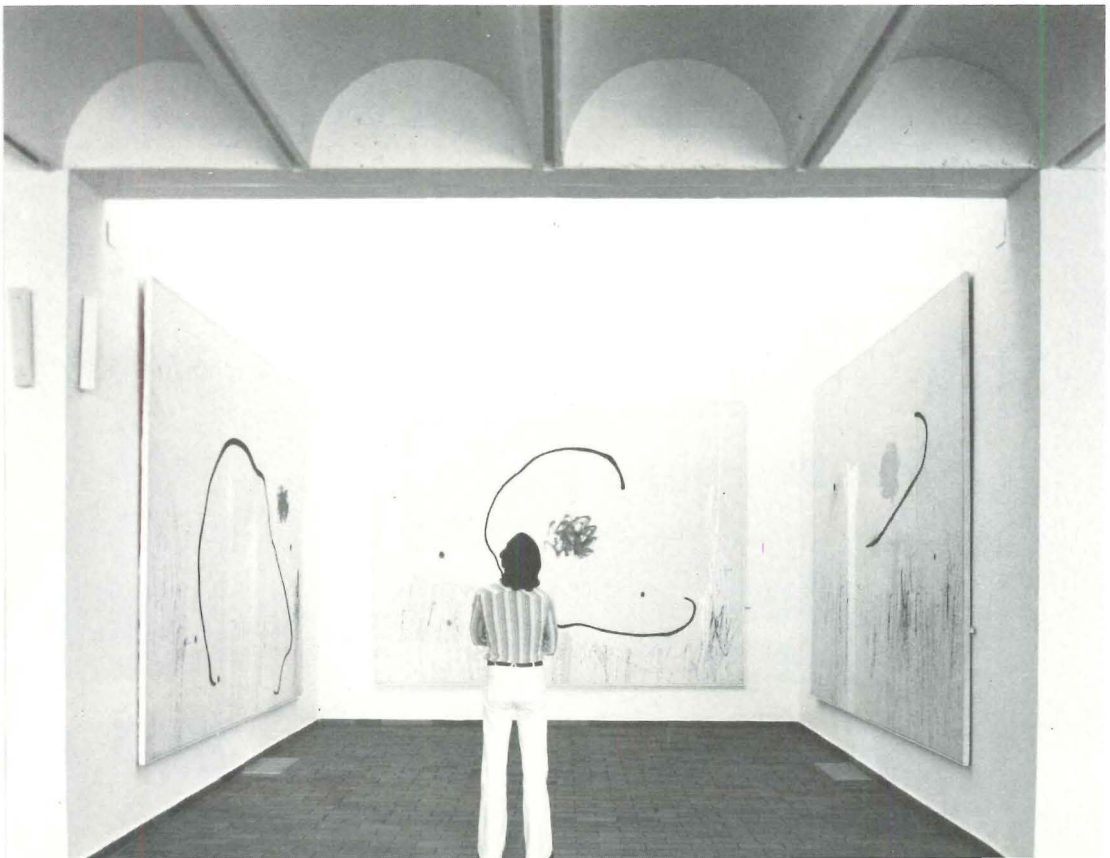


SECTION B-B



Included in the second floor plan at left are (1) sculpture room; (2) hallway; (3) print room; (4) balcony above first floor; (5) terrace with sculptures; (6) hallway at perimeter of exhibition space; (7) offices; (8) director's office; (9) restrooms; (10) print archive. The library and meeting room are on the third floor above the print archive and the auditorium is below on the first floor. The ramp (right) extends around all four sides of the sculpture room, allowing the work to be viewed from ever changing heights and angles. Miró has done several triptyches and the museum has two skylit alcoves to display them (below). These and other skylights (shown in the sections above) are similar to those used by Sert at the Foundation Maeght in Saint-Paul-de-Vence (RECORD, October 1974, pages 102-103).





which has its own courtyard and bar.

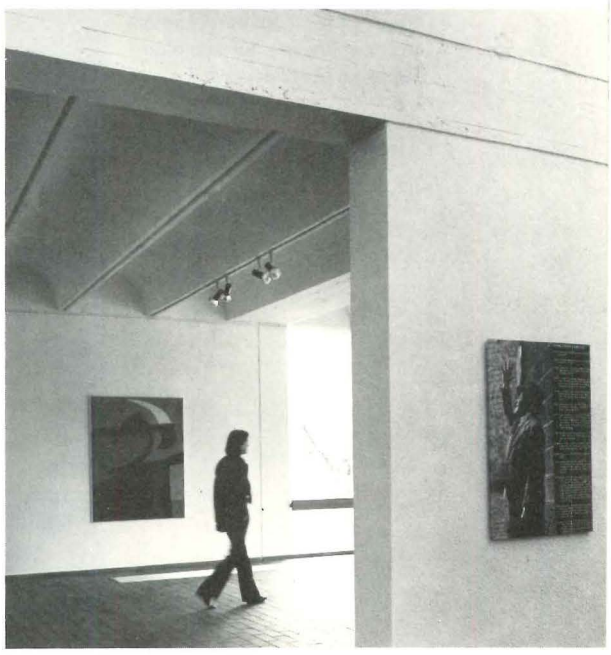
From both the exterior and interior, t
building bears a marked resemblance to t
Foundation Maeght at St. Paul de Ven
principally because of the prominent semic
cular light scoops. Other Sert buildings ha
these scoops: Miró's studio in Mallorca
signed in 1955 (RECORD, January 1957, pag
138-140) and the law library for Boston U
versity (RECORD, May 1964, pages 161-170)
two of the most familiar. The scoops ma
maximum use of natural light, as Sert consid
it to be of utmost importance for the display
paintings and sculpture. The light is diffused
it bounces off the curved surfaces. Wh
draperies are used where necessary to diffu
the bright Mediterranean light as it ent
through the frameless glass walls, which rev
the patios and gardens. Lighting has been bu
into the scoops to replace the daylight in
evenings or to augment it when necessary.

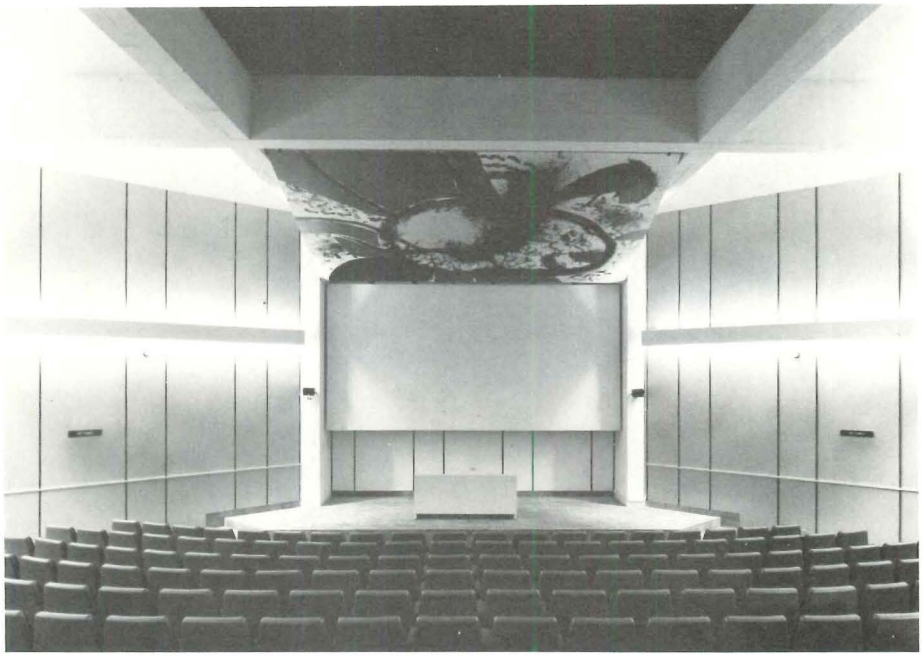
The structure of the building is of re

ed concrete, used by Sert in the manner ch is clearly his. If the scoops remind one ne Foundation Maeght, Miró's studio and Boston law library, the handling of the e-story, octagonal element is in the spirit of Holyoke Center at Harvard (RECORD, May 2, pages 131-146), the rest of his work at on University, and the buildings at Guelph versity (RECORD, May 1972, pages 89-93). ne two-story gallery structure, the ceilings of small barrel vaults, and the ribs of these ts carry tracks for the lighting fixtures. The ops in the higher rooms are one-half barrel ts. The nonglazed, non-bearing walls are rick faced on the exterior by precast panels an exposed aggregate surface. In addition, outside of the building has another basic ure provided by the board-marked cast-in-e concrete.

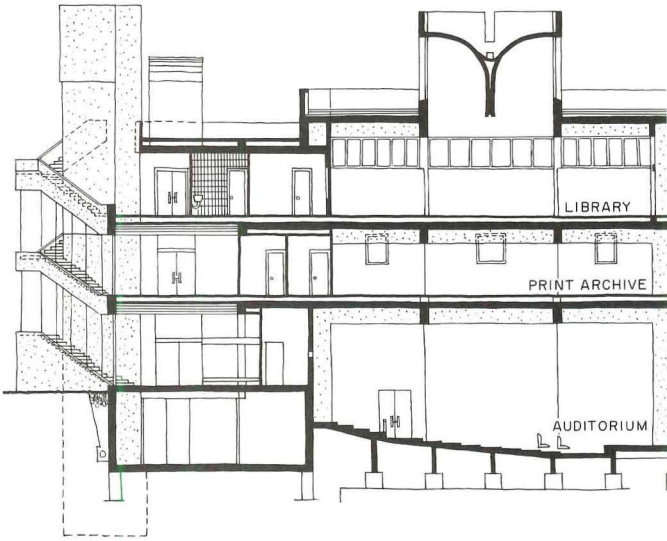
A large basement is linked directly with a e elevator and stair and serves as storage pictures, sculpture, films and books. The basement will permit considerable future expansion. Since the building is not devoted just to the work of Miró, Sert has given the building sufficient flexibility and potential for growth to display the art of our time and of the future in a variety of ways. It is planned that eventually half the space in the museum will be devoted to the work of young contemporary artists. As a symbolic harbinger of this, a gigantic sculpture by Chillida (not shown) has been placed in the front of the building, sharing this prominent space with a sculpture by Miró.

CENTER FOR THE STUDY OF CONTEMPORARY ART/JOAN MIRÓ FOUNDATION, Barcelona, Spain. Owner: *The Joan Miró Foundation and the City of Barcelona.* Architects: *Sert, Jackson & Associates—Josep Lluis Sert, Joseph Zalewski, Jaume Freixa.* Associated architects: *Anglada, Gelabert & Ribas, Barcelona, Spain* (working drawings and site supervision). Structural engineer: *Jose Cobo.* Consultants: *Rafael Serva* (acoustics); *Luis Riera* (graphics). Contractor: *S. A. Piera, Barcelona, Spain.*





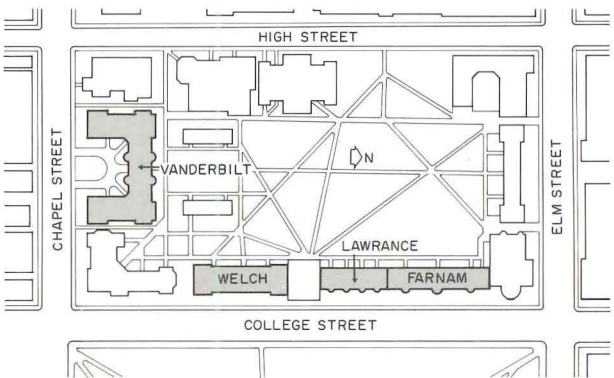
The auditorium (right) is in the basement of the three-story octagonal element shown in the section (below right). The mural on the panel extending over the speaker's rostrum is by Miró. Shown below is the short ramp leading up to the sculpture room.



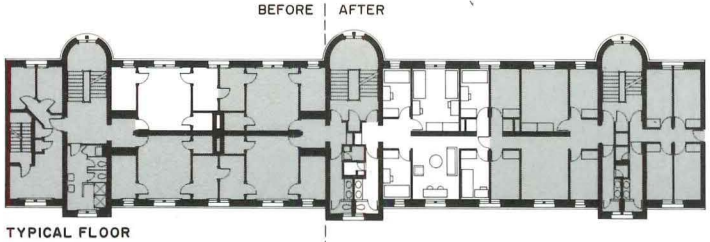
The view of the sculpture room at the lower level (right) looks up toward the ramps. The box-like spaces under the ramp frame small sculptures. These boxes project on the exterior and form niches for sculpture displayed out of doors.

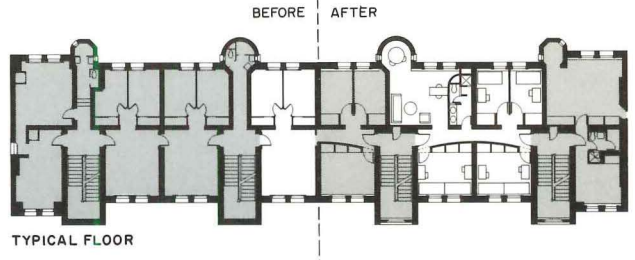
Norman McGrath photos

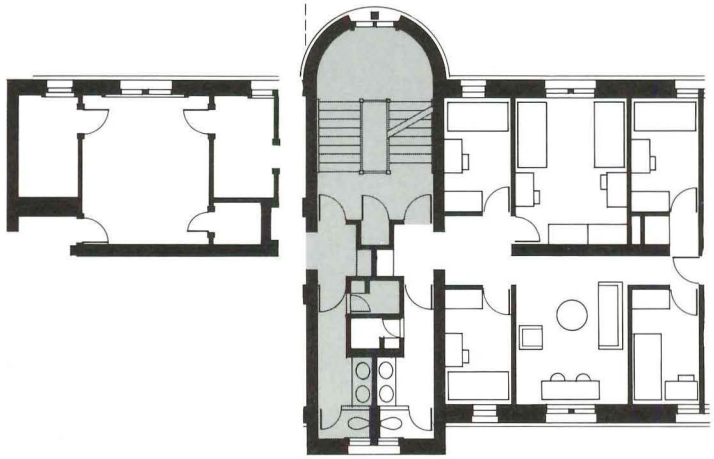
Yale University is preserving its great late-19th-century architecture by remodeling the Old Campus

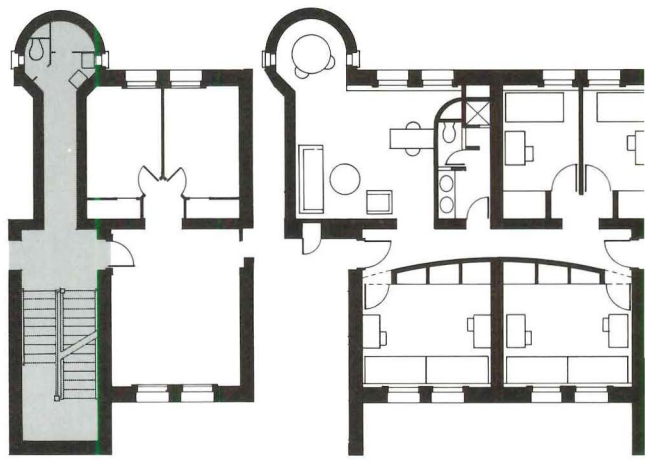


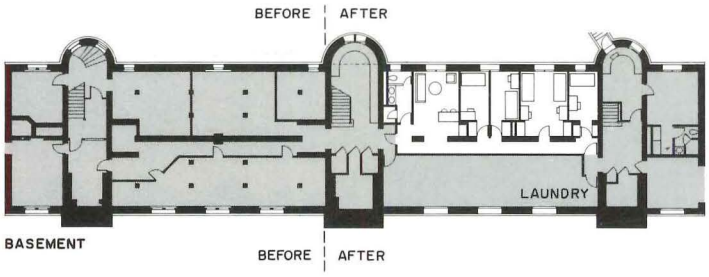
Since the 1930s, Yale's Old Campus has been the home of the freshman class—an enviable group, fortunate in having overcome stiff competition to be admitted to one of the nation's leading universities. Generation after generation has moved into three splendid High-Victorian dormitories—Farnam (1869-70), Durfee (1871), and Lawrance (1885-86) all three designed by Russell Sturgis, Jr; and two fine examples of the English Collegiate style—Welch (1891) by Bruce Price and Vanderbilt Hall (1894) by Charles C. Haight.

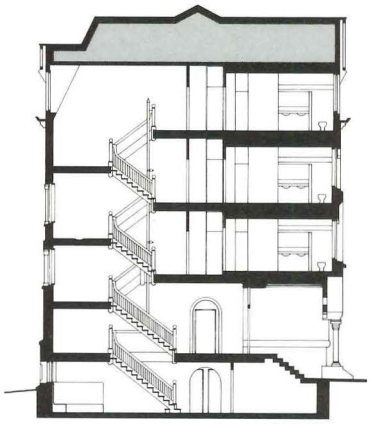




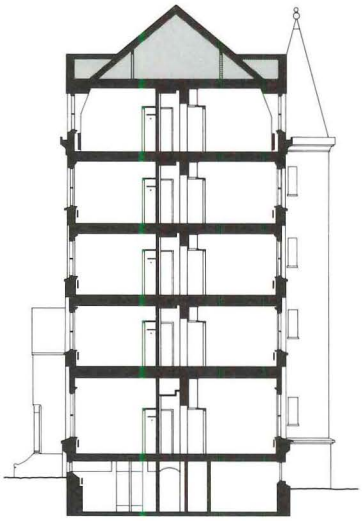








Farnam: The typical floors were gutted to bring the single bedrooms up to the code width of 7 feet. The basement slab and window sills were lowered. The east side of the basement, overlooking the New Haven Green has been developed as suites, and the opposite side as common facilities. The apses in two of the three basement stairwells are used as small living rooms for double suites. The third apse is used as a sitting area for the laundry.

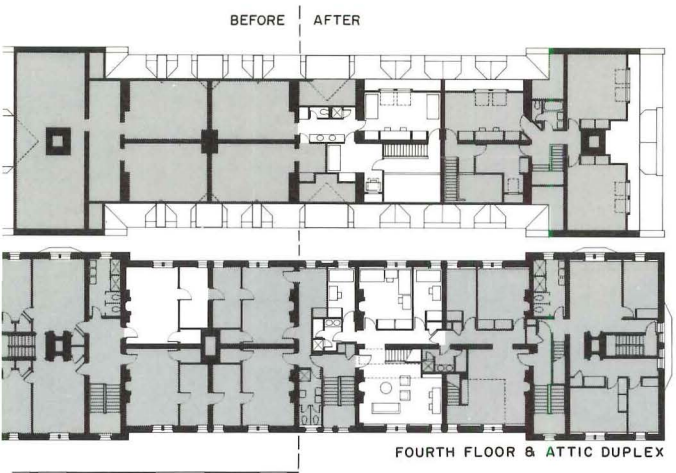


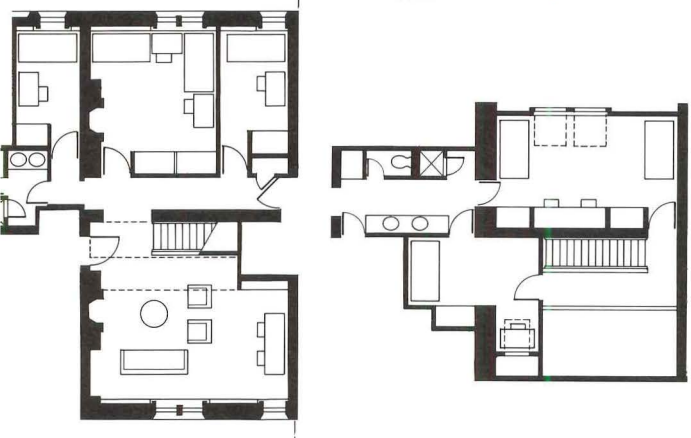
Lawrance: The circular towers once enclosed bathrooms. By ren of the bearing wall, these spaces were incorporated into living rooms and made into sitting alcoves and study niches. The curving wall in the corridor gives a special architectural character to Lawrance while maintaining existing arched brick entries. The basement floor was lowered to gain legal headroom, to make space for mechanical equipment, and to accommodate new suites.

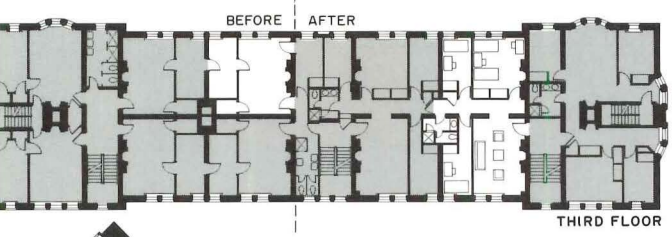
Unused or partially wasted attic and basement space has been transformed into student living and bedroom suites

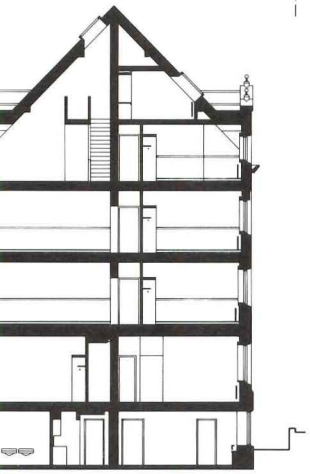
Except for the switch from gas to electric light, the periodic upgrading of plumbing and heating facilities, and general maintenance, these dormitories have been little altered since Farnam was begun. In recent years they have become desperately crowded. Double-decker bunks were crowded into small bedrooms originally designed for one. Up to eight students shared a single toilet, sink and shower in small awkward bathrooms in public hallways. To avoid using double-deckers, many students put their beds in the living rooms of what had grown from two-person to four-person suites, thus destroying what had heretofore been the shared communal space. For the students and their proud parents on moving-in day, only the euphoria generated by making it to Yale can have mitigated the thundering shock delivered by the first look at the tenement-like freshman suites.

Something had to be done. Several years ago a proposal for two new student residential colleges on nearby Whitney Avenue and Grove streets seemed to be the answer. John Hay Whitney of the class of '26 donated million dollars for the proposed buildings planning began. Fortunately for the caus extending the life of fine old buildings, the colleges fell through. The University and New Haven Board of Aldermen could agree on a tax financing plan for the pro and the Board refused to approve the struction. By the time this decision was turned by the courts, building construc costs had become prohibitive. Furtherm students at Yale and on other campuses

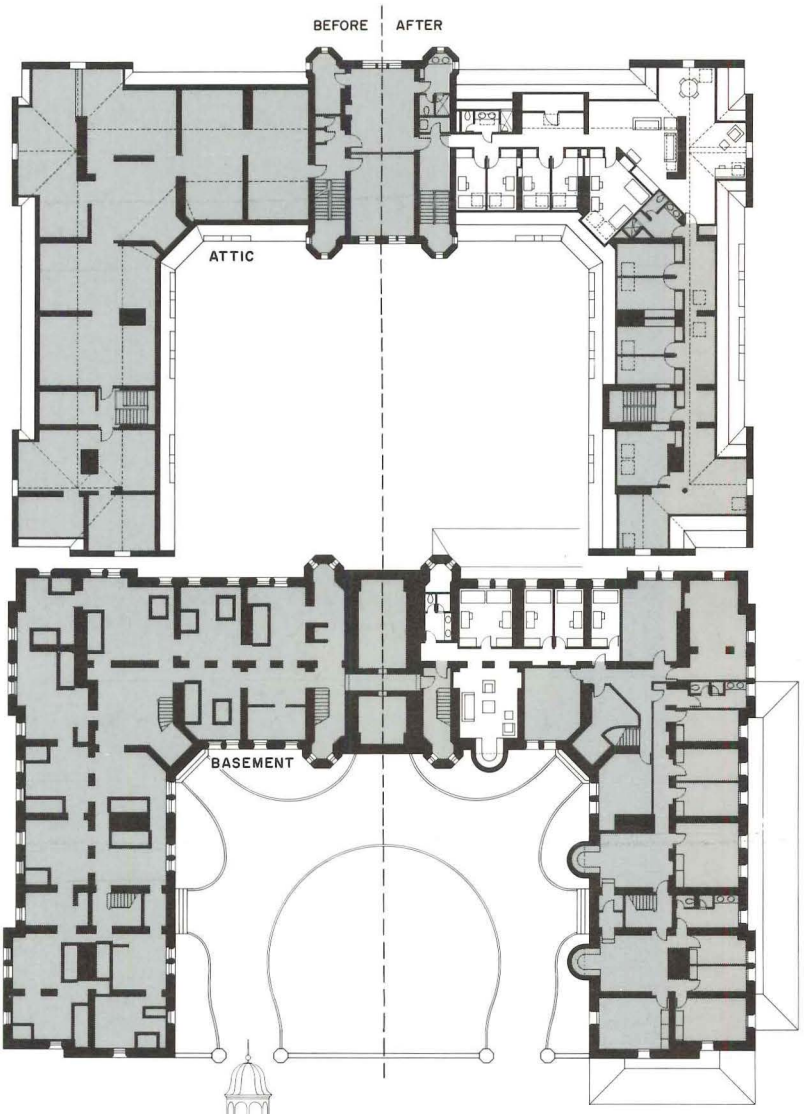


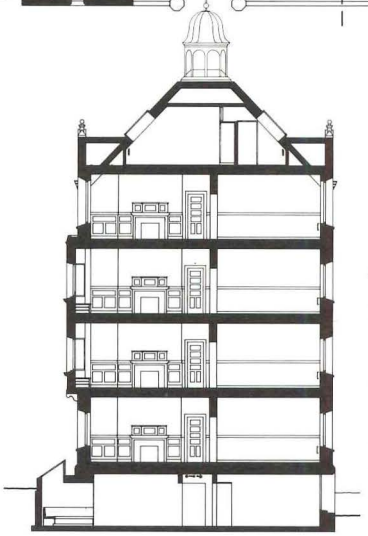




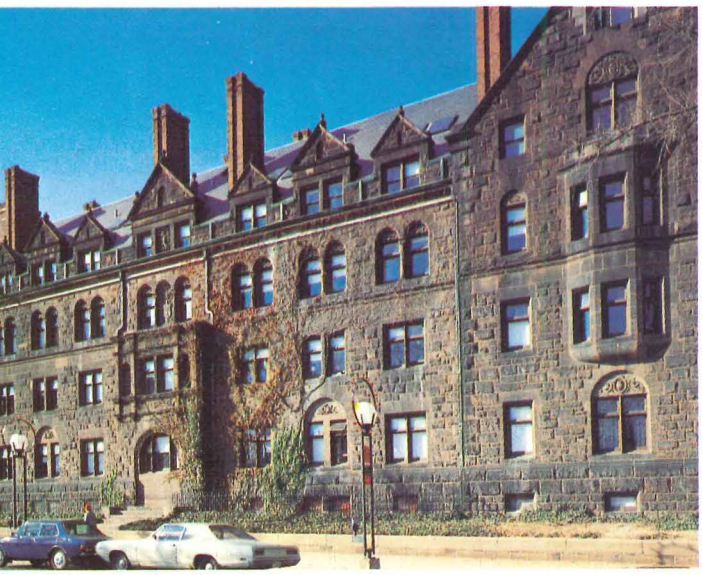


Welch: The attic and fourth floor were combined with interior stairs to create large six- and seven-person duplex suites with double-height living rooms. On typical floors, four- and five-person suites were created with interior bathrooms by combining two former suites consisting of a living room each and bunk bed double rooms. One living room was converted to a double room, one living room remained, and all former bunk bed doubles were converted to single rooms.

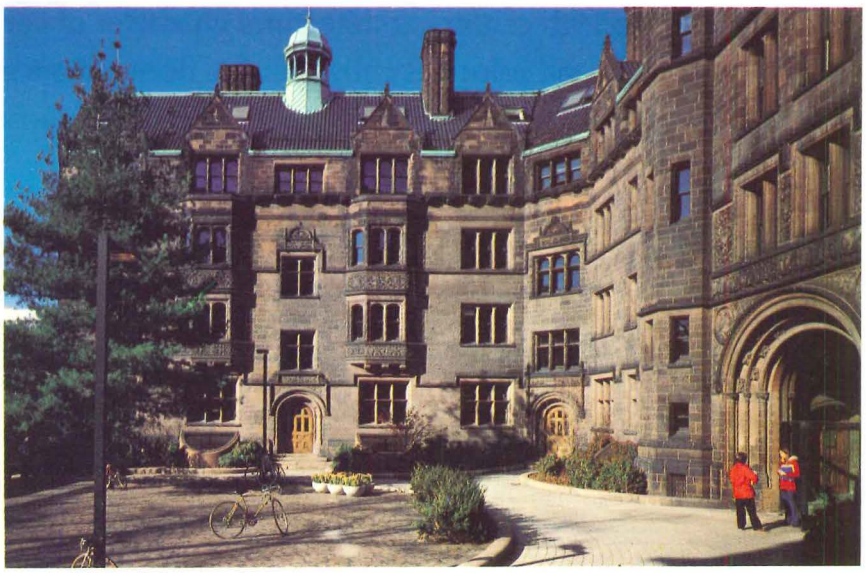




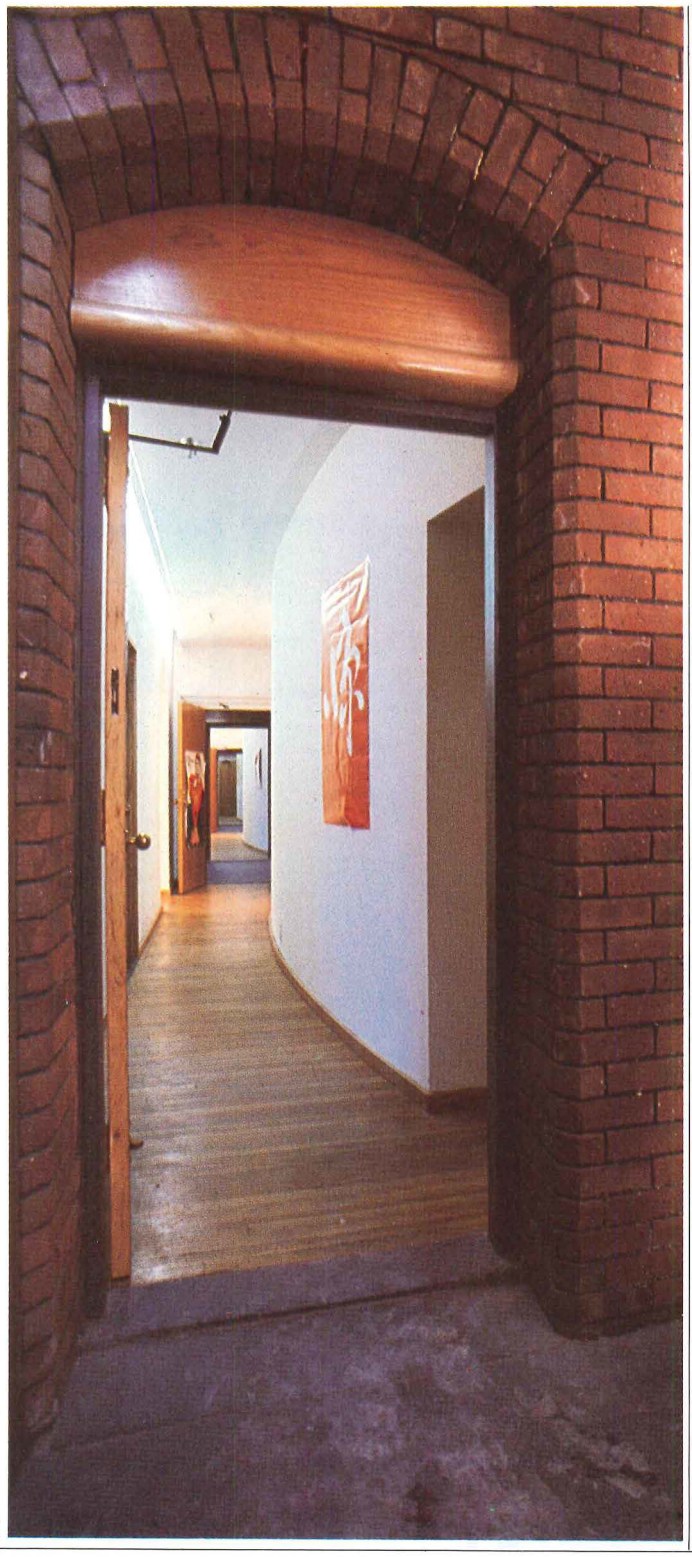
Vanderbilt: The attic has been transformed into bedroom and living space. The basement, formerly used for storage and the old gravity heating and ventilating system, has been converted into suites by the removal of the large masonry heat boxes of the old system to gain space. The window sills were lowered and shallow grassed areaways were made on the campus side. The living rooms on the courtyard side are lit by semi-circular top lit areaways.

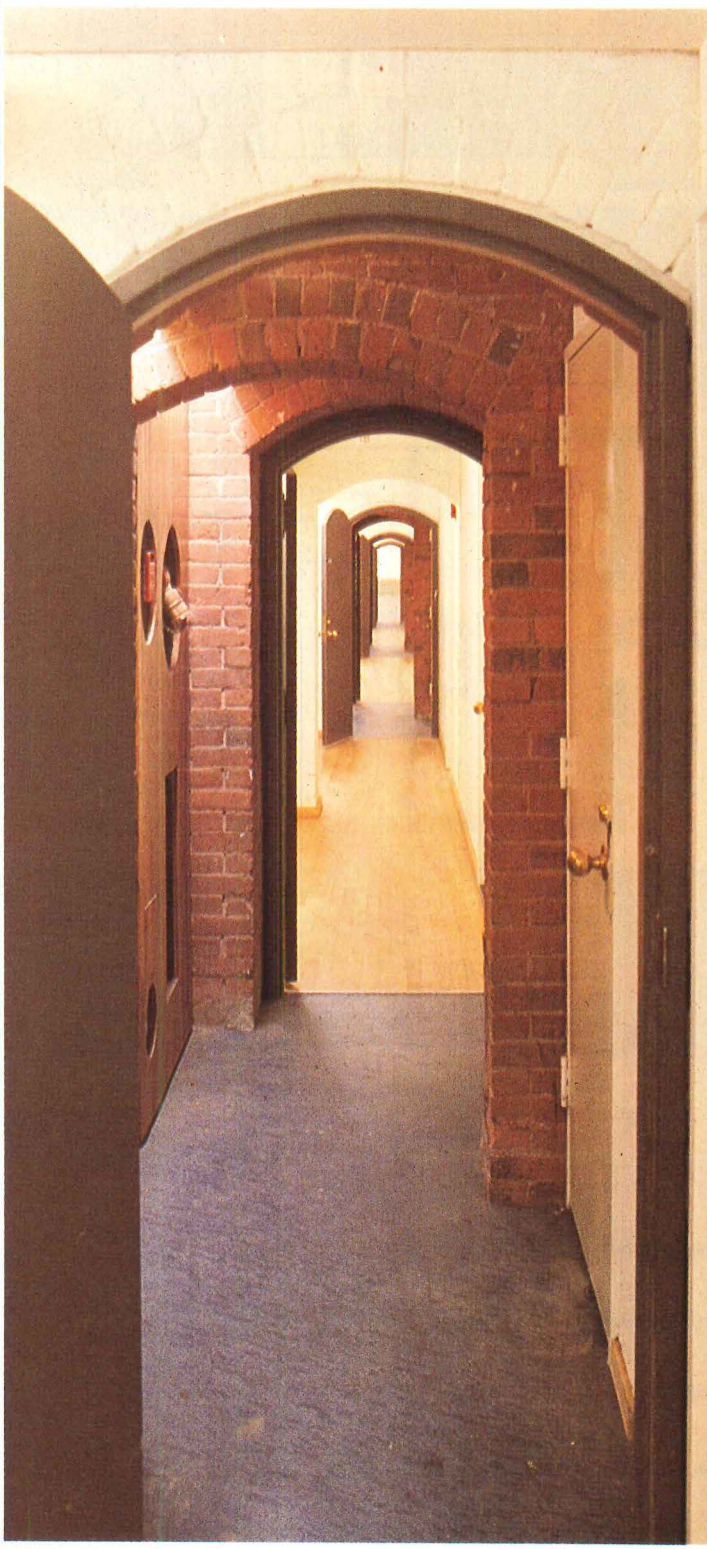


h Hall from New Haven Green



Vanderbilt Hall Courtyard





1

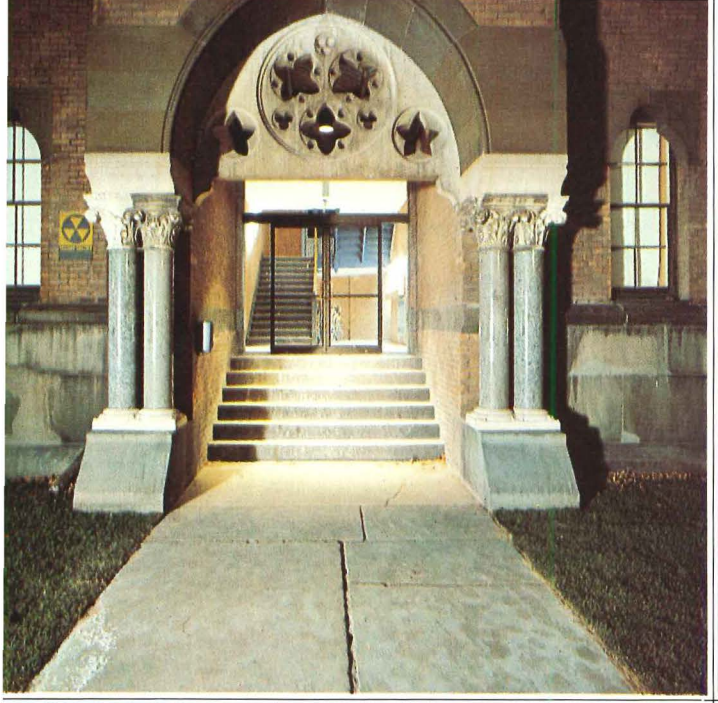
The late-19th century architectural character of corridors, entrance halls stairways and principal entrances has been enhanced by the restoration

beginning to realize how much they loved old buildings and preferred them as places to live. There was little enthusiasm among Yale students for the new residential colleges scheme. As a result of these considerations, Yale's president, Kingman Brewster Jr. will have spent $7.3 million of Whitney's gift on Farnam, Lawrance, Welch, Vanderbilt, Durfee and McClellan including furniture, landscaping, management costs and all fees. The quarters of 1,000 students will be renovated at a cost of $7,000 per bed. (Costs of new construction in New Haven in 1975 were figured to be $13,000 per bed.)

Brewster established a faculty-student committee headed by associate provost Jonathan Fanton to work with the two associated architectural firms: Edward L. Barnes, Architect, New York City and Herbert S. Newman Associates, New Haven. Every aspect of the renovation, from basic suite arrangements to the design of the storage units under each bed was carefully worked out among the Yale Office of Facilities Planning, the architects and the committee.

The goal of the renovation was to
120 beds and to reduce overcrowding; to b
the buildings up to the current life safety c
to renovate completely the heating, ele
and plumbing systems; and to renovate al
building finishes and the structure for l
term dormitory use.

The two architectural firms develo
common design objectives for all the build
to be renovated. First, they determined tha
architectural character of each building w



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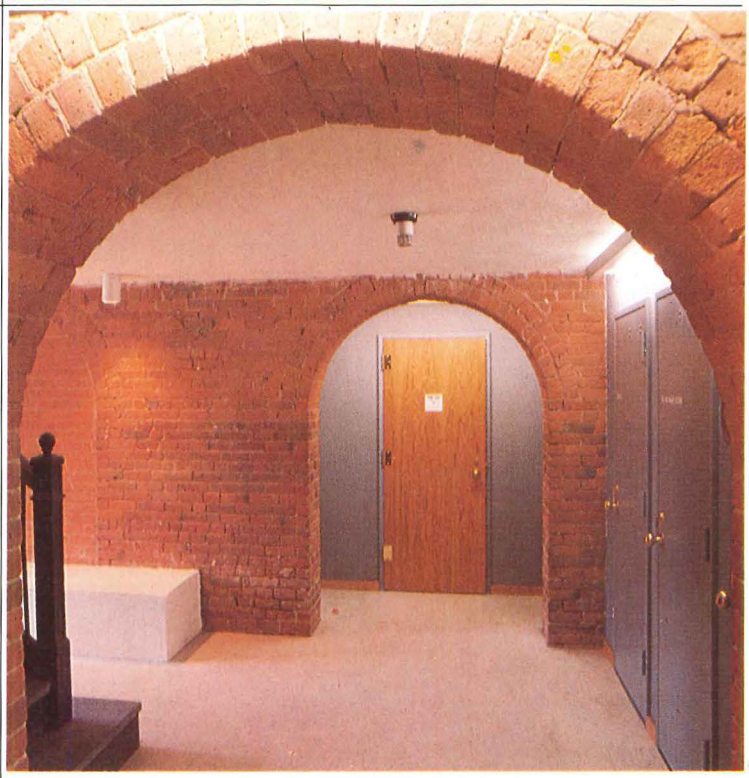


6

reserved as much as possible by retaining original materials, details and external appearance of the buildings—which when taken whole represent a unique period in late century American architecture. Second, wished to provide a variety of room types sizes. Third, they decided to provide two ns of egress from each suite, accomplished out affecting the privacy of adjacent es. Fourth, they concluded that the rooms should be provided within the s rather than at public corridors and

The Lawrance typical floor suite corridors (Figure 1), and the basement corridor (Figure 2) are punctuated by a series of beautiful brick arches left intact by the architects. The arches have also been retained in the Farnam basement (Figure 6), and throughout the structure. The Farnam entrances (Figure 3) have new glass doors to accentuate the silhouettes of the beautiful pierced-stone transoms as seen from within, and to make the severely handsome character of the brick and tile stairwells visible from without. In the stairwells of Welch (Figure 4), new oak walls conceal emergency devices and utility closets while carrying the building's name and floor identification as an ornamental detail. The steeply pitched roofs in the Vanderbilt attic (Figure 5) make good space.

