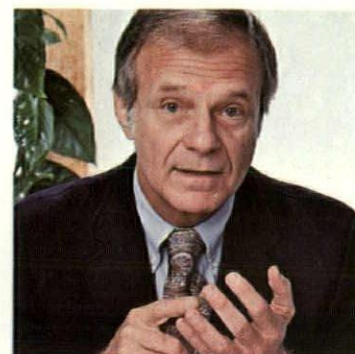


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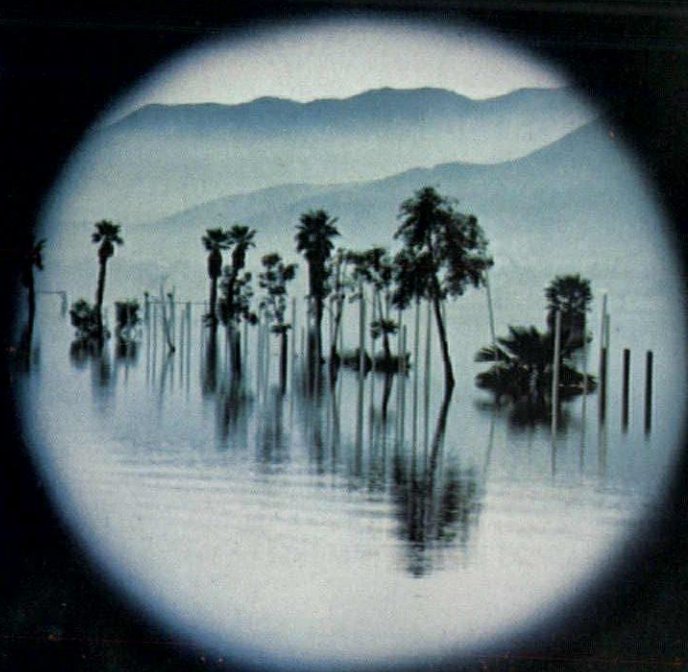
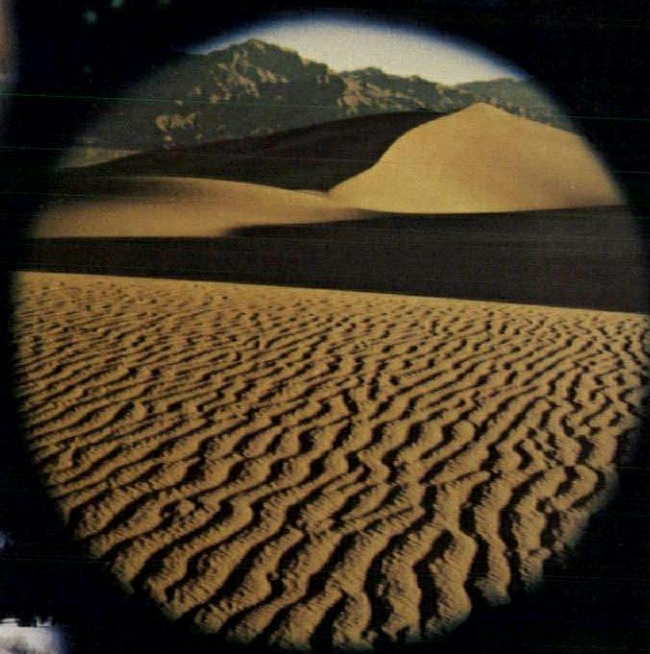
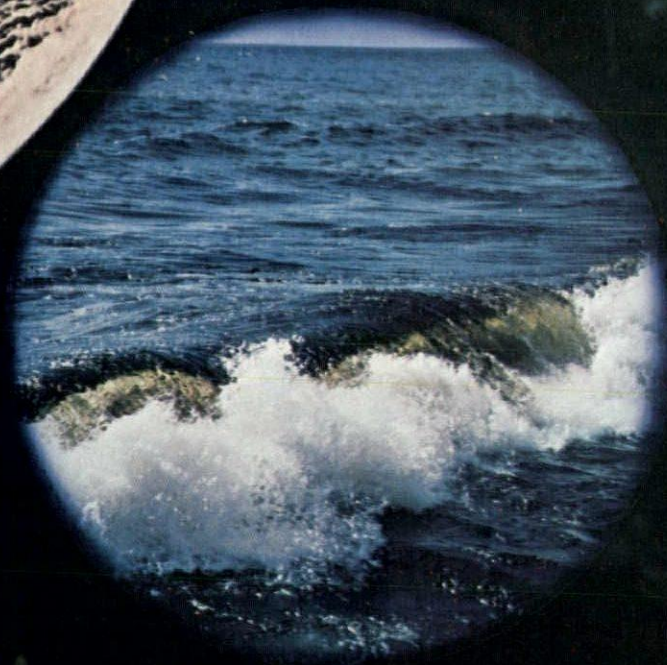
As materials costs rise and tests predict performance of wood, the engineering advantages of this renewable resource receive closer examination by architects.

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Cover: Reflective façade and space frame trellis of Indiana Bell 37X ESS switching facility, Columbus, In; architects are Caudill Rowlett Scott associated with Boots-Smith & Assoc. (p. 66). Photo: Balthazar Korab.





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Paris, 1974
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Shiu Wing Steel Works, 1978
- **JAPAN**
Oshima Shipyards,
Nagasaki-Ken, 1973
- **KUWAIT**
Shuaiba South Power and Water
Production Center, 1968
- **SAUDI ARABIA**
National Commercial Bank,
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- **SWEDEN**
The Town of Hertsön,
Lulea, 1970
- **UNITED ARAB
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Sheraton Hotel, Dubai, 1977
- **UNION OF SOVIET
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Natural Gas Pumping
Stations, 1977
- **UNITED KINGDOM**
Anglesea Loading Jetty,
Anglesea, Wales, 1969
- **UNITED STATES**
 - ALASKA**
Chena Power Plant #5,
Fairbanks, 1969
 - CALIFORNIA**
Mount Sutro Tower,
San Francisco, 1973
 - FLORIDA**
National Airlines
Hangar No. 2,
Miami, 1973

LOUISIANA

Boise Southern Paper Mill,
DeRidder, 1969

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Renaissance Center,
Detroit, 1976

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Arena, Kansas City, 1975

NEW JERSEY

United Airlines Reservation
Center, Rockleigh, 1975

NEW YORK

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Ontario, 1967

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Washita, 1966

PENNSYLVANIA

The Gallery, Philadelphia, 1977

RHODE ISLAND

Kaiser Aluminum & Chemical
Corporation, Portsmouth, 1967

TEXAS

Texas Stadium, Irving, 1972

WISCONSIN

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• WEST GERMANY

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Ethics I Profit or doom?

July 1979

Architecture, as Nancy Hanks reminded us at last month's AIA Convention, must somehow reconcile the characteristics of an art, a business, and a regulated profession. With the privileges of a professional license come legal obligations to society as a whole and to the architect's clients. Added to these regulations are those imposed by architects on one another—principally the strictures imposed by the American Institute of Architects on those who choose to join it, identified by the exalted title "ethics."

AIA's Code of Ethics, cannot, of course, address all of the real ethical questions involved in this art/business (some of which will be taken up in subsequent Editorials). The code is meant to reinforce the posture of architects as professionals serving society and to ensure that members respect other members' interests. Some of the group protection aspects of AIA "ethics" have been invalidated in recent years by the judiciary; like other professional societies, AIA can no longer set fees, for instance, or prohibit advertising. Such rules had little to do with true ethics, anyway, and more in common with the protective compacts of Medieval guilds. So much the better that these fraternal "ethics" have been largely abandoned.

The principal ethical issue now before AIA involves the real ethics of architects vis-à-vis society. This issue: can architects serve their clients and society as professionals if they stand to profit from the process of construction? There is an unmistakable conflict of interest here: will the architect risk his own income for the sake of his client's interests.

This issue has been debated within the AIA for more than a decade. It arose when more and more clients began to seek "single-point responsibility" for delivering buildings at a given price and date. There had always been organizations—not governed by AIA rules—ready to offer the building as a product at a prearranged

price, but by the early 1970s they were invading fields, such as school and hospital design, hitherto ruled almost totally by AIA's ethics code. Intense debate on the subject dominated three successive AIA Conventions—and could have split the organization down the middle—before an interim solution was adopted last year in Dallas.

Defenders of the established code claimed that the architect tainted by profit from construction would no longer be trusted by clients. Ethics aside, asserted others, the architect who reached for the role of "master builder" in today's complex world would be likely to fail.

The argument for change was made most persuasively—though without immediate success—back in 1977 by AIA Past-President Jack McGinty. "An architect cannot escape conflict of interest," he pointed out, citing conflicts between the interests of clients and users, between mandated standards and expert judgment, between economics and aesthetics, and between the client's pocketbook and the architect's—no matter what the method of compensation. "What makes us professionals," claimed McGinty, "is not the absence of conflict; it's how we resolve that conflict."

What finally passed in 1978 was provision for a three-year test of liberalized rules permitting the architect to profit from construction, provided the potential conflict is disclosed fully to the client. This ethical experiment is to be monitored over the three-year period by a Design-Build/Construction Contracting Monitoring Task Force headed by Herbert E. Duncan, FAIA, of Kansas City. The monitoring process, reported by Duncan to this year's convention, is comprehensive and methodical. Every year, representative firms—some involved in contracting and some not—will be questioned on current activities in this area, obstacles encountered, likelihood of future activity, etc.