1

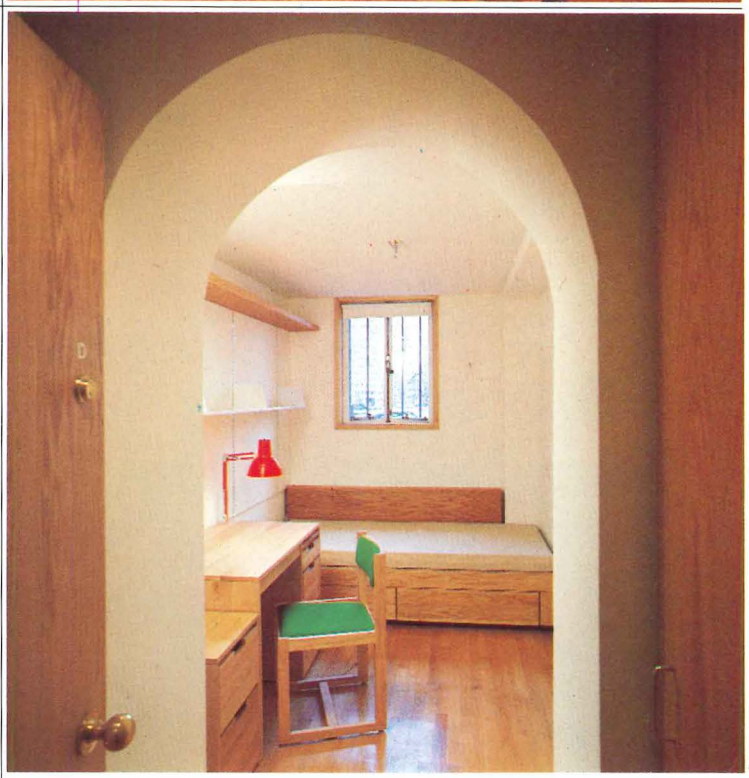
The policy of making the renovations invisible on the exteriors has enriched the interior suites

stairhalls. This makes the bathrooms secure from intruders, permits bathroom sundries to be left in the bathrooms, and encourages student maintenance of their own bathrooms.

As planning progressed it was decided that a six-person suite arrangement of four singles, one double, a living room and a private bath shared by all six was the optimum arrangement. This organization of space had to vary in response to the actual conditions existing in each of the old buildings. Wherever possible the architects converted the existing suites originally designed for two but now containing up to four persons into suites for six. This was done by converting alternate living rooms into double bedrooms, thus permitting the crowded small bedrooms to revert to single occupancy. Although on typical floors, the density increased slightly, a significant number of additional beds were gained by taking over the attics in Vanderbilt and Welch and the basements of Farnam, Lawrance, Welch and Vanderbilt as living quarters. The attics and basements were remodeled with great care to minimize the effect on the exteriors.

The renovation of the four halls sho began in the spring of 1976 and the buildi were ready for occupancy last fall. Two ad tional halls including Durfee will be ready the fall of 1977. The freshmen are delig with their new quarters, which now surpas spaciousness and esthetic quality most of residential college living suites of upper cl men including the cramped bedrooms of E Saarinen's Morse and Ezra Stiles Colle (1960-62). Traditionally, when a stud

4



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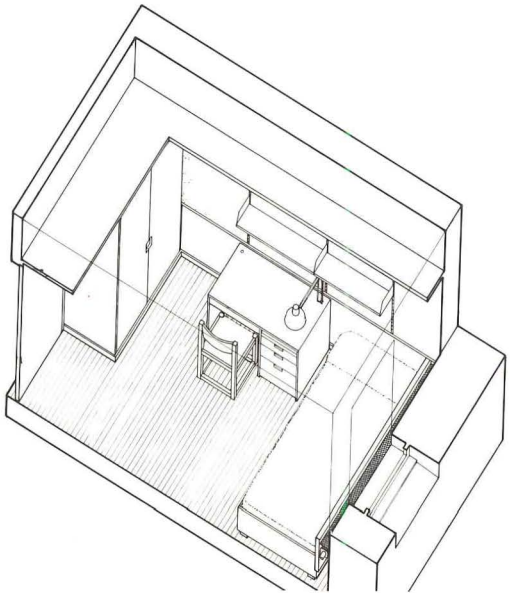
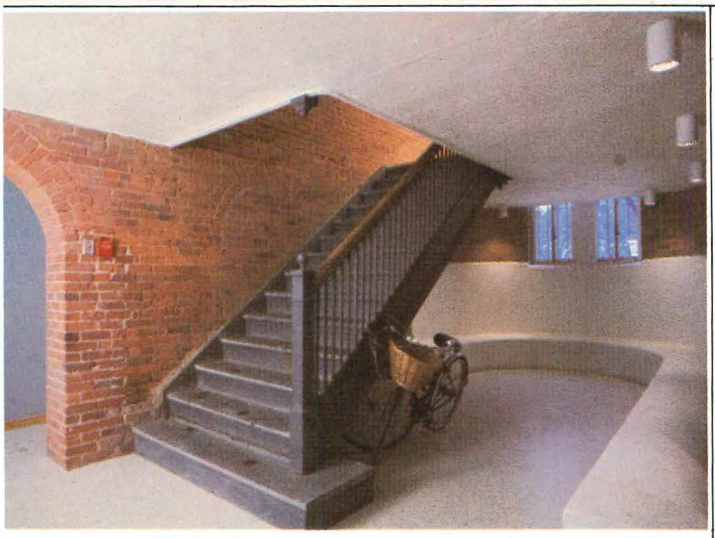


The Welch duplex living room (Figure 1) is part of a suite for 6 to 7 persons. To achieve this space, the attic and the fourth floor were combined. The double bedroom in the Welch duplex (Figure 2) has windows of the type that were used in all the attics renovated. Constructed of aluminum-clad wood and tempered bronze glass they were designed for installation in a sloping roof surface with a minimum of disruption to the roof plane. The window has a reversing mechanism for exterior glass cleaning. The existing fenestration was kept intact in all buildings except for lowering basement sills or replacing sash, glazing and trim where necessary.Farnam is the only building with all new window trim (Figures 4 and 5). The existing trim in Lawrance (Figure 3) was left as is. Fully furnished mock-up rooms containing the elements shown in the isometric were carefully analyzed.

1



2

The generous old dormitories had a lot of leftover space now brought to life

leaves the Old Campus, he moves up to better quarters. If this is to continue, Yale will either have to upgrade many more student rooms, or put its seniors back on the Old Campus, which once, long ago, was their preserve.

—Mildred F. Schmertz

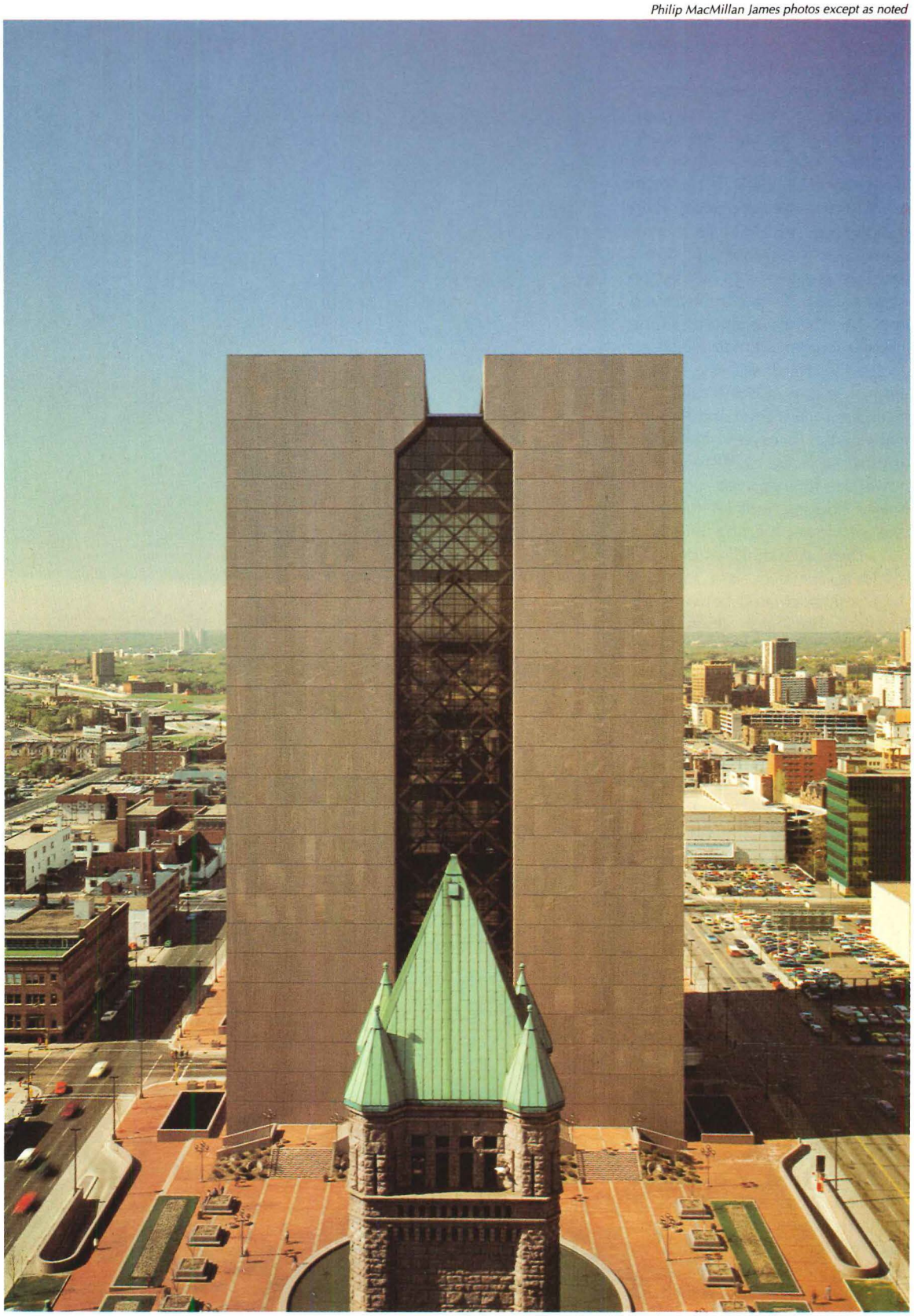
YALE UNIVERSITY OLD CAMPUS RENOVATION PHASE ONE: FARNAM, LAWRANCE, WELCH, VANDERBILT HALLS, New Haven, Connecticut. Owner: *Yale University.* Architects for Farnam and Vanderbilt: *Edward L. Barnes, Architect—Edward Z. Jacobsen, associate; Thomas V. Czarnowski and Frederick Stelle, project architects; Mary Barnes, interior design.* Architects for Lawrance and Welch: *Herbert S. Newman Associates—Glenn Gregg, partner, Don Cosham and Joseph Schiffer, project architects; Monique M. Corbat-Brooks, Robert Gotshall, Susan Marko and Neil Troiano, assistants.* Consultants: *Spiegel & Zamecnik* (structural /foundation engineers); *Yale University Engineering Services* (mechanical); *Zion & Breen* (landscape); *George A. Fuller Co.* (costs); *Glendon R. Mayo* (building code). General contractor: *E. & F. Construction Co.*

A typical basement living room in Vanderbilt (Figure 1) is lit by a top-lighted circular areaway, which meets the light and ventilation requirements with a minimum of disruption to the landsca and architectural character of the Vanderbilt courtyard (page 95). The circular seating area (Figure 2) is in a basement apse in Farnam. The second floor living room in Lawrance (Figure 3) extends into the turret, formerly occupied by an inadequate toilet facility. As already mentioned, the furnishing of the student bedrooms was done by the university according to mock-ups carefully studied by the architects the students and the university management. The living rooms, however, have been exuberantly furnished by the suit occupants themselves, with the traditional reliance upon the New Haven flea markets.

Impressive new government center around a grand atrium space

An important new public building has been designed as the focal point of a developing civic center in Minneapolis. In a bold design approach, John Carl Warnecke & Associates provided a public space in the grand tradition of civic buildings that is also compatible with today's needs, a scheme that combines what the architects refer to as "informality within monumentality."

Philip MacMillan James photos except as noted



Completion of the Hennepin County Government Center in Minneapolis marks the beginning of a new civic center that will encompass an 18-block area when completed. The civic center's master plan (also designed by the Warnecke firm) was premised on the design of this building as the focal point of the area. While the plan establishes guidelines for future public and private development within the parameters (including the location, height and bulk of buildings, and the position of open spaces—all interconnected by pedestrian aerial walkways), it does so with all aspects relating to the Center.

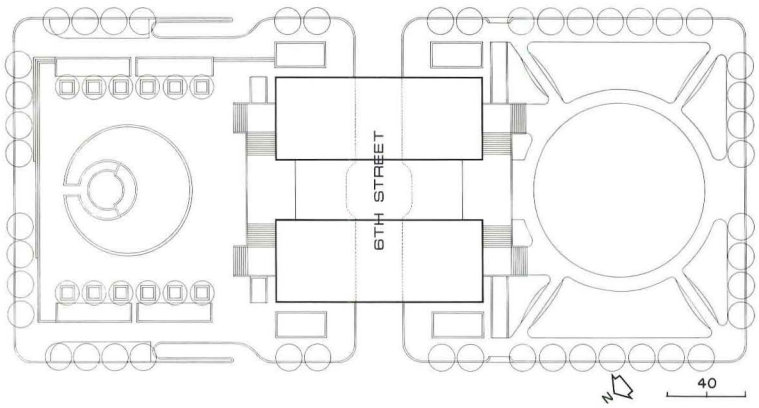
The Center's design concept was based on an exemplary planning process by both the architects and a facilities analysis and design firm, SUA, Inc. SUA began an extensive, detailed space utilization study in 1965; its recommendations subsequently stimulated the passage of 23 bills by the state legislature that reorganized the county government. One major recommendation which affected the design was the separation of county administration offices from the district and municipal courts. To express these two distinct services, a 24-story twin-tower design evolved (the east tower housing judicial facilities, the west tower housing offices).

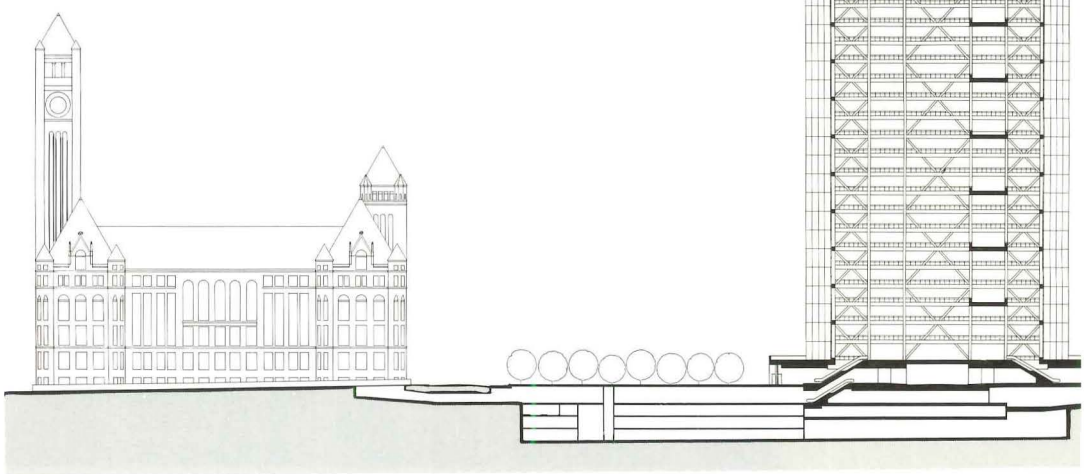
The outstanding feature of the building, however, is a 350-foot-high atrium created between the towers, bordered dramatically with exposed steel diagonal bracing. It is a great indoor space, enjoyed by the public and the employees—fully appreciated as a controlled, year-round environment, not affected by the changeability and severity of the Midwest's weather. The atrium is flooded with light through a combination of glass end walls and a large skylight. At the roof line, enormous exposed steel tetrahedrons frame this skylight and the corridors of the top floor.

By siting the structure so the inner court aligns with the towers of the old Municipal Building across the street (designed by Long and Kees in 1906) and by using glass curtain walls on this axis, views from the atrium are opened up and primarily focused on the old building, signifying the relationship and continued coordination of services between the two structures. Compatibility of the two buildings is further enhanced by the use of carnelian red granite on the new building's fa-

Roberts Associates, Min

An interior court, formed by the enclosure of space between two towers, is the highlight of the Center. Bold, exposed geometric forms of structural cross bracing create this exhilarating public space. The public service level (above) houses facilities most often used by the public thereby eliminating the need for most people to travel to the upper levels.





cade complementing the older building's granite exterior walls.

A unique structural system solved the inherent engineering problems of the atrium concept (RECORD mid-August 1974, page 82). Diagonal wind-bracing was positioned on the interior walls facing the atrium rather than on the perimeter of the building, and exposed the full height of the court. The total space frame acts like a cage, stiffening the building's frame, minimizing building drift and allowing 85 per cent usable floor space in the towers. It accepts lateral loads (transmitted from the composite floors through diaphragm action) and distributes the stresses downward throughout the 180-foot building length. The cage is supported below the public service level by 30-inch-thick concrete shear walls, constructed on bedrock. The building spans a street using a conventional support system (rolled structural steel shapes, designed compositely, with a concrete topping slab).

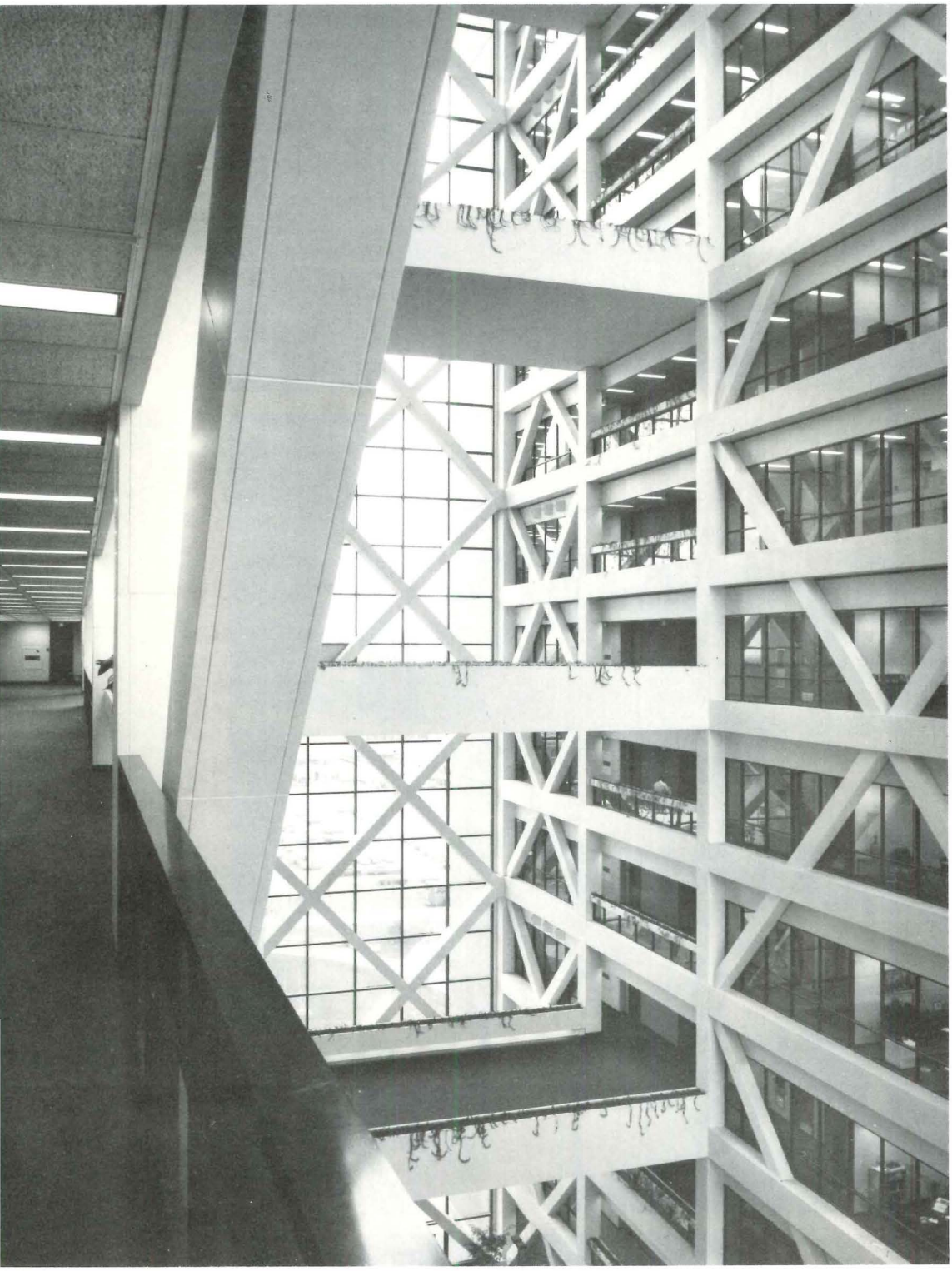
Because the center spans a street, spaces were created for two large landscaped parks. Recycled water from the north plaza fountain flows one story below the street level, and can be seen from a large cafeteria. This level also connects the two government buildings and houses jury, computer, mail and printing facilities.

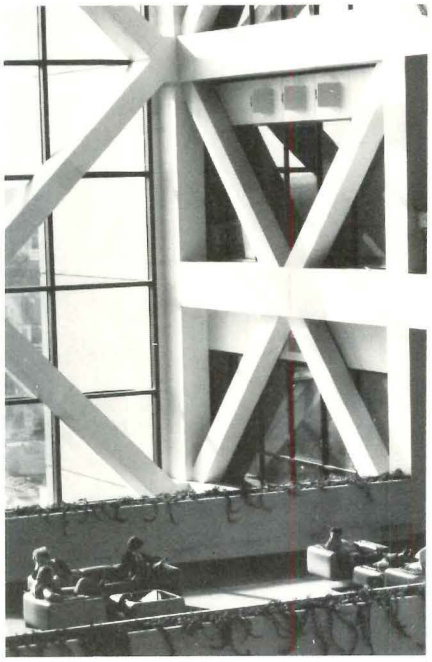
A total cost of $49.3 million for the building (not including $1.9 million for landscaping and site work) was achieved. This is a surprisingly low $34 per square foot, with a large part of the savings resulting from the structural ingenuity of the diagonal bracing, which required less steel and fewer complicated connections of members than in many more conventional systems.

HENNEPIN COUNTY GOVERNMENT CENTER, Minneapolis, Minnesota. Architects: *John Carl Warnecke & Associates; Peterson, Clarke and Associates, Inc.* (associates). Engineers: *Ketchum, Konkel, Barrett, Nickel and Austin* (structural); *Jacus and Amble* (associate structural); *Donald Bentley and Associates* (mechanical/electrical/plumbing); *Michaud, Cooley, Hallberg, Erickson & Associates* (associate mechanical / electrical / plumbing). Consultant: *SUA Incorporated* (facilities analysis/planning/design). Interior design: *John Carl Warnecke & Associates.* Landscape architects: *John Carl Warnecke & Associates* and *Michael Painter & Associates.* Construction management: *Construction Management Services, Inc.* General contractor: *Knutson Construction Company.*

Roberts Associates, Minneapolis

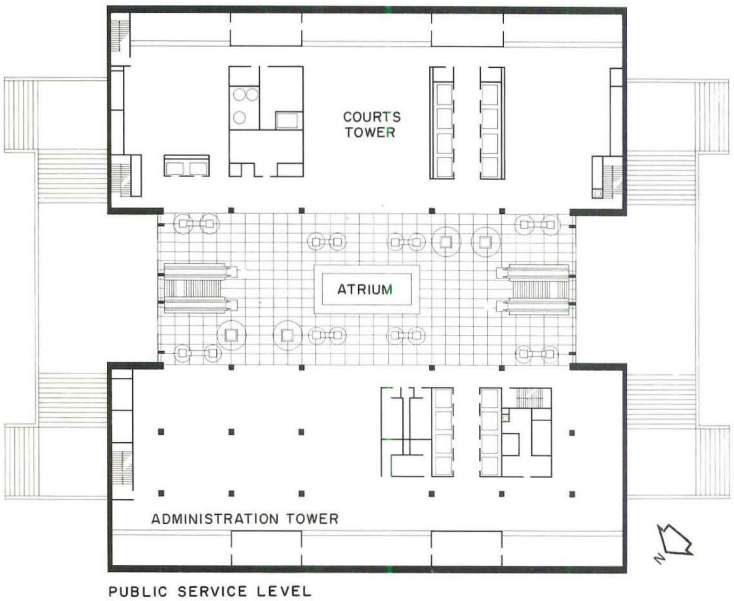
Leo Holub



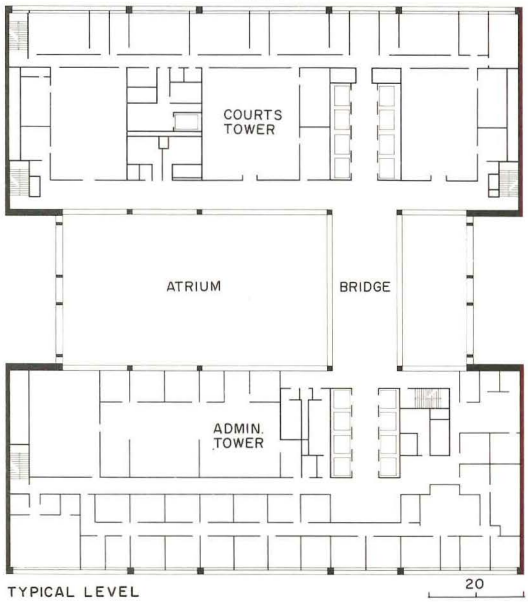


Despite a noticeable difference between the interior tower facades bordering the court (only one side is glazed for acoustical reasons) there is no air conditioning imbalance throughout the 4.3 million cubic foot court space, for a wall set back beyond a corridor in the opposite tower performs an offsetting effect. Seven elevated walkways (spaced every third floor above the public service level) span the court, connecting the two towers. Eventually a series of elevated bridges will connect this building with others in the civic center.

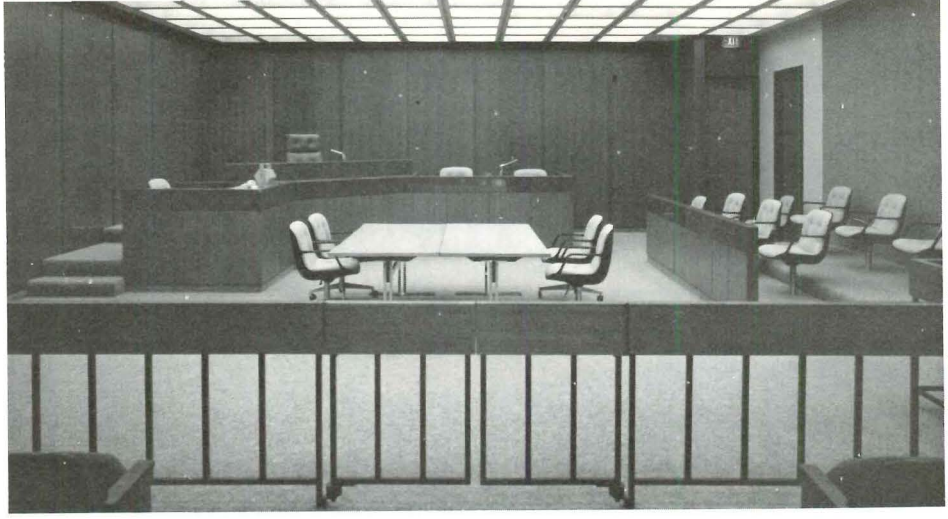
Bruce Barnbaum



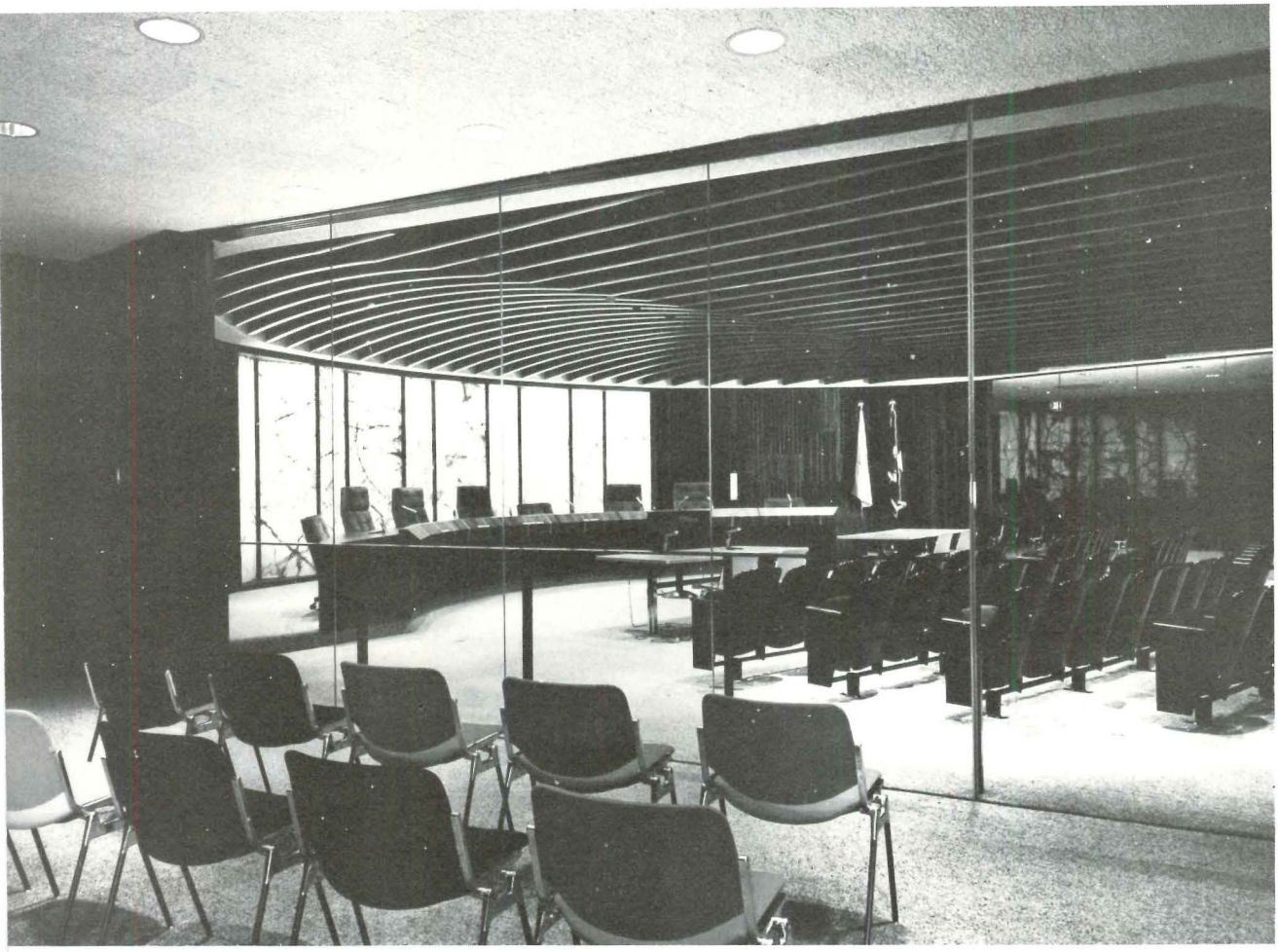
PUBLIC SERVICE LEVEL



TYPICAL LEVEL



Roberts Associates, Minneapolis



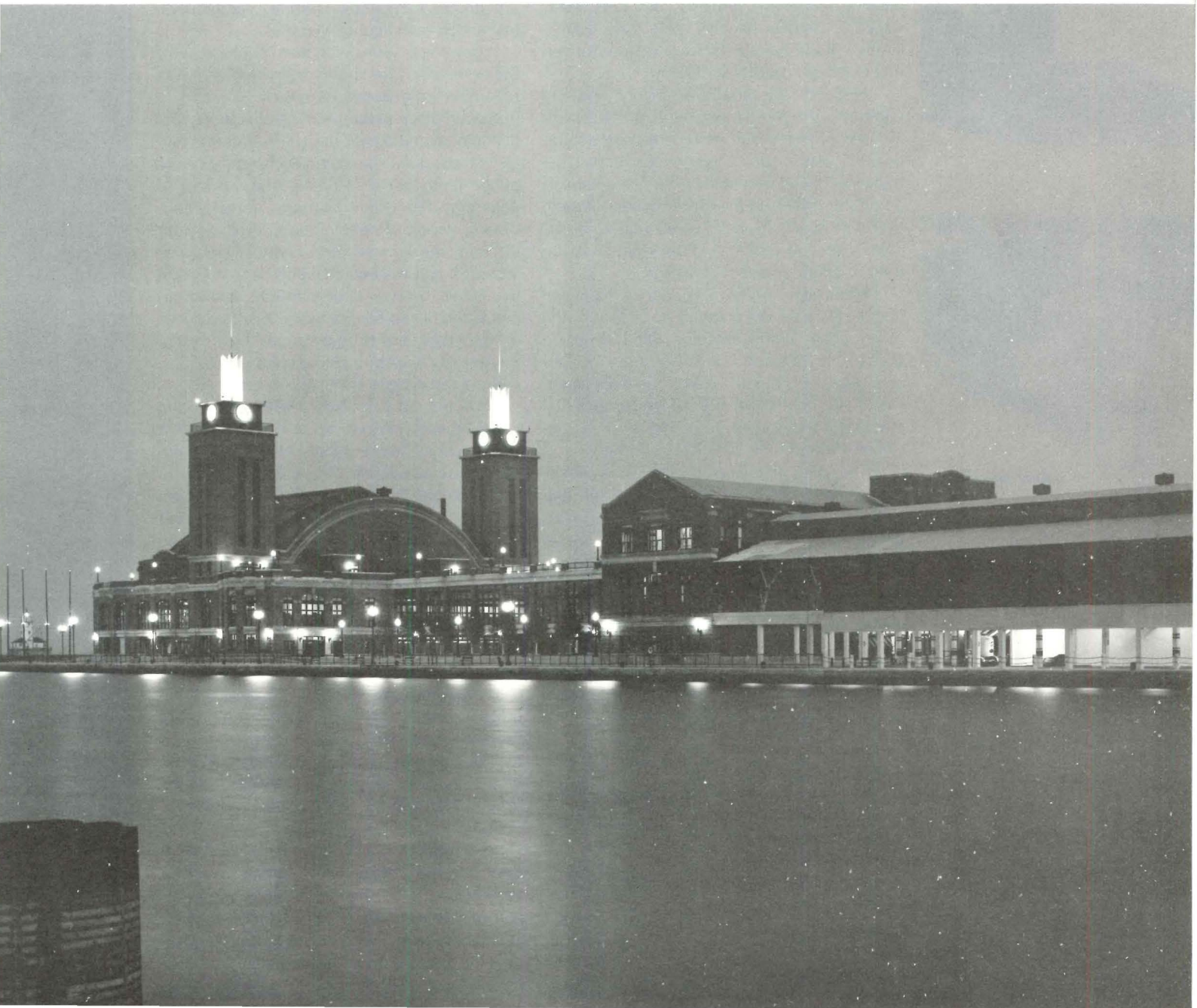
Bruce Barnbaum

The design of courtrooms (top and right plan, page 105) affords the most modern security measures while solving acoustical and lighting problems. Public access to courtrooms is only by a corridor on the atrium side, while judges' chambers are located along the perimeter with access to the courtrooms by a separate inner corridor. Prisoner holding cells and auxiliary court personnel offices are also near the inner corridor. A Commissioners' meeting room (above and right) provides an unusual design concept for public meetings. Seating is provided for only 90 persons inside a glass enclosed meeting room, with additional seating for 200 persons outside the enclosure, allowing limited direct public participation.

Bruce Barnbaum

ANCHORS AWEIGH ON CHICAGO'S LATEST AMENITY

Last summer, Richard J. Daley, the late legendary mayor of Chicago, decided to drop by his favorite building. He had long been seeing to it that as many new buildings as possible got built, but his favorite one was altogether different. This was Navy Pier, built in 1916 to the design of an architect named Charles S. Frost, and now, 60 years later, being rebuilt to the design of the mayor's Bureau of Architecture, whose chief is Jerome R. Butler, Jr., the mayor's City Architect. Why would an abandoned pier, 3,040 feet long and 292 feet wide, have excited Richard J. Daley so much? Maybe he knew that its fun-handling facilities, as much as its freight-handling facilities, had excited many people over the years, and maybe, too, he thought that, turned into shipshape condition, it would be the best place for them to take in the skyscraper-studded skyline that his 21-year rule helped to create.



Ah, but the ragtime was resonant. It is almost as though Scott Joplin had taken up architecture. But when Chicago, in 1916, let out with "Municipal Pier No. 2," stretching three-fifths of a mile eastward into Lake Michigan, people recognized it right away as the kind of place they could tap their feet to. And as the Twenties roared, the pier turned into the marathon mix of function and mood that it was meant for, achieving necessity, amenity, and levity all at once.

Excursion boats, cargo ships, and lake steamers moored alongside its parallel double-decked sheds, each 100 feet wide and jumping with stevedores, passengers, and freight. At its outermost reach was a recreation area with high arcades and extravagant esplanades. Crowds attended art shows, plays, trade fairs, picnics; and they danced inside a glittering, cavernous 3,500-seat concert hall and auditorium, canopied with soaring metal-ribbed arches. Hook, line, and sinker, Chicagoans fell for the place. Even dusk fell for it, as the lanterns atop the two 165-foot concert hall towers glowed, the roof-garden bands playing on.

Chicago Historical Society

It was called a modern *Sans Souci,* a place without a care, and as long as they were in a position to behave similarly, this relentlessly nautical, slightly naughty pier gave Chicagoans a round-the-clock mix of reasons for getting together—and inexpensively.

Not that Chicagoans, or anyone else, are without a care these days; but in 1974, Mayor Richard J. Daley, full of Bicentennial fervor, decided that a *Sans Souci* might be just the thing for Chicagoans, and, as he had a habit of doing, he called up his City Architect, Jerome (Jerry) R. Butler, Jr., head of his Bureau of Architecture, and said to find out what could be done to shore up the old swinger.

Under Jerry Butler, who, unlike many city architects, was encouraged to call up the mayor about almost anything, the 100-person Bureau has become one of the most design- and quality-conscious public facilities agencies in the country, a professional proficiency that Daley's successor, to be chosen in a special election in June, should encourage.

The pier, the Bureau staff soon determined, hadn't been in any shape for fun and games for years. Because as the Twenties whimpered away, people had been in less of a mood for them as well. Passenger traffic on the Lake dwindled, what with the Depression, and, besides, the auto replaced the steamer as the way to go. Although the pier continued as a recreational facility through the Thirties, the music stopped for good in 1941. Renamed Navy Pier, the place went to school as a training base, its spaces hastily subdivided for offices and classrooms.

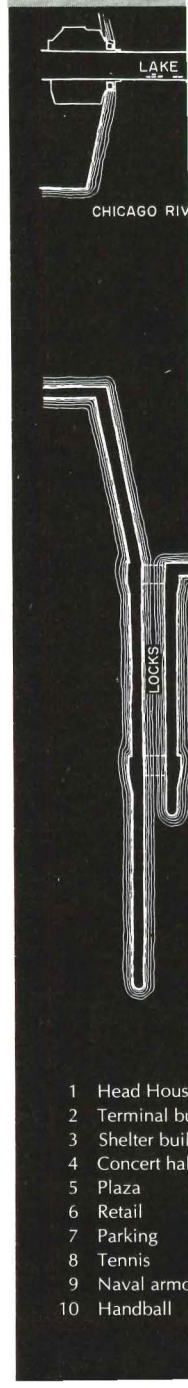
It went to school a second time, in 1946, when the University of Illinois, hit by the GI Bill influx, leased the pier, and, until 1965, it jumped with undergraduates attending what became known fondly as "Harvard on the Rocks." By this time, despite a flicker of freight traffic and occasional trade shows, Navy Pier, especially at the eastern end, with its domed terminus, had become a haggard, almost hopeless mess of partitions, awkward additions, blocked-up windows, and disheveled terra cotta detailing. Parts of the copper roof were seen to blow off, and, by the time the Bureau team, led by Jerry Butler, Joseph W. Casserly, and Daniel G. Jones, showed up to see what could be done to help, parts of the concrete slab, laid over some 21,000 Oregon timber pilings, had dropped into the water.

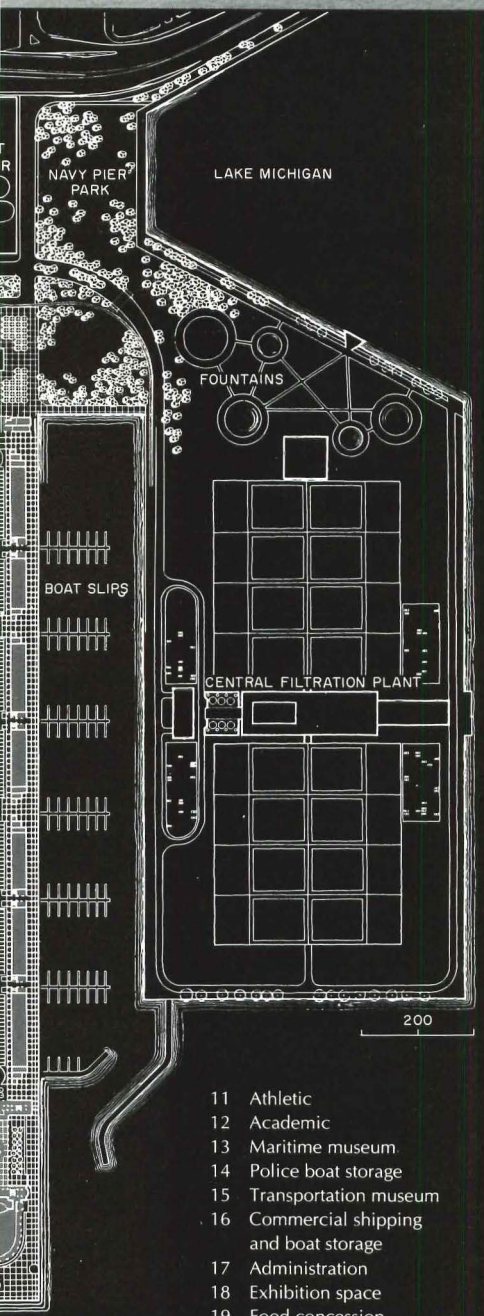
With city plans for a huge international trade fair/lakefront festival in the works, and with thousands of people expected in connection with these events and the Bicentennial summer, the Bureau came back to Mayor Daley, who had seen Navy Pier plans come and go, with a plausible two-phase program. The first phase, for which the City Council appropriated $7.2 million (later supplemented by over a million more), took care of the restoration and adaptation of the worst-off buildings at the end of the pier; work was accomplished, from design to rededication, in just the twelve months leading up to the Bicentennial. The second phase, for which programming is being finalized and marketing studies done, will, when approved, transform the remaining 2,340 feet of the pier—the old freight and passenger sheds running west from the fixed-up recreation buildings—into a full-fledged pleasure dome, combining cultural, commercial, and added recreational elements.