Client experience and attitudes will be monitored, too, as will the impact of the new rules on AIA membership. The first year's findings yield no conclusions. (Though 90 percent of firms have had no design-build or contracting experience, 60 percent of those firms support the concept; the minority with such experience "strongly supports" the concept by an eight-to-one margin.) This year's data will serve mainly as benchmarks for measuring changes over the next two years.

Obstacles do remain. Lack of experience and expertise will defeat some architects venturing into profit-and-loss situations. Many will find that state regulations preclude what AIA now permits. Some clients—Department of Energy is a major one—have ruled out single-source responsibility for their design and construction. And professional liability insurance will not cover construction activities.

There are—as there have been—alternative ways to offer the client single-source design and management services, strictly on a fee basis. But then, should any firm guarantee a price without the opportunity for profit to offset that risk? And why, some ask, shouldn't some construction profit be channeled into capital for architectural firms, where it can make careers more secure and services more proficient?

In 1981, informed by the task force's data, AIA members will vote on whether to make this ethics revision permanent, to extend it for another trial period, or to repeal it. What develops by 1981 cannot be foreseen; whatever happens, the profession will have considered a view of ethics that acknowledges inherent conflicts of interests rather than suppressing them. Ethics codes must not become dogma, but demand continual reexamination.

John Morris Diefen

Views

Energy encouragement

I picked up the April issue of P/A on Energy Conscious Design, carefully read your exciting editorial and raced through the balance of the magazine with a feeling of ever increasing enthusiasm. I have waved it at meetings and workshops and urged the architects present at these sessions to read it and reread it.

I predict that this will be a landmark issue, remembered for its influence in helping to lead our profession into the Age of Energy Conscious

Design, after these uneasy times in "the land of grope."

I was particularly pleased and excited by the emphasis on a strong and vital linkage between energy, architectural form, and quality design, which I and AIA's Energy Committee believe in so fervently.

We needed this—we really needed this—and you, your staff and your contributors are to be warmly congratulated for a timely and important work. Well done!

Herbert Epstein, FAIA
Chairperson, Energy Committee
American Institute of Architects
Brooklyn, NY

Drexler's 'candy jars'

The show called "Transformations in Modern Architecture" at the Museum of Modern Art was

awaited anxiously to see whether it would be a "real" statement . . . how would it deal with "post-modern"? . . . where is architecture going? Most reviews of the show are unfriendly. They are bothered by who was left out (Aalto and Aldo Van Eyck), by a "chaotic welter of images," and by the special homage paid to the glass box. And especially that the show didn't resolve any burning questions. All of these are less critical than what the show *did* do.

The show organized Drexler's 400 "best" buildings within a conceptual scheme that completely leaves out any reference to what makes architecture different from all the other arts. Architecture has the two "extra functions" of 1) supporting and configuring human activities in order to achieve human purposes and 2) tying buildings to a specific place, or context, which they transform and which transforms them. Hospitals, airports, housing, schools—all have a social purpose in addition to being beautiful. And they are not portable objects as they are in one place only.

For Drexler to classify buildings within a taxonomy which only deals with what they *look like*, and not to deal with what they do or where they are would be silly, if it weren't so dangerous. I thought by now we could move towards an ecological perspective in architecture, where we could look at art and human need and context together as a system of issues to be approached. Then comes this MOMA-blessed taxonomy of "structure, sculpture and vernacular" and within these larger categories are "curved forms, glass skins, roofs and walls. . . ." Besides dealing with only one out of three critical aspects of buildings, this taxonomy doesn't even have the kind of internal structure which could *teach us* anything the way useful taxonomies do, like Mendeleyev's Periodic Table of the Elements, the Dewey Decimal System or Linnaeus' scheme for classifying living things. Drexler's taxonomy is a series of meaningless labels, like on candy jars. And when the "Transformations" book comes out, my architectural design students will see this taxonomy, with its MOMA-Drexler imprimatur and cachet, and believe it to be a move forward in architecture. And I gotta work harder to deal with that junk.

Michael Brill
Architect/Professor Type
BOSTI, Buffalo, NY

[While these points are very well taken, it should be noted that Arthur Drexler does not indicate that this "400" is in any way "best." The show seems to avoid any quality judgment whatsoever (see P/A, April 1979, p. 31). The catalog is expected to do the same.—Editors]

Credit extended

The following firms provided services for the Saskatchewan Conservation House project (P/A, April 1979, p. 99): architectural and structural engineering, Grolle Architect & Engineer, Ltd.; mechanical, Yoneda & Associates, Ltd.; and electrical systems, Alfa Engineering Ltd.

Chicago EL corrections

The correct name of the architect from Holabird & Root, mentioned in the news story about Chicago's EL (P/A, May 1979, p. 20), is Walker Johnson.

Also, estimated cost of the new Franklin St. subway is \$4.6 billion.

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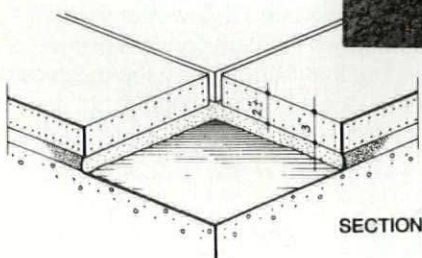
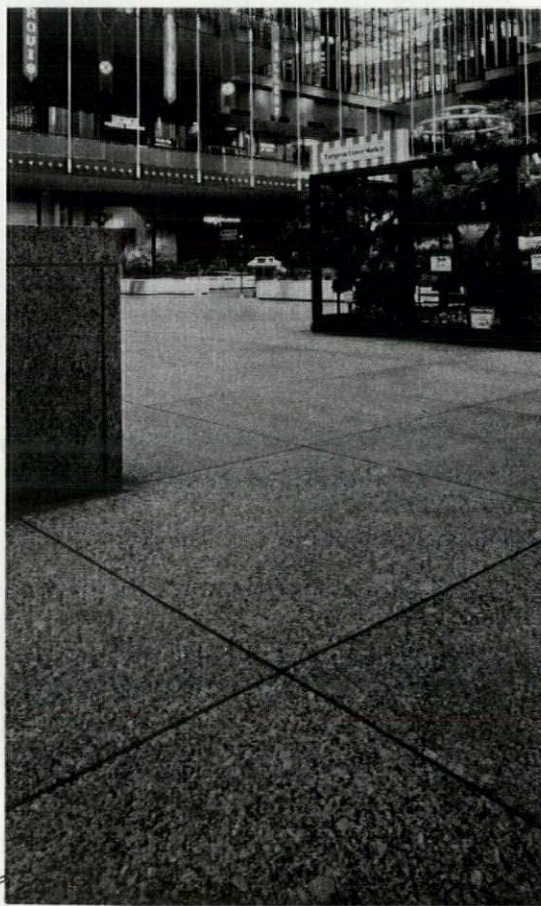
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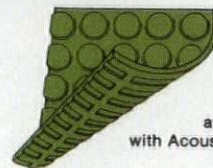
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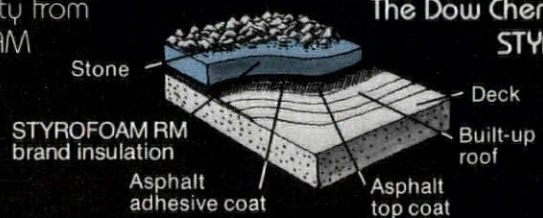


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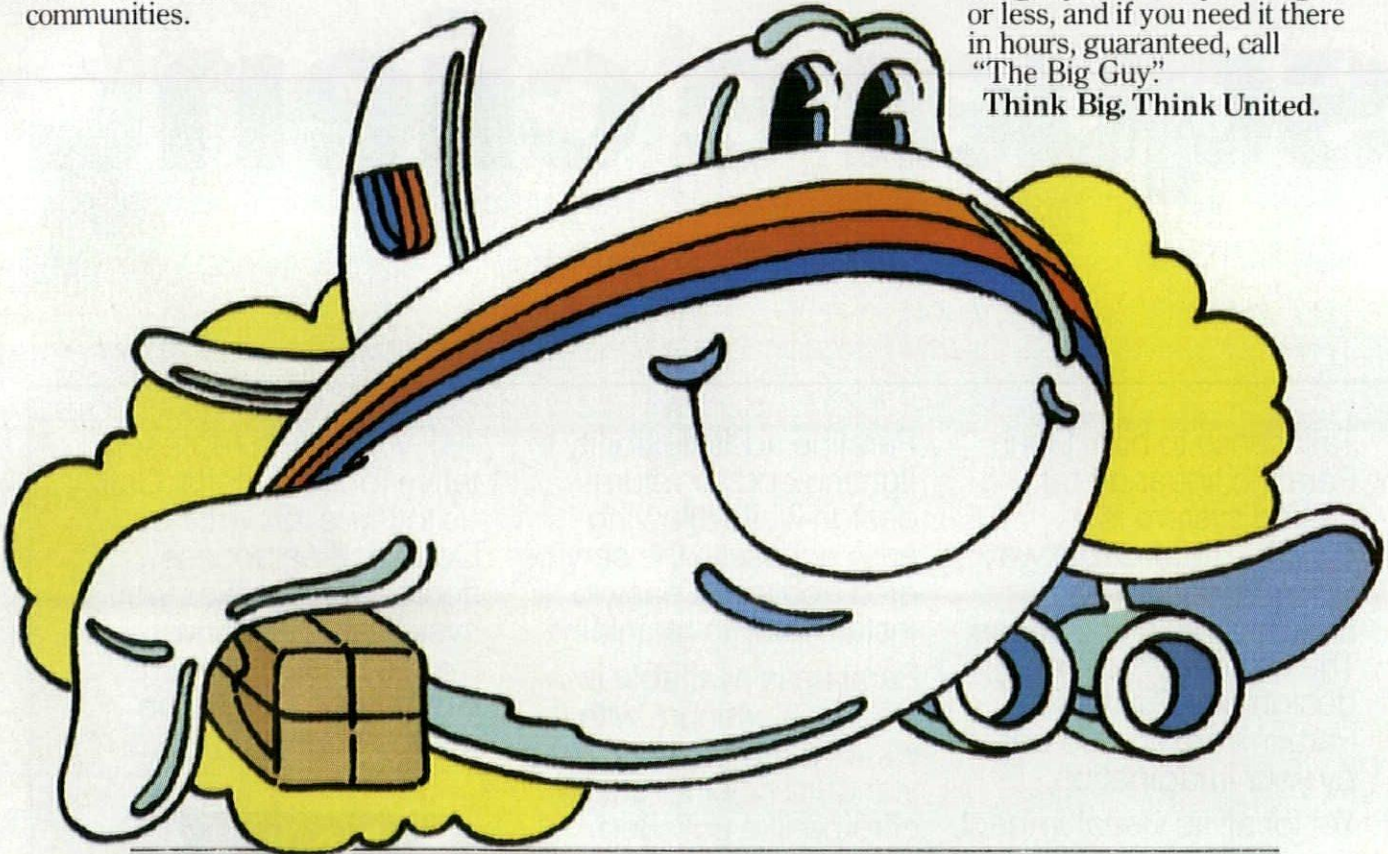
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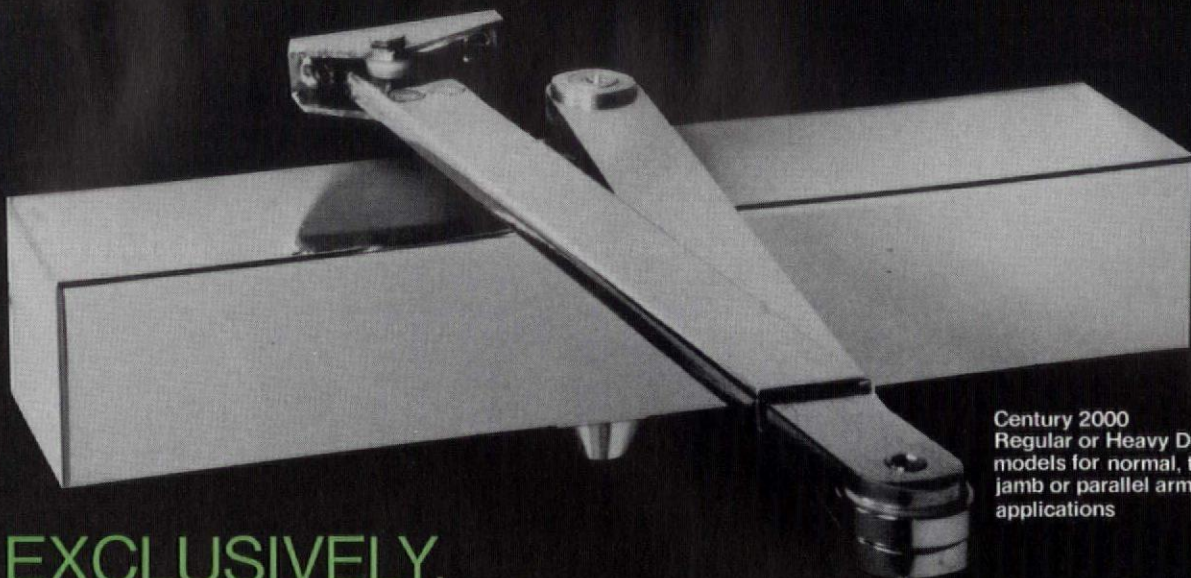
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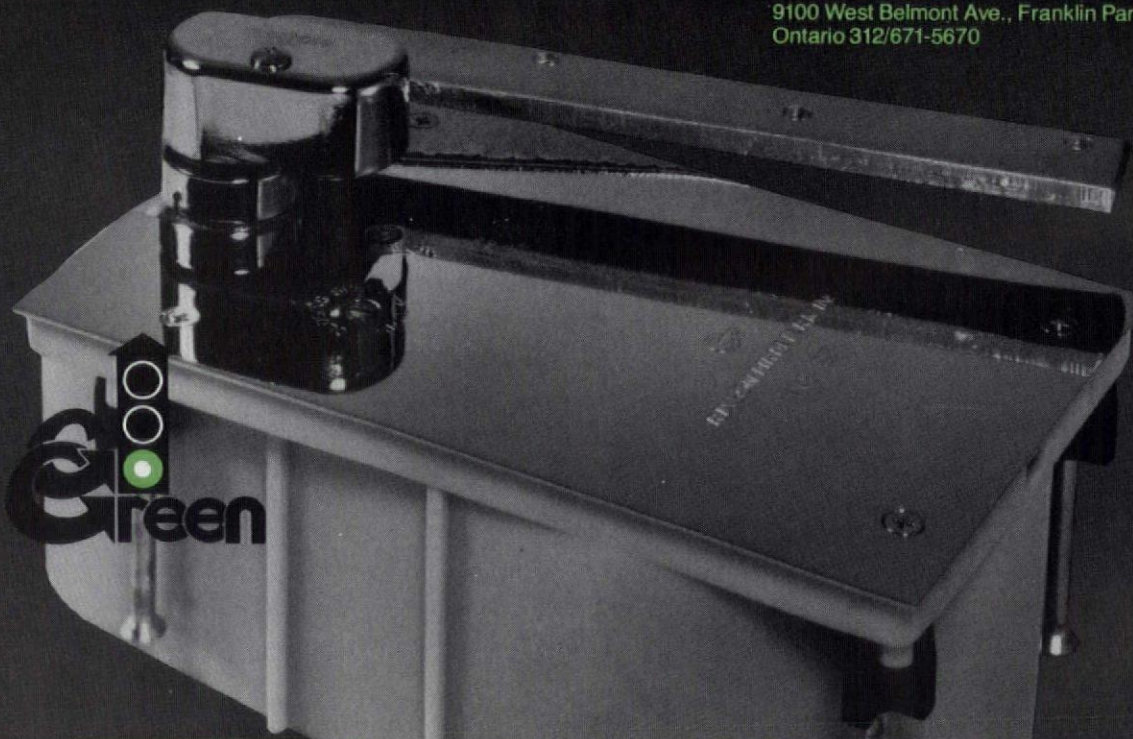
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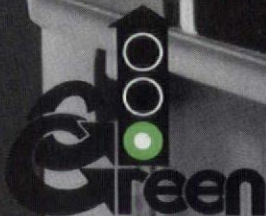
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Progressive Architecture announces its 27th annual P/A Awards program. The purpose of this competition is to recognize and encourage outstanding work in architecture and related environmental design fields in the design phase, before it is executed.

Submissions are invited in the three general categories of architectural design, urban design and planning, and applied architectural research. Designations of **first award, award, and citation** may be made by the invited jury, based on overall excellence and advances in the art.

The jury for the 27th P/A Awards program: **Frank O. Gehry**, FAIA, president, Frank O. Gehry & Associates, Santa Monica; **Helmut Jahn**, AIA, partner in charge of design, C.F. Murphy Associates, Chicago; **John L. Kricken**, AIA, AICP, associate partner, director of urban design and planning, Skidmore, Owings & Merrill, San Francisco; **Wolfgang F.E. Preisner**, Dipl.-Ing., MArch., Ph.D., partner in charge of research, Architectural Research Consultants, Inc., Albuquerque; and associate professor, co-director, Institute for Environmental Education, School of Architecture and Planning, University of New Mexico, Albuquerque; **Charles F. Rogers II**, principal, Perry, Dean, Stahl & Rogers, Inc., Architects, Boston; **Robert A.M. Stern**, AIA, Robert A.M. Stern Architects, New York; **Blanche Lemco van Ginkel**, professor, director, University of Toronto School of Architecture and partner, van Ginkel Associates, Toronto; **Francis T. Ventre**, chief, Environmental Design Research Division, Center for Building Technology, National Engineering Laboratory, National Bureau of Standards, Washington, DC.

Judging will take place in Stamford, Ct., during September 1979. Winners will be notified—confidentially—before Oct. 1.

First public announcement of the winners will be made at a presentation ceremony in New York in January 1980, and winning entries will be featured in the January 1980 P/A. Recognition will be extended to clients, as well as professionals responsible for the work. P/A will arrange for coverage of winning entries in national and local press.

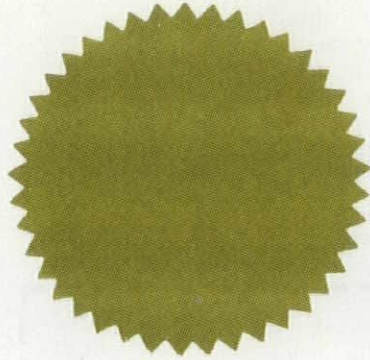
Eligibility

1 Architects and other environmental design professionals practicing in the U.S. or Canada may enter one or more submissions. Proposals may be for any location, but work must have been directed and substantially executed in U.S. and/or Canadian offices.

2 All entries must have been commissioned by a specific client. Only work initiated on the client's behalf—not in fulfillment of academic requirements—is eligible (but design teams may include students).