Coming to terms with the first phase, Jerry Butler recalls, "The major design problem was refraining from doing too much. We had to purge the place of the physical alterations that had accumulated over the years, and that had all but obscured the original character of the public recreational facilities. And we had to determine the extent of basic, largely concealed, structural deterioration, resulting from 60 hard freezes and those awful storms. The technical and esthetic challenge was to match the color, texture, craftsmanship, and ornamentation of another era, while keeping an eye on the costs, and to make room for a mix of present-day recreational and cultural activities, without resorting to slick shoe-in effects."

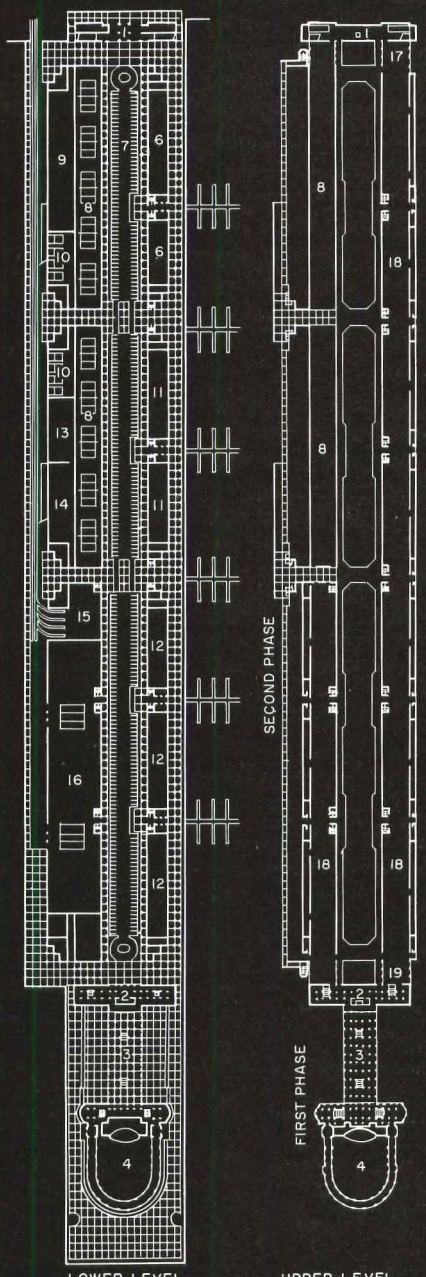
Of the $8.2 million spent on the first phase of work, 20 per cent will never be seen by the pier's adoring public. All that went into basic structural repair. The steel-frame, brick-clad structure had to be exposed and examined. A lot of the the steel, it was found, had become dangerously weakened. The precarious condition of the floor had to be corrected by ripping up substantial portions of the concrete slab and replacing the piling caps. The expansive outdoor esplanade had to be raised two feet in some places, three feet in others. Deteriorated masonry and terra cotta had to be carefully removed, and new materials, even more carefully selected for their matching properties, put into place. The idea was to return the buildings to their essential shell, in preparation for adapting the retrieved spaces for new use, and return them, also, to their essential integrity.

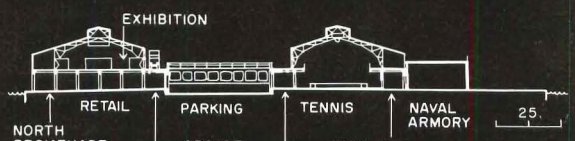
For example, the original cast iron window and door frames were fixed up as much as possible, and, otherwise, these were replaced with steel frames of a compatible color. Eighteen different brick panels were laid up to determine the best masonry match. To replace the color and texture of the original terra cotta

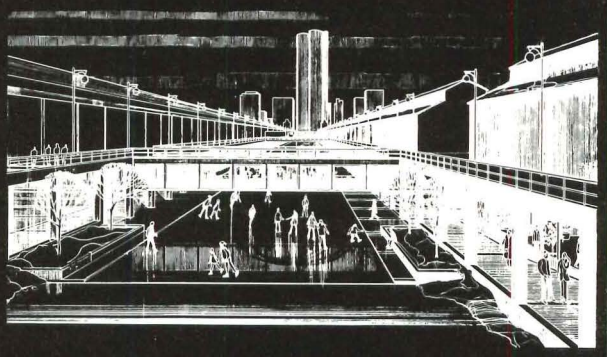


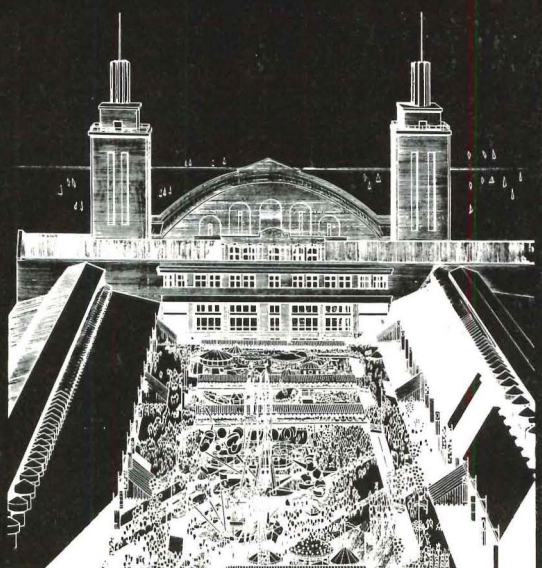


11 Athletic
12 Academic
13 Maritime museum
14 Police boat storage
15 Transportation museum
16 Commercial shipping and boat storage
17 Administration
18 Exhibition space
19 Food concession









molding, limestone, costing half as much as new terra cotta, was selected. A copper-coated stainless steel was chosen for the roof for the domed concert hall and auditorium.

Says Dan Jones, project manager, who practically lived on the site during construction, "You could almost feel the pier coming alive again. And as we cleaned it up, clearing out the clutter, the place seemed to embellish itself because of the things we were taking away, not because of what we were adding."

The original skylights, for example, sealed over by successive users, were unsealed and, in some places, expanded, so now a lot of natural light filters in. The Shelter Building, as it was called, was initially a kind of open bridge, connecting the Terminal Building just west of it, with the rounded, domed concert hall at the end of the pier. The second level of this "bridge" was enclosed with glass, creating a beautiful 20-foot-high year-round "shelter," while its ground level was opened to let the outdoor spaces and breezes flow underneath across the site.

Chicago Historical Society

In the case of the old concert hall and auditorium, steps were taken to improve acoustics and mechanicals, but, other than that, it is its good old self. One of the best interior spaces is the second-level promenade, which was retrieved by removing the window frames along the inner wall overlooking the hall, and by installing new windows around the outer wall. These arch-framed openings are arrayed all around the big building and the promenade performs as a balcony for both the hall and for surveying the lakefront scenery.

That scenery is not unlike being on a ship, and it is hardly steerage class. While the interior floors are finished with terrazzo, the outdoor esplanades, representing five of the pier's 34 acres, have been paved with an exposed aggregate, laid down in a checkerboard-pattern, which is picked up, again, on the roof promenades where a subtle deletion was also made by removing the continuous masonry pediments and replacing them with simpler metal railings, thus enhancing the lakeside views and lightening of the top-heavy look of the structure. Pointing up the people- and play-oriented mood that Mayor Daley, week after week, was insisting on, trees, benches, and flags were supplied. There was even a carousel, the Mayor's idea.

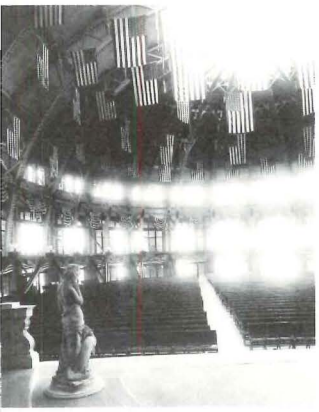
The festive mood he envisioned out here on the Lake is in hibernation these harsh winter months, but many possibilities are being pursued by the Bureau of Architecture for the second phase of the project so that it can be used all year. According to these projections, the upper level of the north and south sheds, which have been used as exhibition halls, would be renovated, mostly for exhibitions, and partly for tennis courts, which would be two levels in height. The lower level of the north shed would house assorted restaurants, shops, and other athletic facilities. Just north of this, between the pier and the low-lying Central Filtration Plant by C. F. Murphy & Associates, a marina has been proposed. The marginal amount of overseas shipping that has survived would be encouraged to continue and even expand, helping to restore the atmos-

From the Head House on the shore end of Navy Pier (near left) to the Terminal, Shelter Building, and Auditorium far out in the Lake (below), Navy Pier, rededicated last summer after years of deterioration, is a relentlessly nautical array of flexible interior spaces and dramatic outdoor esplanades. From the roof garden of the Shelter Building (far left), or from the newly paved and landscaped plazas, there are sweeping, well ventilated views of the skyline. The festive atmosphere (right), will be greatly amplified in the proposed second phase rehabilitation of the parallel sheds.

pheric as well as commercial benefits of having it around, and right in view. To the south of the pier, the existing Dime Pier (in the old days it cost that much to walk out onto it) would be converted for rod-and-reel fishing.

Studies have been made to show the feasibility of converting the big hall for professional theater and other sections of the north shed for educational use. Should an outfit like the Naval Reserve Armory or the Goodman School of Drama take space, as has been suggested, "Good Ship Lollipop" will never be the same again as all of the variations of the last 60 years are reincarnated in one spritely venue.

Construction plans are already underway for a solar space- and water-heating system, as the result of a grant from the Energy Research and Development Administration last October, and this will take care of over 30 per cent of the restored Terminal Building's needs. On top of the south shed, 8,500 square feet of solar panels will collect the heat, which will be passed into an exchanger, and then stored in a thermal tank full of circulating fluid. So even in the area of applied scientific research, the pier is proving that there is, after all, nothing old under the sun. The Bureau has also been going to considerable lengths from the standpoint of old technology to come up with a reproduction of the early street cars which used to careen through the complex from the lakefront out to the end.



Chicago Historical Society

It is this lakefront—the legacy of such "City Beautiful" advocates as Daniel Burnham and perhaps the most resplendent in the nation—which the reactivated Navy Pier is meant to enrich. Parks and abundant public facilities stretch eight miles to the south of the Loop area, and another eight to the north. The location of the pier, stretching out from the northern edge of the Loop, is crucial, because in its former, forlorn condition, it was an obvious dropped stitch in an otherwise continuous seam. As the second phase of the program unfolds, including the development of additional park land to the northwest of the pier, the lakefront will be truly complete. And a projected 1,225-car parking area to the southwest, slightly sunken and lavishly landscaped, will help alleviate the noxious presence of cars while, at the same time, making the pier more convenient for drivers. The 80-foot-wide space, running between the sheds, would also be converted for some parking (400 cars). Its east end, next to the Terminal Building, would be available for amusement facilities and fairs in the summer and for skating in the winter.

Looming across from its west-end Head House and entrance plaza is the curvilinear Lake Point Tower apartment house, by Schipporeit & Heinrich, which now inadvertently announces the pier, almost like a sign post, as one approaches the area from the city or whisks by on Lake Shore Drive. An interesting historical note is that the Tower's antecedent was Mies' unbuilt Glass Skyscraper Project, designed in Berlin in 1922—concurrent with the pier's first Golden Age. In an urbane composition, its brilliant descendant now bears witness to the pier's second Golden Age.

No so-called master plan ever called for such a relationship, which makes it all the

more worthy, because this kind of subtlety, linking the visual and symbolic increments of a city's experience, is not the kind of thing that master plans usually call for. So as the budgetary block-and-tackle for the pier's second phase is being hoisted into place, and while the ragtime of last summer's reunion with the dressed-up landmark is still ringing in everyone's ears, it can only be hoped that Chicago's new leadership will understand that the total retrieval of this one resource, with its potential for commercial and cultural vitality, is and will be helping to make the most of those resources that are already in place nearby. The only way to "make no little plans" (Burnham again) is to make connections between urban elements that were not particularly conceived to connect. Here was a lakefront park with a gap in it, a deteriorated pier creating the gap, a legacy of inlets on either side, and an isolated skyscraper craving company—all now brought into play. Now *that* is a master plan.

Navy Pier isn't completely out of mothballs yet. In fact, as part of the first-phase preparations for the Trade Fair exhibition spaces in the old freight sheds, a moth-balling substance was actually used to seal over the glass cracks and roof leaks—an exotic spray costing a nickel a square foot. But in addition to esthetic care and technical innovation, Jerry Butler's Bureau has worked a miracle of project management, a miracle, that is, in the context of most municipal construction procedures, which tend to grind exceedingly slow. Acting as general contractor, 22 separate contracts were awarded over a one-year period, which meant preparing 22 separate packages of contract documents. Skillful supervision and coordination of the work assured timely completion and, so it would seem, nothing was left out—right down to detailed, elaborate provisions for the handicapped and elderly.

When Richard J. Daley, almost obsessed by the place, dropped by last June to see how the work was coming, it was hard to pull him away from the 50 inner-city high school students whom he found, down on all fours, painting huge murals for the half-mile-long promenade along the north shed (these are on display at the Chicago Art Institute through March 31). The chords of camaraderie were proving irresistible then and, a month later, 100,000 people showed up to tap their feet again, moved by a counterpoint of fond memories from an earlier era. It was some event, including the visit of Norway's full-rigged *Christian Radich* (page 112), but with plenty of room and time for more activity, this building is full of eventuality. Anyone who is not for phase two probably hasn't been to Navy Pier. It's too late to slip the moorings on this landmark.—*William Marlin*

NAVY PIER RESTORATION, Chicago. Owner: *Public Building Commission of Chicago.* Architect: *Department of Public Works, City of Chicago, Bureau of Architecture—Jerome R. Butler, Jr., City Architect.* Engineer: *Bureau of Engineering (Louis Koncza, chief engineer).* Consultants: *Environmental Systems Design, Inc. (mechanical); Robert H. Samuel & Associates (plumbing).* General contractor: *Bureau of Construction—George Ing, Deputy Commissioner.*

The restoration of Navy Pie
spruced-up interiors en
lished with banners and ba
in natural light, has the
ebullient spirit that it hou
back in 1921, with an ex
tion called "The Pagean
Progress" (see original po
page 107, and reproduced
sion hanging in the Audito
promenade, below). It is a
ful, but poignant symbo
connecting 60 years of Chi
experience. Old materials
been carefully restored
matched with new ones,
old skylights, sealed over,
been opened up again, the
spaces below liberated for
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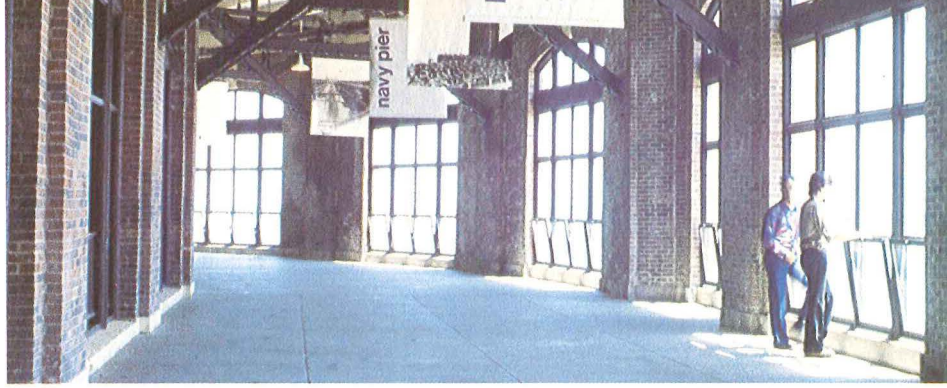
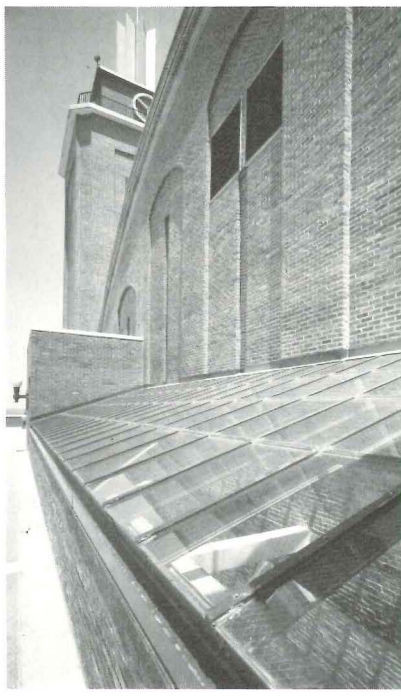




BRINGING IN THE BUSINESS

mages that attach themselves to individual pieces of commercial tecture are usually not particularly sweeping in their implications. e are almost never any spiritual overtones (as in religious build- there are few metaphors of hearth and home (as in houses), and ıe whole there are few striking symbols of public trust and civic ation (as we sometimes expect in government buildings). Instead, ulk of the emphasis goes on one thing, selling the product. Thus lesign problem for the architect—or at least the first part of the gn problem—is equally simple: a good store is one which attracts le's attention and answers for them the question of "Where can so-and-so?"

t makes "good" commercial architecture

re does business, and so bringing in the business is the high road ccess in commercial architecture. The architect who follows this e will not necessarily achieve the status of fine artist (nor will he ssarily be denied it either), and his works may not be soon canon- in the pages of architectural history books. Few stores ever have in the books anyway, after all, and so that is no great cause for ern. What is a cause of first concern is that the architecture of a should work, it should attract attention, and it should draw in ds. All of the stores shown in this Building Types Study meet this rion, and that is one of the reasons they have been included here. Another reason—and a slightly unfashionable one—is that all of tores shown in the collection that follows are designed for subur- shopping centers. Until quite recently, if even then, architects felt slightly uncomfortable dealing with popular phenomena like uburbs and like the car, and so the suburban shopping center has seemed to represent the nemesis of bad taste and the nadir of itectural endeavor.

multaneously, the general public—sated, perhaps, with a 30-year e-family romance—has just begun to show a rekindled interest in center city as a place to shop, and this interest is beginning to be onded to by what *Business Week* magazine called a "basic shift tail strategies," involving the renovation and sometimes the total acement of "flagship" stores in major urban centers and the imple- tation there as well of traditional suburban shopping center design niques. ARCHITECTURAL RECORD, too, in the December 1976, special , "The Home Towns Come Back," has described the beginnings new wave of interest in medium-size towns as alternatives both burbia and to the great cities.

All of these things are nonetheless still beginnings, and however h they will be welcomed by urbanistic architects and applauded enter city fans, they are movements that are still in their infancy. ar the greatest concentration of shopping facilities today is still in rban locations, and sites there—as just about eveyone has already arked—are particularly fraught with peril when it comes to attract- he attention of drivers-by and would-be shoppers.

Attention-getting clamor

Suburban commercial sites generally have a manic proliferation of signs, gewgaws, and paraphernalia that work hard to hype up the battle for attention to the proportions of a major war. And it is a war somewhere between Vietnamese and Pyrrhic in quality, with no clear winners and lots of losers.

How, then does the individual store (and that store's architect) make an impression in the midst of all this clamor? Surely, in this context, the stealthiest course is to eschew the "more" and "bigger" treadmill and to pursue instead the course of "different." All of the suburban stores shown in this collection try to be different from the standard suburban store, but they do it in two very different ways. The first one—Burdines Department Store in Tampa—sets out to be "nice." The second group of stores—designed by the New York City consortium known as SITE (for "Sculpture in the Environment")—set out, broadly speaking, to be strange. Both approaches, though opposite, seem to work admirably, and both are very interesting to look at.

Nicer and nicer

Burdines of Florida, is a chain of department stores owned by Federated Stores, Inc. In the past five years, the chain has commissioned the large Florida firm of Reynolds, Smith and Hills to design four new stores—in Clearwater, Tampa, Sarasota, and Plantation. The Tampa store, now completed and shown on the following pages, is a good example of the kind of refinement and stylistic upgrading that many suburban stores are now receiving, a phenomenon that comes directly from the client's need to have a building that seems special and that achieves its specialness by a general elevation in over-all quality. "We wanted to come up with something better, something unusual, something exciting," say the architects of the Tampa Burdines; "we wanted to respond to the needs of our client for something that would really stand out."

The solution was to clad the two-story building in elegantly reflective stainless steel panels—panels that, since they are slanted away from the perpendicular, reflect the movement of cars and people on the ground and, at night, themselves become a shimmering announcement of the store to passers-by. The interiors of the new store are finished off with as much finesse, so that the over-all effect is one of simple, restrained, and modest stylishness.

Stranger and stranger

Different from this are the designs by SITE for Best Products Company's showrooms. Best Products, the country's largest catalog showroom merchandiser, sells more than 10,000 nationally advertised hard line items in eight states. In 1972 the company hired SITE to provide a startling revision to its otherwise altogether standard showroom in Richmond (top photo, page 117). The public response was enormous, so SITE was again hired to do a large showroom in

Houston (bottom photo opposite), and they are now completing a third one in Sacramento and planning additional ones for Southern California. "We've always felt if we could get customers inside our door we could serve them well and have them come back," says Best president Andrew Lewis; "people either love the buildings or hate them, but either way they come in to enjoy them." James Wines, of SITE, adds, They're all screaming, 'How do you get people interested in shopping?' Whatever implications SITE's structures have, they will be public events."

Another (and higher?) "good"

A final note. Perhaps the most striking thing of all about SITE's stores for Best Products Company is a quality that they share with just about every piece of architecture that has any merit at all. It can be convincingly argued that, for all the extravagant variety of its manifestations, all good architecture has one thing in common: that it is at once familiar and unfamiliar, that it is vividly like something we already know about and, with an equal vividness, unlike anything else in the world.

Good architecture apparently doesn't thrive by being just one of these two things; it seems it has to be both, both like and unlike. Take the whole phenomenon of eclecticism, honored by millenia of practice and rejected by an early twentieth-century architectural aberration. Eclecticism is really about "like" and "unlike."

The Villa Rotunda in Vicenza is like Roman architecture (and virtue of that, like Greek), but it is also unlike it, being something now know as Palladian. Stratford Hall in Virginia—by far the n remarkable eighteenth-century house in America—is like the sple country houses of the rich in Great Britain, and in fact curious hist ans have unearthed a house in Ireland whose plan is meant to Stratford's "source." But anyone who has actually seen Stratford H recognizes instantly that it is peculiar to Virginia, to its site above lower Potomac, and to the famous family who built it.

The architecture of Modernism, too, is by no means immun the business of being like something (no matter what the Modern actually said), and fine buildings by masters like Wright and Mies Le Corbusier follow suit: like the prairie, like the Maya, like a mach like a grain elevator, like a ship.

There is really no high mystery to the process of architec being "like" and "unlike." It is as though we first need someth comfortable and familiar (the "like") to win our confident atten and then something strikingly different (the "unlike") to stimula flood of further interest—and to edify, please, surprise, shock, or e to dismay.

All this brings us to the perhaps unsettling conclusion that SI Best Products Company stores are—in much more than the functio mercenary sense—"good" architecture. They begin by being like

twentieth-century classic, the familiar shop on the strip, and they eed from there to turn that classic popular image (literally, in one on its ear.

The effect is astonishing, and it is also multi-dimensional. In one e it is cataclysmic, an image that "responds to the unconscious es of an America that is rediscovering pessimism," one French has wailed, "an America deceived by big business." True, the ge of a big chunk falling out of the corner of a building, or of the ding jacked up on one side, or collapsing, or being altogether ed over by an asphalt parking lot in some final apocalyptic nph of the automobile—all of this can be seen as pessimistic.

But it is also funny—and fun, and profitable, and very powerful. 's juxtaposition of the modestly familiar with the stunningly unfa- ar is like a bomb that arrives in a shoebox.

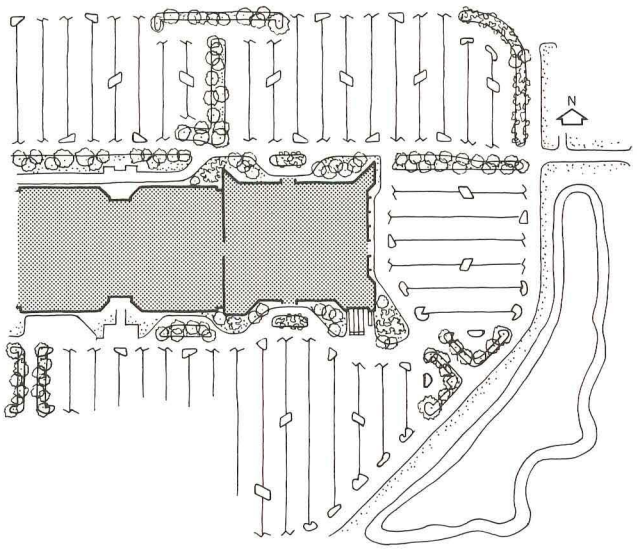
Herein, though, lies a slight problem, and it is the ironic petard e designers' own cleverness: where do you go from here? After open the shoebox the second time (if you've survived the first) re not particularly surprised to see the bomb there; it's no longer miliar. Similarly, after you've done just about everything you can e standard commercial warehouse building short of turning it up- down, what's left to do? Nothing gets stale faster than a performer only one routine. So it will be interesting to see what SITE's next ber will be.—*Gerald Allen*

SITE photos

BURDINES DEPARTMENT STORE HOLDS UP A MIRROR TO PASSERS-BY

Henry O. Navratil photos

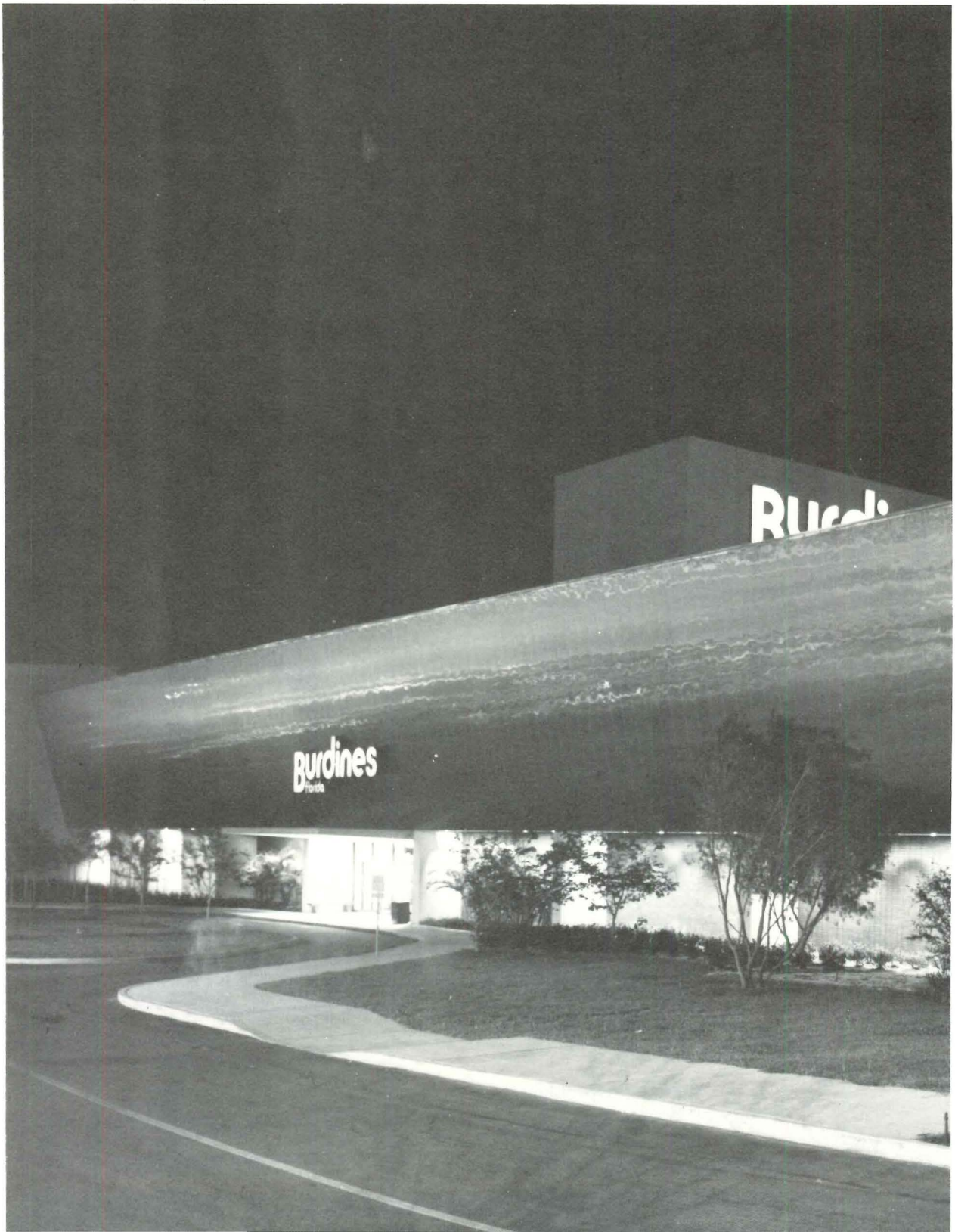
Aside from the large plinth-like structures at each of its corners, the facade of Burdines Department store is composed almost entirely of mirror-polished stainless steel panels that reflect the passing pedestrian and vehicular scene. The site for the department store is typical of suburban shopping centers, surrounded on three sides by vast expanses of parking lots. Landscaping is limited mainly to the periphery of the parking lots and to the area immediately around the store, so that there is very little to soften the visual impact of the undifferentiated asphalt surfaces. Accordingly, the unadorned facade with its large planar elements is appropriately at the scale of its immediate surroundings and makes a strong visual impact.

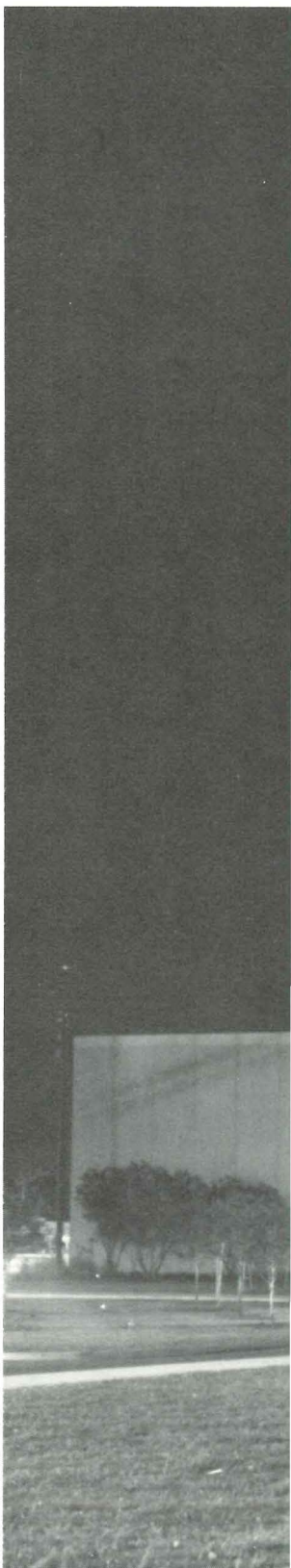


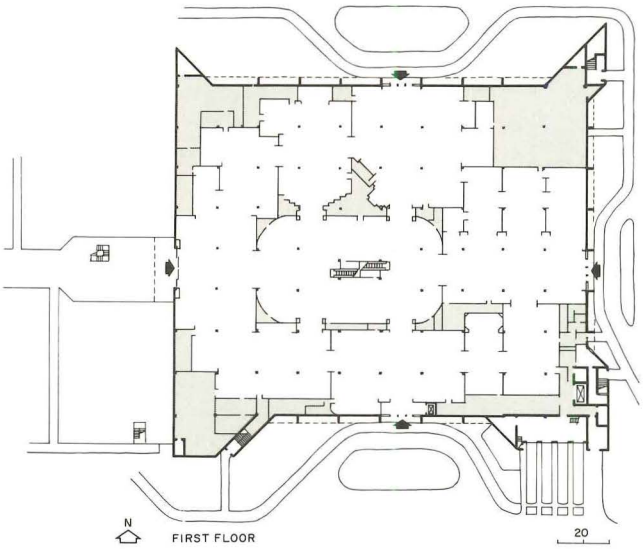
At nighttime, the facade of Bu
Department Store glows in th
flected light of passing cars; it is
of two-inch-thick, 30-inch-wide
less steel and urethane foam p
"Most of us think of building ma
as static things, although there ar
tain things always happening wit
and shadows," say the architect
this particular facade, in their
"has a capacity for changing its
and character—depending on the
of day and the kind of lighting, th
and the things that are happeni
around it."

Inside, the store has two
levels of retail space (shown
plans on the right) serviced by
stage supply areas (shaded o
plans) on each level.

Henry O. Navratil photos



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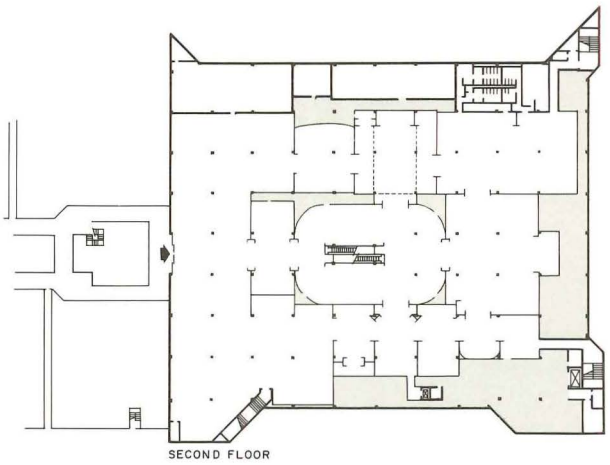
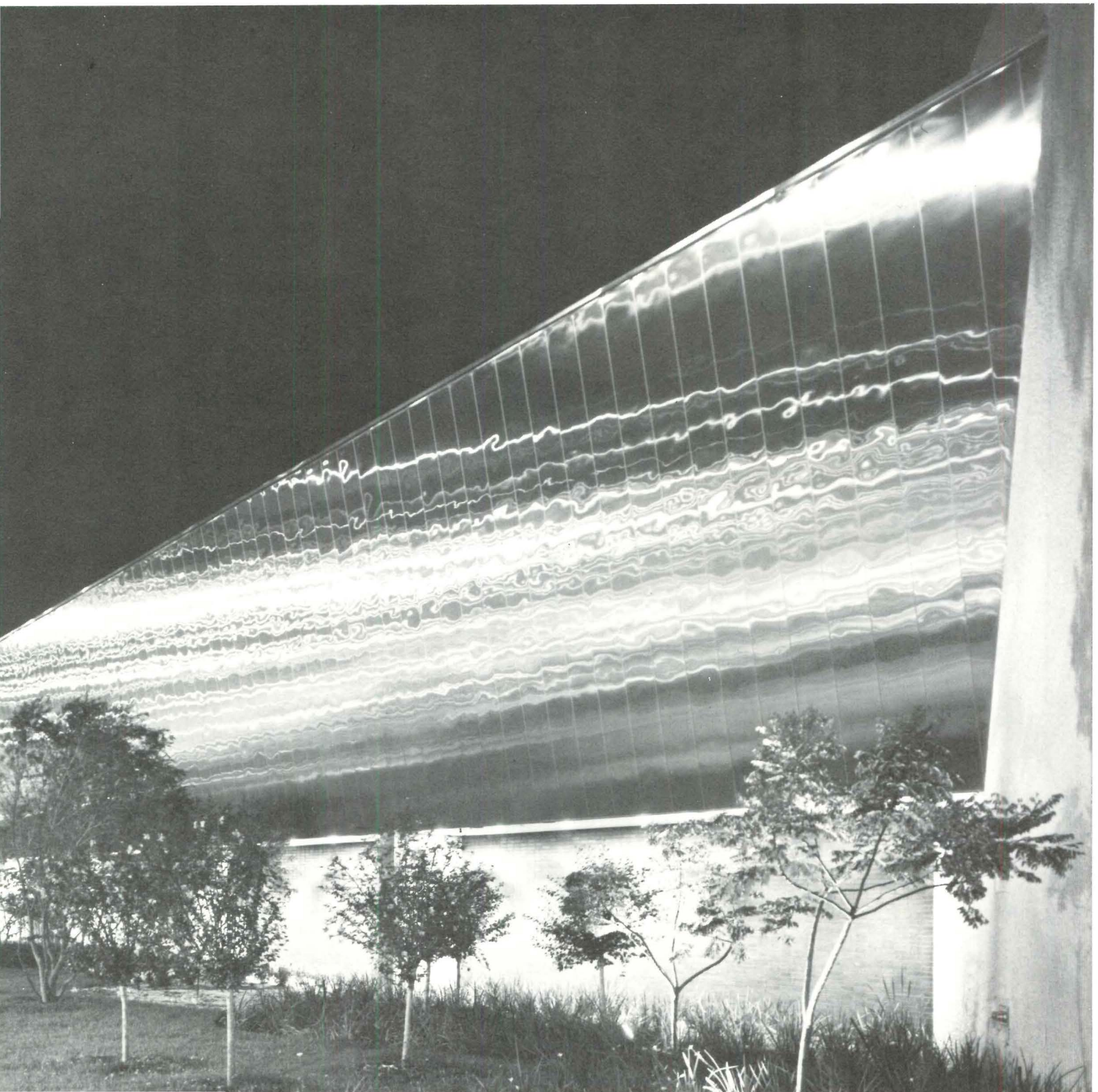
FIRST FLOOR
20

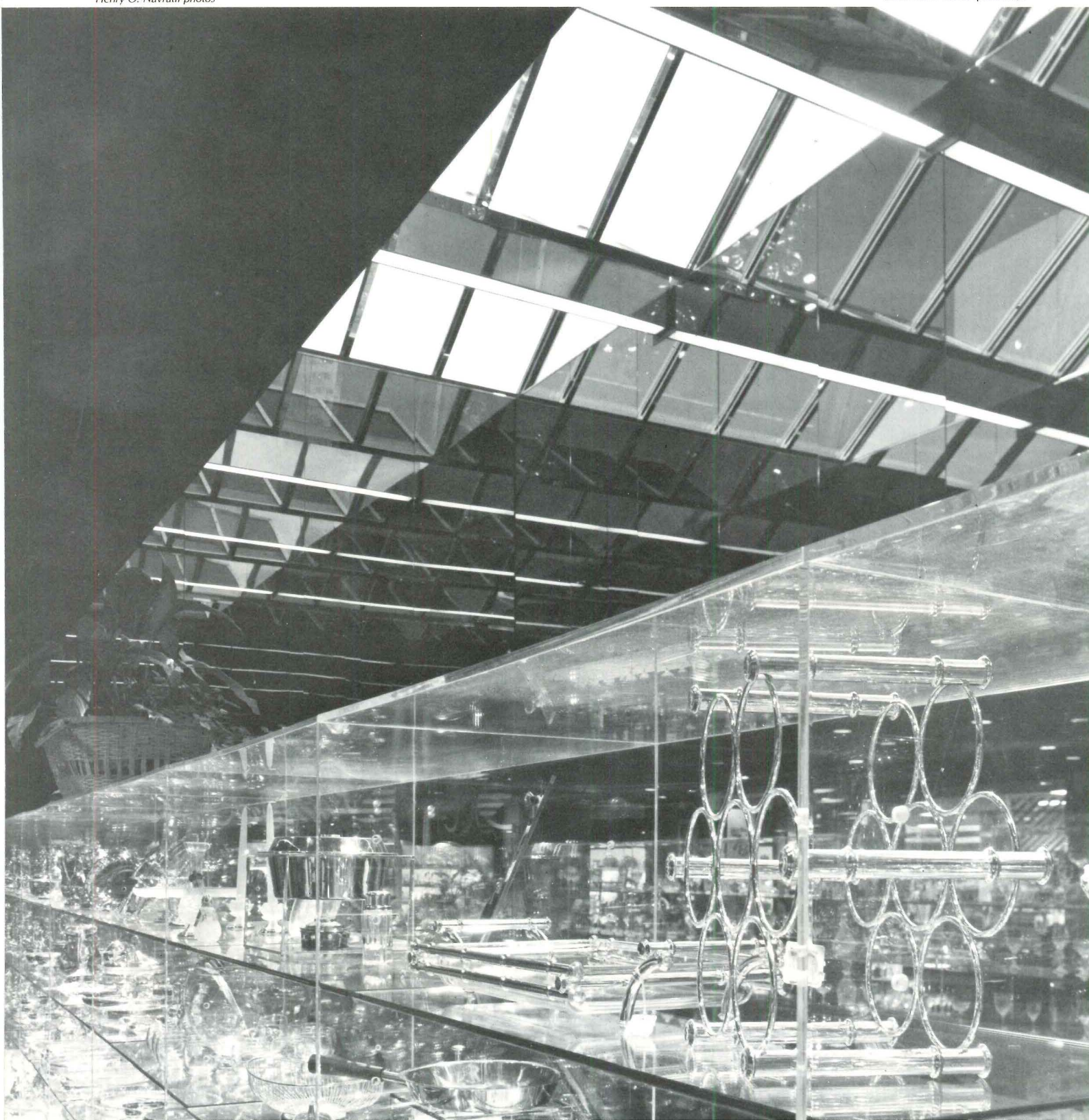

SECOND FLOOR



The upper sales floor of Bu
Department Store in Tampa is re
by a centrally located escalato
space topped with skylights
tograph opposite). Also skylit a
adjacent display cases, shown
photograph below.

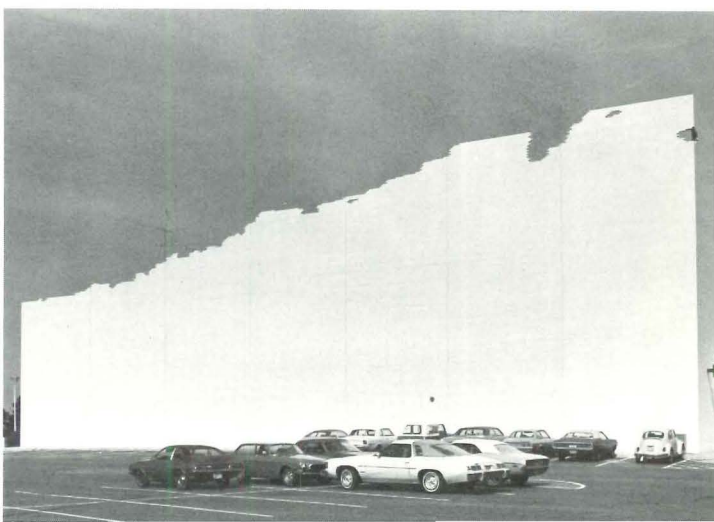
BURDINES OF FLORIDA DE
MENT STORE, Tampa, Florida.
tects: *Reynolds, Smith and Hills,*
Tampa office. Engineers: *Rey*
Smith and Hills, Inc. (structural);
Ross Associates, Inc. (mecha
electrical). Consultants: *Walker/*
Inc. (interiors/graphics). General
tractor: *Frank J. Rooney.* Sub-co
tors: *Fred McGilvray, Inc.* (me
cal/plumbing); *Flournoy Electric*
Inc. (electrical); H. H. Robertso
(stainless steel panels).