3 Architectural design entries may include buildings or complexes, new or remodeled, scheduled to be under construction in 1980—that is, not completed in 1979 and scheduled to commence before 1981.

(continued on next page)



P/A 27th Annual Awards Program

for projects not yet completed
in
architecture
planning
and
research

Entries in this category must include building design for at least one construction phase.

4 Urban design and planning entries may include only proposals or reports accepted by the client for implementation before the

end of 1980. Feasibility and implementation strategy should be documented.

5 Research entries may include only reports accepted by the client for implementation before the end of 1980. Submissions should deal with programming,

design guidelines, or post-evaluation for a type of project or problem. Research methodology and ways of disseminating findings should be documented.

Entry form: 27th P/A Awards Program

Please fill out all parts and submit, intact, with each entry (see paragraph 11 of instructions). Use typewriter, please. Copies of this form may be used.

Entrant:

Address:

Telephone number:

Project:

Location:

Client:

Category:

Entrant:

Address:

The undersigned confirms that this entry meets eligibility requirements (paragraphs 1-5) and that stipulations of publication agreement (paragraphs 6-7) have been and will be met. Entry has been reviewed for compliance with submission requirements (paragraphs 8-15).

Signature _____

Name (typed): _____

Awards Editor

Progressive Architecture

600 Summer Street, Stamford, CT 06904

Your submission has been received and assigned number:

Entrant:

Address:

(Receipt)

Awards Editor

Progressive Architecture

600 Summer Street, Stamford, CT 06904

Entrant:

Address:

(Return label)

Publication agreement

6 If the submission should win, the entrant agrees to make available further information, original drawings, or models, as necessary, for publication in the January 1980 P/A. The entrant will also provide appropriate slides for the presentation ceremony and reproducible black-and-white graphic material for press releases.

7 In the case of architectural design entries only, the entrant agrees to give P/A the first opportunity among architectural magazines for feature publication of any winning project upon completion.

Submission requirements

8 Each submission must be firmly bound in a binder no larger than 11" x 17". Binders 9" x 12" or smaller are preferred.

9 Submissions must include illustrations and drawings necessary to a full understanding of the proposal—all legibly reproduced. *No original drawings, actual models, or slides will be accepted.*

10 Each submission must include a one-page synopsis, in English, on the first page inside the binder, summarizing the intent and principal features of the entry. Synopsis should take up economic, environmental, energy, and user need aspects of the proposal, as pertinent. *Synopsis must conclude with a statement on why this submission deserves recognition.*

11 Each submission must be accompanied by an entry form, to be found on this page. Reproductions of this form are acceptable. All four sections of the form must be filled out—using typewriter, please. Insert entire form, intact, into *unsealed* envelope attached *inside back cover* of submission.

12 For purposes of jury procedure only, projects are to be assigned by the entrant to a category on entry form. Please identify each entry as one of the following: *Education (Higher), Education (Secondary), Education (Primary or Early Childhood), Housing (Single-family), Housing (Multiple-unit), Commercial, Governmental, Cultural, Recreational, Religious, Health, Planning and/or Urban Design, Applied Research.* Mixed-use entries should be classified by the larger function. If unable to classify, enter *Miscellaneous*.

13 Entry fee of \$20 must accompany each submission, inserted into *unsealed* envelope containing entry form (see 11 above). Make check or money order (no cash, please) payable to *Progressive Architecture*.

14 No identification of the entrant may appear on any part of the submission, except on entry form. Identifying titles may be concealed by any simple means. Client and location should be identified. For the sake of anonymity P/A will seal stub of entry form in envelope before judging.

15 Deadline for mailing is August 31, 1979. Address entries to:
Awards Editor
Progressive Architecture
600 Summer Street, Stamford, CT 06904

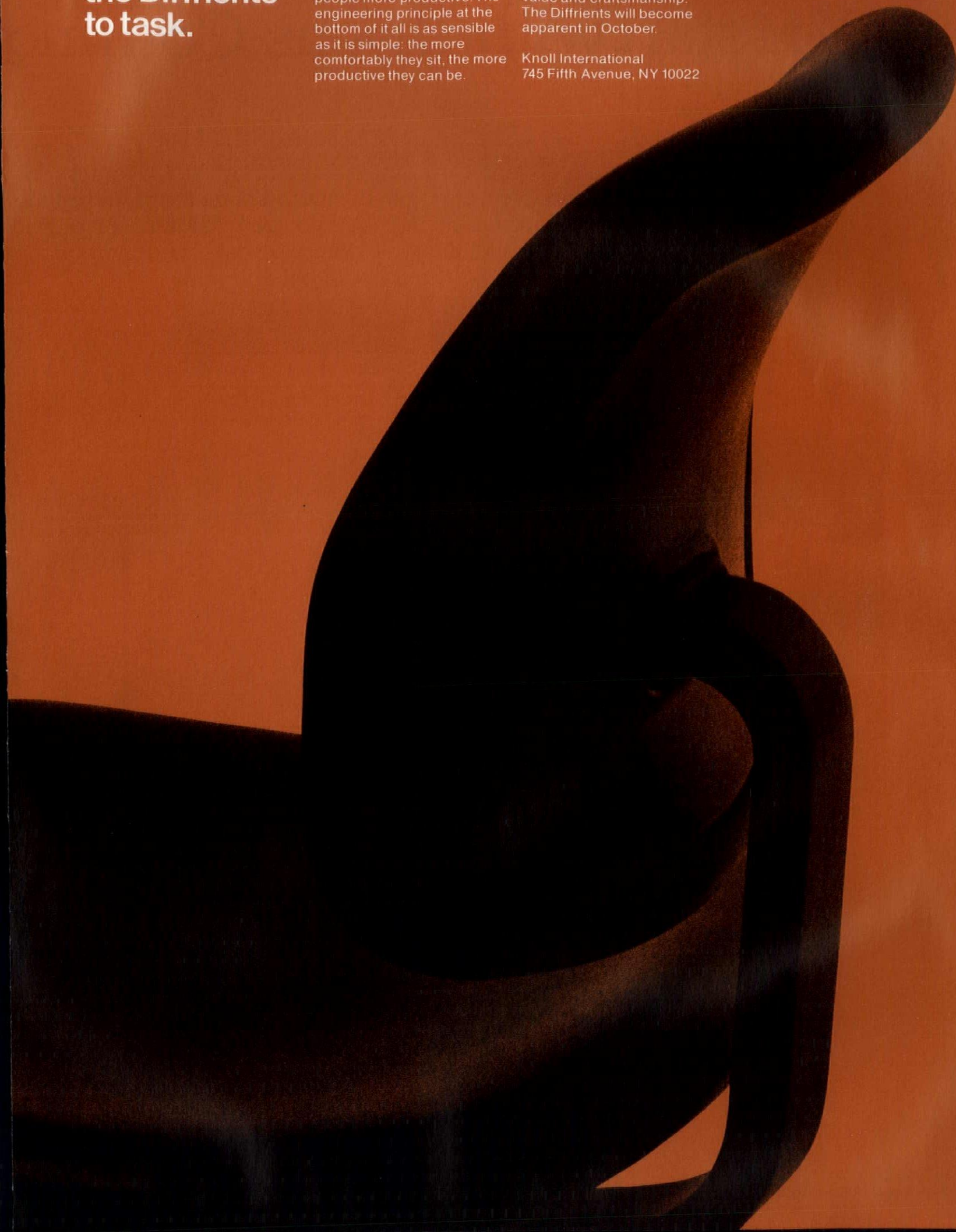
P/A will take every reasonable precaution to return submissions intact, but can assume no liability for loss or damage.

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How do you design the

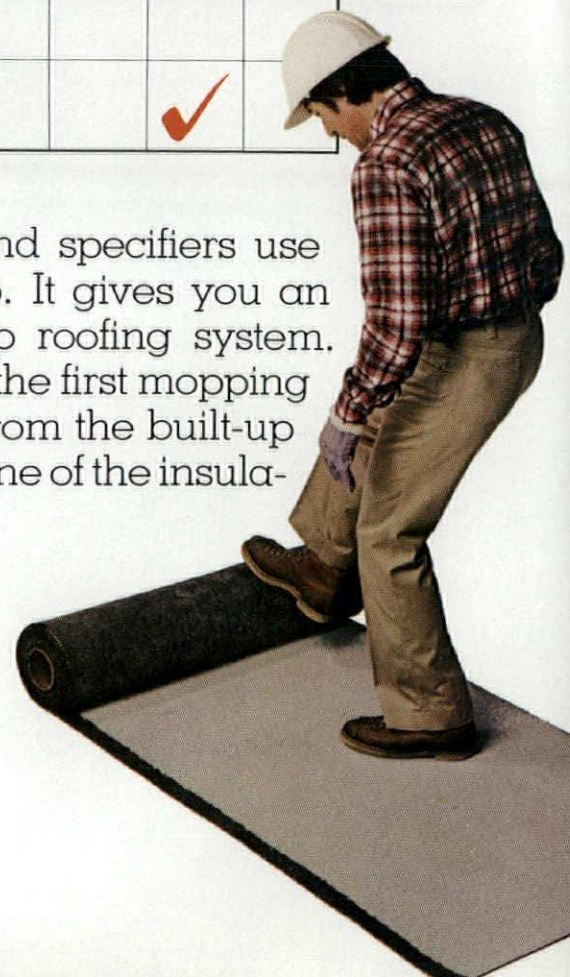
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WHY OWENS-CORNING FIBERGLAS ROOF INSULATION IS THE BEST BASE FOR BUILT-UP ROOFING									
Base for BUR	Conforms to minor deck irregularities	Resilience	Ventable	Large sizes up to 4' x 8'	Easy to fabricate (in field)	Not damaged if wet (short term)	Excellent for covering old roofs	Stable "K" factor	Dimensional stability
Owens-Corning Fiberglas Roof Insulation	✓	✓	✓	✓	✓	✓	✓	✓	✓
Owens-Corning Fiberglas Furi®	✓	✓	✓		✓	✓			✓
Perlite								✓	✓
Urethane				✓	✓	✓			
Composites									
Wood Fiber								✓	

Many Owens-Corning customers and specifiers use Fiberglas Roof Tape as the next step. It gives you an even stronger base for your built-up roofing system. Fiberglas Roof Tape is applied before the first mopping of bitumen. It prevents bitumen loss from the built-up roofing and helps control the sheer plane of the insulation base.



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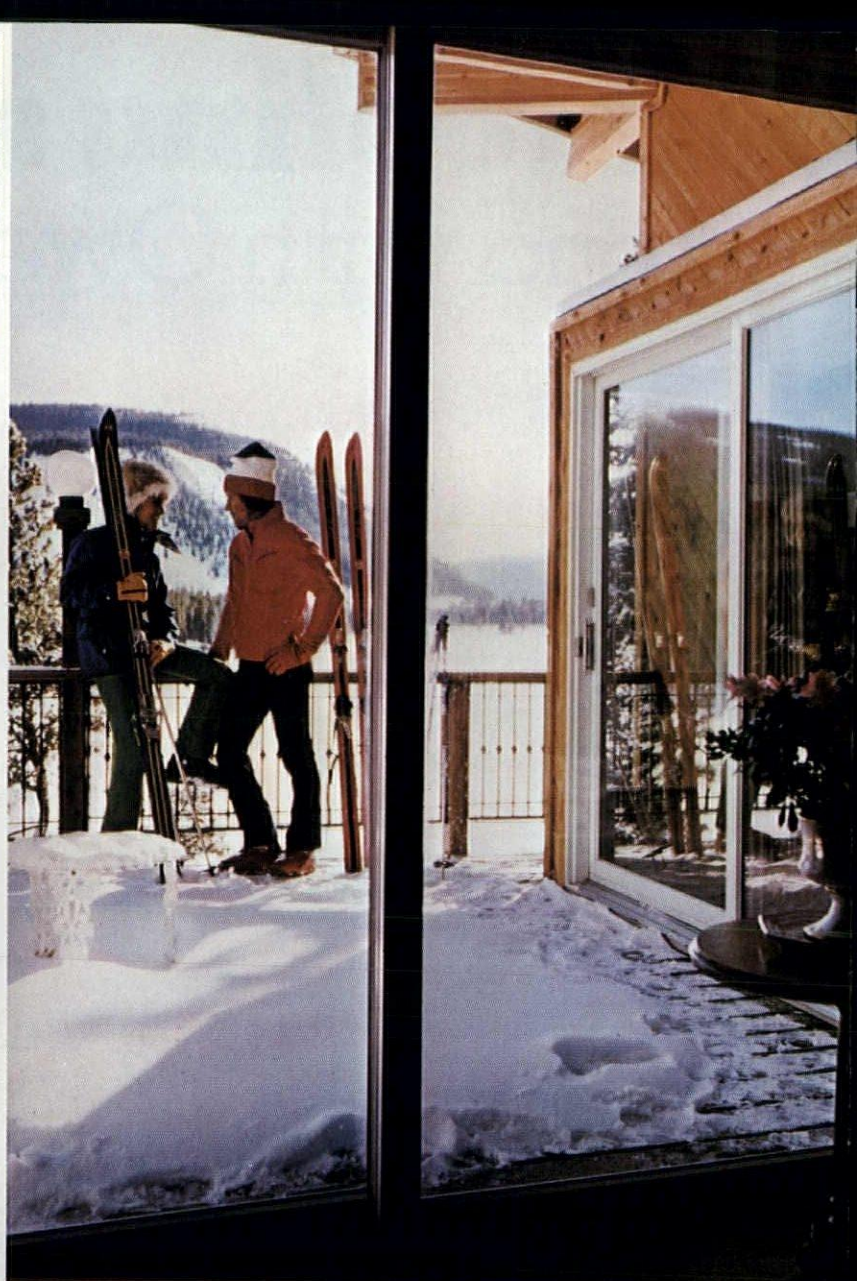
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*T.M. Reg. O.-C.F. Corp. © O.-C.F. Corp. 1979

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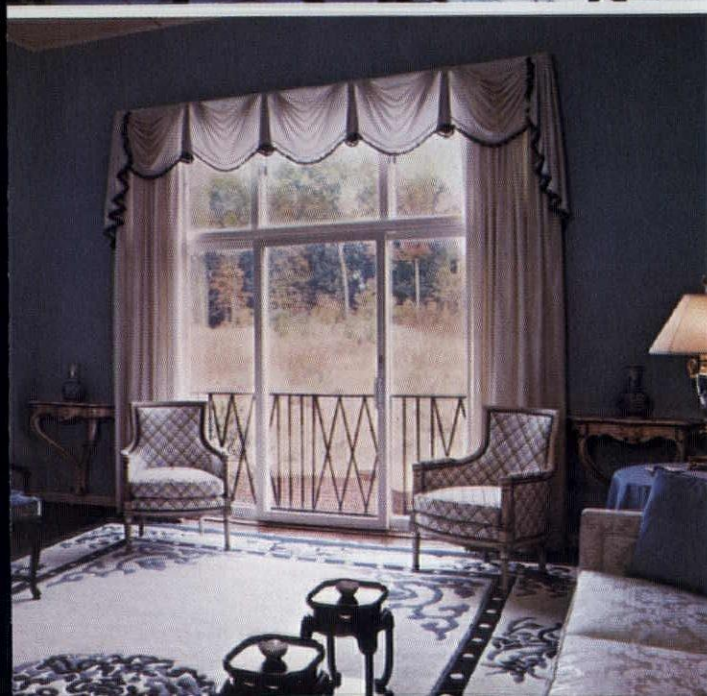
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News report

Retail construction: wholesale destruction

It is becoming alarmingly clear that New York's Fifth Avenue Special District zoning is encouraging wholesale development that totally destroys the essence of the Avenue. Paradoxically, the zoning was introduced, in the early 1970s, to preserve the character of one of the world's most gracious shopping promenades. Instead, it is selling off Fifth, bargain-basement style. A controversial project planned for the very heart of the city, at Fifth and 56th St., is the latest in a series of recent Midtown colossi to illustrate the crisis.

In the current booming office-space market, the Special District regulations, which grant developers floor area bonuses for the inclusion of retail and certain "public amenities" in new projects (see P/A, Dec. 1975, pp. 44-47) have made high-rise mixed-use development in Midtown so profitable that the mid-rise masonry department stores that established the unique retail identity of the Avenue can no longer compete with the new blockbusters. The whole scene resembles a football game in which developers pass the zoning bonus ball, scoring repeatedly, while the Commission, having made the rules, now plays a short-sighted defense, vainly tackling each in turn while leaving the goal unprotected.

The planned \$100-million, 58-story tower at 56th St., developed by New York real estate magnate Donald Trump, is to replace one of the kinds of enterprise the Special District was intended to save: Bonwit Teller's. Standing with the Tiffany building by Cross & Cross, the 1930 department store, designed by Warren & Wetmore, provided the Avenue with a joint image of limestone decorum. Although the proposed new tower, designed by Der Scutt of the New York architectural firm of Poor, Swanke, Hayden & Connell, is a showy building which might be a fine asset



Trump's sawtoothed, stepped-back glass tower.

to other cities, any 750,000-plus-sq-ft building is much too big and too bulky for traditional, gracious Fifth. Moreover, the contextual impact of the 638-ft tower, by far the tallest building on the Avenue (except for the 705-ft General Motors building) will be compounded by its proximity to other megatowers: the IBM building, by Edward Larrabee Barnes, on the same block, and the AT&T building, by Philip Johnson, one block away on 56th—both of which are only somewhat shorter and contain less floor space (see p. 55).

Like Olympic Tower before it (see related story, next month's P/A) the Trump



Bonwit's building set the tone of Fifth Ave.

project uses the development rights of an adjacent existing building (Tiffany's) to increase its zoning lot size. So that the bonuses won for retail and amenities generate, in Trump's case, so much additional floor area that the proposed building is almost double the size of the building Trump would be allowed to build without bonuses on the parcel he purchased. With the bonuses and lot merger, Trump claims that he could build an "as of right" building which would be much uglier than the Der Scutt design. Therefore, he implies, the Commission had better approve the latter, even though that building exceeds the lot coverage requirements and includes an arcade perpendicular to Fifth as a bonus-able amenity—two design features contrary to the intent of the Special District zoning. The flaw in this threatening logic is that the "as of right" building, with its small office floors, is recognizably unmarketable.

Trump is requesting a zoning variance for the arcade based on the rationale that the four stories of retail at the tower's base would be organized around a covered pedestrian space linked to IBM's through-block arcade, between 57th and 56th Sts. Thus, in theory, the Trump arcade would provide an internal circulation system. But in fact, IBM's plans, designed to intersect with the existing Bonwit's building, call for an escalator which will not match Trump's floors and a column which

David Morton

will block all but 12 ft of Trump's arcade.