Henry O. Navratil photos



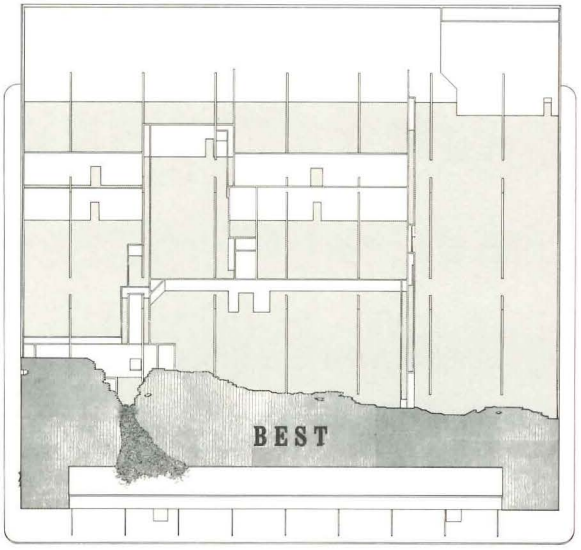
AN "INDETERMINATE FACADE" FOR BEST PRODUCTS COMPANY, HOUS

SITE photos

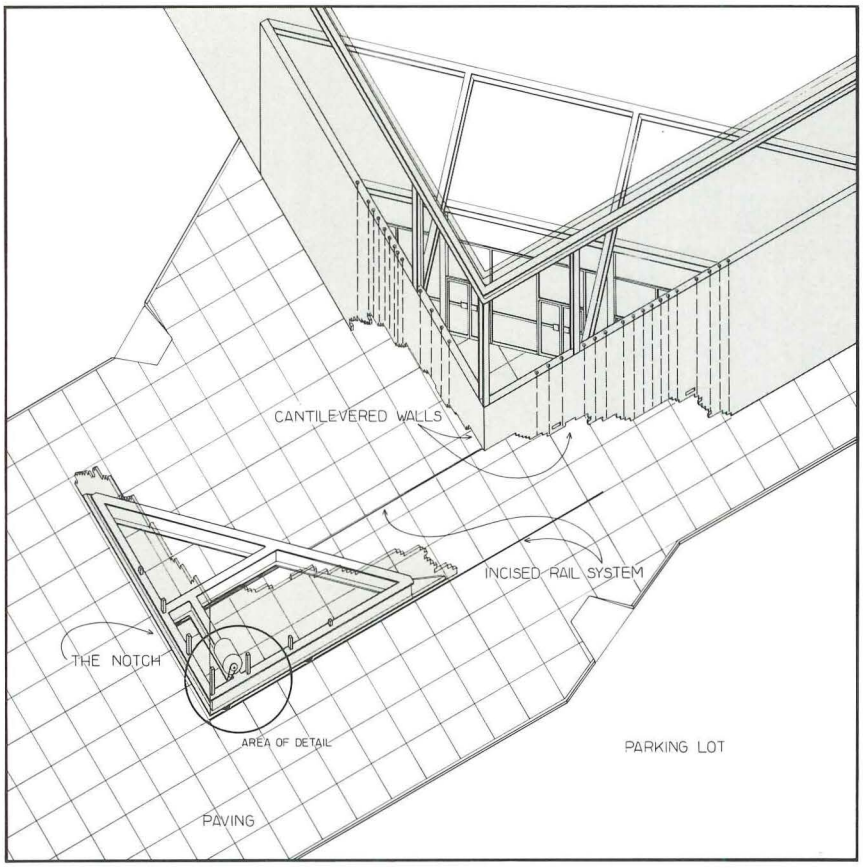


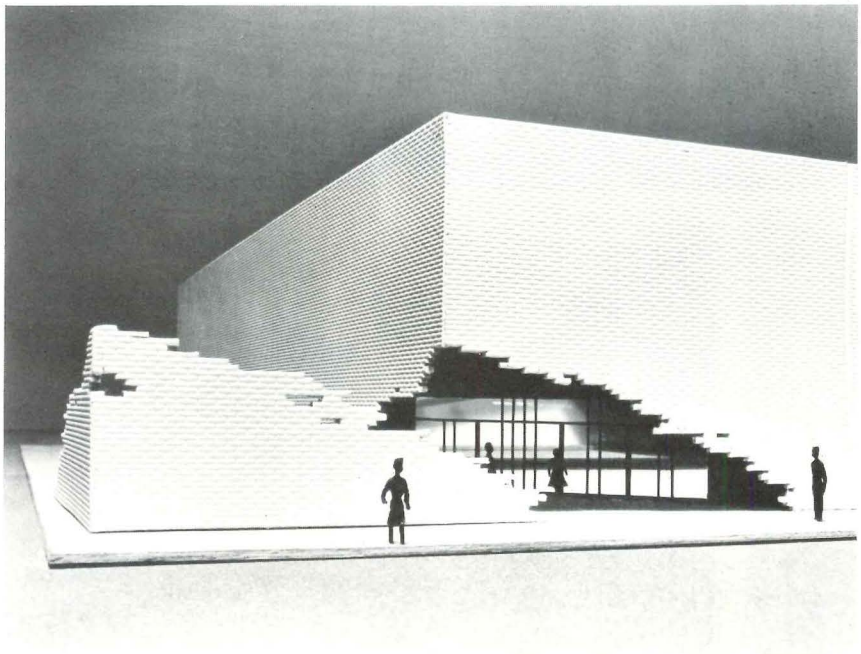
"The concept" of this store, according to the designers, "is an architectural inversion of the standard merchandising warehouse located in a suburban shopping center. The brick veneer of the facade and side walls was arbitrarily extended beyond the logical edge of the roofline, resulting in the disconcerting appearance of a building arrested somewhere between construction and demolition."

BEST PRODUCTS COMPANY, Houston, Texas. Architects: *SITE, Inc.—principal-in-charge and designer: James Wines; associate director of project: Emilio Sousa; graphics: Michael McDonough; associate architects: Maples-Jones Architects.* General contractor: *Conceptual Building Systems.*

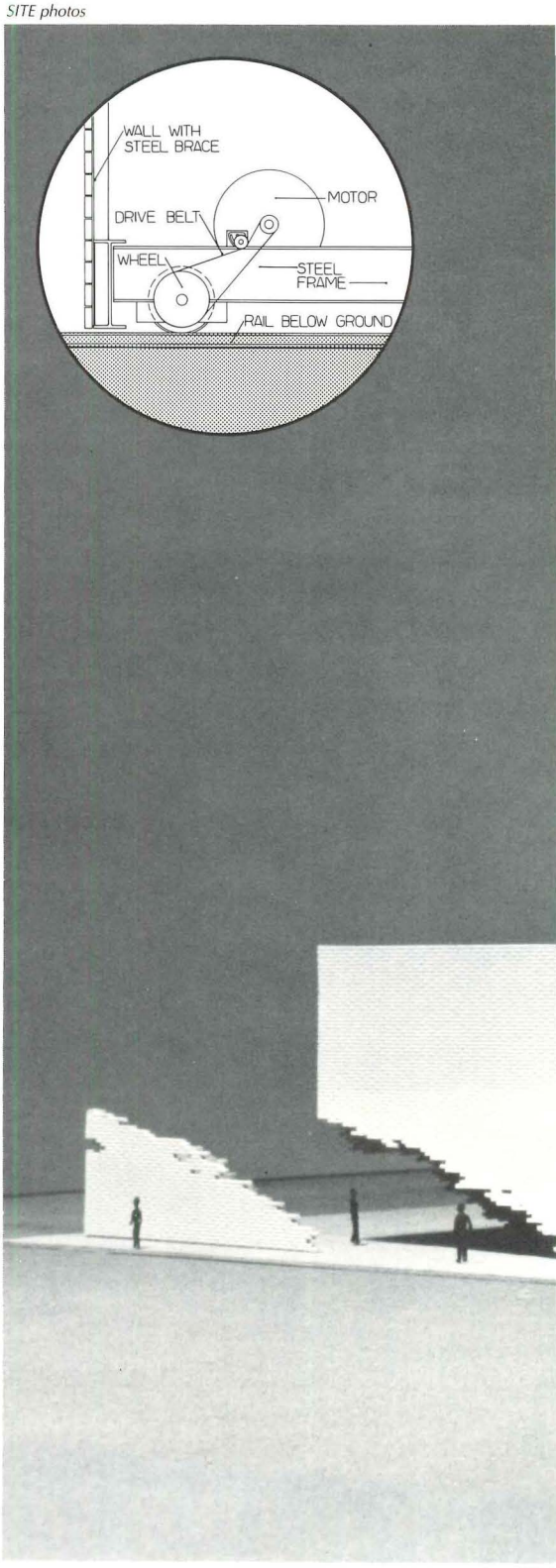


SITE'S "NOTCH PROJECT" NOW UNDER CONSTRUCTION IN SACRAMEN



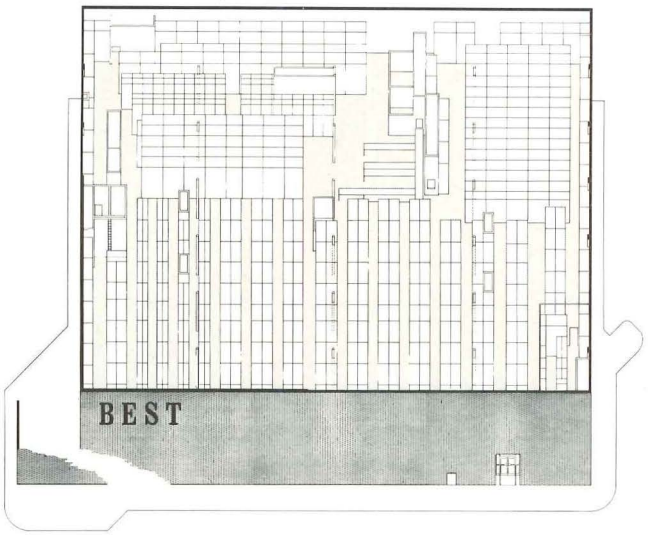


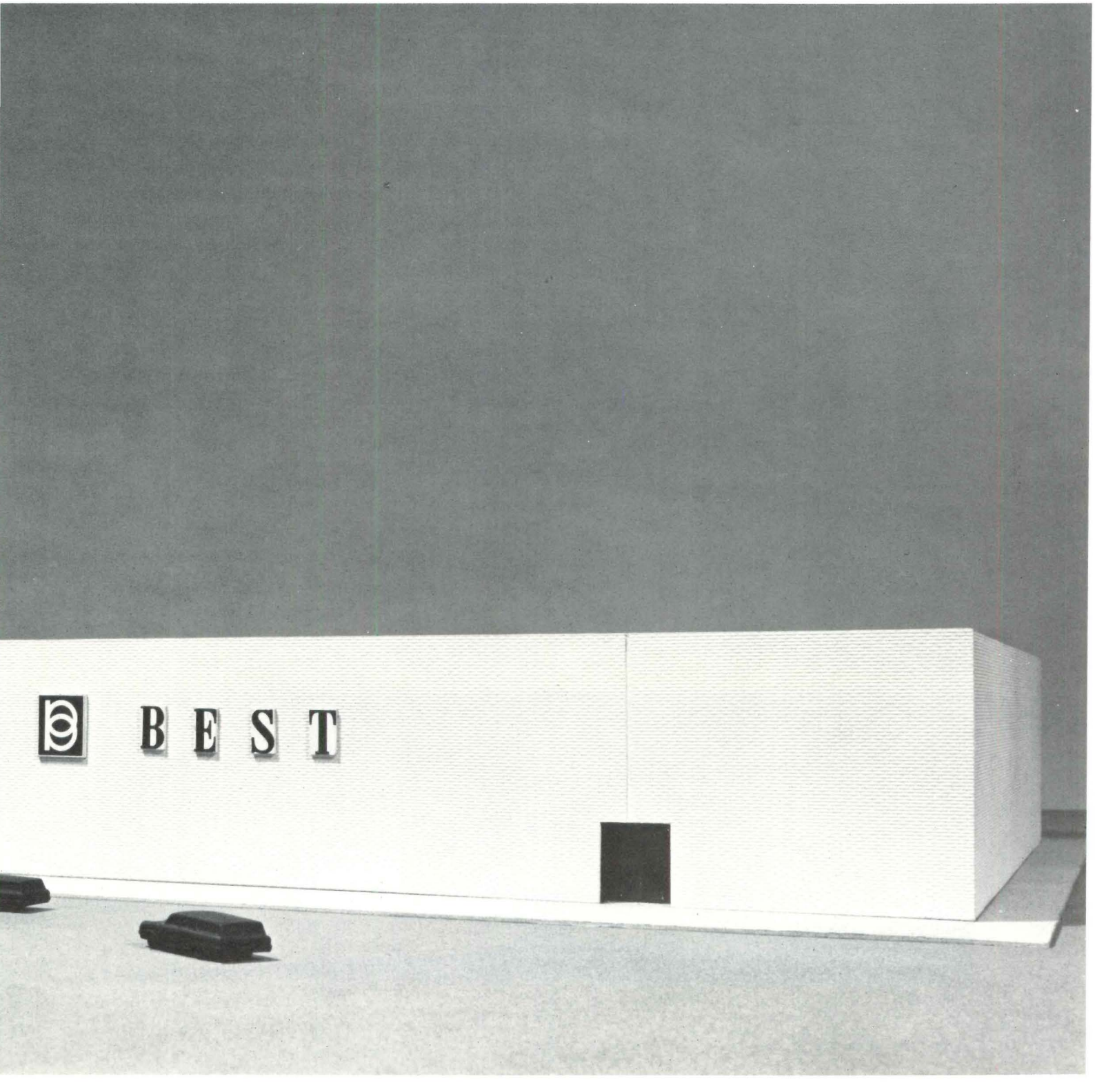
SITE photos



For the Sacramento Best Products store, SITE has designed a building that "calls for reductions as additions. A large, raw-edged notch will be removed from one corner of the brick-structure which serves as the main entrance, and also as a monument."

BEST PRODUCTS COMPANY, Sacramento, California. Architects: *SITE, Inc.—principals-in-charge: James Wines and Emilio Sousa; graphics: Michael McDonough; associate architects: Simpson Stratta and Associates.* Engineer: *Thomas Kinney* (structural). General contractor: *Rudolph and Sletten, Inc.—principal-in-charge: Onslow Rudolph.* Engineers and fabricators for movable notch: *Allied Engineering and Production Corp.*

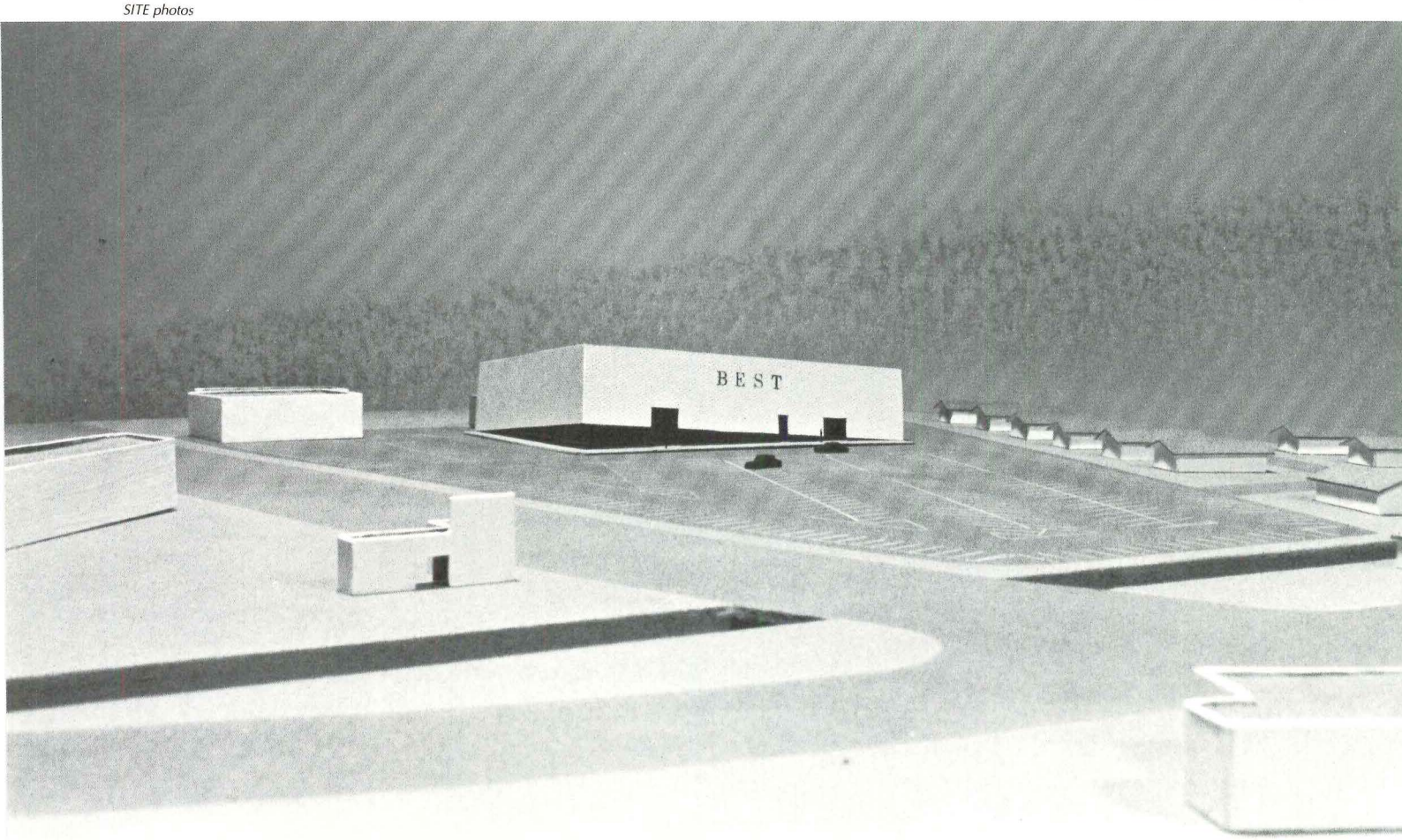


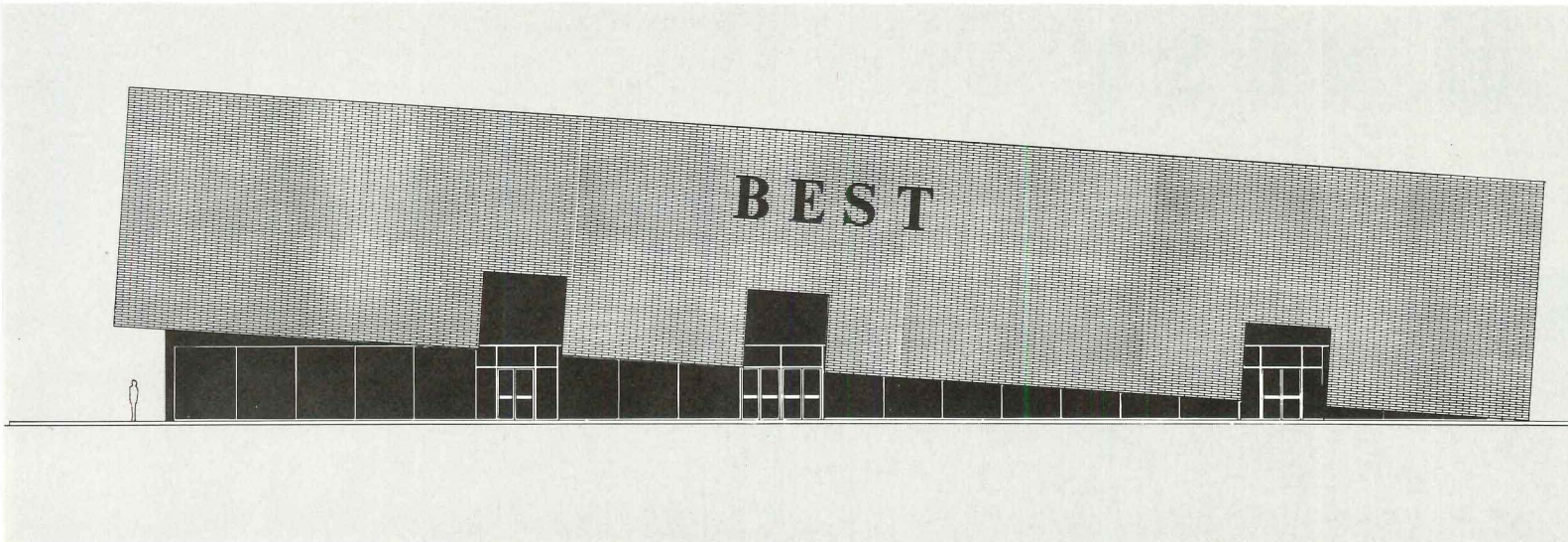


TWO PROPOSALS FOR BEST PRODUCTS IN SOUTHERN CALIFORNIA

SITE, Inc.'s "Tilt Project" for a s
Southern California is the Best
ucts Company prototype, set i
middle of its requisite expanse
phalt parking lot and surrounded
sea of conventional houses and
mercial buildings. But one corn
the building's outer shell is dra
cally jacked up—like (unnervingl
product of an earthquake.

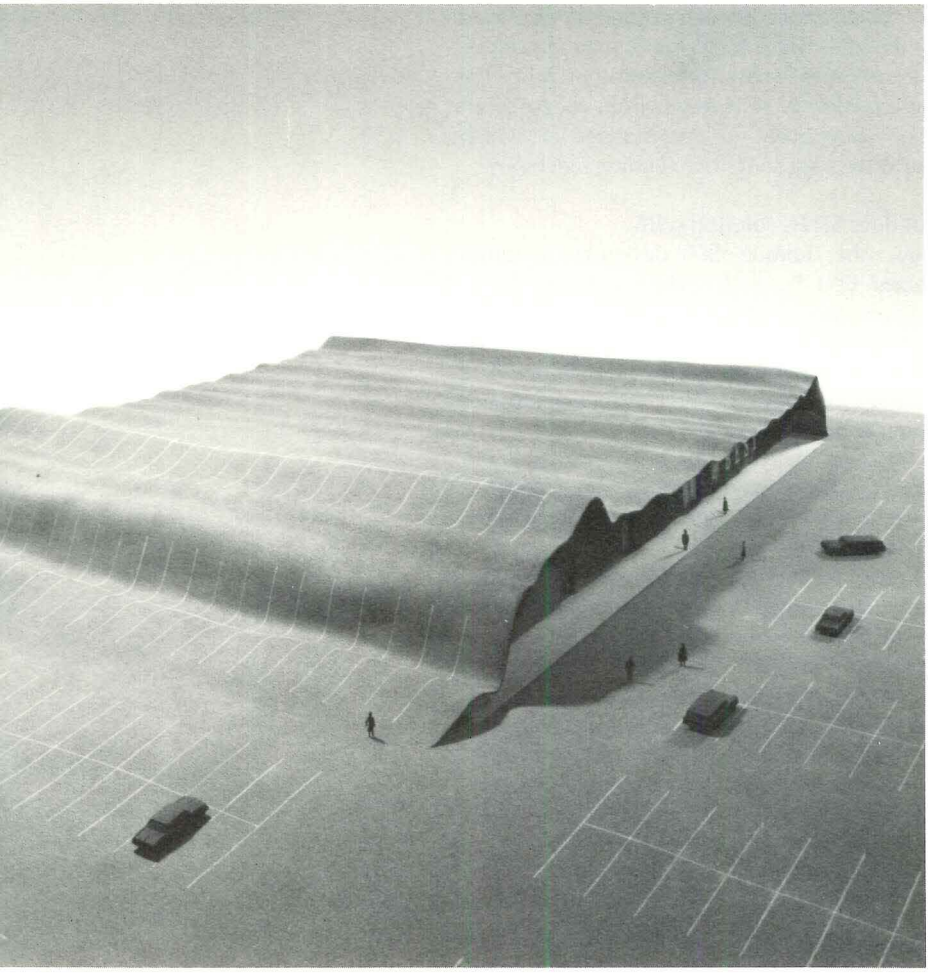
SITE photos

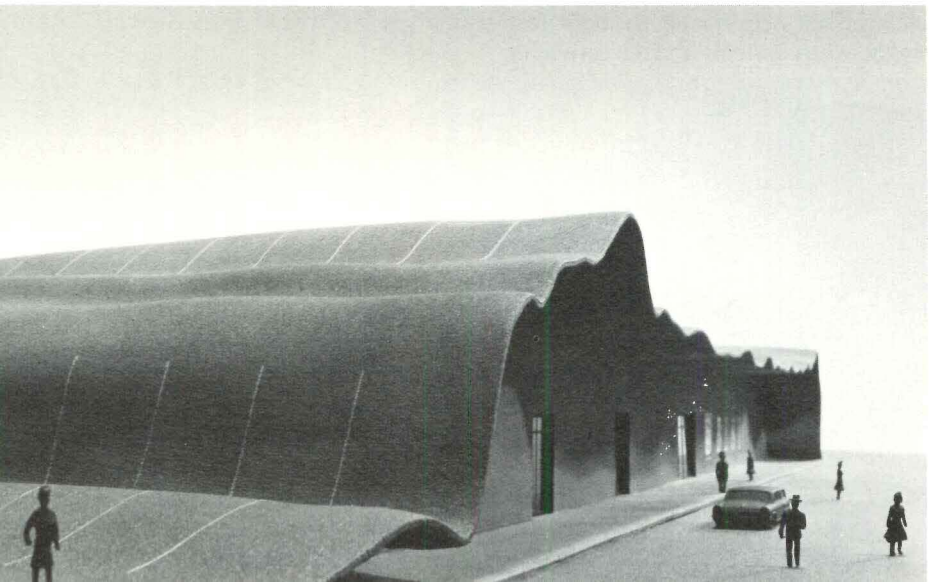




HOW BEST PRODUCTS PROFITS FROM SITE, INC.'S DESIGNS

"The concept," according to SITE, Inc., "is a multiple inversion of the combined ingredients of strip merchandising—parking lots, acres of automobiles, and shoebox warehouses—based on the theory that these eyesores, although condemned by purist designers, are not in themselves bad; it is simply negative attitudes toward them that prevent interesting solutions.





by Edwin Slipek
Best Products Company, Inc.

In the early 1970s, the president and executive vice president of Best Products Company, Inc., scouted the greater Houston area with the intention of expanding their catalog showroom operation there.

The area did not lack for handsome retail establishments. But there was little in the commercial architecture of the city to keep one's attention or expand one's interest.

"It was our first experience in Texas, and we were impressed that each company had a spiffier and showier building than the next," said Frances Lewis, executive vice president, "but after we had left Texas and returned to Virginia, our company's headquarters, we could not remember which company had built which structure. This was particularly true of our competition."

It was then that they decided that Houston might be the perfect location to make an immediate impact, establish identity, and have some fun by engaging SITE, Inc., of New York City to design the facade of the new building.

SITE's first Best work

SITE had its first crack at a Best Products Company building in 1972, when it had been hired to redesign the facade of a showroom in suburban Richmond.

The unassuming red brick showroom had been open for a number of years and had been quietly swallowed up by the suburban commercial strip around it.

"After the building had been built, we thought 'Good grief, this is the perfect ugly public space. Let's get SITE to do something with it,' " said Mrs. Lewis.

SITE's first proposal for transforming the dreary structure called for a "floating" brick roof which would have been constructed over transparent glass mullions. But in order to carry out the construction, business operations would have had to be shut down, and so the design was rejected.

The solution that was accepted and built, without losing a single day of business due to construction, included a "peeling" wall (page 117). The facade gives the appearance of brick facing rolling off the supporting masonry wall.

Three years after completion of the "peeling" facade—in November, 1975—Best Products opened its Houston showroom in the Al-

meda-Genoa shopping center (pages 124-125). SITE's solution here was to give the outer walls a crumbling effect. The building immediately gained notoriety as well as acclaim.

Vending machine merchandising

Although the SITE-designed facades are unique, the interiors of these showrooms are no different from those of some 40 other more conventional Best Products Company showrooms located in eight states. Most Best Products buildings contain some 64,000 square feet of floor space with roughly 70 per cent devoted to warehousing and 30 per cent to retailing. The warehouse occupies the entire second floor and a portion of the ground level.

The design of the sales floor varies little from showroom to showroom. The layout has been devised over the years to provide Best Products with what it considers the most accessible, efficient, and economical way to move customers into the building and serve them.

Best Products distributes over 2.5 million catalogs annually. These include more than 10,000 nationally advertised items—hard goods, primarily, like cameras, jewelry, housewares, appliances, stereos and other electronic equipment, toys, and sporting goods. Catalog distribution is concentrated in households and businesses in communities where Best Products showrooms are located. Thus convenient and immediate pick-up by the consumer is what makes the efficiency of the showrooms more important than they would be for a conventional mail-order retailer.

One sample of each product is displayed on the sales floor. After examining the sample, if a customer wishes to make a purchase, the merchandise is sent down from the second-floor warehouse—in the manner in which candy bars are sold from vending machines.

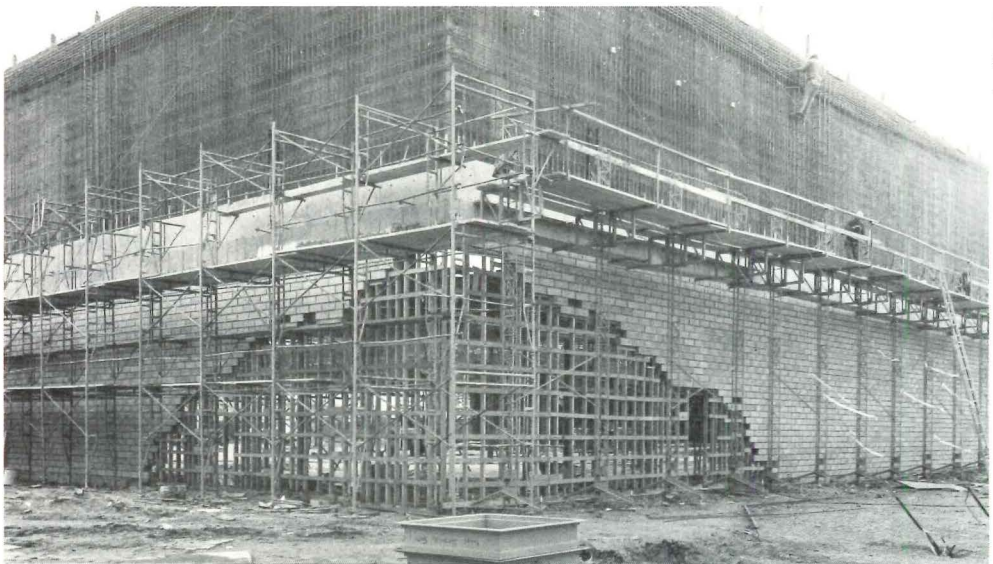
But does SITE's solution sell?

Have the unique SITE-designed buildings helped Best Products' sales? Yes, they have. Andrew M. Lewis, Best Products president, says: "Business increased significantly with the completion of the Richmond SITE design. And in Houston, sales exceeded our budgeted sales estimate by 40 per cent."

Lewis adds that he hopes the SITE-designed Sacramento building, scheduled to open in April of this year, will generate even greater results.

But, according to Lewis, equally important in the company's decision to incorporate novel design in some of its buildings is the hope that the structures are making a broader statement and a contribution to urban design. "We hope our buildings will stimulate citizens to discuss the very nature of art and architecture, function and form in buildings. Concern for the environment—visual and otherwise—is an increasingly important topic.

"We do not think it necessary that business always portray itself as interested only in profits, with no sense of humor," he adds; "business must be willing to experiment sometimes, and to take risks. We hope that these buildings will help humanize those relationships between business and the consumer."



Joe Donovan

Best Products' Sacramento store, now under construction, will be finished this spring.

hat size solar heating system is economical for a house?

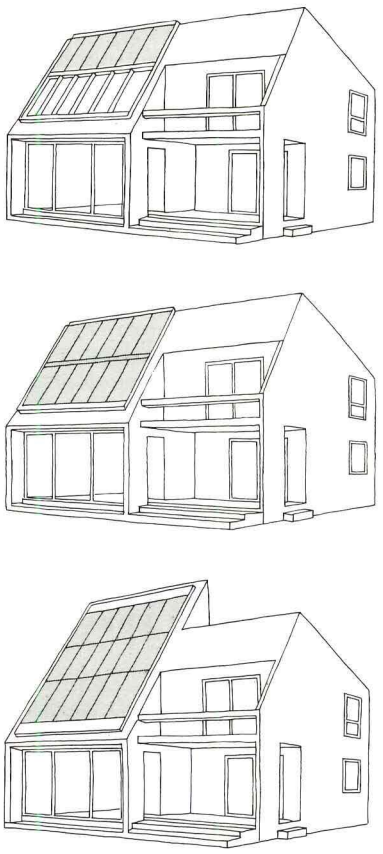
onald Watson, AIA and Fred N. Broberg, P.E.

practicality of solar heating for houses nds, first of all, upon climatic factors and nticipated cost of conventional fuels. The favorable locations are cold, clear cli- s where the heating requirements are high where there is ample winter sunshine—the so if local fuel rates are high.

Some degree of solar heating is economi- ow for northern climates. The most criti- ariable in determining how much solar ng the owner of a house can afford is the of escalation of conventional fuel costs: igher the rate, the more practical are r-capacity solar-heating systems.

Climate, too, is an important variable. e Pittsburgh and Denver are both near 40° latitude, they receive quite different unts of sunshine because of differences in d cover, sky clearness, and altitude. And e Williston, North Dakota is much farther than Denver or Pittsburgh, and has a greater space-heating requirement, its lent winter sunshine makes it as viable a ion for solar heating as Denver. Hartford cluded as a representative New England ion, with moderately high heating re- ements, but only moderate winter sun- availability.

In this article, the economics of six ap- ches to solar house heating are compared ese representative northern climates. For economic evaluations, it was assumed the additional costs of the solar systems mortized over the life of a 20-year mort- at 8½ per cent interest, and that savings in conventional energy are averaged for the 20-year period and divided into monthly-saving increments. Average monthly paybacks in the first table, and in the graphs that follow, are determined by subtracting monthly amortization costs from the monthly energy savings.



These packaged solar houses designed by Donald Watson for American Timber Homes offer three capacities: auxiliary, medium (with heat pump) and large.

Systems range from domestic hot water, to window heat recovery, to space heating

Alternative A: Solar Domestic Water Heating. A small solar collector area (two or three collectors) can supply a major proportion of the year-round requirement for domestic water heating. Solar domestic hot water equipment, now available from many manufacturers throughout the United States, imposes few if any restrictions on the building design.

Alternative B: Window Heat Recovery. An approach to solar heating that is often neglected is the utilization of heat gain from solar-oriented windows, skylights, greenhouses and sun rooms. Window heat, of itself, has the effect of overheating the sunny side of a building while the colder side still calls for heat. Window heat can be recovered, however, and more evenly distributed by an air circulation system that removes heated air from windows, sun rooms and/or upper portions of the house and passes it through rock storage—in effect cooling the house when it is overheated during winter days and storing the heat for some nighttime carryover. Installation costs of windows are part of the normal house construction and rock storage can be built within typical foundations. Sun rooms or greenhouses

MONTHLY PAYBACKS FOR SIX ALTERNATIVES	HARTFORD					PITTSBURGH					WILLISTON					DENVER				
		% fuel increase					% fuel increase					% fuel increase					% fuel increase			
	% sol	0	8	12	16	% sol	0	8	12	16	% sol	0	8	12	16	% sol	0	8	12	16
ALTERNATIVE A domestic hot water	11	4	21	40	72	11	3	19	36	65	8	5	25	46	81	15	7	29	52	92
ALTERNATIVE B window heat recovery	24	-2	10	23	45	21	-4	5	15	31	22	1	16	33	62	36	1	18	35	65
ALTERNATIVE C auxiliary solar space heating	18	-1	24	50	94	17	3	17	38	75	14	1	27	55	103	25	1	28	57	106
ALTERNATIVE D combined alternatives B and C	40	-4	31	69	134	37	-8	21	53	106	34	-1	40	83	156	58	1	43	88	164
ALTERNATIVE E arge capacity solar 20% CA/FA	51	-24	15	57	127	44	-30	0	32	86	42	-20	24	71	151	74	-17	32	84	172
ALTERNATIVE F arge capacity solar 40% CA/FA	70	-41	6	58	145	60	-49	-13	27	93	57	-37	18	76	176	95	-34	24	87	194

hly dollar paybacks are tabulated for six different solar-heating alterna- for a 1200-sq-ft- house in four different climates. The values were derived btracting the monthly amortization (over 20 years) of additional cost of olar equipment from the monthly savings in conventional energy, averaged for the same period. Energy assumed for conventional domestic hot water was electric at 4¢/kWh; and, for space heating, oil at 42¢/gallon. Systems range from domestic hot water, only, to large-scale solar space heating. CA/FA is the ratio of solar collector area to the "heated" floor area.

can gain solar heat without overheating the residence itself.

Alternative C: Auxiliary Solar Heating. Auxiliary solar heating, like window heat recovery, involves only a small investment for partial solar heating. As first suggested to the authors by Everett Barber, Jr., auxiliary solar heating is a system that uses the same components as a solar domestic water installation (Alternative A, above) adding only a few more solar panels to increase collection area, and a heating coil to pipe excess heat into the conventional space heating system. Other than increasing the size of domestic hot water storage slightly, no other heat storage or controls are involved, and thus installed cost and construction requirements are small. The control sequence used—whether to supply domestic hot water first with the excess to space heating, or the reverse—depends upon engineering decisions related to climate and comparative fuel cost. In this article, the former control sequence was assumed.

Alternative D: Auxiliary Solar Heating and Window Heat Recovery. This option combines previous Alternatives B and C. If a window heat recovery system did not have the rock-type heat storage component, then it would be redundant to combine it with the auxiliary space heating system since both would provide space heating on sunny days only. However with heat storage, the daytime heat recovered from the house can be carried over into nighttime hours.

Alternative E: Solar Space Heating with Relatively Small Collector Area. In this option, the collector area is held to less than 20 per cent of the heated floor area and thus imposes little constraint on architectural design while providing sufficient heat to a storage unit for partial carry-over. The solar panels also supply domestic hot water.

Alternative F: Large Capacity Solar Space Heating. This is the same as Alternative E, but with more collectors (approximately 40 per cent of the heated floor area). Of the solar alternatives compared, this option requires the largest construction cost but also contributes the largest percentage of solar heating.

In evaluating solar alternatives such as those just described, the architect and engineer must first of all assess their performance and their esthetic impact. But whether a particular approach is viable or not is determined by the projected energy-cost saving. Life-cycle costing is important to the economics of solar house-heating approaches; and, yet, it involves judgmental decisions about fuel cost increases that directly affect the relative economic merit of the various alternatives being evaluated.

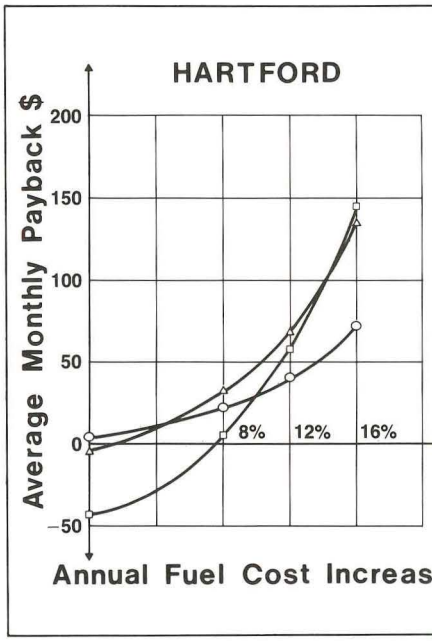
The potential dollar savings (and optimum size of system) depend upon the cost of fuel and the amount of sun available

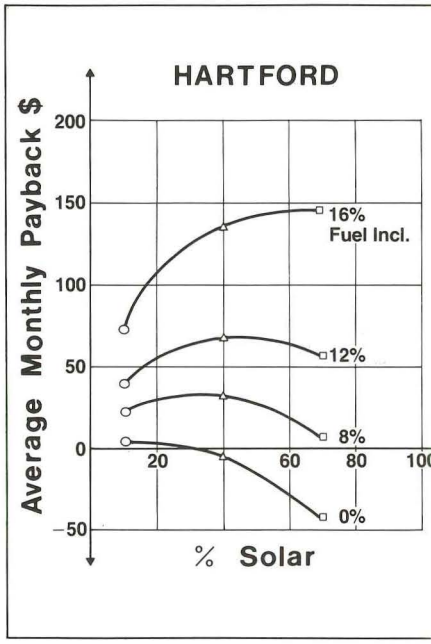
Two series of graphs show how the savings from house solar heating in four different northern climates are affected by the relative costs of conventional energy sources (top), and by the extensiveness of the solar-heating systems (bottom).

Curves at the top show how increases in assumed cost of conventional fuel affect the economics of different-sized solar-energy systems. At the greater increases, the larger systems generally become more and more economical.

From the bottom series of graphs one can determine the optimum percentage of solar-system contribution (the curve peaks) for different assumed fuel-cost increases—0, 8, 12 and 16 per cent.

Climate is a very significant factor. Hartford, for example, has a moderately-high heating requirement, but only moderate sunshine. Pittsburgh is not as cold as Hartford, but has more cloudy days. Denver is colder than Pittsburgh, but its weather and altitude give it good sunshine. Williston, N.D. is near the Canadian border, but it gets a lot of clear days.





○ Alternative A: domestic hot water

△ Alternative D: auxiliary solar space heating with window heat recover and domestic hot water

□ Alternative F: large capacity solar heating (40 per cent CA/FA)

High quality solar equipment was assumed in projecting system installation costs

The same building plan, a one-family 1200-sq-ft house, is used for the tables and graphs, with construction costs and present fuel costs assumed to be equal in all four locations. Housing is a good candidate for solar heating because of its steady demand for relatively low-temperature heating, including a year-round demand for domestic hot water, and generally detached or low-density construction which offers a large surface area exposed to the sun.