Most important, any arcade opening off Fifth so close to its intersection with 57th will be detrimental to the intersection of those two great shopping streets. If successful, the arcade will siphon off pedestrian activity, leaving the boulevards barren; if a failure, it will become a bleak cavern. And either way, this arcade and the bronze reflective glass skin of the building will create a disturbing break in the street-level retail frontage on the Avenue. Clearly, this "amenity" is not worth the giveaway in bulk and density.

The city claims to be rethinking the existing giveaway program. High time.

Bonwit's "positively last" appearance

After departing its old building, due to be demolished for a high-rise tower (see related story, above) with tears and a close-out sale, Bonwit Teller's is planning to reopen down the street, in another oversized product of zoning bonus legislation, the "Pahlavi Foundation" building at 52nd St. and Fifth Ave. (The Foundation, which owns the building, was established for personal investment purposes by the ex-Shah of Iran.) This recently completed building received bonus floor area for including a covered pedestrian space—which at present is not serving its intended purpose, but is being used as an unloading area for the building.

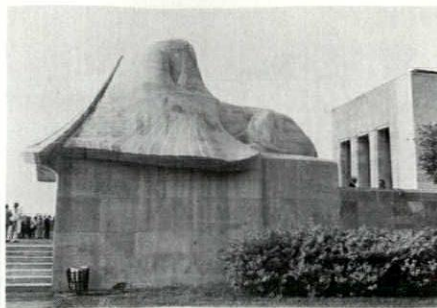
This area is now to be converted into floor space for Bonwit's. Making the best of a bad situation, the City Planning Commission has agreed to accept the added retail space as a substitute for the arcade, under the Fifth Ave. Special District zoning. At 85,000 sq ft (spread over seven floors and a basement), the new Bonwit's will be much smaller, and more specialized than the present 200,000-sq-ft store.

AIA Convention: Practice and/or ideas

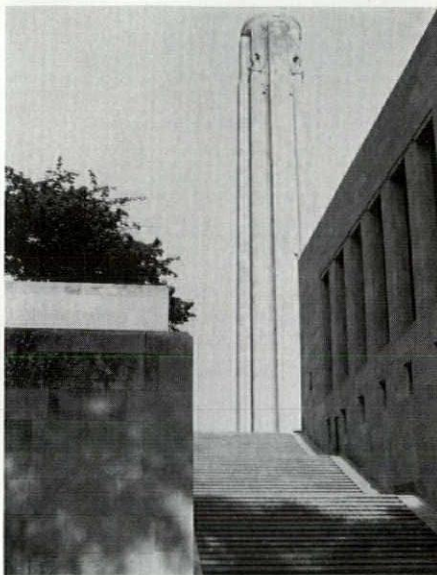
Receiving the AIA Gold Medal at the 1979 Convention in Kansas City, June 3–7, I.M. Pei exhorted architects to remember that "The world of practice and the world of ideas belong together." Though Pei stressed the "paramount importance of the art of architecture," the convention focused on the business of architects.

D-B/CC: Year one

One highlight of the three business sessions was a report from the AIA Task Force on Design/Build Construction Contracting, summarizing the base year efforts at eval-



Kansas City Liberty Memorial, by Van Buren Magonigle: mourning sphinx, be-angled tower.



Photos: John Dixon

uating the change to the Ethics code, approved last year, which allows AIA members to participate in profit-loss situations in construction contracting (P/A, June 1978, p. 22). One effect of D-B/CC, changes in liability exposure, seemed particularly relevant following the spectacular collapse of Kemper Arena (see below). The report indicated that architects are hesitant to get involved or comment before the three-year experimental phase of D-B/CC is over; a third of firms questioned were not willing to express an opinion as to whether AIA members should be allowed to participate in D-B/CC, and over one-half of those who did felt that such participation should be done by creating a separate business entity.

No nukes?

The California Council introduced the most controversial resolution of this year: that the AIA "expeditiously develop and promulgate a policy on nuclear energy." This resolution was viewed as outside the scope of the AIA's expertise by delegates from Ohio, Illinois, and other states that rely heavily on nuclear power. The nuclear policy resolution was defeated in a regionally divisive roll call (1238 to 810), while a substitute resolution, calling for the AIA to "urge national reappraisal" to eliminate energy waste in buildings and move toward renewable energy systems, passed.

Guild solidarity

Also passed was a resolution, introduced by the Chicago Chapter, that the AIA should oppose states' adoption of the criteria of internship identified in the NCARB's Intern Development Program, as a mandatory prerequisite for licensing. The IDP, instituted last year, defines what skills an intern should have the opportunity to develop. According to NCARB's Sam Balen, Director of Professional Development, such a program may be perceived by architects as a threat, since, if the criteria become mandatory for licensing, architectural firms which deny interns the chance to gain the necessary expertise may have trouble finding interns.

Good intentions

This year saw a greater integration of convention business with related architectural activities and with the host community. Award winners contributed their expertise through the Professional Development Seminars. The Kansas City R/UDAT, held June 1–3 (see next month's P/A), provided issues to which the Student Design Charrettes during the convention furnished design solutions. The week-long "City In Celebration" arts festival that preceded the convention set a welcoming tone.

The innovative discussion among living



Mitchell, Harrison, Johnson at Gold Medal talk.

Gold Medal winners—Wallace K. Harrison, Pietro Belluschi, Philip Johnson, and I.M. Pei—was a dynamic and barbed interchange, culminating in a typically forked remark by Johnson: "The greatest accomplishment of Wally (Harrison) is the Albany Mall" (see P/A, May 1979, p. 106). If the architects who applauded that comment were serious in their approval, architecture is a sad business indeed.

Kemper Arena roof collapses

A pall was cast over the Kansas City AIA convention, only one day into general business sessions, as a powerful storm decimated 5-year-old R. Crosby Kemper Memorial Arena. Designed by Helmut Jahn of C.F. Murphy Associates in Chicago, the handsome hall was a previous winner of Chicago and national AIA [News report continued on page 30]

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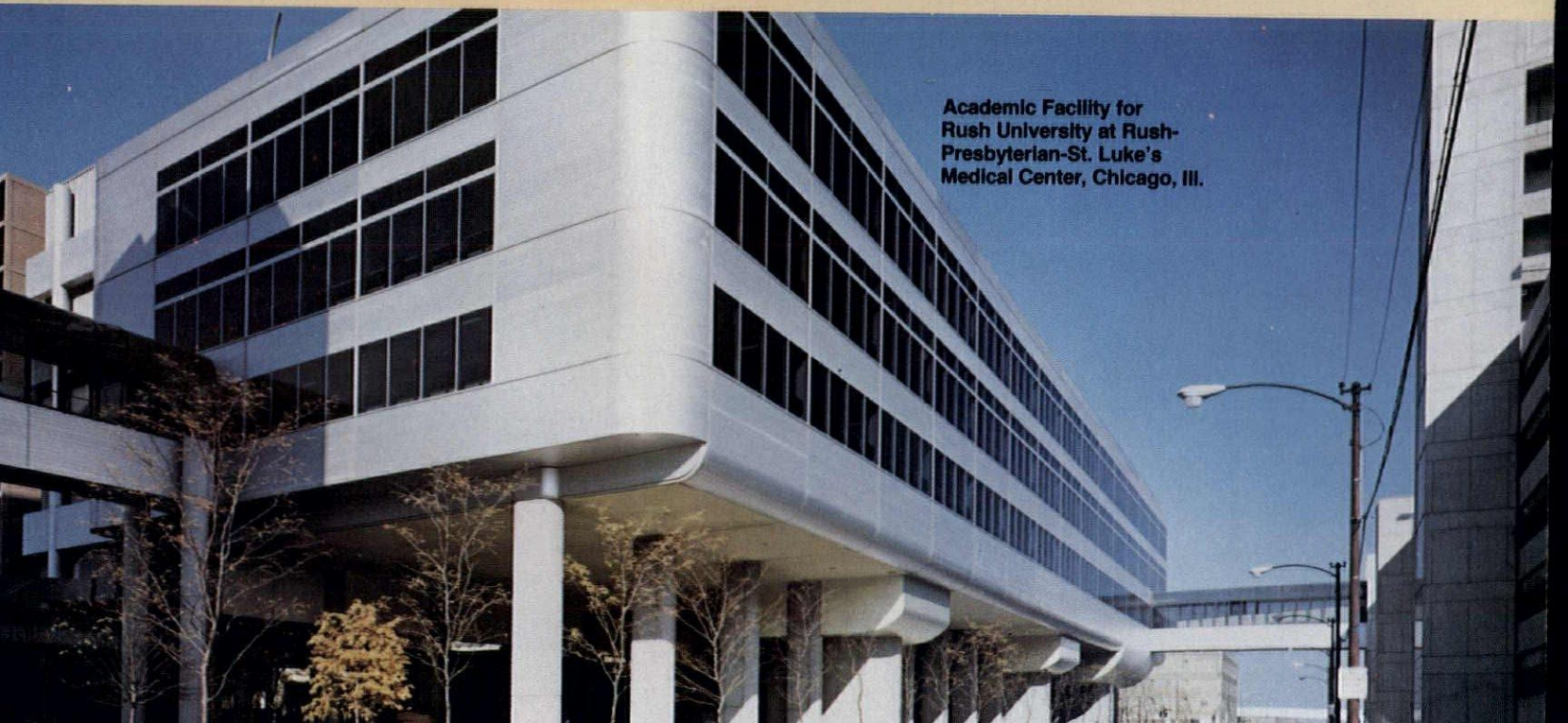
Anyone concerned with the planning and building of healthcare facilities knows that these structures are destined for many changes after completion.