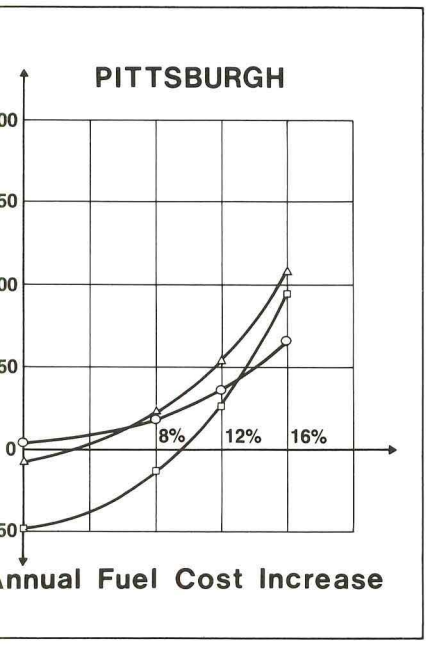
While cost and performance breakthroughs in solar technology can be anticipated, these are not considered in the estimates. The performance and costs of the solar equipment, and the installation costs used in the comparisons represent state-of-the-art estimates. The installation costs used are relatively high, compared to costs claimed by other sources, but the solar-system performance assumed in the calculations also represents high-quality solar equipment. Lower installation costs and lower system efficiencies appear to be directly related at this time.

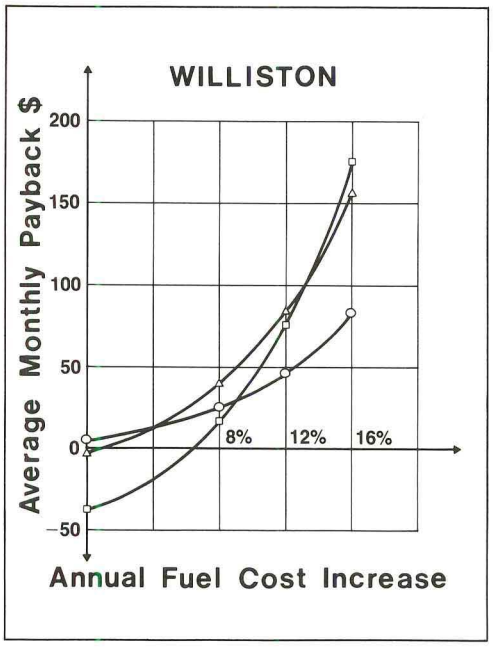
The heating load of the house in the example is greatly reduced by following high-insulation standards, with the result that the total energy contribution of the solar heating systems is smaller (see graph at bottom of page 133). The solar heating payback would look better than the results reported if a higher heat loss due to poorer insulation characteristics were assumed.

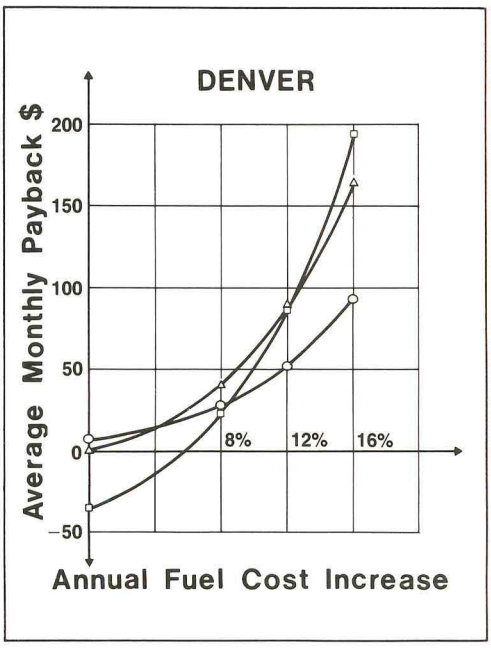
The cost effectiveness of improved insulation standards is so apparent, however, th architect or engineer would obviously us saving techniques first, and *then* compare heating alternatives. The intent of the cor sons is to show what the relative eco merit might be of different solar appro *after* everything had been done by pra construction and design methods to redu fuel requirement.

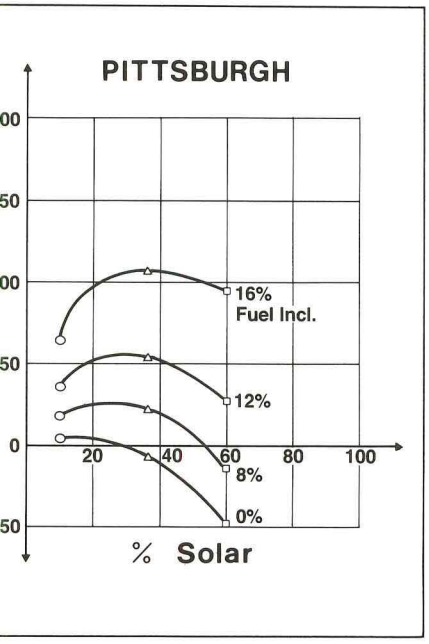
The table at the top of page 134 su rizes the heating-load calculations of th ample house design in the four location design heat losses shown are in the range per cent less than average, reflecting high sulation standards and reduced infiltratio loss that good planning and constr achieves.

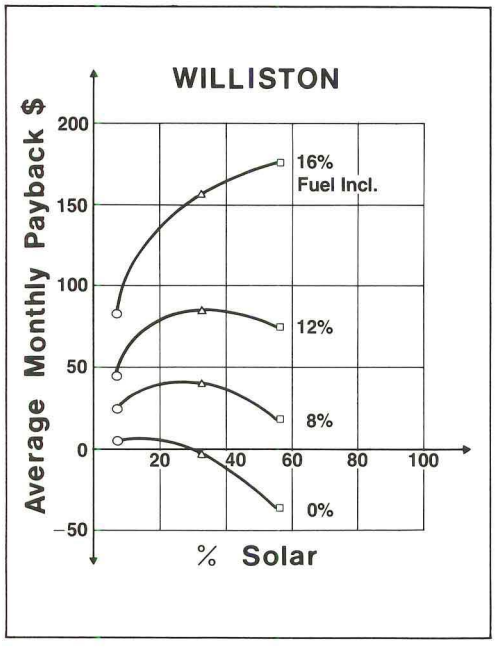
The table on page 131 shows the av monthly fuel cost savings, less finance ch for each of the six alternatives for assume nual fuel cost increases of 0, 8, 12, and cent. The negative numbers in the 0 pe fuel escalation rate column show that i do not increase in cost, the solar investm

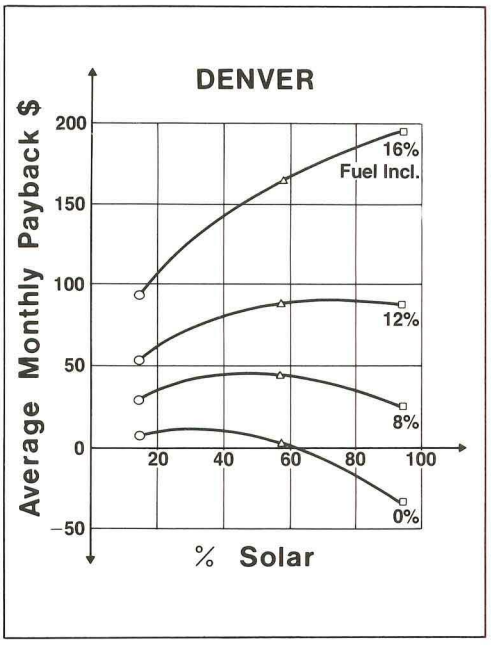








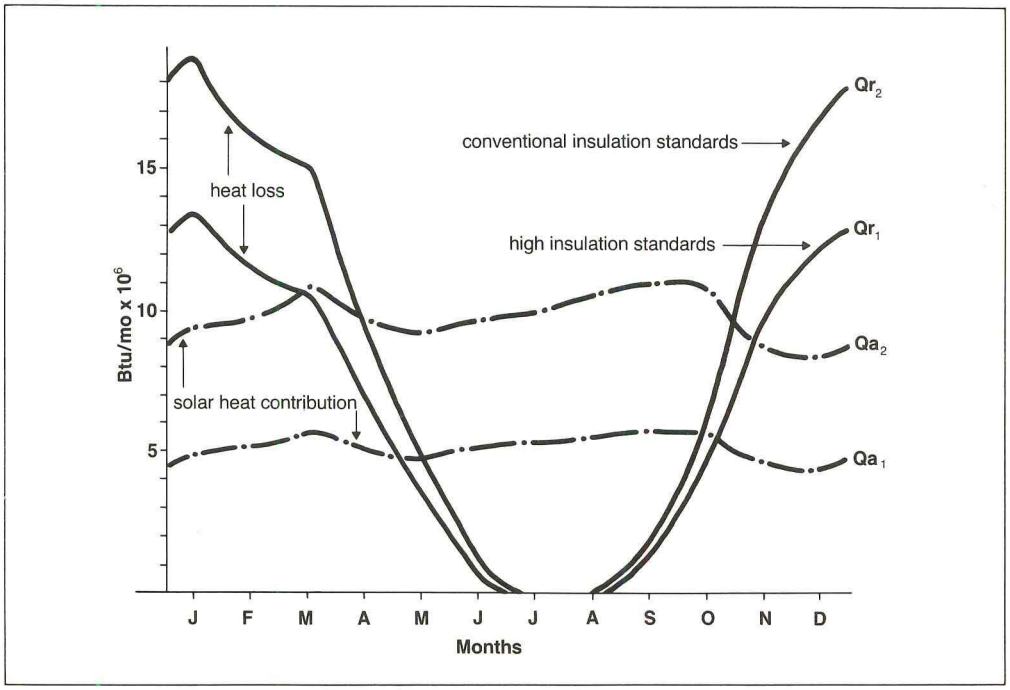




e cases does not pay back within the 20- mortgage period. But, a projection of 8 cent fuel escalation is the consensus of private and government forecasts.

er-cost systems may save more money n climate is favorable and fuel expensive

articular interest in the payback results is act that the order of merit of the six alter- es does not follow the relative order of initial cost. It varies considerably accord- o climate and assumed fuel cost escala- For example, the large-capacity solar- ng approach, *Alternative F,* is among the economical of the six choices at the nt time, even though it may rank highest nvironmental merit" by greatly reducing eliance on nonrenewable and polluting But if fuel escalation increases above 12 ent per year, the economic merit of *Alter- es D* and *E* is highest in nearly every case, ot for Pittsburgh where local cloudiness s a large investment in solar heating still ractive. And if escalation were to rise to



Heat loss for a 1200-sq-ft Denver house built following conventional insulation standards is plotted in solid curve Qr_2, and following high-insulation standards, in solid curve Qr_1. The comparative solar-heat contribution of a solar collector with an area equal to 20 per cent of the floor area is plotted in the dash-dot curve Qa_1, and equal to 40 per cent of the floor area, in curve Qa_2. Although solar energy contributes more heat proportionately to the house with conventional insulation, the investment, over-all, is not as cost-effective.

LOCATION	LAT	ELEV	t_o	DD	DHL (MBH)	YEARLY ENERGY 10^6 X Btu DHW	HTG	TOT
HARTFORD, CT.	42	15	5	6235	35	13	83	96
PITTSBURGH, PA.	40	749	11	5053	33	13	67	81
WILLISTON, N.D.	48	1877	-17	9243	47	14	123	138
DENVER, CO.	40	5283	3	5524	36	13	74	87

	DHW		SPACE HEATING				INSTALLATION	
	CA	tank size	AUX	WA	CA	STO	Cost$	$ mo.
ALTERNATIVE A domestic hot water	56 S.F.	60 gal.					$900	$8
ALTERNATIVE B window heat recovery				300		X	1200	10
ALTERNATIVE C auxiliary solar space heat	93	80	X				2000	17
ALTERNATIVE D combined alternates B and C	93	80	X	300		X	3200	28
ALTERNATIVE E large capacity solar 20% CA/FA	56	60		150	223	X	5800	50
ALTERNATIVE F large capacity solar 40% CA/FA	56	60		150	427	X	8500	74

Solar heating adds a cost that can be recovered from savings in fuel

The top table lists the geographic and weather characteristics of four northern cities, and itemizes the heat-load characteristics of a 1200-sq-ft, well-insulated house located in each city. DHL is the heat loss of the house at outdoor design temperature. Yearly heating loads are given for domestic hot water, for space heating, and for the two combined.

The bottom table lists the areas of solar collectors (CA), sizes of domestic hot water tanks, the larger dhw tank used for auxiliary space heating, and window areas (WA) for the assumed example. Storage (STO) is required for space-heating alternatives (except alternative C) and for window heat recovery.

The costs listed are the dollars required to pay for the additional cost of the alternative systems over that of conventional domestic hot water and space heating systems. The monthly cost is the additional monthly mortgage payment for 20 years at a finance charge of 8½ per cent.

16 per cent, the largest-capacity system would yield the largest monthly payback. And though *Alternatives A, B* and *C* rank low when fuel escalation is above 8 per cent, the table on page 131 shows that when combined *(Alternative D),* and the escalation is between 8 and 12 per cent, this *Alternative* is the most economical option in all four of the climates. The top series of graphs on pages 132 and 133 shows the approximate crossover points of economic merit of various alternatives as a function of changing fuel escalation rates. The bottom series of graphs have the same data plotted in another format to show the optimum percentage of solar capacity for given installation and fuel costs.

The example is limited to a single, though typical, case—that of a house financed under conventional mortgage terms. The economics, however, look poorer than if compared with standard house construction, in which case the paybacks would appear more favorable. Installation and financing costs also depend on individual circumstances. Many individuals are able to undertake a solar installation on different financial terms than used in the example through low-interest building loans. Tax incentives are being considered on the state and Federal level that may further change current economics in favor of solar heating. System cost breakthroughs or performance improvements may result in more cost effective solar installations. Finally, the calculation methods used are monthly averages and result in only general results. Nonetheless, the *relative order* or economic merit of the various alternatives shown in the example would not change.

The study takes a moderate, if not overly conservative, view of solar installation and fuel costs in order to represent the typical case for solar heating with the options that it presents now. The results, in fact, suggest that—in the almost certain event that fuel costs will increase—some sort of solar heating is justified in any northern climate. If only solar domestic water heating and auxiliary space heating systems were to find the place in the residential market, the increase in production of solar equipment would make possible substantial economics of scale which would lead in turn to lower costs for the larger capacity systems. Even now, a middle-range solution might be adopted—an incremental approach to solar heating in which a building is constructed with only a small solar installation at first, such as *Alternates A through D,* with provisions made in the design for adding more capacity in the future, as the economic variables change in favor of increased solar heating. Other factors that could help lower installation costs include "one-contract" supply, installation and servicing; solar building and equipment packaging; and various subsidized economic incentives. In any case, the need is obvious for close coordination between architect, engineer, manufacturer and builder to ensure that a solar installation is appropriate for a building in terms of climate, heat requirement and financing.

Donald Watson, AIA, of Guilford, Connecticut has d
his practice largely to energy-conserving design sinc
when he completed the Westbrook Solar House, one
first in New England to be built on the private mar
has since been involved in over 80 housing designs u
solar energy, including projects for ERDA and HU
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from a new book, *Designing and Building a Solar*
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Fred N. Broberg, P.E., is an engineer with Hill ar
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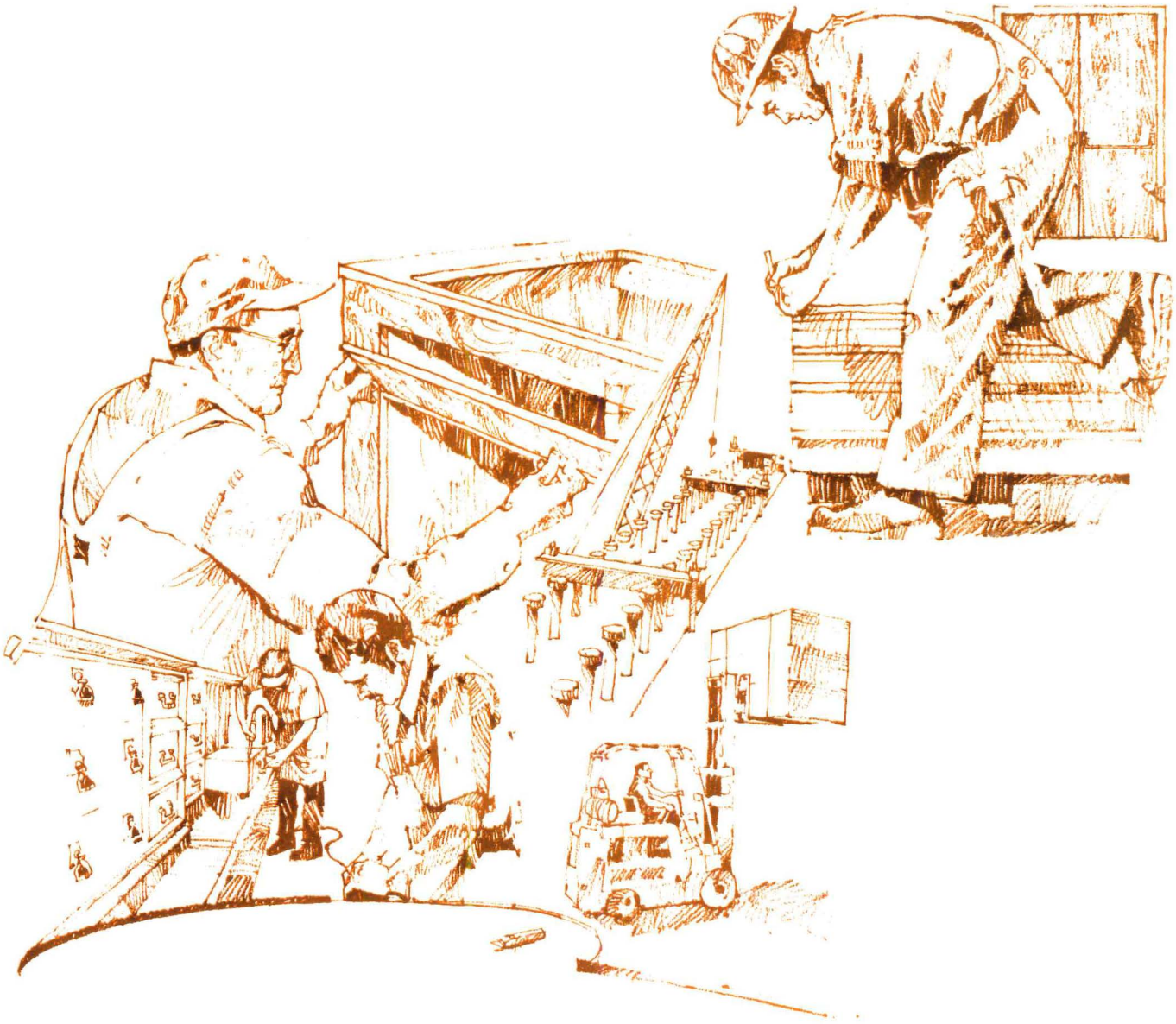

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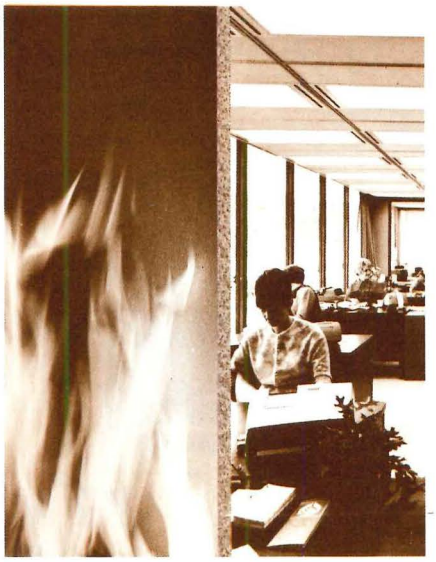

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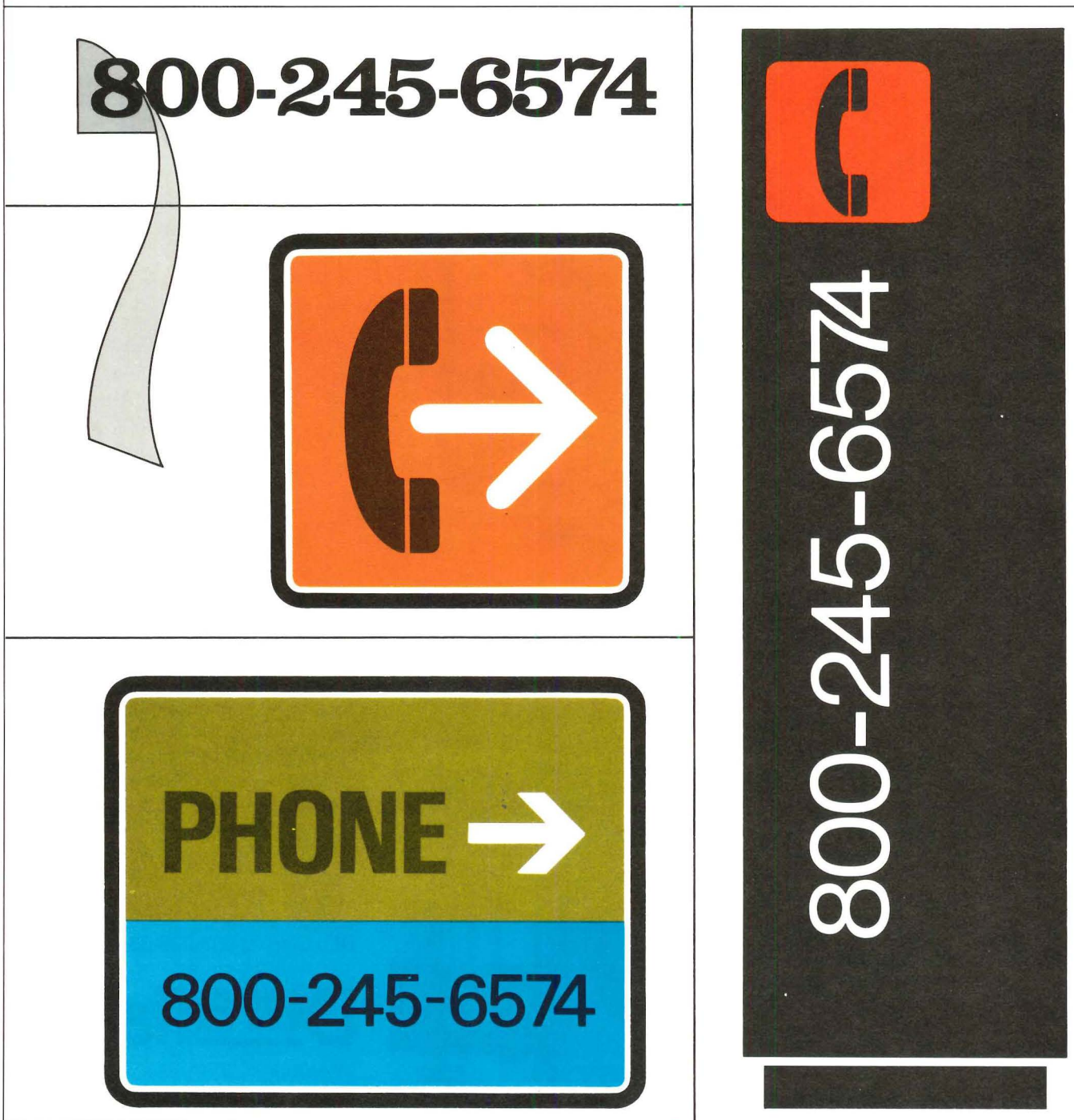

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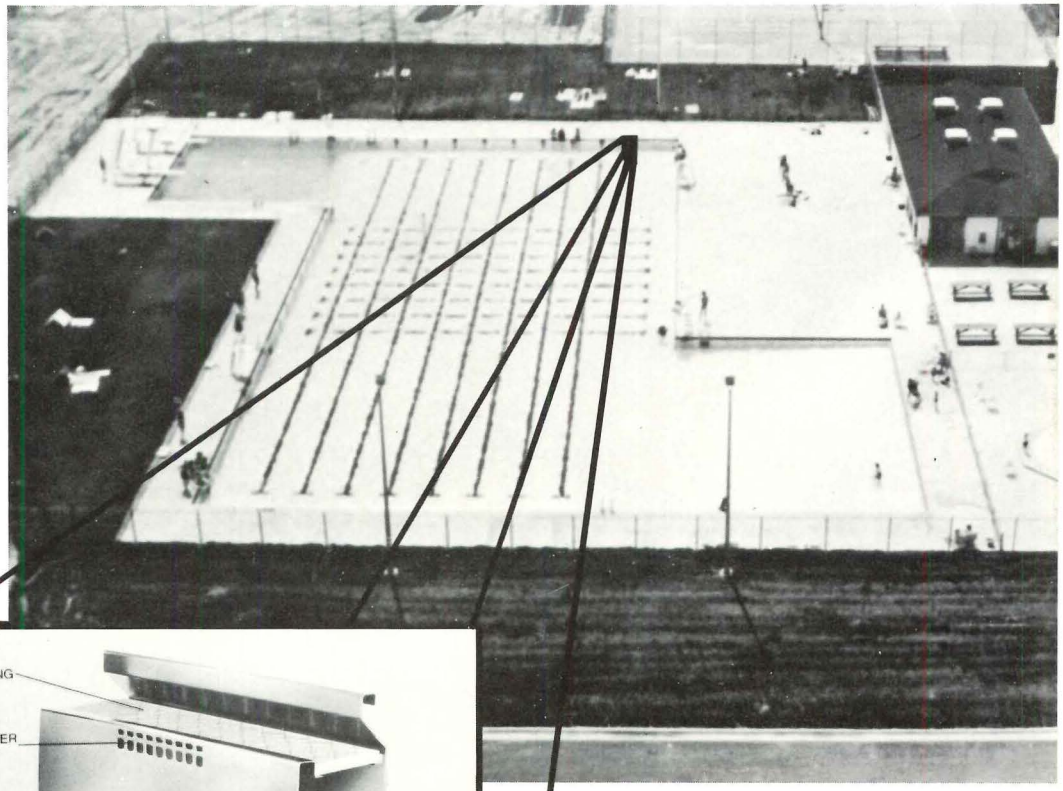

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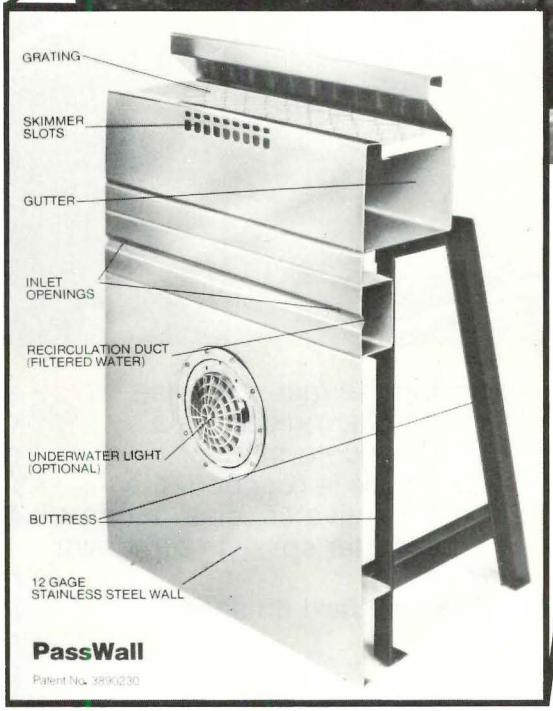

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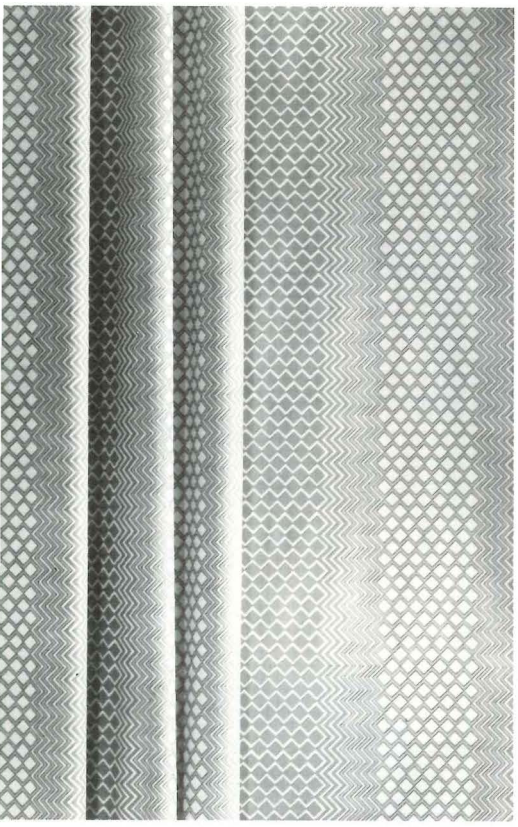

rinted fabrics are scaled for large windows

from Germany, con- fabrics designed by de Boer are scaled windows. "Zodiac" 50-in. wide and 100 cotton, places broad diamonds or herring- a precise rotation so natural folds of the abric emphasize first one, then the other of the positive patterns. "Mala" (not shown), a 52-in.-wide polyester and cotton semi-sheer, is offered in pale monotones. Upholstery and wallcovering fabrics are also available in this line. ▪ Souveran Fabrics Corp., New York City.

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ed contract carpet esigns

d "Cross Bars," two of ts designed by Jack sen for the *Gulistan* Collection, provide a signating special areas oor expanses. The two nown can be used end side by side. Made of emical's second gen- *so* nylon fiber with re- ling characteristics, all ns come in three col- Sapphire, Russet and n. They are made in ths. ▪ J.P. Stevens & New York City.

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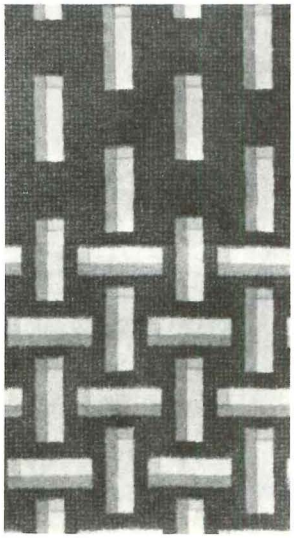

Screen-printed carpet has commercial applications

"Rectangle" is one of four geometric designs in the company's "Watch-tower" commercial carpet line recommended for offices, stores and schools. Sixteen colorations are available. Wear and soil-hiding capabilities of the continuous filament nylon fiber combine with built-in static control. The ⅛-in. gauge carpet meets requirements of HUD-FHA UM44C for Type I, III, Class 1 installations. ▪ Armstrong Cork Co., Lancaster, Pa.

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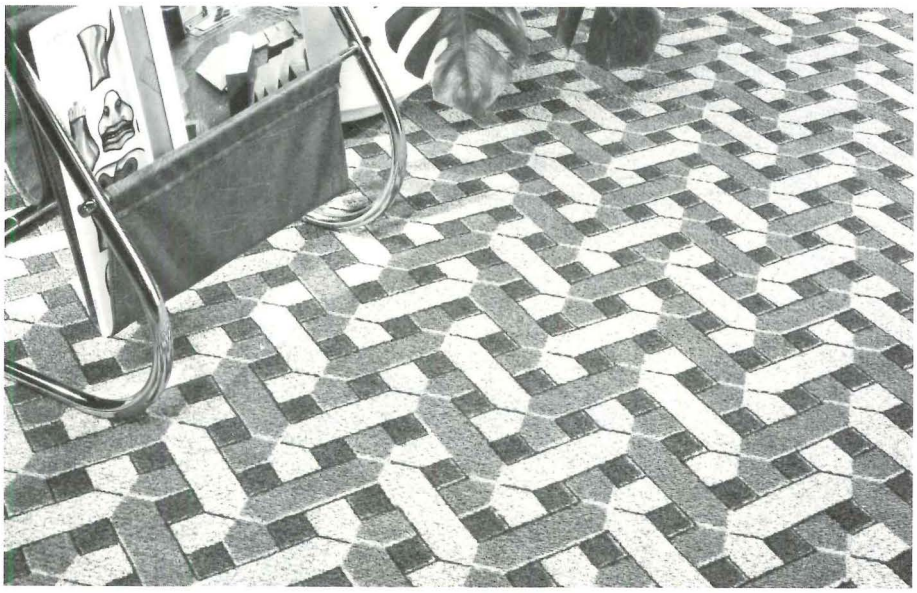

Gray is the keynote color of this 1977 fabric collection

Leathers, fabrics and carpeting in gray predominate in this group. Shown is "Saville Row," a hard finished upholstery fabric in wool and cotton. The affinity between the company's other new wool upholstery fabrics and carpets is often the loosely twisted heather-spun natural yarns used in both. Leather in the collection is very thick, heavyweight and—in the case of "Rhino"—shrunk 25 per cent to exaggerate the wrinkles and natural folds of the skin. Colors range from ivory to russet to gray. The company has introduced wall fabrics in 100-in. widths to minimize seaming: sandy textures, heavy quilting and linen weaves. ▪ Jack Lenor Larsen Inc., New York City.

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UTIONAL CASEWORK / Both standard- and n-built cabinets, dressers, desks, wardrobes, e shown in a new catalog. Units are con- d of high-pressure laminates in either colors or grains; the easy-to-maintain finish is said to be scratch- and oil-resistant. ▪ Hausmann In- s Inc., Northvale, N.J.

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TONE FACING SYSTEM / A detailed brochure es the "Swen-Angle" method for anchoring neer limestone panels to building exteriors. tting system is said to permit the use of the conomical sizes and thickness of limestone, be equally effective on either new con- on or renovation work. ▪ Indiana Limestone c., Bedford, Ind.

Circle 404 on inquiry card

TING GUIDE / Information on how *Creslan* carpet fiber meets various contract specifica- s given in an illustrated booklet. A portion of ochure discusses routine maintenance and moval; a chart lists procedures for the removal e than 60 different types of spots and stains on in contract installations. ▪ American Cyan- Co., Fibers Div., Wayne, N.J.

Circle 405 on inquiry card

R HEATING / An illustrated product brochure everal data sheets on individual air handling lar collection units explain *Solaron* residential mmercial solar heating systems. This method irculating air for transfer of heat from solar col- s directly to the building or to the heat storage depending on the heat demand. ▪ Solaron Commerce City, Colo.

Circle 406 on inquiry card

D DOORS / An eight-page catalog covers a e of wood flush and panel doors, including l solid core UL-listed fire doors. The manufac- "all-six-sides" prefinishing options and door ning capabilities are explained. ▪ Mohawk Doors, Inc., Northumberland, Pa.

Circle 407 on inquiry card

EXTERIOR COATINGS / The results of a manufacturer-sponsored program intended to produce useful guidelines for the selection of cost-effective coatings for buildings are given in a test report. Inorganic and organic coating systems were tested by three independent research firms, using ASTM and other test procedures, over a two-year period. Architectural wall finishes are graded according to their resistance to color change, airborne pollution and contaminants, humidity, and the abrasive effects of airborne particles. ▪ H. H. Robertson Co., Pittsburgh, Pa.

Circle 408 on inquiry card

LAMINATE FILMS/FABRICS / Stock designs of laminate-quality vinyl films and fabrics are shown in a sample and specification brochure. Products described are UL-listed, and can be laminated in continuous coil to non-metallic substrates. "LT" and "LF" series films are 6-mil and 8-mil thick, respectively; available designs include wood grains, textured and smooth solid colors, and fabric-backed vinyl in a woven-burlap texture. These films can be applied to prefinished wall panels, movable partitions, tackboards, etc. ▪ Borden Films, Columbus Coated Fabrics, Columbus, Ohio.

Circle 409 on inquiry card

RESILIENT FLOORING / A 16-page 1977 catalog contains full-color illustrations of all colors and patterns in this vinyl asbestos floor tile line. Also included is information on asphalt tile, feature strip, and cove base, as well as general data on sizes, gauges, installation tips, and light reflectance values. ▪ Azrock Floor Products, San Antonio, Texas.

Circle 410 on inquiry card

VINYL-CORK FLOORING / A sampler kit contains a full-size tile of "Classic" pattern *Cork-O-Plast* bonded vinyl/cork flooring, as well as smaller swatches of the entire line. A brief product description and installation photographs are on the covers of the folder. ▪ ARCO/Chemical Co., Architectural Products, Philadelphia, Pa.

Circle 411 on inquiry card

UNDERFLOOR PLENUM / An underfloor plenum heating/cooling system developed by wood industry groups is detailed in a technical manual. The method is described as an alternative to slab construction, using a combination of an all-wood or concrete perimeter foundation and a wood floor to create the enclosed plenum for the air distribution chamber, eliminating heating ducts. ▪ Western Wood Products Assn., Portland, Ore.

Circle 412 on inquiry card

CARPET DESIGNS / This 36-page workbook is intended to assist the professional in the design of custom carpeting to implement special decorating themes. Illustrations include over-all designs, perimeter and corner motifs, and isolated medallions. The patterns shown are achieved through hand tufting and carving the carpet pile. ▪ Berven of California, Fresno, Calif.

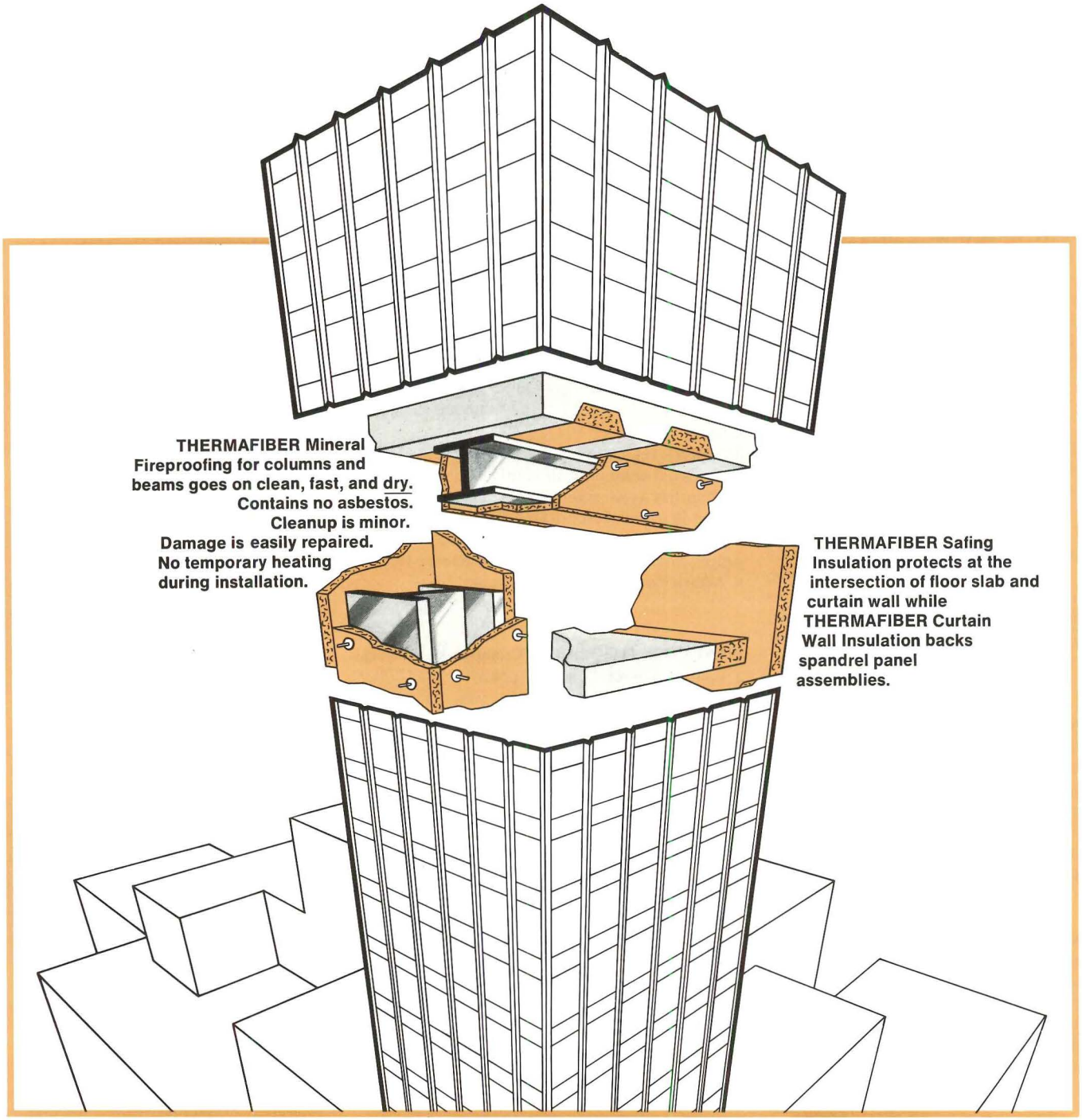
Circle 413 on inquiry card

CONSTRUCTION CASTINGS / Complete dimensional data, photographs, and diagrams covering an entire line of construction castings are included in a 296-page catalog. Among the products described are manhole covers and adjusters, catch basin and curb inlets, drains, and grates, in either gray or ductile iron castings. ▪ Neenah Foundry Co., Neenah, Wis.

Circle 414 on inquiry card

more literature on page 153

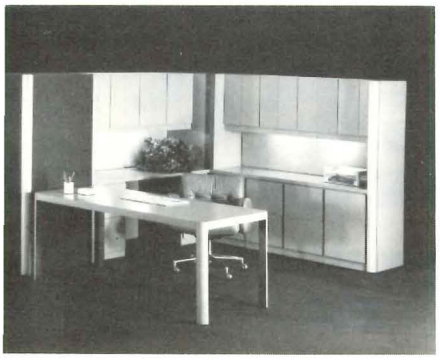
Only a 100% THERMAFIBER® fire safety system is 2000° sure!



It doesn't take a disaster movie to call attention to the life-or-death importance of fire-stopping. Or to remind you of the energy-saving values that a fire safety system contributes. But only one material satisfies both fireproofing and thermal values efficiently. That material is THERMAFIBER mineral fiber. When subjected to the ASTM E119 Time-Temperature Curve, THERMAFIBER did not melt or disintegrate. All other materials tested disintegrated in from 2 to 14 minutes at temperatures from 550°F. to 1375°F. Thus, to get THERMAFIBER protection, you cannot mix other materials in the system. Only an *all* THERMAFIBER system provides such performance. For detailed information and research figures, write to us at 101 S. Wacker Drive, Chicago, Ill. 60606, Dept. AR–37

UNITED STATES GYPSUM
BUILDING AMERICA

For more data, circle 62 on inquiry card



TRACT OFFICES / The self-supporting compo- of the "Advent III System" may be arranged to freestanding office environments with minimal of mechanical connectors. Work stations need e disassembled to suit changing storage require- s: storage modules slide out and are easily ed. Details of the office line, designed by Harvey ber and Charles C. Keane, include rounded ers on all units; built-in planters; invisible fas- s and connector tracks; and task and ambient ng fixtures by Lightolier. ▪ Harvey Probber Fall River, Mass.

Circle 304 on inquiry card

CK-MOUNTED PANELS / Permanent track, ceil- mounted in a modular grid pattern, holds indi- al "Divisiflex 301" panels, which can be ar- ed to form partial space barriers or complete s. A "puck" suspension system permits panels to otiate turns, including right angles, in the track out special adapters or switches. Seals at both and bottom of each panel complete the closure floor to ceiling, and act to reduce noise trans- ion. The panels are said to move easily, and can earranged without custodial help. Panels may be aced in textured vinyl, chalkboard, and sound- rbing carpet. ▪ Modernfold, New Castle, Ind.

Circle 305 on inquiry card

ITEPRINTER/BLUEPRINTER / The "EconoJet" o copier is said to combine a small per-copy cost high quality printing and developing. Copier sures 9- by 60- by 12¾-in., and can be used ei- on a desk-top or wall-mounted. The unit has a imum speed of 9 ft per minute, and a printing th in excess of 42-in. by any length. "EconoJet" ters meet all OSHA standards. ▪ Teledyne Ro- e, Stirling, N.J.

Circle 306 on inquiry card

ELECTRIC-EYE FAUCET / Using a photo-sensitive beam to regulate water flow, *Aquatron* 12-volt DC solid-state sink controls let water flow when hands interrupt the beam; water stops automatically when hands are removed from the beam. The unit can be included in new sink installations or used to convert existing units. *Aquatron* features preset water temperature and adjustable pressure regulation when used in conjunction with a hot/cold mixing valve; the electric eye is not affected by sunlight or room lights. The device fits any sink, and is said to be easy to install and economical to operate. Suggested applications include public rest rooms, restaurants, health care facilities, etc. ▪ Qualco, Los Altos, Calif.

Circle 307 on inquiry card

WOOD INSULATING WINDOWS / Designed for cold weather area use in multiple-housing construction, these *Perma-Shield* window units feature removable storm panels installed over double-pane insulating glass. The panels are said to improve insulation effectiveness more than 35 per cent over double-pane glazing alone. Windows are constructed with a rigid vinyl sheath over preservative-treated wood core sash and frame; weatherstripping is factory-applied. These triple-glazed units are available in *Perma-Shield* casement, awning, and double-hung windows, as well as some primed wood units. ▪ Andersen Corp., Bayport, Minn.

Circle 308 on inquiry card

more products on page 145

MORE IS LESS.

Get the extra protection of a fluoropolymer coating at significantly lower cost. With DURANAR® 200 coatings.

It's as easy as PPG.

More protection at less cost — that's what you get with DURANAR 200 coatings. And that's what you'll find on this Montana power plant — DURANAR 200 coatings on siding and roofing panels of pre-coated Reynolds Aluminum.

The more-for-less secret is twofold:

First, DURANAR 200 coatings are based on KYNAR* resin to give you long-life fluoropolymer protection. You know how tough that is.

Second, PPG's patented combination of resins (U.S. Patent #3449466) gives you that fluoropolymer protection at a cost significantly lower than other fluoropolymer coatings.

And exactly what does a DURANAR 200 coating give you? It gives you a surface that's virtually maintenance-free, with beauty, durability, and color integrity that last for years. It's extremely flexible, extremely color-fast, extremely resistant to UV erosion. It's a two-coat system that can be applied to aluminum and galvanized steel, available in a wide range of colors in flat and semi-gloss finishes. And its color compatibility is excellent even with long-span and adjacent surfaces.

For all the details, write to Tom Keeling, Market Manager, Coil Coatings, PPG Industries, Inc., Pittsburgh Drive, Delaware, Ohio 43015. Or call him at (614) 363-9610.

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For more data, circle 64 on inquiry card

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4-22

Installation: Colstrip Generating Plant, Colstrip, Montana
Owners: The Montana Power Company, Butte, Montana
Puget Sound Power & Light Company, Bellevue, Washington
Engineering/Construction: Bechtel Power Corporation, Colstrip, Montana
Coater/Fabricator: Reynolds Metals Company, Richmond, Virginia
PPG Products: DURANAR 200 fluoropolymer coating

Coil Coatings

PPG INDUSTRIES

RAL FIBER FLOORCOVERING / A grass-type carpet, "Ribbed Aloe" is woven in Belgium in both a 4-meter-wide ribbed weave (shown), and a single-ply flat weave in 2-meter widths. The natural-fiber, bone-colored carpet l to have excellent acoustical properties; its latex backing should simplify installation on wall or floor. ▪ Saxony Carpet Co., Inc., New City.

Circle 309 on inquiry card

TOOL / A new addition to this manufacturer's contract seating collection, the "Lisa" stool has a beech wood frame with cylindrical legs in a buffed finish. The slung seat is of natural saddle leather. Bar stool is 37½-in. high, 15-ep, and 17½-in. wide. ▪ Intrex Inc., New City.

Circle 310 on inquiry card

T HINGE / This reinforcing pivot hinge is designed to transfer excess opening force on frequently used doors through the pivot into the jamb. This action is designed to reduce hinge wear and sagging, and improperly closing doors. ivot hinge is easily installed, and units are ble for both full-surface and half-surface appli-ns, with 3½-, 4-, 4½-, and 5-in. hinges. ger Hinge Co., St. Louis, Mo.

Circle 311 on inquiry card

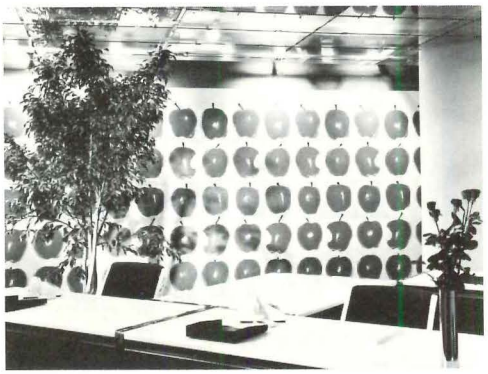
TING FIXTURES / Said to be appropriate for accent lighting in retail stores, restaurants and theaters, as well as for residential use, these "Small Bullet" fixtures are available in three styles. All can be wall-, ceiling-, or stem-mounted, and come either single or double fixtures. Four finishes are ard: satin aluminum, satin brass, matte white or black. ▪ Kosman Lighting Equipment Co., rancisco, Calif.

Circle 312 on inquiry card

TING TIMESAVER / A transparent, pressure-sensitive adhesive backed sheet, *Typiton* vellum has a special finish that will take a clear, reproducible impression from a standard typewriter. A draftsman need not stencil or handwrite title blocks, texts, etc. These can be typed directly onto *Typi-*sing an appropriate typeface; the backing is d off; and the clear sheet with the text material oned on the drawing. Repetitive details, dia-, or other drawings may be reproduced from ster directly onto *Typiton* sheets using repro-ic copiers. In either case, copies of the com-d drawing are said to appear as though the text peated detail has been drawn directly onto the al. ▪ Ameropean Corp., Hamden, Conn.

Circle 313 on inquiry card

more products on page 146

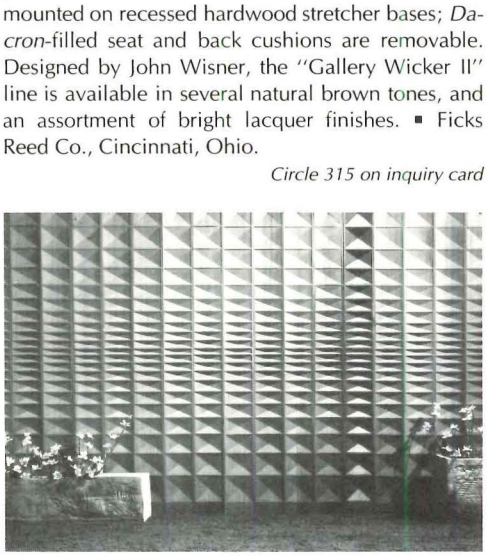


CONTRACT WALLCOVERINGS / Eleven murals and three companion repeat patterns are included in this wallcovering collection. Designs generally offer small- and large-size figures on 10-ft backgrounds; materials include asbestos-backed stainless steel, buckskin, suede and patent vinyls, and mylar. Pattern pictured above is "Frailty," a mural-repeat. ▪ The Jack Denst Designs, Inc., Chicago, Ill.

Circle 314 on inquiry card

WICKER CONTRACT FURNITURE / The 84-in. sofa and 60-in. love seat pictured are part of the "Gallery Wicker II" collection of furniture for commercial and residential use. Also included in the line are armless chairs, ottomans, and a corner seating unit. The pieces have double-walled woven wicker frames mounted on recessed hardwood stretcher bases; *Dacron*-filled seat and back cushions are removable. Designed by John Wisner, the "Gallery Wicker II" line is available in several natural brown tones, and an assortment of bright lacquer finishes. ▪ Ficks Reed Co., Cincinnati, Ohio.

Circle 315 on inquiry card

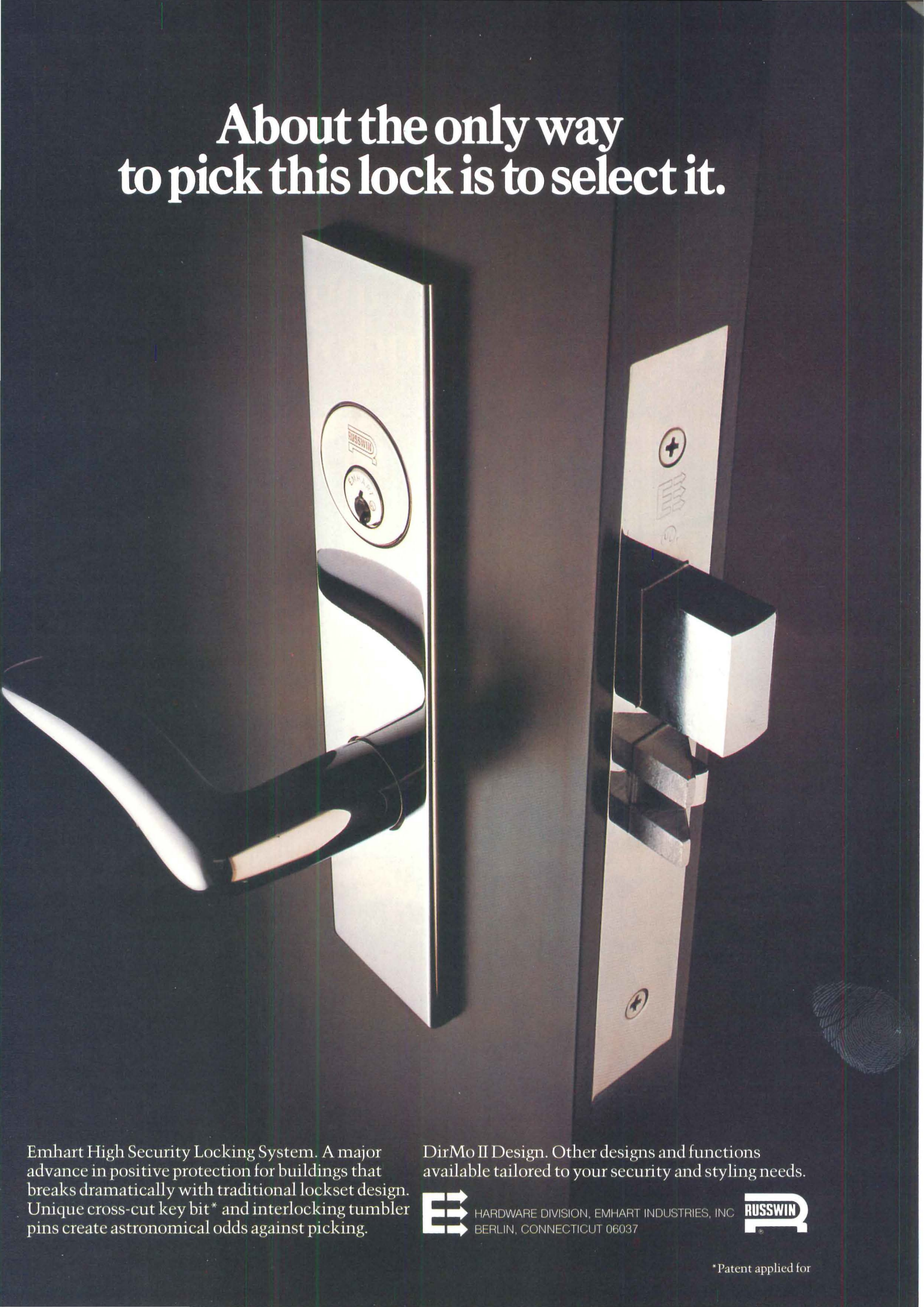


WALLS PANELS / "Panelcarve 1400 Series" features a geometric design theme displaying a variety of shadow effects on carved wood. The 1-in.-thick panels are available in 9- by 36-in., 9- by 48-in., and 9- by 96-in. sizes; a tongue-and-groove edge detail is said to permit easy assembly without surface nailing. Wall panels are all-heart vertical grain redwood, in several finishes. The "1400 Series" may also be ordered in Honduras mahogany, oak and other hardwoods. ▪ Forms and Surfaces, Santa Barbara, Calif.

Circle 316 on inquiry card

more products on page 149

About the only way to pick this lock is to select it.



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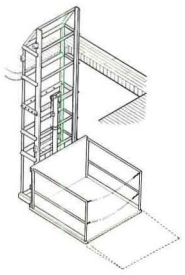
The bigger the project, the more you need to be sure of the windows. We've furnished windows like these Casemasters for projects requiring several *thousand* units. The Casemaster is beautiful, rugged, easy to operate, and tight. Those are some of the reasons they get specified. Another is that Marvin can deliver big numbers of windows on a tight schedule, including prefinished units set up and ready to go into the opening. Write for complete information on these and other fine Marvin units. Marvin Windows, Warroad, MN 56763. Phone: 218-386-1430.

PRODUCT REPORTS *continued from page 146*

VERTICAL LIFTERS / Electric-powered vertical lifting platforms do not need a pit for either portable or stationary installation. The freestanding lifters are constructed in sections, and can be quickly installed in existing buildings, according to the manufacturer. Capacities and lift heights range up to 50,000 lbs and 60 ft. Units are powered by electric hydaulic or cable drive; either power option can be mounted inside the framework, or at a remote location. Platforms are supplied with fixed or removable pipe rails, hinged or upsliding gates; side thrust rollers compensate for uneven loading of the platform. Suggested applications include freight handling, dock loaders and levelers, mezzanine service, etc. ▪ Giant Lift Equipment Mfg. Co., Everett, Mass.



Circle 317 on inquiry card

WOODGRAIN LAMINATE / "Jacobian" is a parquet pattern of medium and dark toned woodgrain "blocks," available in both general purpose "H-5" and postforming "HF-5" grade high-pressure plastic laminates. The laminate surface is suitable for a variety of residential and contract applications, including furniture, cabinets, doors and commercial fixtures. ▪ Exxon Chemical Co. U.S.A., Odenton, Md.

Circle 318 on inquiry card

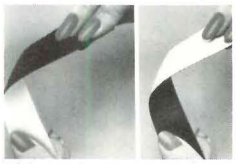
DIAZOPRINTER / Model "172FL" fluorescent, table-top diazoprinter features a negative-pressure developer tank for ventless operation, and provides full domestic and international size capability with a 47½-in. printing width. Synchronized printing and developing is said to ensure processing of long prints without damage; solid-state controls provide repeatable speed settings of up to 15 ft per min. ▪ GAF Corp., Reprographic Products, New York City.

Circle 319 on inquiry card

LANDSCAPE FURNITURE / "Wood-Ware 20" is a series of modular area landscaping blocks, which include lighting, benches, planters and graphics. Units are constructed of either rough-sawn or smooth-surface cypress, redwood and cedar, with the specifier's choice of signage and logo graphics. ▪ Street Lighting Equipment Corp., Woodside, N.Y.

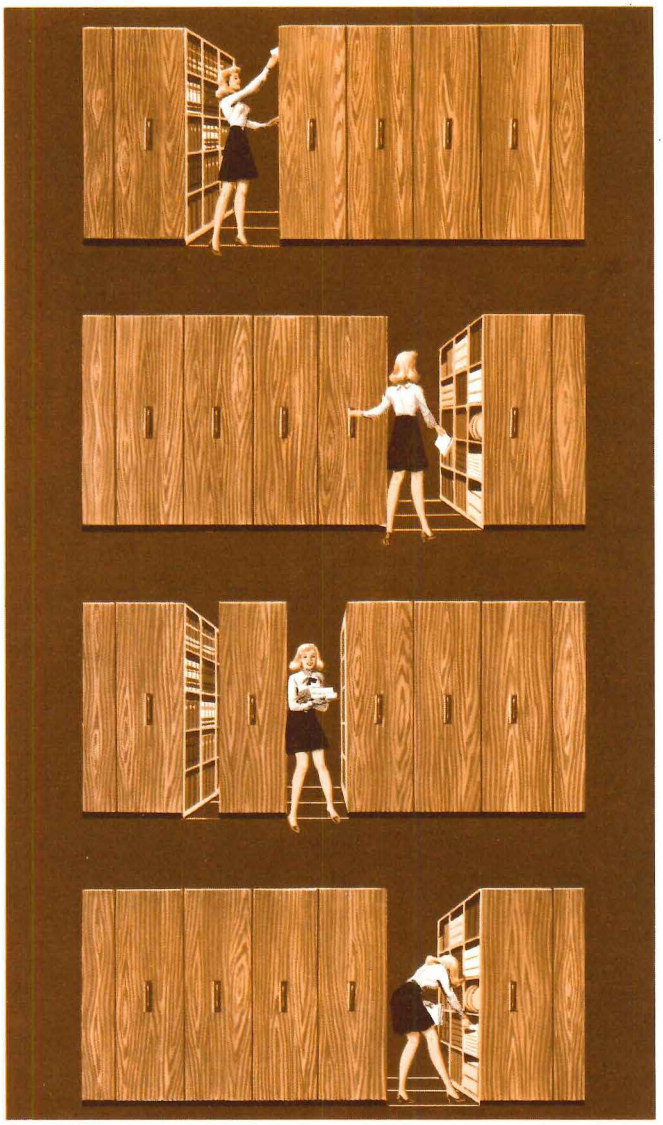
Circle 320 on inquiry card

WINDOW BLINDS / Colors featured in the "Tiltone" line of 1-in. window blinds may be specified on either the top (convex) or bottom (concave) side of the slat; the other side will be white. This option permits the use of bright colors and striping on the side of the blinds that normally face interior spaces without affecting the uniform exterior appearance. ▪ Levolor Lorentzen Inc., Hoboken, N.J.



Circle 321 on inquiry card

more products on page 151



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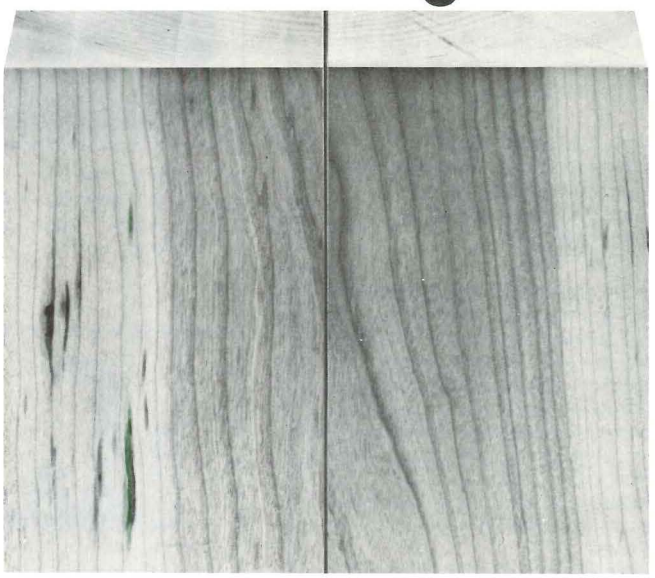
Just like no hinge at all



Now you see it. Now you don't!

The hinge that hides

Some hinges are decorative. Some are functional. But only one hinge is invisible.

So when the best hinge would be no hinge at all, specify Soss.

Choose from 18 models and four finishes. All models open 180° and disappear when closed.

Complete specifications are in Sweet's. Or, write to Soss Mfg. Co., Div. SOS Consolidated Inc., P.O. Box 8200, Detroit. Mi. 48213.

the SOSS Invisibles

For more data, circle 72 on inquiry card

LIGHTING KIOSK / Constructed of molded reinforced fiberglass, these freestanding units can be used to provide indoor or outdoor lighting in malls, parks, etc., and to display advertising. Other models, with doors and windows, may be used as self-contained selling centers or information booths. Kiosks are available in heights of from 5- to 10-ft, and diameters of 2- to 6-ft; over a dozen colors are offered for both top and bottom sections. Individual units are constructed from two parts: internal flanges on the top piece fit into the base for nut-to-bolt assembly. Completed kiosks are said to withstand wind loads of 100 mph. ▪ Visual Products Co., Melville, N.Y.

Circle 322 on inquiry card

PUSH BAR EXIT / This mortise exit device can be readily adapted to many narrow stile glass doors and metal frames, according to the manufacturers of the "8400 Series" life safety push bar. The bar itself is 2⅜-in.-wide by 30-, 36-, 42-, or 48-in.-long. Non-standard door sizes can be accommodated by shortening the next larger bar. The latchbolt is operated by a 1-inch straight travel, rather than a downward arc; normal unloaded release pressure required is 8 lbs. Standard finishes are satin aluminum, and bronze or black anodize. ▪ Adams Rite Mfg. Co., City of Industry, Calif.

Circle 323 on inquiry card

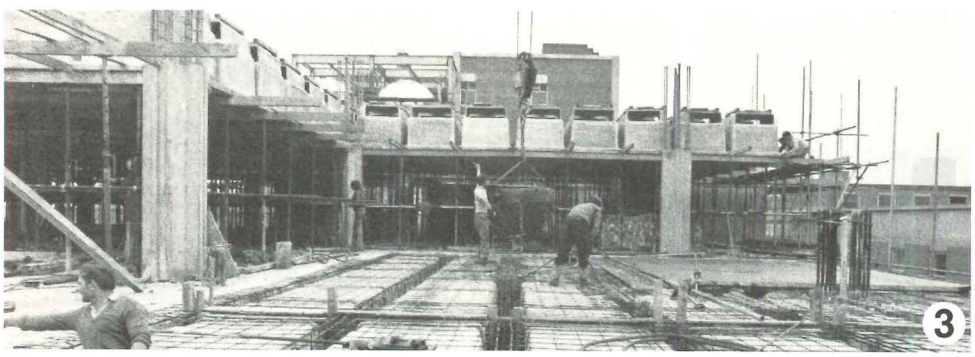
WASHROOM PARTITIONS / Low maintenance costs are claimed for these prefabricated crystalline marble interior partitions for washrooms, shower stalls or dressing rooms. *Marblstal* partitions resist moisture, odors and stains; compartments include chrome-plated brass hardware and are available with either red oak or birch veneer doors. Units designed for the handicapped feature out-swinging doors and grab bars on each side partition. ▪ Georgia Marble Co., Structural Div., Nelson, Ga.

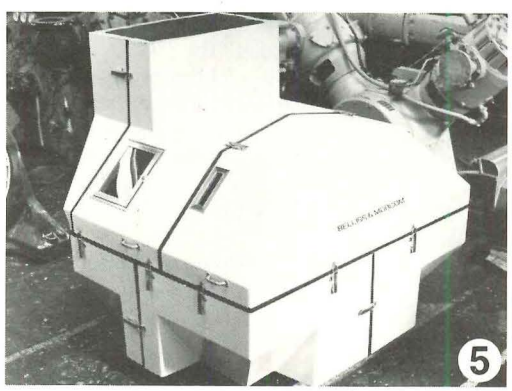
Circle 324 on inquiry card

UNIT HEATERS / These wall-mounted forced-air unit heaters may be ordered in capacities of 2000 to 5000 watts; heating elements are all-steel finned sheath type. The front grille is designed to withstand heavy impact abuse and vandalism; a "Zero Voltage Reset" thermal cut-out provides protection if normal operating temperatures are exceeded. The "3420" and "3450" series heaters offer several factory-installed control systems, including hydraulic-type thermostats; relays for remote pilot duty control or time clock night set-back programs; and built-in circuit breakers for multiple heater hook-up to feeder and feeder taps. ▪ Markel Electric Products, Inc., Buffalo, N.Y.

Circle 325 on inquiry card

TAKE A GOOD CLOSE LOOK AT Cem-FIL® AR GLASS FIBER, GLASS REINFORCED CEMENT...





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Graham Associates. Manufacturer: Olym
Stone, Seattle, Washington.

#3—Lost Form Work
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form the five floors of this brewery buildi

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OFFICE LITERATURE *continued from page 141*

FIRE PROTECTION EQUIPMENT / An extensive line of fire extinguishers; modular cabinets for hoses and valves; standpipes and connectors are shown in a 32-page catalog. Featured is a cabinet identification device in which the one-piece cast handle has raised brushed finish letters spelling "FIRE," eliminating the need for decals or signs that can be removed or damaged. ▪ J. L. Industries, Bloomington, Minn.

Circle 415 on inquiry card

RADIANT HEATING / An eight-page construction guide provides design and installation instructions for the *Panelectric* ceiling radiant heating units, intended primarily for homes and low-rise apartments. ▪ Gold Bond Building Products, Buffalo, N.Y.

Circle 416 on inquiry card

PORCELAIN-ON-STEEL PANELS / A 16-page catalog describes interior and exterior applications for insulated porcelain-on-steel panels, giving installation instructions, specifications and recommended core materials. Another section is devoted to uninsulated panels for interior and exterior use, with photographs of panels in manufacturing plants, clean rooms, hospital laboratories and elevators. A final section deals with "Vitriform 90," a procelain-on-steel material that can be formed—with the porcelain already on it—at angles up to 90 degrees without spalling, chipping or crazing. ▪ AllianceWall Corp., Wyncote, Pa.

Circle 417 on inquiry card

COMMERCIAL/INSTITUTIONAL FLOORING / All current colors and patterns of *Vinylast* and *Terralast* solid vinyl tiles are shown in a floor product catalog. Also included are vinyl wall base, corner pieces, carpet runners and adhesives. ▪ Vinyl Plastics, Inc., Sheboygan, Wis.

Circle 418 on inquiry card

PROTECTIVE COATINGS / A coating systems guide details selection, preparation, and application of protective coatings for floors, stairways and steel decking in industrial and commercial facilities. Coatings designed to resist foot traffic, severe abrasion, chemical spills and constant washing are discussed. ▪ Rust-Oleum Corp., Evanston, Ill.

Circle 419 on inquiry card

WOOD FRAMING / A series of six folders discuss specific ways to lower wood framing costs in residential construction. Detailed plans illustrate such suggestions as correlating lumber spans to standard lengths; permitting the use of thicker insulation by framing with 2x6 studs at 24-in. intervals; and utilizing the full span capabilities of lumber. ▪ Southern Forest Products Assn., New Orleans, La.

Circle 420 on inquiry card

SILICONE/URETHANE FOAM / The advantages of "3-5000" silicone rubber/urethane foam roofing and insulation system are given in an illustrated brochure. ▪ Dow Corning Corp., Midland, Mich.

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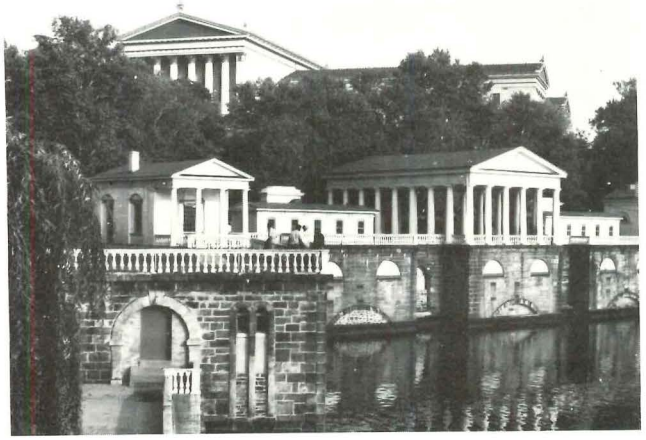
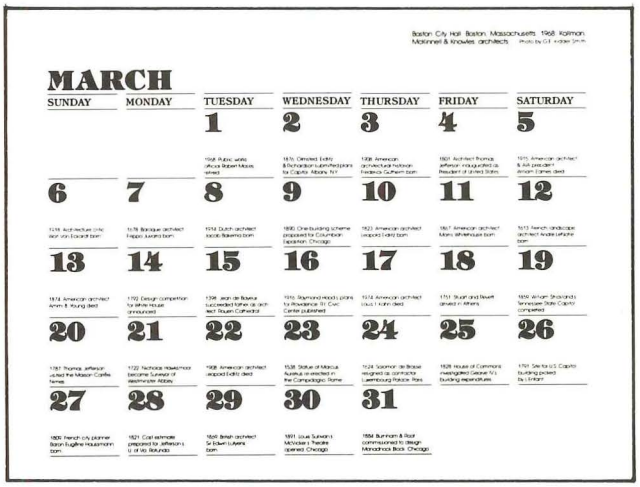
GARAGE DOORS / Six door series are covered in this 24-page industrial and commercial catalog: steel, fiberglass, combination steel/fiberglass, wood panel, wood flush, and aluminum. Specifications include construction details, track, spring counter balance, lock options, weather seals, and wind load data. ▪ Raynor Mfg. Co., Dixon, Ill.

Circle 422 on inquiry card

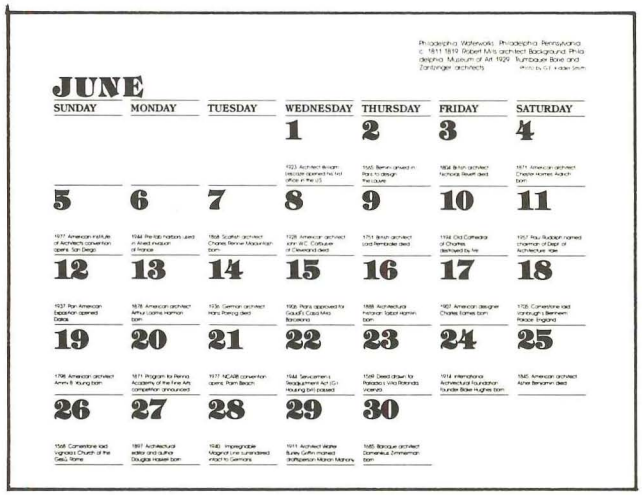




Boston City Hall, Boston, Massachusetts. 1968. Kallmann, McKinnell & Knowles, architects. Photo by G. E. Kidder Smith

MARCH

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		



Philadelphia Waterworks, Philadelphia, Pennsylvania. c. 1811-1819. Robert Mills, architect. Background, Philadelphia Museum of Art, 1929. Trumbauer, Bare and Zantzinger, architects. Photo by G. E. Kidder Smith

JUNE

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

The All-New 1977 Calendar of Historic Architectural Event

The 1977 Architectural Calendar is better than ever! It is all ne 365 more historic events in architectural history and 13 m stunning architectural photographs by award-winning archit photographer G. E. Kidder Smith, FAIA. And, for the first ti this year's calendar is designed to be used as a write-in d calendar as well as a wall calendar! They said it couldn't be do but the 1977 Architectural Calendar continues its daily c memoration of memorable architectural events . . . famous fi in architecture and engineering . . . births and deaths of world's greatest architects and engineers . . . significant, am ing and little-known facts that inform and surprise even the m knowledgeable . . .

- The day Palladio was fined for absenteeism from the constr tion site
- The day the Parthenon was "rediscovered" during the Ren sance
- The day that Latrobe complained that architecture wasn't a profession for a gentleman"
- The day Michelangelo began painting the Sistine Chapel
- The day Thomas Jefferson insured Monticello—for $6300
- The day Inigo Jones loaned his client (and King) £500
- The day the Congressional Medal of Honor was awarded famous American architect
- The day Disneyland opened

. . . these and hundreds of other bits of history make the 1 Architectural Calendar a valuable source of architectural kno edge and a true collector's item.

Illustrated with 13 beautiful, full-color photographs illustra the architectural heritage of the United States, this calendar make a handsome and decorative addition to your home or off and would make a much-appreciated (and inexpensive) gift. T strikingly designed calendar is printed on luxurious enamel st in an oversized, 9x12″ format. Only a limited number of calend are being printed this year, so in order to avoid disappointm order today! Send your payment for $5.00 to Architectural Rec Books, 1221 Avenue of the Americas, 41st Floor, New York, N 10020, or use the handy order blank below.

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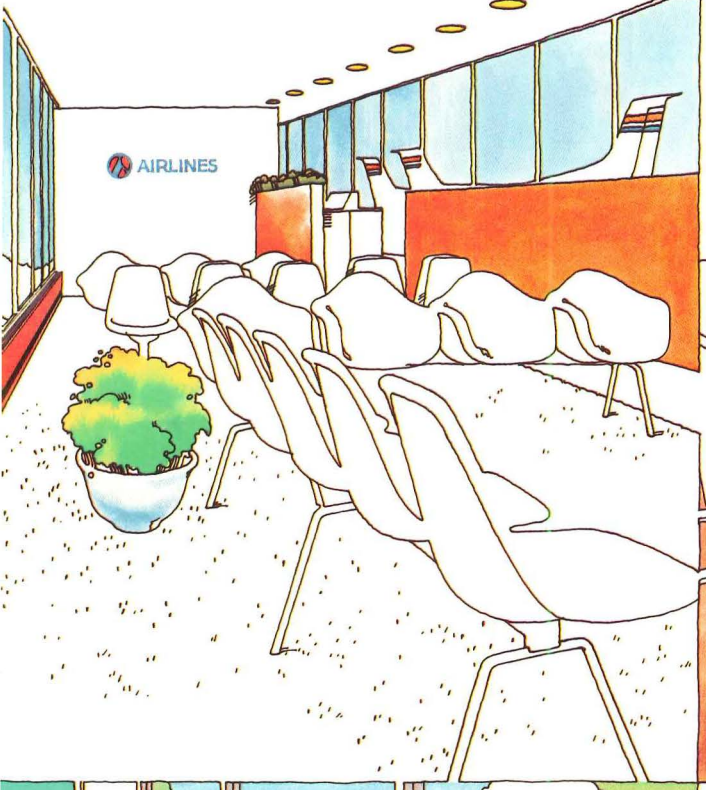

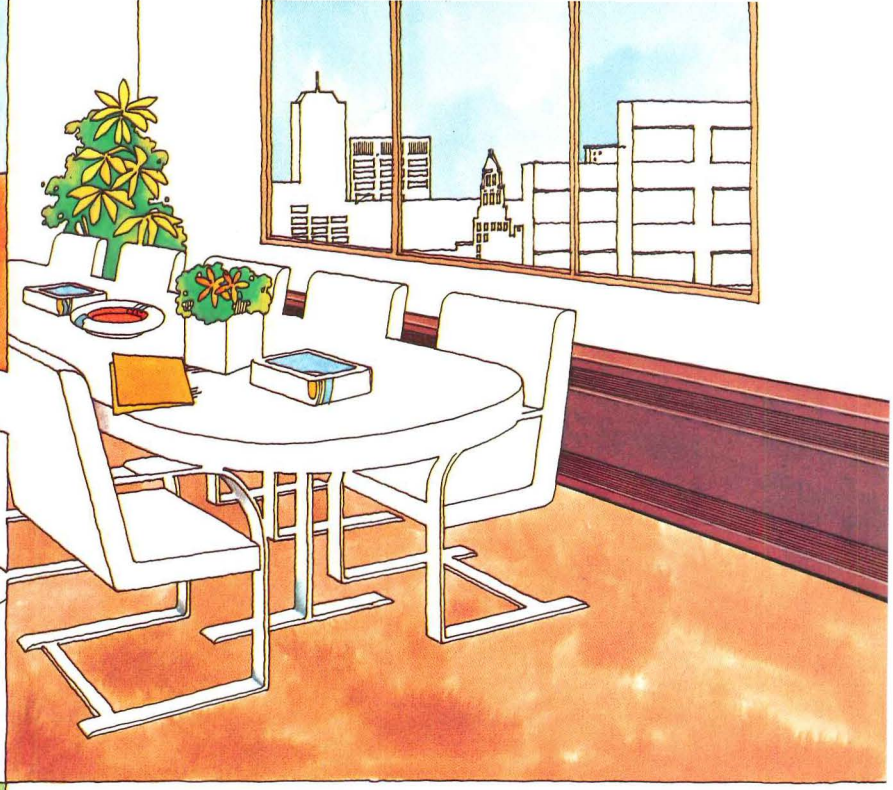

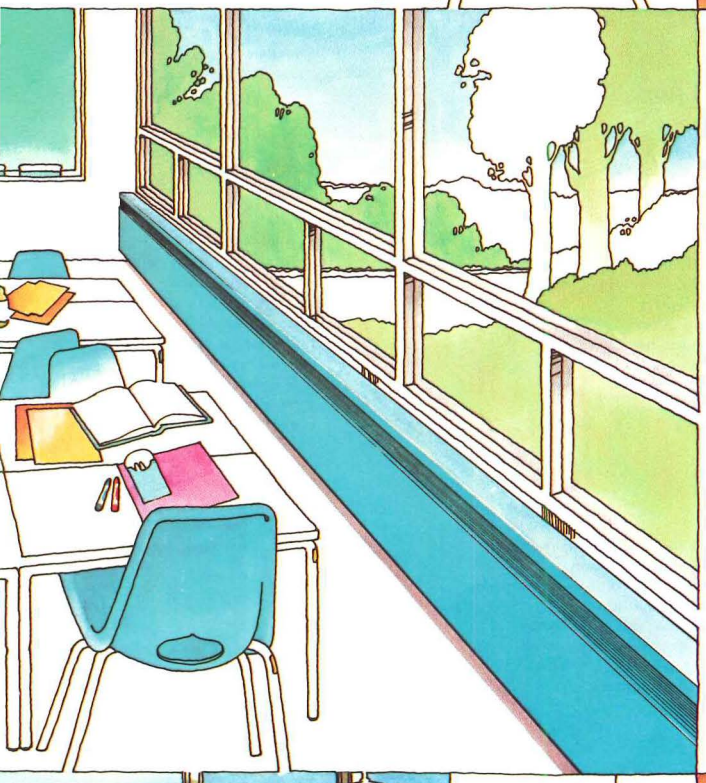

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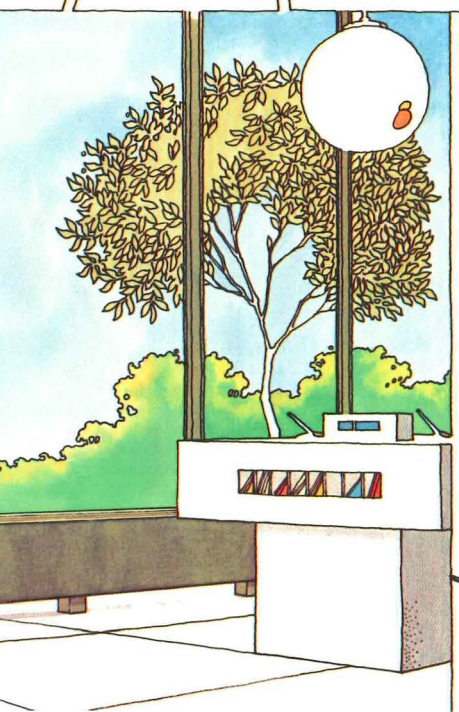

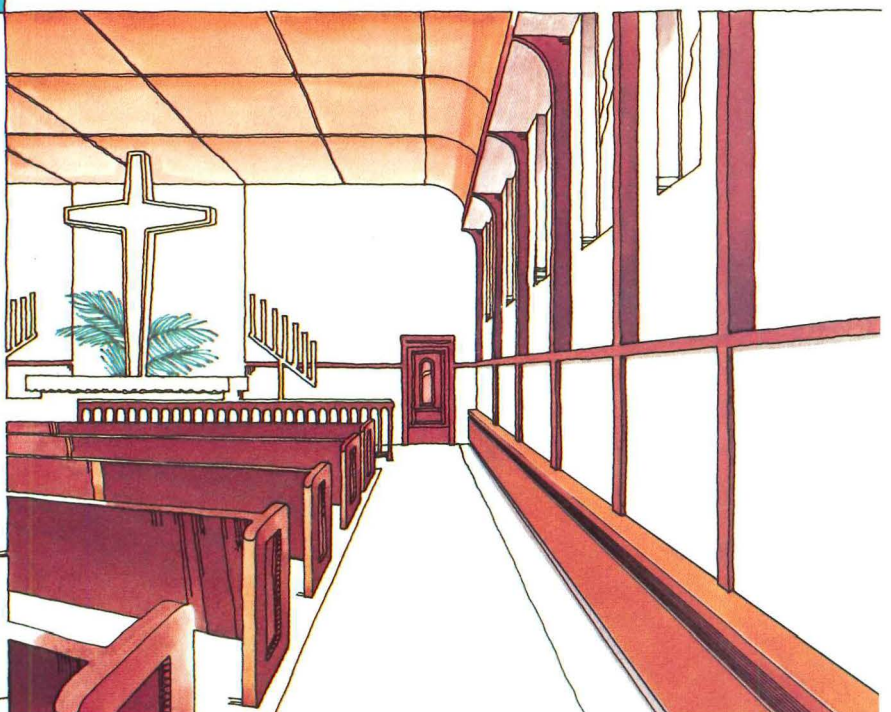

'Shop Talk' 27th International Design Conference in Aspen
Sunday, June 12 through
Friday, June 17, 1977

Jane Thompson
(Program Chairman)

Richard Farson

Lou Dorfsman

Henry Wolf

Niels Diffrient

Richard Saul Wurman

Julian Beinart

M. Paul Friedberg

Milton Glaser

Saul Bass

Ivan Chermayeff

Eliot Noyes

Jack Roberts

Jivan Tabibian

John Massey

George Nelson

Pat Carbine

Ralph Caplan

Shop Talk participants from abroad will include:

Ettore Sottsass

Moshe Safdie

Reyner Banham

John Tyson

Shop Talk will be an unusual week devoted to discussion, demonstrations, and close examination of what today's designers think, do, and feel in various stages of their professional lives.

The Conference leaders—practitioners from the IDCA Board of Directors representing diverse disciplines within the design field—will be joined by ten leading designers and architects from abroad.

In dialogs, interviews, and personal case histories, they will talk candidly about their career choices, philosophies, clients and co-workers, successes and failures, and about strategies for the creative enjoyment of an evolving profession.

Registration is by mail only, do so early as space is limited. Your cancelled check is your confirmation. Deadline is May 29th.

Fees: $150 Registration
$100 Companion
$75 Student (proof required)
$50 Children
(per child, 6-12 years)
Fee covers access to all conference programs and literature.

Mail checks, payable to IDCA, with coupon to:
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Temperature range is from 90° to 30°. Bring warm clothing and casual attire.

Please fill in and return. Names of all persons being registered must be listed.