An effective and economical answer to this problem: Interstitial Space Design—a system which incorporates intermediate spaces between working floors.

In these spaces, electrical, mechanical and special service equipment, communications lines and piping and ducts are housed and serviced...allowing the working floors to undergo major changes without interrupting vital services. And maintenance of services need never disrupt normal operation of working floors—a key factor to a hospital which must function around the clock.

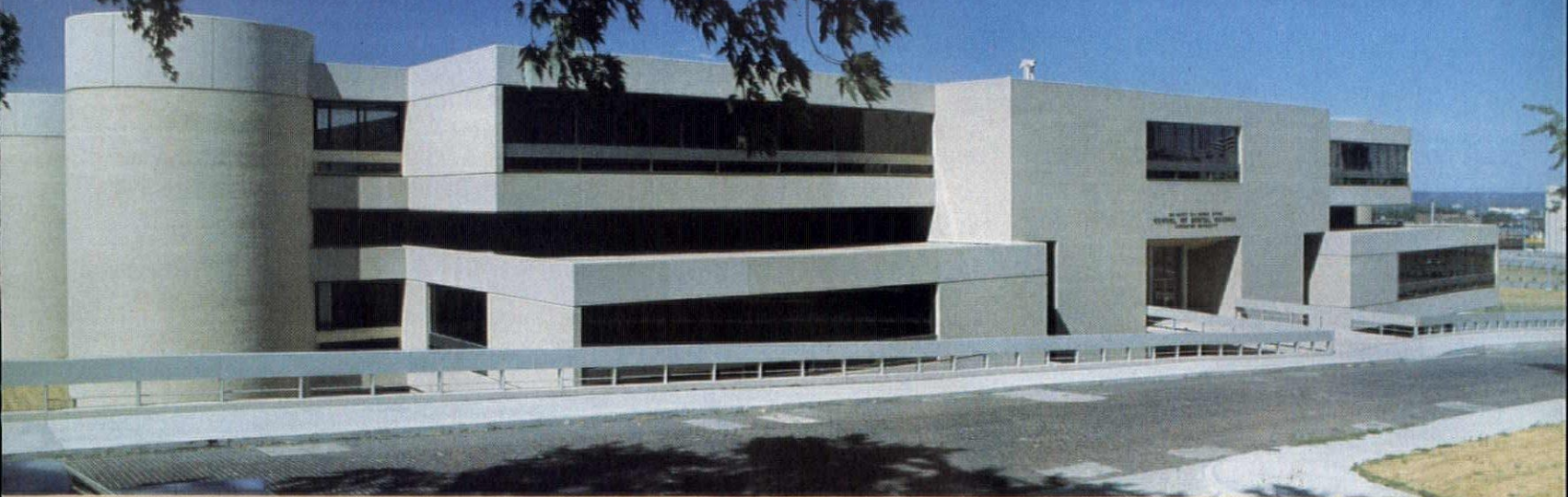
Steel for Flexibility and Economy.

Structural steel plays an important part in the concept. Large, column-free, open floor spaces and the long spans necessary to allow major functional changes



Academic Facility for
Rush University at Rush-
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Medical Center, Chicago, Ill.

Boyne School of Dental Science,
Creighton University, Omaha, Nebraska.



are only possible with steel. An important cost consideration: many of the steel trusses used for interstitial structures are shop-assembled, which can lower construction costs and reduce erection time. The deep trusses in the interstitial spaces provide a strong yet light frame from roof to foundation—which also results in economies.

The new, well-planned healthcare facilities pictured here all used the Interstitial Space Design System. To find out more about them, or for more information regarding the many applications for structural steel, contact a USS Construction Services Representative through your nearest U.S. Steel Sales Office. Or write for the Technical Reports to P.O. Box 86 (C1166), Pittsburgh, Pa. 15230.

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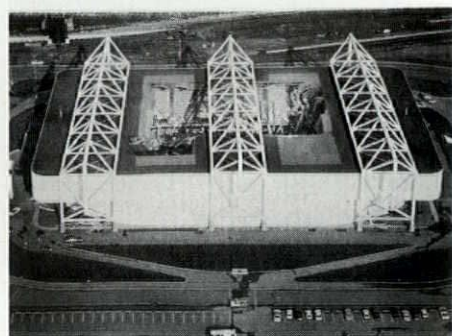
Good Samaritan Hospital,
Dayton, Ohio.

Hennepin County Medical Center, Minneapolis, Minnesota.
ARCHITECT: Medical Facilities Associates General, Minneapolis, Minnesota. A Joint Venture of Smiley-Glotter Associates and Thorsen & Thorshov Associates.
HOSPITAL CONSULTANT: Booz, Allen, Hamilton, New York, New York.
STRUCTURAL ENGINEER: Bakke Kopp Ballou McFarlin, Minneapolis, Minnesota.
STRUCTURAL CONSULTANT: LeMessurier Associates/SCI, Cambridge, Massachusetts.
GENERAL CONTRACTOR: M. A. Mortenson Company, Minneapolis, Minnesota.
STEEL ERECTOR: N.H. Sandberg Erection Company, St. Paul, Minnesota.

Boyne School of Dental Science, Creighton University, Omaha, Nebraska.
ARCHITECT/ENGINEER: Leo A. Daly, Omaha, Nebraska.
GENERAL CONTRACTOR/ERECTOR: Peter Kiewit Sons' Co., Omaha, Nebraska.
STRUCTURAL STEEL FABRICATOR: Drake-Williams Steel Inc., Omaha, Nebraska.

Academic Facility for Rush University at Rush-Presbyterian-St. Luke's Medical Center, Chicago, Ill.
ARCHITECT: Metz Train Olson & Youngren, Inc., Chicago, Illinois.
STRUCTURAL ENGINEER: C. A. Metz Engineers, Chicago, Illinois.
STRUCTURAL CONSULTANT: LeMessurier Associates/SCI, Cambridge, Massachusetts.
GENERAL CONTRACTOR/CONSTRUCTION MANAGER: Morse/Diesel, Inc. Chicago, Illinois.
STRUCTURAL STEEL FABRICATOR/STEEL ERECTOR: American Bridge Division of U.S. Steel.

Good Samaritan Hospital, Dayton, Ohio.
ARCHITECT: Levin Porter Smith, Inc., Dayton, Ohio.
HOSPITAL & HEALTH SERVICES CONSULTANT: E. D. Rosenfeld Associates, Inc., White Plains, N.Y.
STRUCTURAL ENGINEER: R. S. Fling & Partners, Columbus, Ohio.
GENERAL CONTRACTOR: B. G. Danis Co., Dayton, Ohio.
STRUCTURAL FABRICATOR: (Now known as Berkley Steel Division, Inc.) Camden Steel Corp., Camden, Ohio.
STRUCTURAL ERECTOR: J. O. Berkley Co., Inc. Gettysburg, Ohio.



Aerial shot of Kemper collapse.

honor awards. Luckily, except for a few uninjured security and maintenance people, the arena was empty during the Monday evening storm. Jahn, in Kansas City to receive yet another award—for the Angela Athletic Facility, Notre Dame, In (P/A, July 1978, p. 58)—was soon besieged by reporters demanding an immediate explanation.

Speculation at the convention ran rampant about the cause of the incident. Early newspaper reports compared the Kemper structure to the Hartford Civic Center, which collapsed last year. The structures, however, are in no way similar—except for similar functions and long spans—and the circumstances are obviously worlds apart. Talk turned to tornados, flat roofs, and drainage problems, but it appears that there wasn't an actual tornado, Kemper's roof was *not* flat (it has a 3-in. pitch), and drains appeared to be working well. Even though a National Severe Storms Forecast Center spokesman estimated that 640 tons of water (240,000 gallons) fell on the roof in half an hour, that would only have added a pressure of 16 psf on a surface designed to withstand 75 psf.

Other damage to the building suggests that extreme atmospheric pressure shifts could have caused unforeseeable differentials between inside and outside pressures. Even the windtunnel testing which preceded the building's construction could not reproduce this type of occurrence, and buckling of some exterior panels and soffits seems unrelated to the roof collapse. The main structural bents which supported the suspended roof remained intact.

Teams of outside engineers, including city-hired James L. Stratta, of Menlo Park, Ca, were on the scene soon after the collapse, to begin to determine both the cause and appropriate rebuilding strategies. Because Kemper is booked for numerous events, the city is understandably anxious to rebuild the facility. Though cleanup operations have now begun, fallen members will be stockpiled for possible future inspection. [JM]

Artistic alternates to Modernism

**Architectural Projects
by Roger Ferri and Allan Greenberg
Museum of Modern Art, New York
June 2–July 15**

Omitted from MOMA's earlier Transformations exhibit (P/A, April 1979, p. 31) these two projects (and a third, by Gaetano Pesce, shown earlier, see below) stand in imaginative and individualistic contradiction to that reductionist exhibit. Asked to create a statement free of all commitments to Modernism, these three architects responded in radically different and unprecedented ways—all of which seem refreshing alternative modes of architectural imaging.

Both Greenberg and Ferri turn to an artificial nature for subject, and each derives from his own ordered nature a consistent and unified style. Each presents his vision in a group of architectural drawings of unusual quality: Greenberg's classical ink renderings, Ferri's rich botanical illus-



Top: Greenberg's witty garden; below: Ferri's engineered lily courts.



trations, are both delightful works of art.