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Occupation

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☐ $150 Registration
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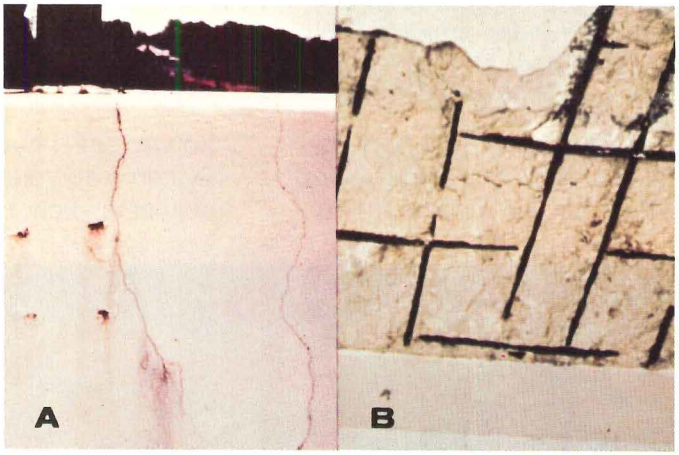
CONCRETE FAILURE

CAUSE

This magnification shows how rust expands as steel corrodes.

EFFECT



The rusting of ungalvanized reinforcing bar creates a pressure which can crack and spall concrete. Photo A shows a portion of the facade of the Charleston, S.C. Post Office which has been cracked and stained by subsurface rust expanding and "bleeding" through. Photo B shows the underside of a veranda roof in Bermuda where rebar corrosion caused a large section of concrete to fall off.

PREVENTION

Galvanizing — the metallurgical bonding of zinc *into* steel — has proven its ability to protect rebar against rust before, during and after installation. This is recognized in the revision of General Services Administration guide specification PBS4-0344.01 as follows: When concrete cover on exterior surfaces is less than 1½ inches... reinforcing bars and mesh shall be zinc coated...in accordance with ASTM A-123.

ZN-640

If you would like to know more about this subject, write on your letterhead for our new booklet "Galvanized Reinforcing Bar— Undercover protection for concrete."

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Architect: Cavender/Kordys Associates, Inc., East Point, Georgia

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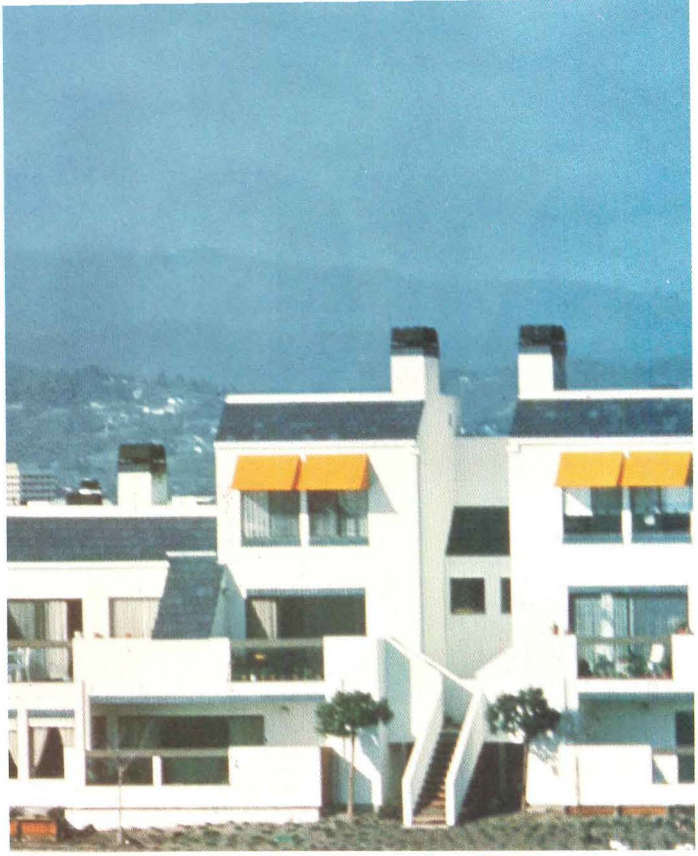
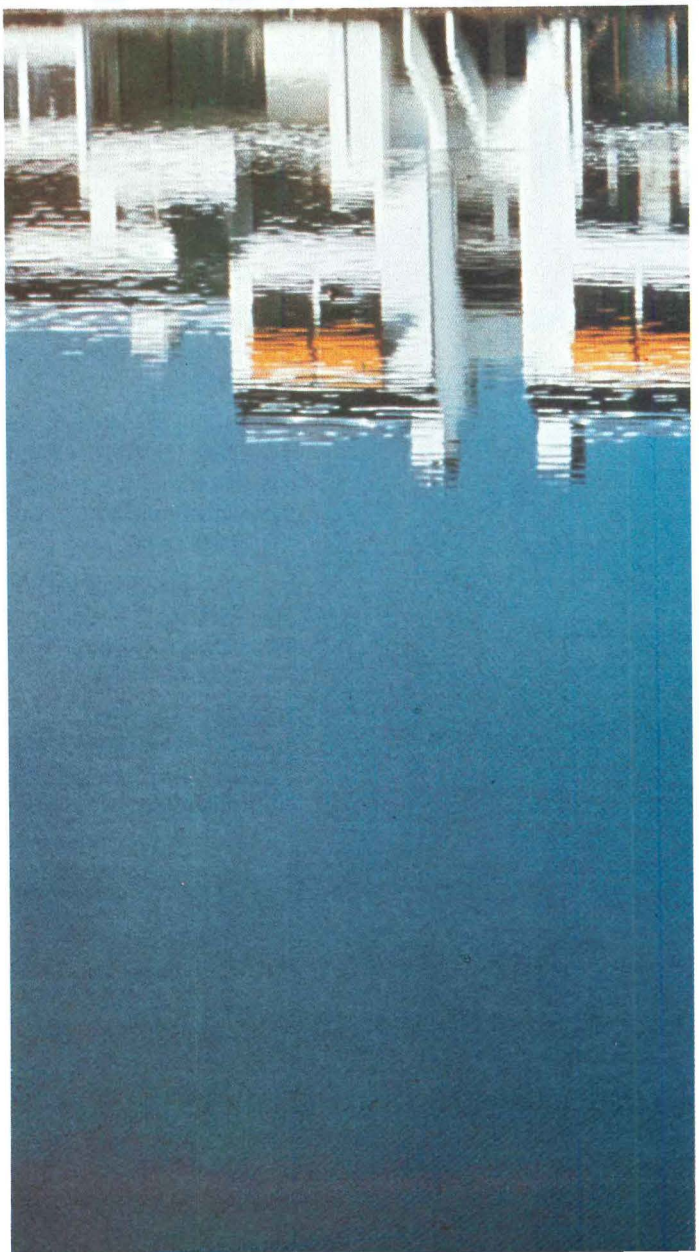


Coming in mid-May

Architectural Record's Idea Annual of the Housing Field

RECORD HOUSES AND APARTMENTS



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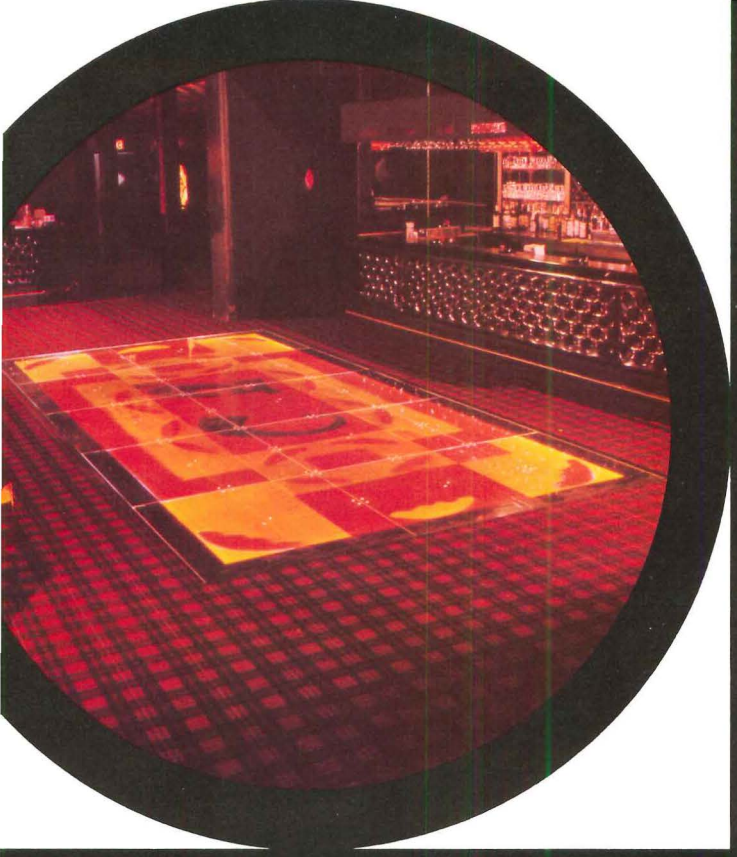

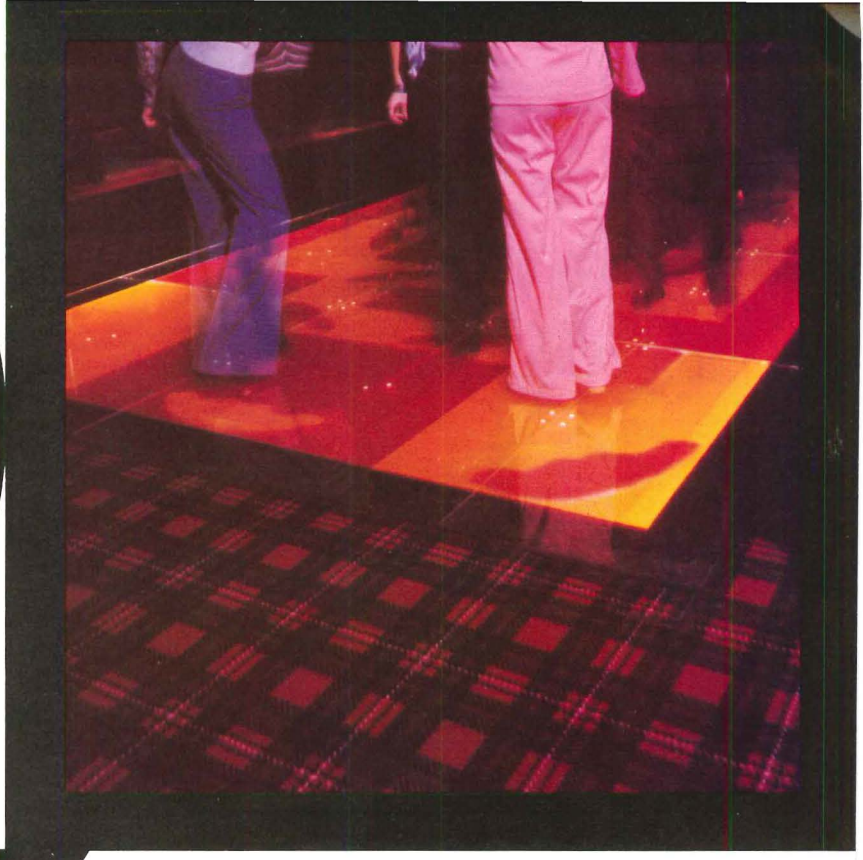

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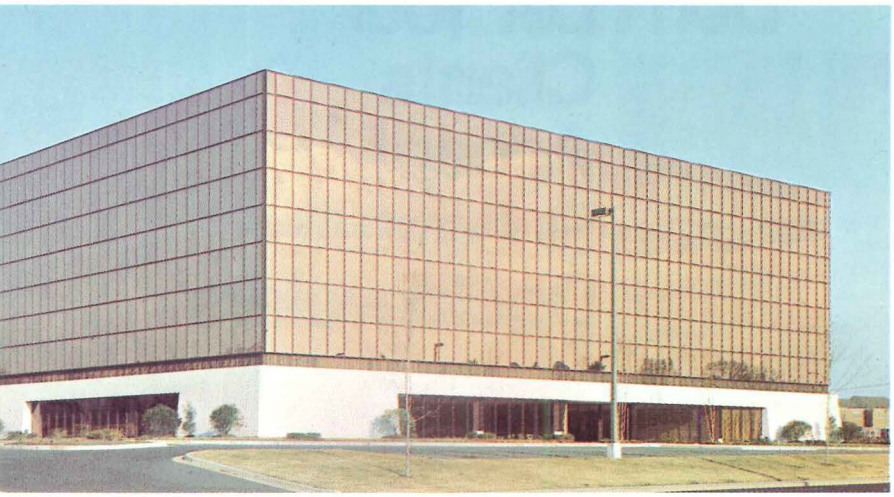

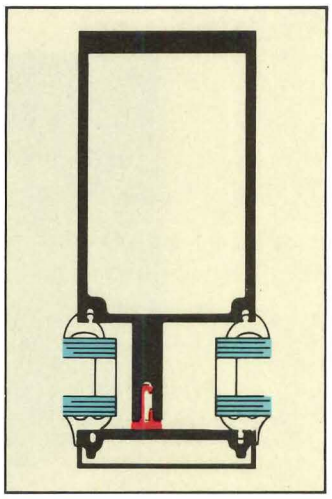

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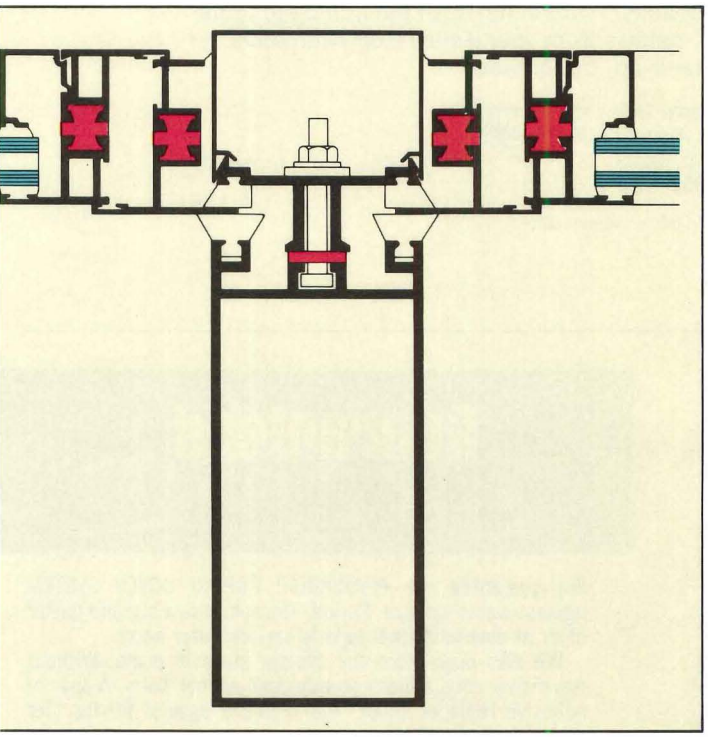

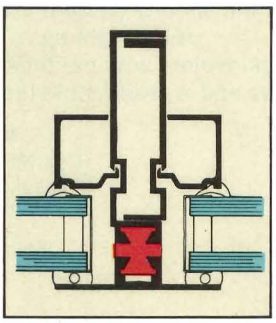

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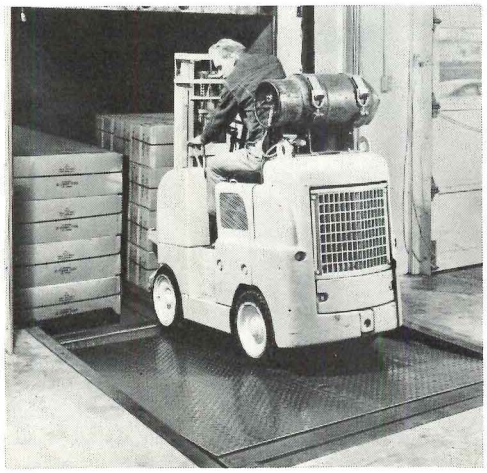

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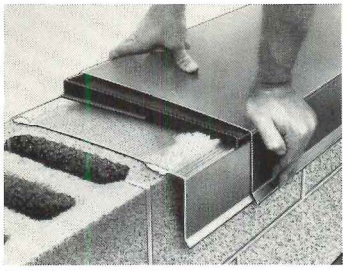

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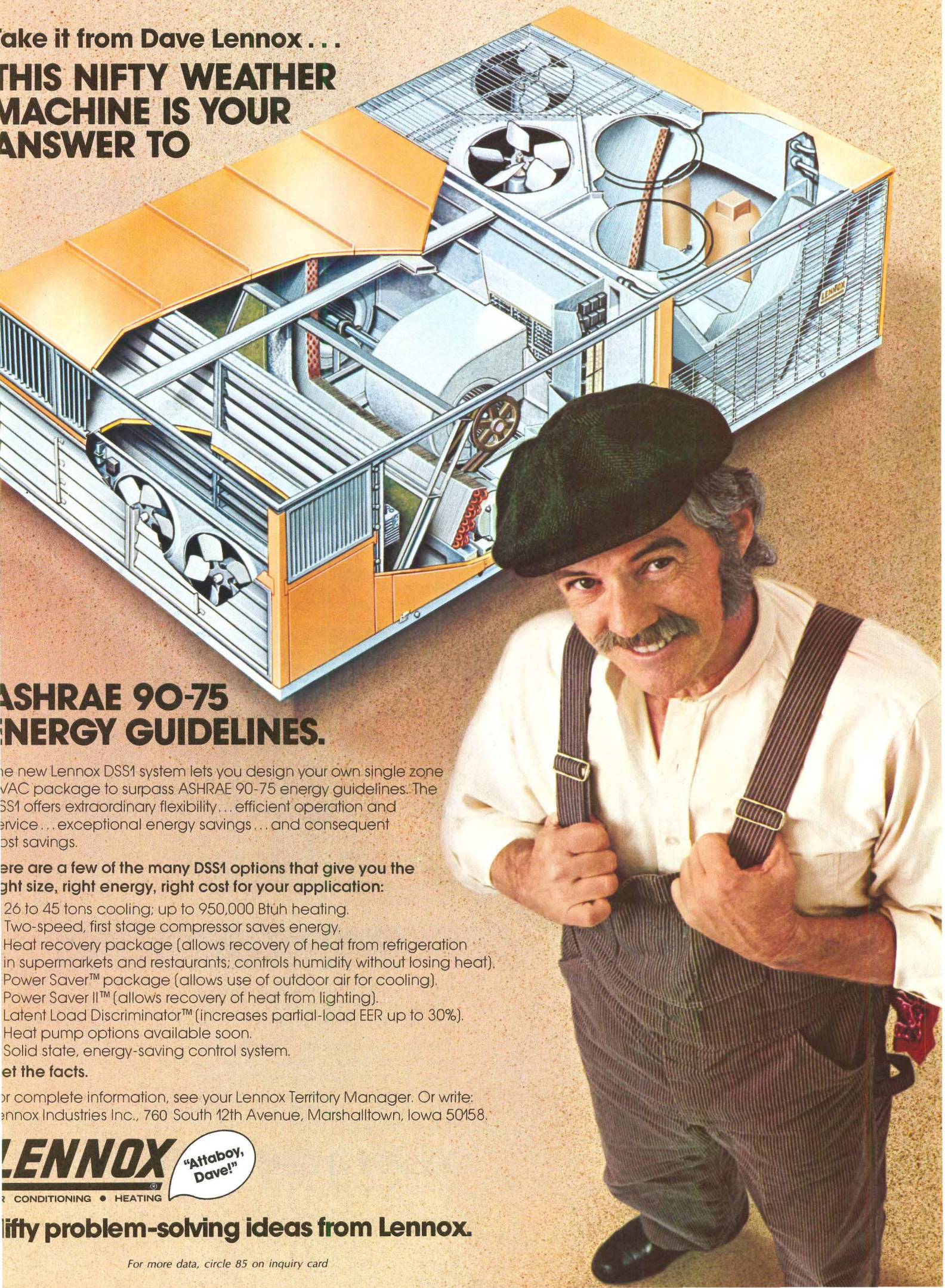
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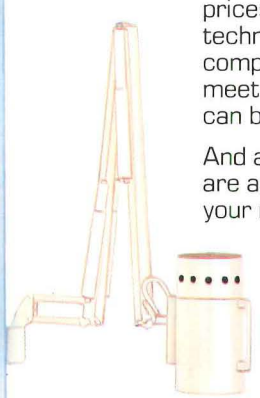

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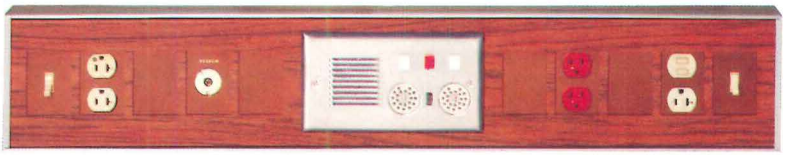

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VONAR interliner kept one of the chairs from burning up in this limited ignition fire.

This test dramatically illustrates hat VONAR* 3 interliner can reduce he likelihood of ignition of upholtered furniture as a unit.** Should gnition occur, it can reduce the urning rate of upholstered furniture limited ignition situations.

Ten minutes, thirty seconds efore this photo was taken, these two ffice chairs were identical in every ay but one. Same construction, ushioning foam and upholstery abric. Both good looking and omfortable.

But the nylon fabric on the chair n the right had been backcoated with ONAR 3 interliner at a modest dditional cost.

The test began with identical astepaper fires in the baskets under he two seats. After one and one-half minutes, the fabric on both chairs was ignited. After four minutes, the paper fires were out, but the chair without VONAR continued to burn until completely consumed.

The chair with VONAR 3 did not. As the flames heated the VONAR interliner, it released heat-absorbing water vapor and a flame retardant. As the VONAR absorbed heat, it formed a rigid, insulating char layer on the chair parts in contact with the ignition source.

The maximum contribution obtainable from VONAR interliners occurs when VONAR totally envelops flammable cushioning materials. If VONAR interliners are ripped or cut, their degree of protection is diminished. For that reason, VONAR is not recommended for seating areas where there is concern about vandalism or intentional fire.

Let us help you determine what a difference VONAR can make in your furniture or in your future specifications. Use the coupon or write: Du Pont Co., Room 25337A, Wilmington, DE 19898.

u Pont trademark for interliner made by licensed anufacturers according to Du Pont specifications. u Pont supplies the basic elastomer to such anufacturers, but Du Pont does not make interliners.

ne test described here does not demonstrate that all rniture using VONAR interliners will perform in this anner or will not burn under all actual fire conditions. ne test was not conducted to assign "numerical ame spread ratings" to any materials involved. The sults show only that specific types of chairs, which ed VONAR interliner properly, performed as dicated under the test conditions. Since Du Pont oes not make furniture or make or install interliner, e assume no responsibility for furniture performance.

Mail to: Du Pont Company, Room 25337A, Wilmington, DE 19898.

Please send me: ☐ further technical data and test results
☐ a list of furniture manufacturers using VONAR
☐ a list of licensed manufacturers of VONAR

VONAR® Interliner

Name _____ Phone _____

Title _____

Company _____

Address _____

City _____ State _____ Zip _____

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Robin Hood Dell West, Philadelphia, Pa. • Architects: John H. MacFadyen and Alfredo De Vido, New York • Associate Architect: I. Demchick, Philadelphia, Pa. • Roofing Contractor: Warren-Ehret-Linck, Philadelphia, Pa.

TCS...THE LOGIC OF ITS USE

Rarely if ever has metal roofing been employed with more stunning visual impact than on Robin Hood Dell West, the Philadelphia Orchestra's new summer home, which will also serve as a creative center for other groups in the performing arts.

In specifying over 80,000 square feet of TCS (Terne-Coated Stainless Steel) on this exciting structure, the architects were primarily influenced by several practical as well as aesthetic considerations. Among them was the material's unsurpassed durability which is measured in generations rather than years. They were also aware that TCS weathers naturally to a uniform and attractive warm gray; that, properly installed, it will never need maintenance; and that it is highly resistant to even the most severe corrosive attack.

For more data, circle 90 on inquiry card

FOLLANSBEE
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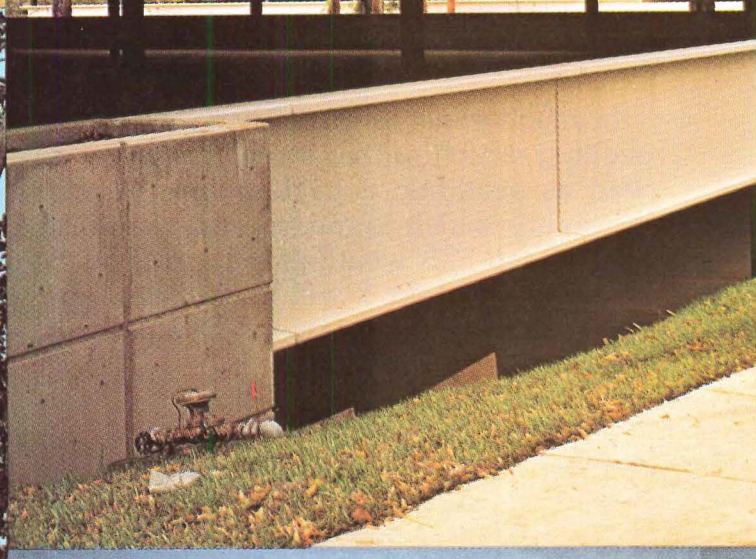

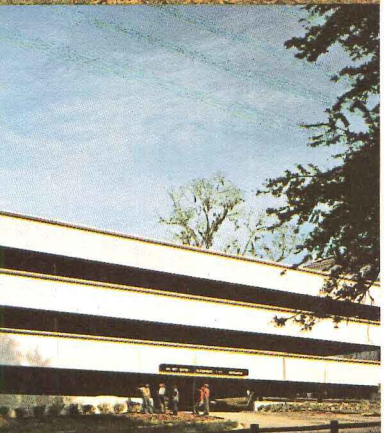

The steel-framed, long-span system: a natural choice for five new Florida parking garages.

Five new open-deck parking garages, accommodating up to 3,402 cars, are serving Florida's state employees in Capitol Center—a complex of government offices in Tallahassee.

The steel-framed, long-span concept was chosen over competitive systems for reasons combining economy, construction speed and aesthetics.

From the start, sites were selected and the respective structures designed with every intention of preserving visual harmony with the existing buildings and landscaping of Capitol Center. The happy result of this careful planning is that most of the trees are still there!

THE GREATEST ECONOMY

As many as eight different structural systems were used as models for evaluation. This in-depth study, which examined construction speed as well as material costs, showed that structural steel framing with composite cast-in-place concrete decks had the potential for the greatest economy.

The decision proved wise. Construction cost per car is figured at approximately $2,400—a unit cost substantially lower than comparable facilities in Florida.

NO FIRE PROTECTIVE MATERIALS NEEDED!

One of the decisive elements in establishing the low-cost estimate for the steel-framing system was the fact that the steel structures could be left exposed and unprotected—except for painting.

Changes in the regulations of a number of building codes (and fire insurance rates) have been effected through a research project carried out at Scranton, Pa., under the auspices of the American Iron and Steel Institute. The dramatic and fully documented Scranton Fire Test was an actual auto burnout in a normally occupied open-deck public parking garage. It confirmed the results of previous tests: *an automobile fire in these structures is a low-hazard fire.*

STANDARD MODULE

For all the five facilities (named Alpha, Beta, Gamma, Delta and Epsilon) the designers selected a standard bay module, which proved to be a major factor in cost-cutting.

Each bay measures 55-ft. wide with a 20-ft. distance between columns and a floor-to-floor height of 10-ft. These dimensions allow angle (58 degrees) parking for standard-size cars and perpendicular parking for compact cars.

Self-parking is, of course, made easier by this amount of long-span, column-free space.

3,446 tons of ASTM A36 steel went into the five facilities which, together, have a floor area of 1,074,909 sq. ft. Only two column sizes were used throughout: W10 x 49 and W10 x 72. All beams are W24's with the majority weighing 68 lbs. per linear foot. Design loads are 50 psf for roofs and floors.

United States Steel is ready to help you with your design of a long-span, open-deck garage. For a Structural Report on the Capitol Center Parking Garages, and for further information, write to U.S. Steel, P.O. Box 86 (C614), Pittsburgh, Pa. 15230. Or contact a USS Construction Representative through your nearest USS Sales office.

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Joint venture organization: Barrett, Daffin and Figg, Tallahassee, Fla.
De Leuw Cather, Associates, Chicago, Ill.
Schweizer Associates, Winter Park, Fla.
Steel Fabricators: Joint venture organization: Musselman Steel Fabricators, Inc., (Prime Coordinator), Tampa, Fla.
Aesco Steel, Montgomery, Alabama.
Florida Steel Corp., Jacksonville, Fla.
Steel Erector: North Florida Erection Co., Inc., Jacksonville, Fla.

A $35,000,000 medical center in Mississippi.

ELEVATORS BY DOVER

The new Mississippi Baptist Medical Center in Jackson puts a $22,000,000 building and $13,000,000 worth of health-care equipment at the service of residents of the area. The 600-bed facility includes 19 operating rooms, a coronary care unit, a burn unit, and a step-down unit for recuperative care. Supply and food carts circulate throughout the building 24 hours a day on five computerized Dover cart lifts. These special elevators dispatch and deliver the carts automatically to patient floors. Passenger and service traffic is smoothly handled by eight Dover Traction Elevators and one Dover Oildraulic Elevator. For more information on Dover Elevators and Dover's special lifts and dumb waiters for hospital use, write Dover Corporation, Elevator Division, Dept. A, P.O. Box 2177, Memphis, Tenn. In Canada: Dover/Turnbull.

DOVER

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Mississippi Baptist Medical Center
Jackson, Mississippi
Architects: Ellerbe Architects/Engineers/Planners
Barlow & Plunkett
Contractor: Turner Construction Co.
Elevators installed by Dover Elevator Co.

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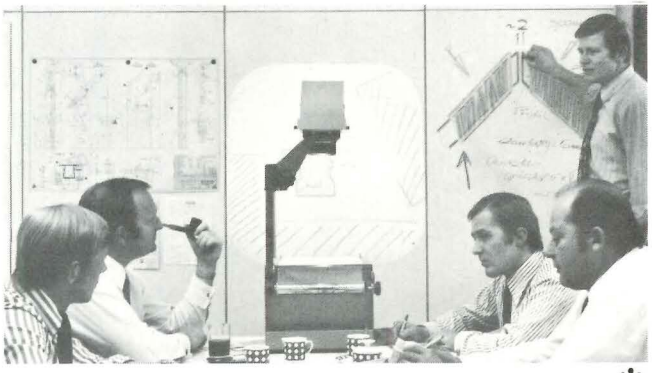

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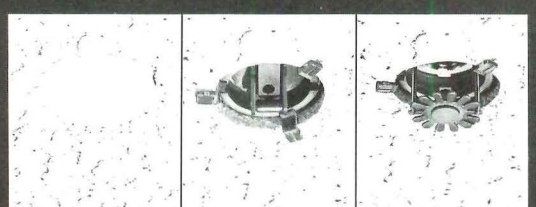

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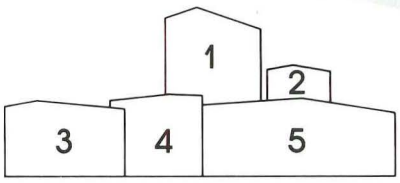

"THE GALLERIA"
Development by the
Gerald D. Hines Interests

1. Post Oak Tower (1969)
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Neuhaus and Taylor
Ellisor Engineers, Inc., *structural engineers*
Harvey Construction Company, *contractors*

2. Houston Oaks Hotel (1969)
Hellmuth, Obata and Kassabaum } *associated architects*
Neuhaus and Taylor
Ellisor Engineers, Inc., *structural engineers*
H. A. Lott, Inc., *contractors*

3. & 4. Galleria II (1976)
Hellmuth, Obata and Kassabaum } *associated architects*
S. I. Morris and Associates
Ellisor Engineers, Inc., *structural engineers*
Harvey Construction Company, *contractors*

5. Galleria Plaza Hotel (1976)
Hellmuth, Obata and Kassabaum } *associated architects*
S. I. Morris and Associates
Ellisor Engineers, Inc., *structural engineers*
H. A. Lott, Inc., *contractors*

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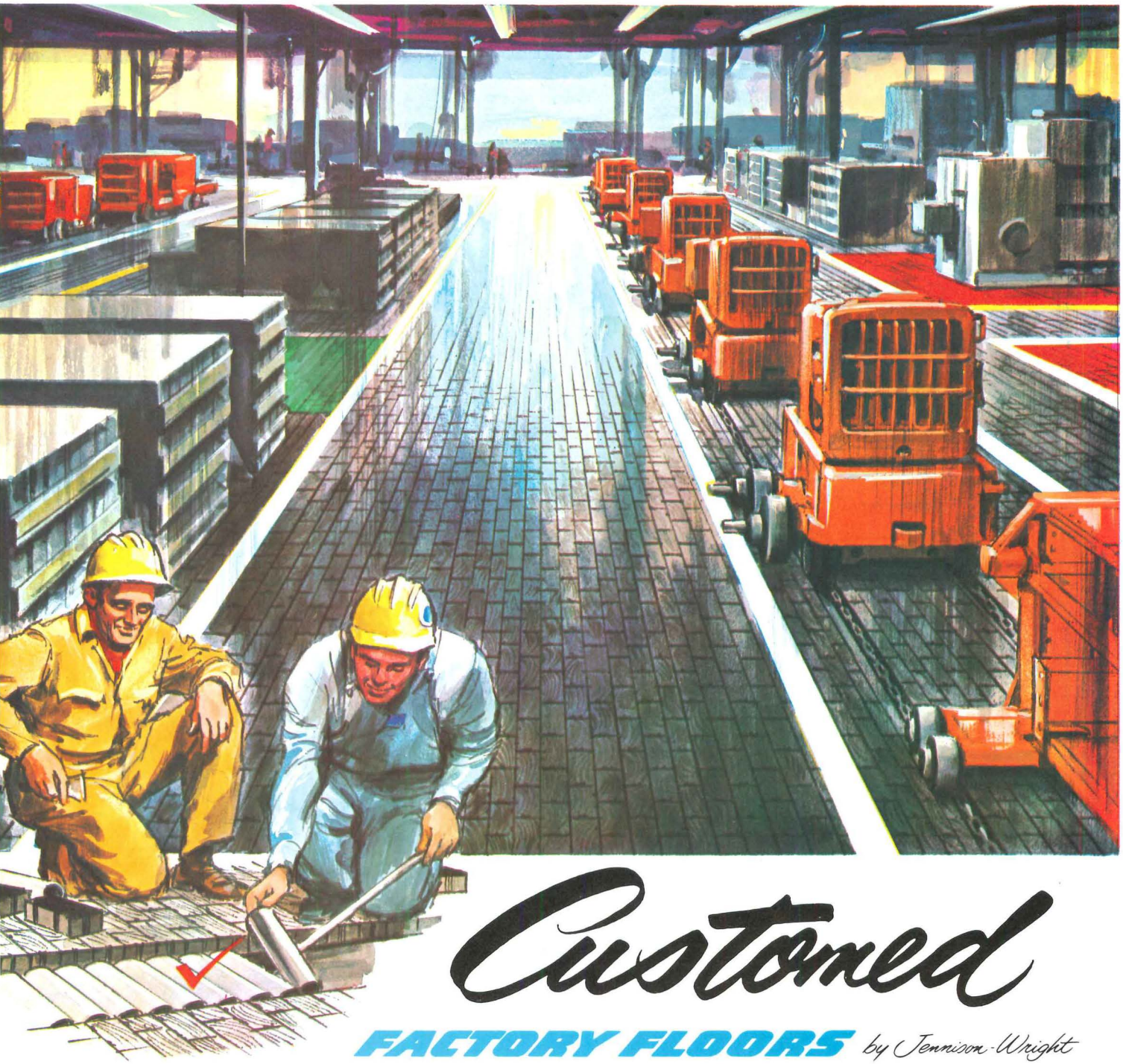

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Comparative Initial Construction Costs	2,497,068	2,230,060	267,008
Annual Heating Cost	25,715	23,377	2,338
Annual Air Conditioning Costs	28,473	12,018	16,455
Annual Insurance Premium	2,497	2,230	267
Annual Property Taxes	49,949	44,601	5,348

Building: Tower Place, Atlanta, Georgia
Developer: Ackerman & Company
Architect: Stevens & Wilkinson, Architects & Engineers, Atlanta, Georgia
General Contractor: Henry C. Beck Company
Glazing Contractor: Starline Inc.

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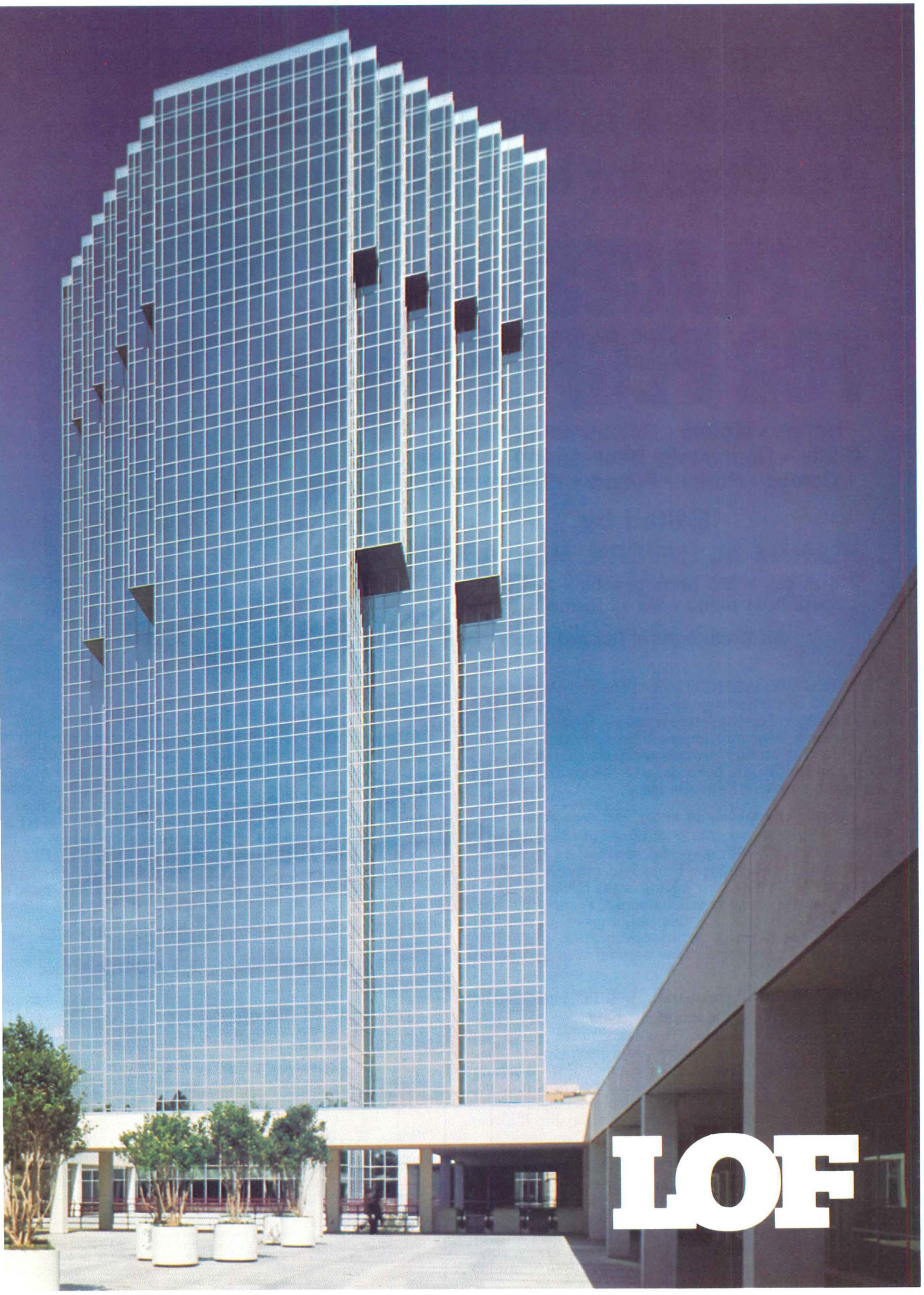
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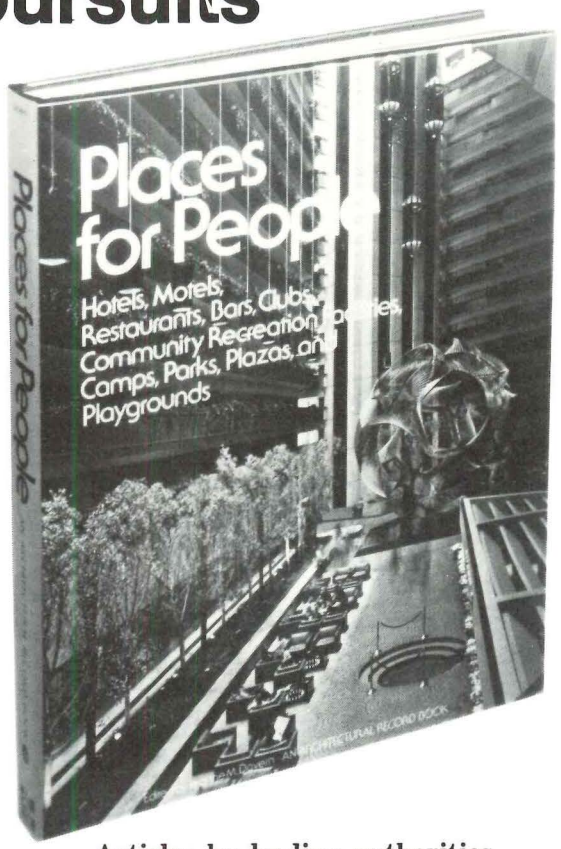

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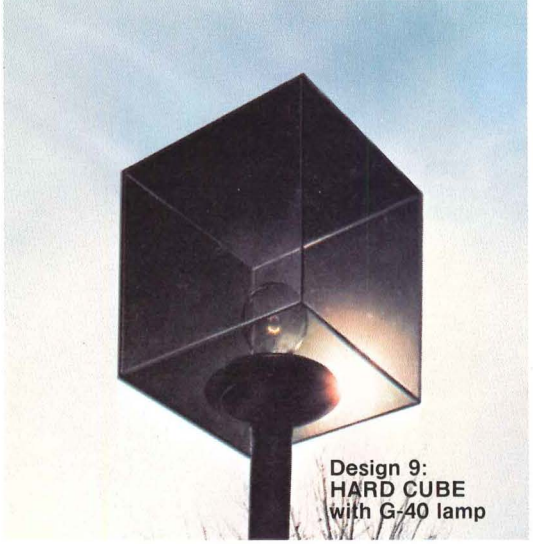

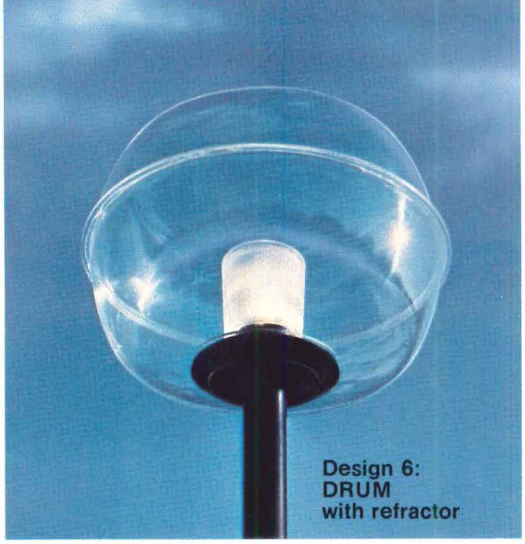

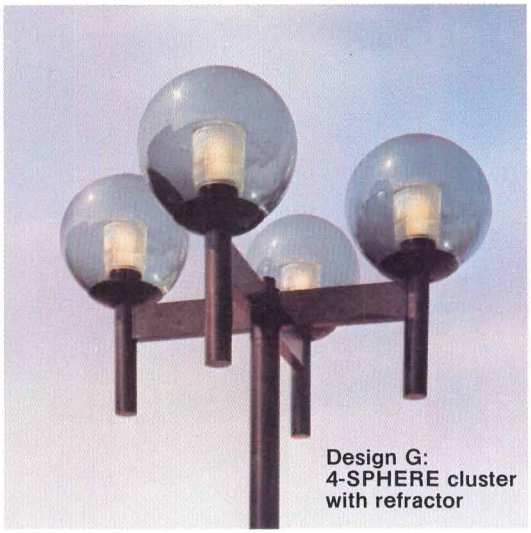

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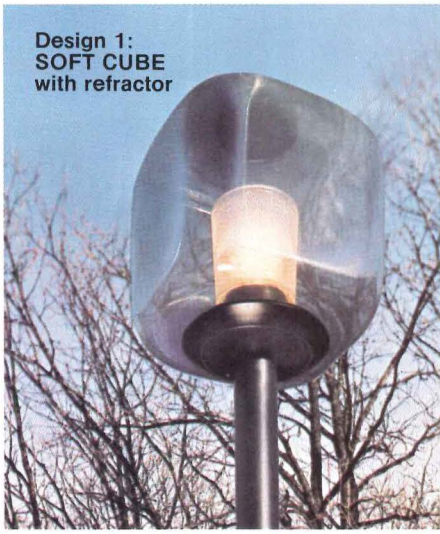

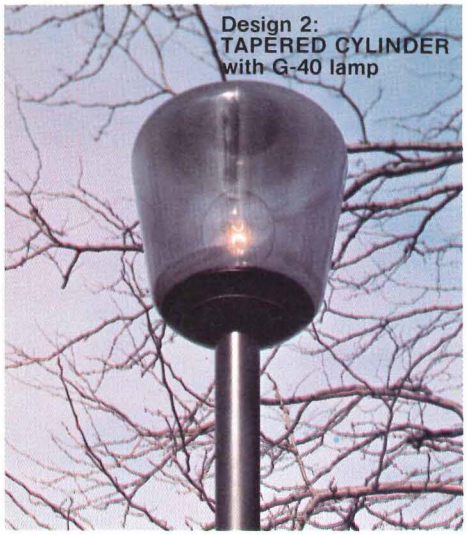

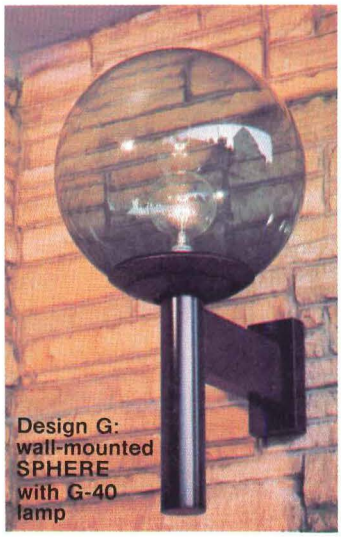

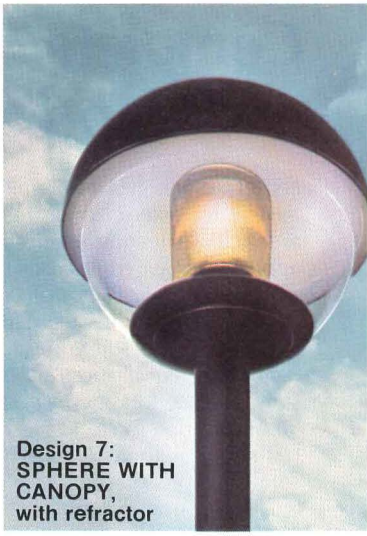

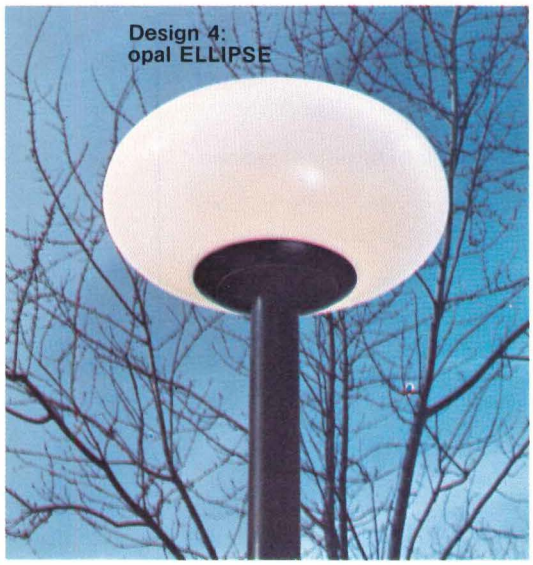

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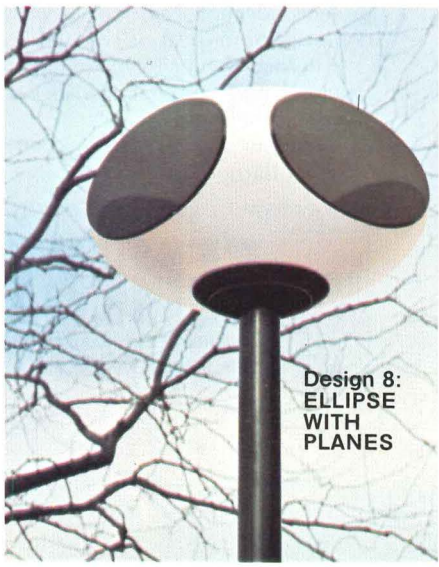

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Remember, insulation today will make your buildings affordable tomorrow. Insulation Group, CertainTeed Corporation, Box 860, Valley Forge, PA 19482.

Pictured is the GSA Building where 3¾" thickness of EES insulation was used to meet a "U" of .06 ("R" of 16) design requirement and non-combustible criteria.

CertainTeed

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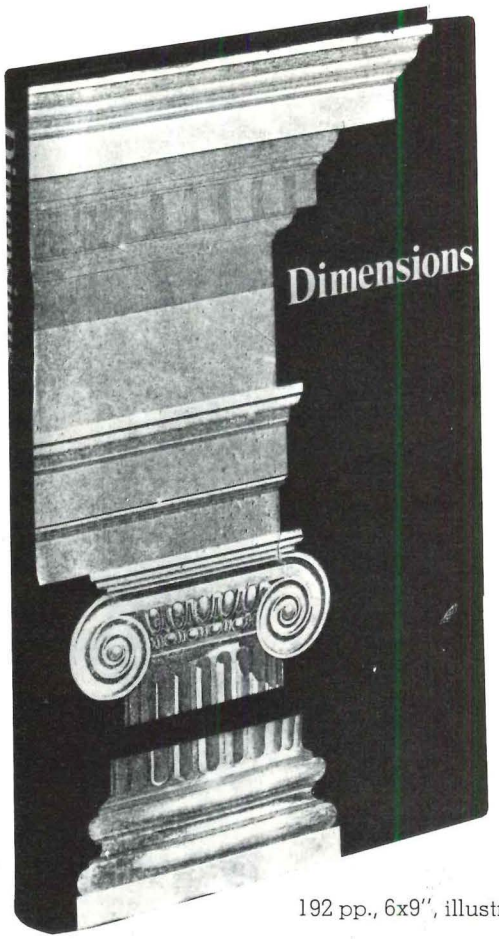

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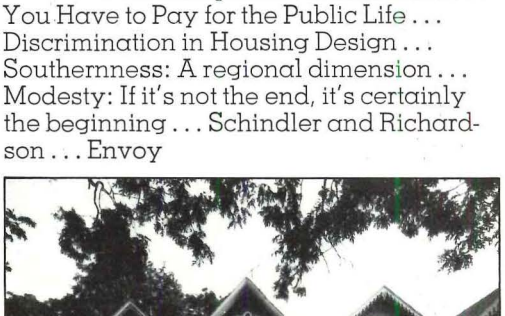

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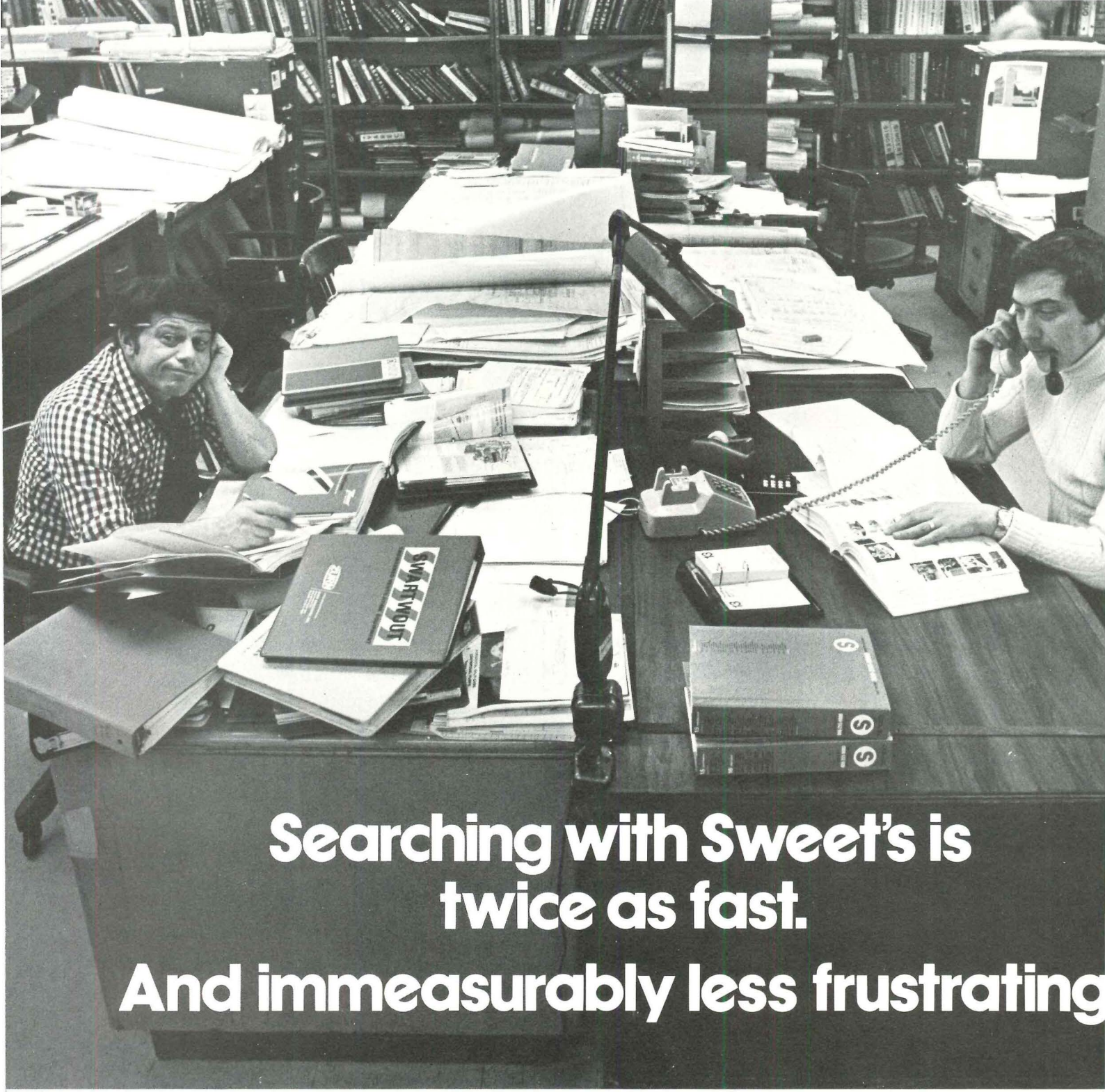

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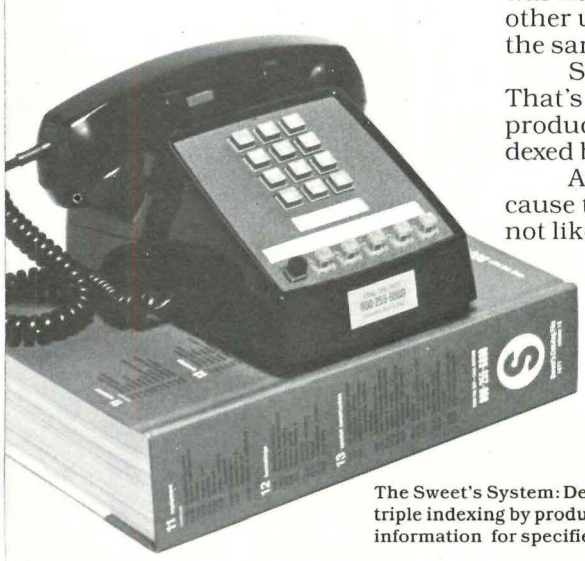

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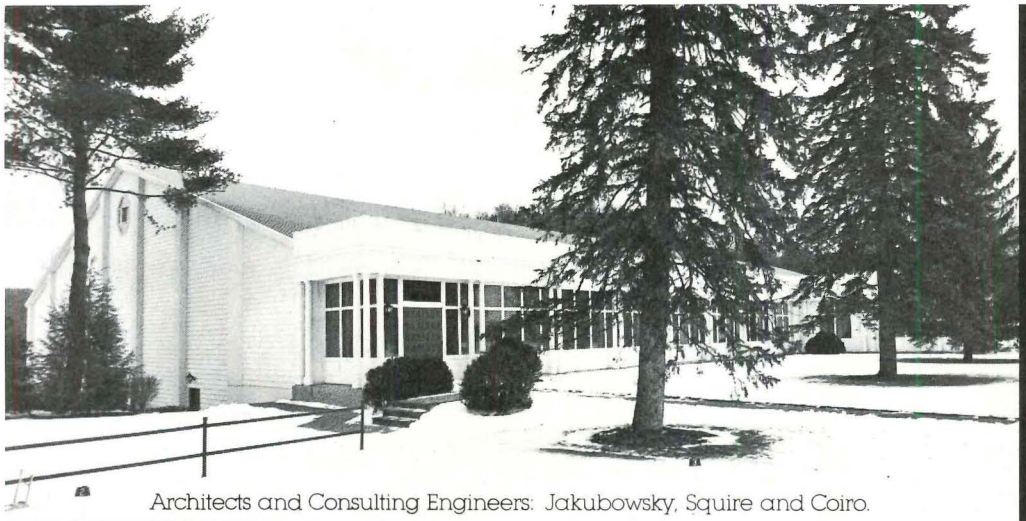

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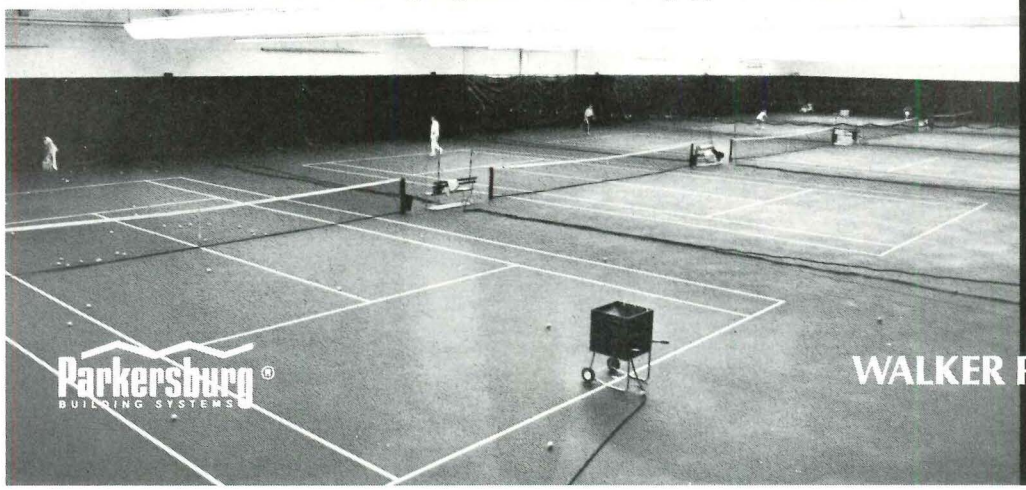

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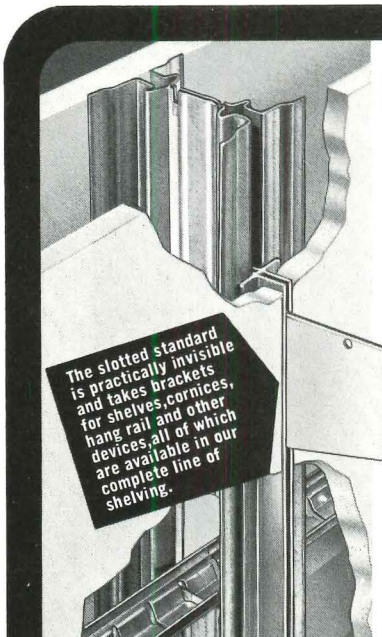

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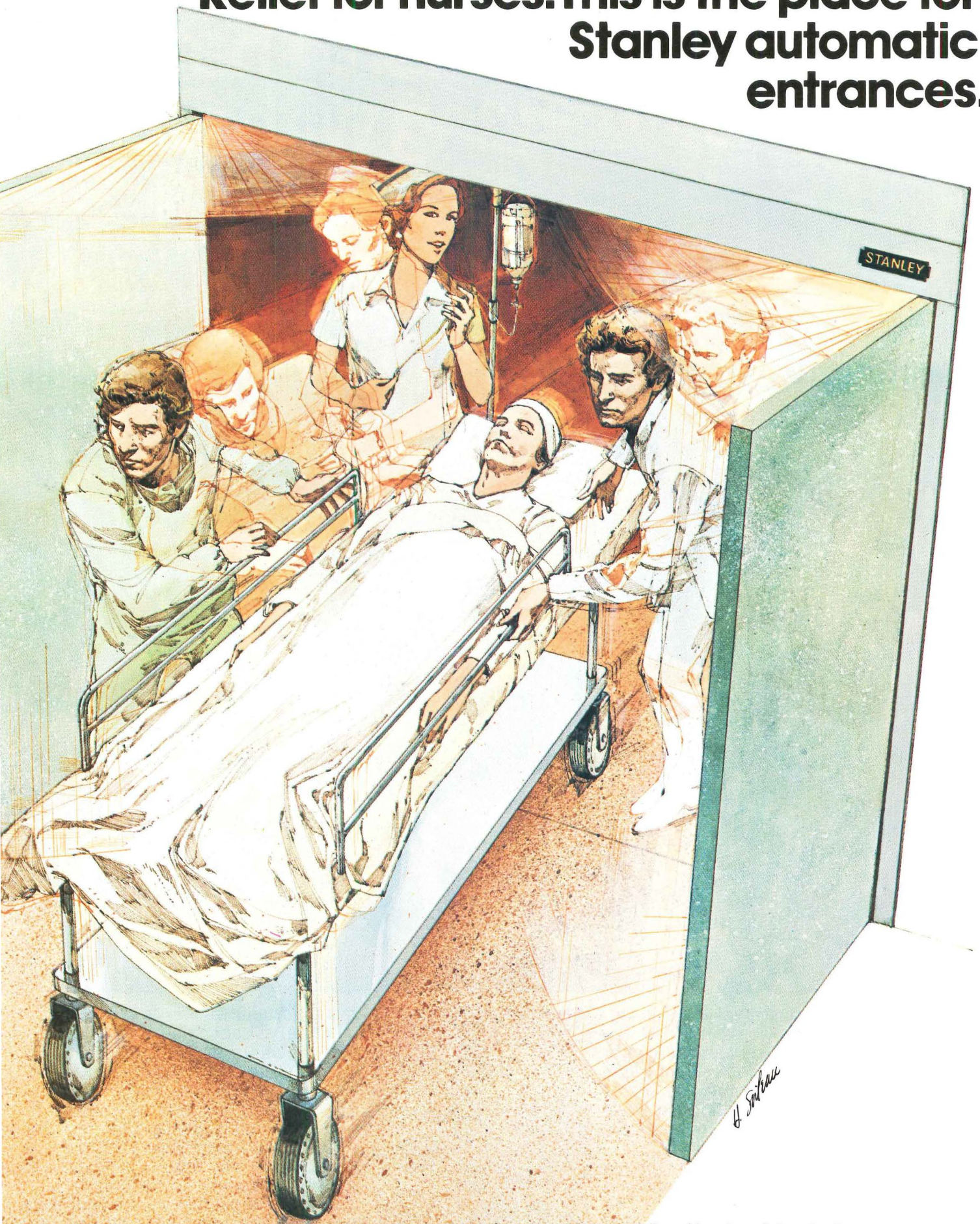

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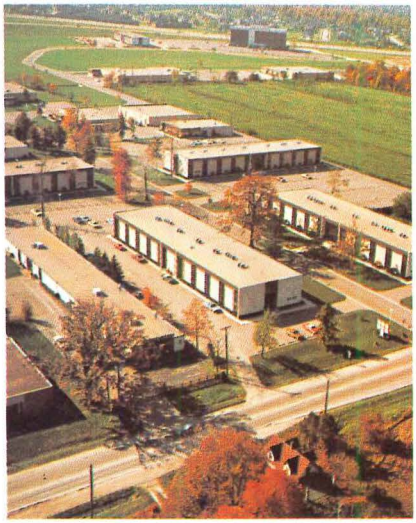

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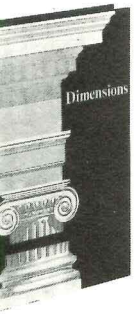

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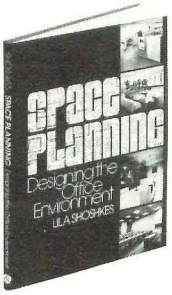

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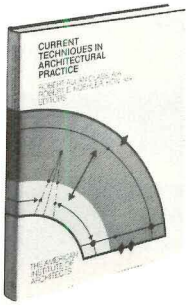

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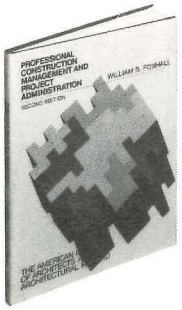

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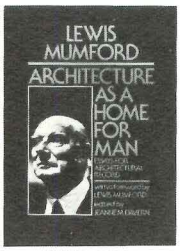

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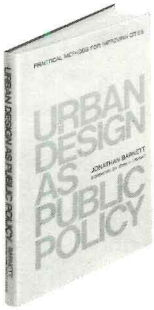

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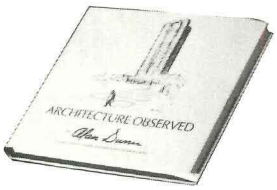

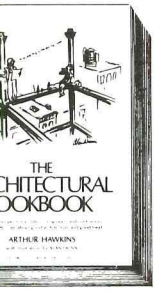

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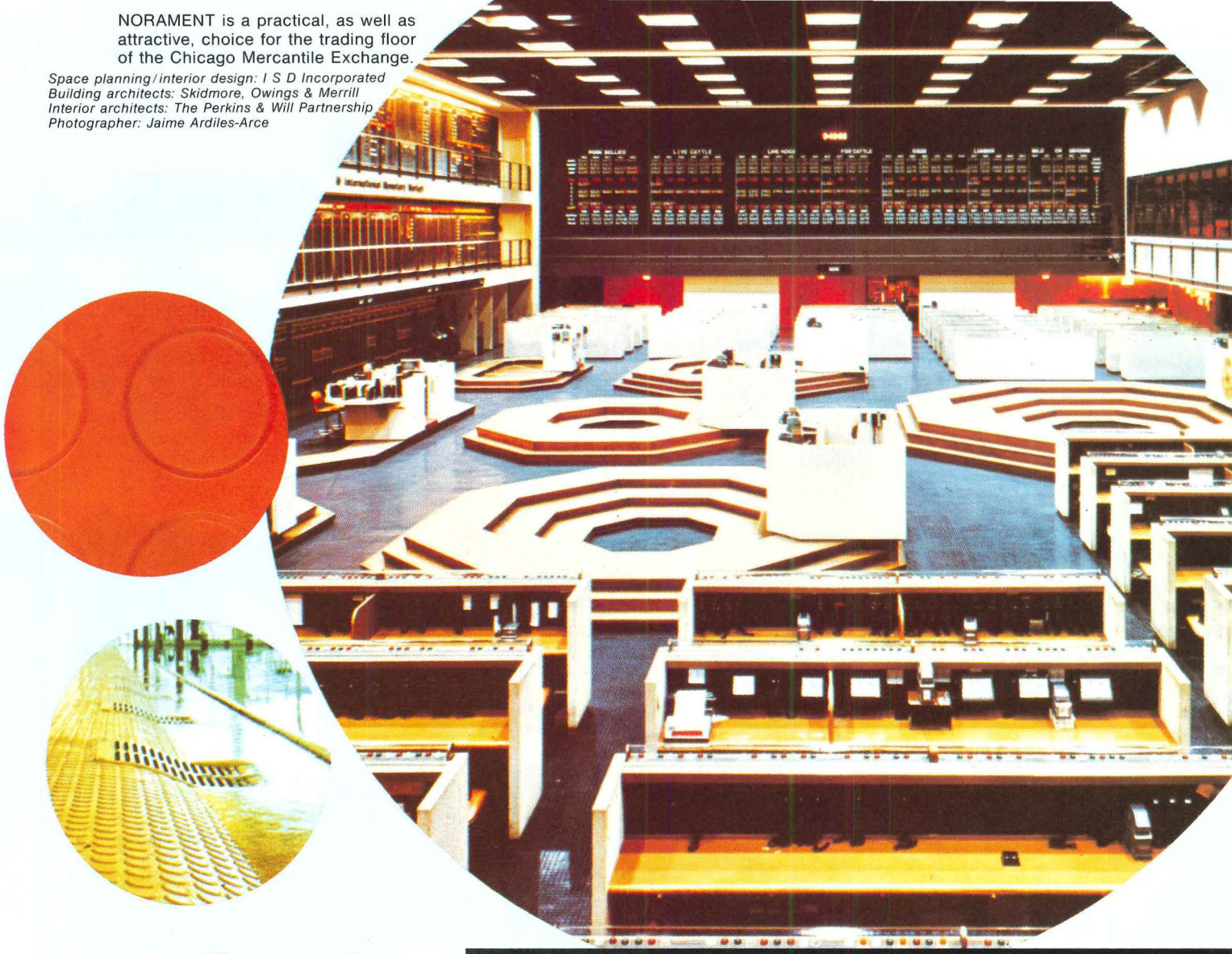

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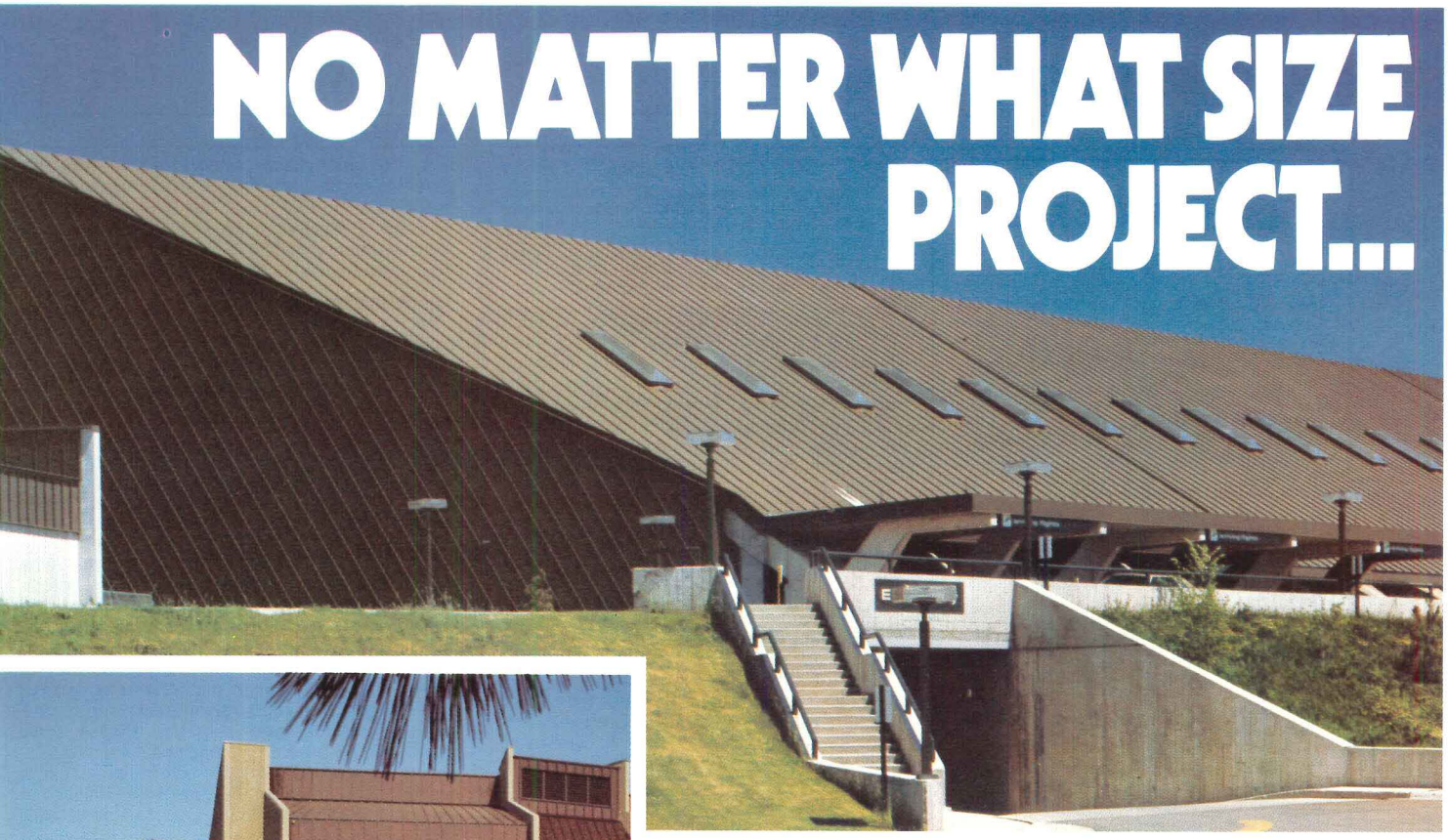

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Unique Department of Architecture at Tuskegee Institute (National Historic Park Site) seeks innovative persons for faculty positions, and Coordinator of Building Technology Program. Opportunities in research, solar energy, and historic preservation. Requirements: Professional degree, teaching experience or equivalent. Appointment June 1, 1977; rank open. Send vita to: Richard K. Dozier, AIA, Chairman, Department of Architecture, Tuskegee Institute, Tuskegee Institute, Alabama 36088.

The University of Riyad wishes to fill a position in the Department of Architecture (Quantity Surveying specialization) starting October 1977. Applications to be sent to: Dean, College of Engineering, PO Box 800, Riyad, Saudi Arabia.

Engineering Opportunities—Very active and growing development company, located in a pleasant Midwestern city, providing design/build expertise to a NYSE listed company, seeks the following: Chief Structural Engineer—Member of in-house design/build staff of professional architects and engineers designing enclosed mall shopping centers. Registration required. Department store and commerical building experience helpful. Electrical or Mechanical Engineer—Graduate engineer to design for shopping center development. Commercial background, HVAC required, registration preferred. Competitive salaries and benefits. Please send complete resume and compensation requirement in confidence to: General Growth Companies, Personnel Dept. B-11, 1055 Sixth Avenue, P.O. Box 1536, Des Moines, Iowa 50306.

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Financial Executive—Heavyweight—Listed co. V.P. Controller—CPA (Big 8 exp.)—Attorney—Acquisitions, financial controls, taxes, Exp'd. real estate, construction industries. Combines technical skills with imagination. $28-32,000 required. For resume: PW-4325, Architectural Record.

College Professor (48), Ph.D.ME: with a strong background in Thermo, Heat Transfer, HVAC, Fluids, energy areas etc., seeks a teaching position (long or short term) in an Architecture Dept. of a University; or in a Design firm. Rank and salary negotiable. PW-4199, Architectural Record.

Registered Architect, 39, seeking responsible and challenging position with progressive Architectural, A-E or design-build firm possibly leading to Partnership. Over fifteen years diversified experience including partnership and sole-proprietor situations. N.Y. Registration - NCARB Certification in process. Willing to travel or relocate—Southern New England or Pacific Northwest preferred. Reply to Box PW-4113, Architectural Record.

Engineer (HVAC), fifteen years diversified experience, good knowledge Electrical and other Mechanical desciplines, excellent references from established, NYC, architects and consultants. Seeks senior design/Administrative level position. Will relocate. PW-4252, Architectural Record.

23 year old Swedish interior decorator, graduated from Frederiksbergs Technical School, Copenhagen, Denmark, is looking for a job on the east—or the westcoast of the U.S.A. Write to: Claes Hallenheim, Thujagatan 26, 230 44 Vintrie, Malmo, Sweden.

Registered Architectural Engineer M.S., Foreign born with 11 years of excellent experience in design of commercial institutional and hi-rise buildings seeks key position with AE firm will relocate. Write: PW-4292, Architectural Record.

Young Architect-Planner, 8 years professional and teaching experience, capable, dynamic and ambitious, seeks position of responsibility abroad (Preferably Latin America), with U.S. A/E or development firm. Reply Box PW-4322, Architectural Record.

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New addresses

Alper Associates, Inc., consulting engineers, have moved to the Spectrum Professional Office Building in the Bellerive Executive Office Park at Mason Road and Olive Boulevard, St. Louis, Missouri.

Robert G. Hammond Associates, Architect, announce the opening of an office at 414½ Sixth Street, Annapolis, Maryland.

Gensler and Associates Architects announce that they have moved to Suite 570, Two Century Plaza, Los Angeles, California.

Harold Wirum & Associates, Architects announce the relocation of their office to 510 L Street, Suite 400, Anchorage, Alaska.

Robert Green has formed a new design firm under his name, located at 233 Sansome Street, San Francisco, California.

O'Malley & Associates, Inc., have moved to One Mall North, Suite 400, Columbia, Maryland.

New associates, promotions

Koster and Associates Architects Inc., of Cleveland are pleased to announce that **David L. Holzheimer** has become a partner.

The architectural and planning firm of Thompson, Hancock, Witte & Associates, Inc., recently appointed **Walter F. Pate** as an associate.

Richard J. Hallinan has been elected a corporate vice president of Combustion Engineering, Inc.

Lee Payne has been appointed Director of the Industrial Design Department in Georgia Tech's College of Architecture.

Wallace J. Toscano, architect, has joined the firm of Karlsberger and Associates of Columbus, Ohio, as director of design.

Richard L. Engler, AIA has been appointed executive vice president and director of operations of Folse/HDR, the New Orleans, Louisiana, office and justice facilities design center of Henningson, Durham & Richardson.

Gary Bowen has been named a vice president of Bahr Vermeer & Haecker Architects, and is also president-elect of the Omaha Chapter of the American Institute of Architects.

Olga E. Petters has been named a vice president of Caudill Rowlett Scott.

The Environmental Planning and Design Partnership have named **Geoffrey L. Rausch, Jack R. Scholl, John O. Simonds, Philip D. Simonds, C. Richard Hays** and **Paul Dorr Wolfe** partners.

William H. Gantz has been made an associate in the firm of Eugene J. Mackey & Associates, Architects.

James F. Rea has joined the staff of Daniel, Mann Johnson & Mendenhall (DMJM) as manager of airport planning.

Johnson, Johnson & Roy Inc., announce the promotion of two members of the firm to the title of associate. They are: **Stephen W. Schar** and **George Sass.**

Marshall & Brown, AIA, Architects/Engineers/Planners has recently named **Ronald Williams Ford,** as a senior associate.

ADVERTISING INDEX

Prefiled catalogs of the manufacturers listed below are available in the 1977 Sweet's Catalog File as follows:
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E Engineering (brown)
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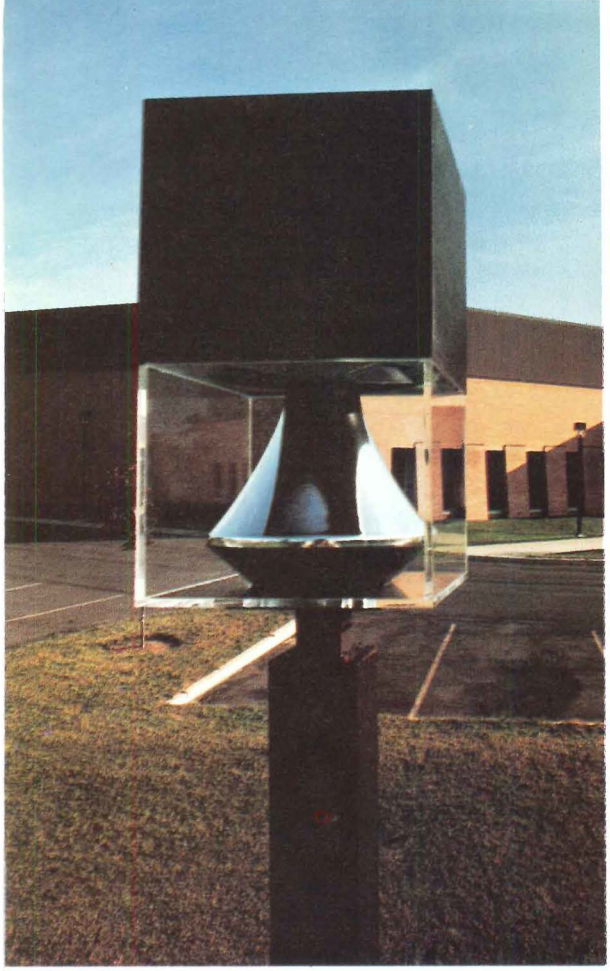

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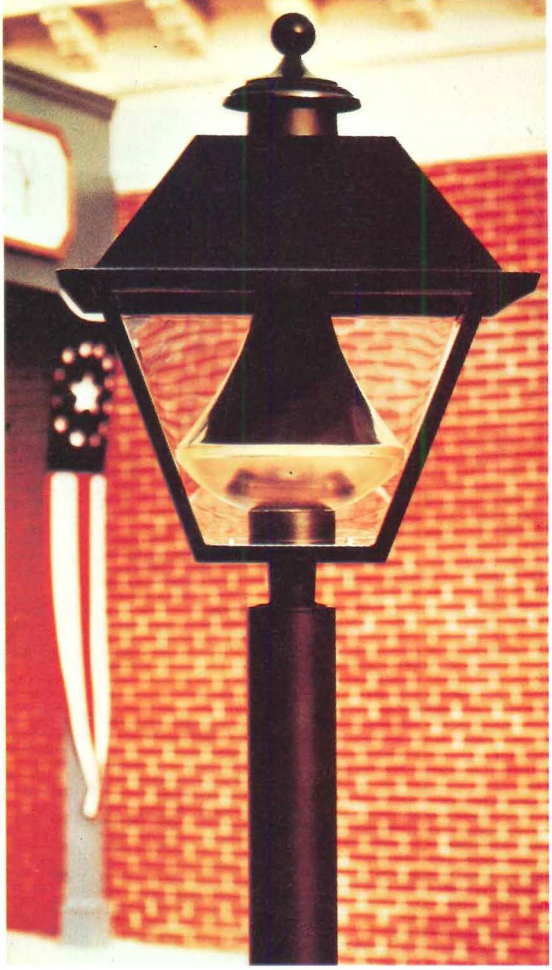

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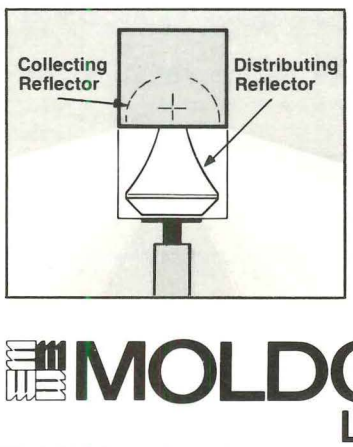

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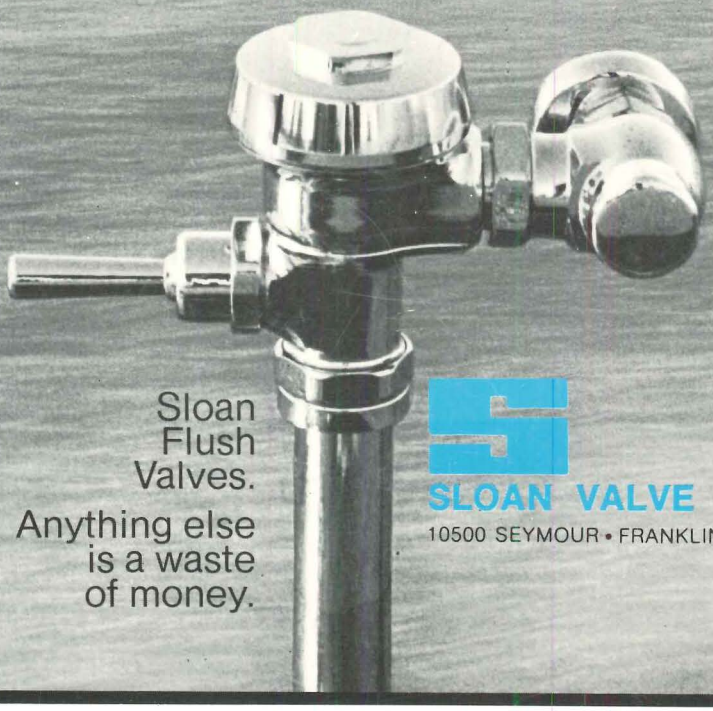

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