Greenberg, a banner-carrying traditionalist, proposes a park on the site of what is now a cementy through-block passage in Mid-Manhattan. Drawing on 16th-Century Italian gardens, his proposal envisions a long Baroque allée, leading to a court cut out of a tall hedge. In the center of this court, an octagonal pavilion contains a fountain whose water forms a dome

for the structure. Around the pavilion, a threaded arcade defines "rooms." The project is full of visual plays. Like any Baroque room, the ceiling of the allée is formed of beams defining lozenges, but where, on a real ceiling, these would be filled with painted clouds, sky, and angels, here the space between is open to the real sky and clouds. In the court, what looks like a building—the octagon surmounted by the water dome—is an unenterable illusion, while the "rooms" are on the "outside."

Ferri's design for an ideal city in the western U.S. recalls in its geometric layout the "ideal cities" laid out by late Renaissance Italian tyrants. The most developed segments of the city, however, the "Hypostyle courtyards," draw on the more modern geometry of Buckminster Fuller's geodesic structures. The "courts," surrounding the city center, are canopied with built hexagonal lilies, supported on twisting stems. The six petals of each stylized flower meet with those of its neighbors to form a field of tripartite arches. Brightly green and blue, the 42-ft-high flowers are illustrated in cross-sections resembling something from an old botanical manual.

Ferri's courts use a system derived from engineering to express not the abstract forms of the tensions involved, but the natural forms from which that geometry takes its mythical roots. Similarly, the scheme plays off of the architectural myth that the column derives from the tree (recalling Emilio Ambasz's use of real plant forms as architecture in his scheme for grape-pickers' housing in California).

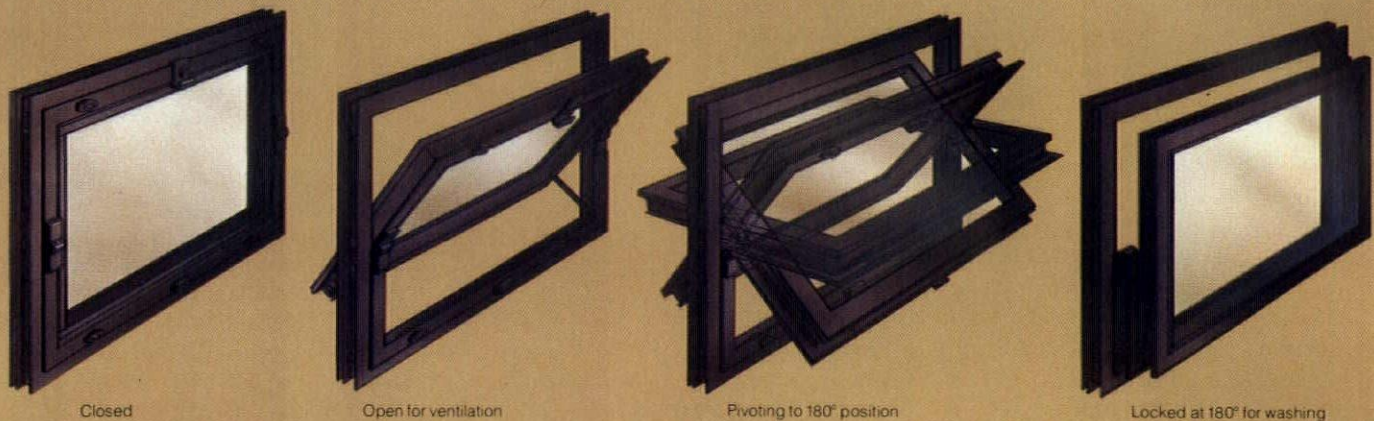
**Gaetano Pesce
Project for Manhattan Highrise
Mar. 1–April 10, 1979**

Gaetano Pesce's project for an imaginary skyscraper on the site of Mies van der Rohe's Seagram Building in Manhattan proposed a radically different mode of conception and construction.

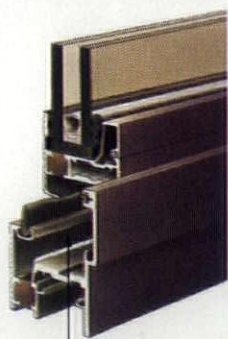
The five-colored rubber bas-reliefs portraying the skyscraper—an introductory piece, the focal elevation, two enlarged sections, and one blown up detail—are startling; rubber bas-reliefs fit no conventions of architectural presentations. And the garish, disorderly forms shock purist aesthetic. But the project conveys infinite freedom and fecundity, a sense of possibilities and potential in architecture. "I chose to work in rubber because rubber is an ambiguous medium," Pesce explained in a recent P/A interview. "In any architecture there is a time between the design and its realization when there are rich possibilities for discussion and change. I want to stress that time of fertilization."

Pesce feels the Modernist movement, [News report continued on page 32]

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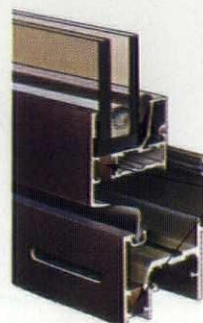
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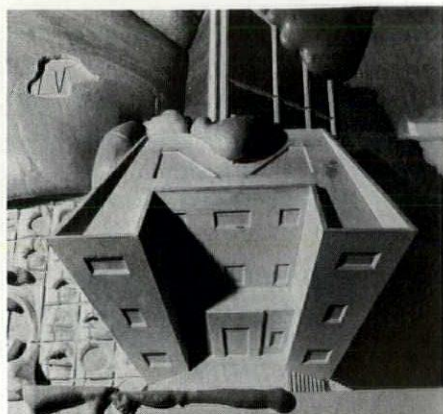
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Detail of Pesce's foam skyscraper.

premised on a new system of engineering (as opposed to architecture), propagated a medium and manner which insidiously became the message. To express the diverse and discordant identities of today's urban places, a new mode is needed, one not only formally but technically innovative.

The project imagined a series of polyurethane form masses, their interiors excavated, imposed on each other in a tall pile. The whole is incoherent, inconsistent, diverse, even discordant, in re-

flection of Pesce's vision of the modern city.

The foam skyscraper contains a multitude of disjointed architectural elements and references, including fragments of four masterpieces of the International Style. Stuck into Pesce's organic form, they seem alien objects stabbing a body. Other pieces of the foam blob, suggesting birth, love, death, etc., represent Pesce's belief that "architecture is life." The enlarged details of the skyscraper select particular aspects of modern life for comment. One section depicts an amoeba-shaped apartment for the prince of modern times, a trade leader; another, the headquarters for a political party, made of a conglomeration of the four modernist fragments, envisioned as abstract and placeless symbols of empty ideologies. Last, a proposal for a construction using perspective as geometry. The planes, slanting in reality to their theoretical vanishing point, project a sense of imbalance, uncontrolled motion. Pesce envisions an alien place. But the point is, that's where we are.

In a museum about to undergo a "transformation" of its own, it is a small good thing to see a few fringe architects' fantasies. Perhaps in its new enlarged quarters, MOMA might mount a show of the built architecture of recent years that has been equally fresh—just to show the pub-

lic that architecture can be aesthetically delightful without being unrealistic. Some architects neither plod nor float above the ground, but walk taller: these are the ones MOMA should show us now.

Pei in the Land of the Giants

The latest Pei pentagon, the \$145-million, 75-story El Paso office tower on Texas Commerce Plaza in Houston, Tx, will be the tallest building in Houston. Yet for all its record stature, the pale gray granite tower, designed by Pei's Texas office in conjunction with the architectural firm of 3/D International of Houston, is a rather quiet, conservative design statement.

The diagonal west façade of the tower is faced with horizontal, mullionless bands of glass and steel, flanked by recessed window wells that rise the entire height of the building. This entrance façade is thus distinguished from the four masonry "sides" of the building, on which the verticals are emphasized. The fenestration of the masonry walls, moreover, defers to the front façade in the slight angling of the windows adjacent to the diagonal glass face.

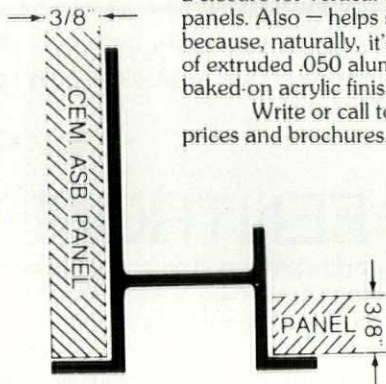
Pei's office towers are something of a breed apart. The form of El Paso tower has [News report continued on page 40]

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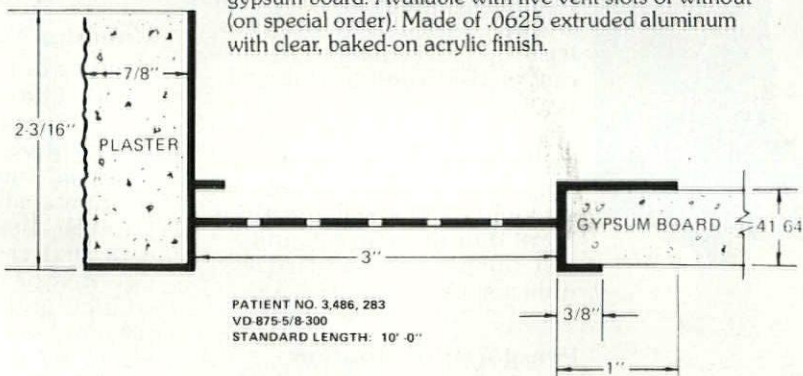
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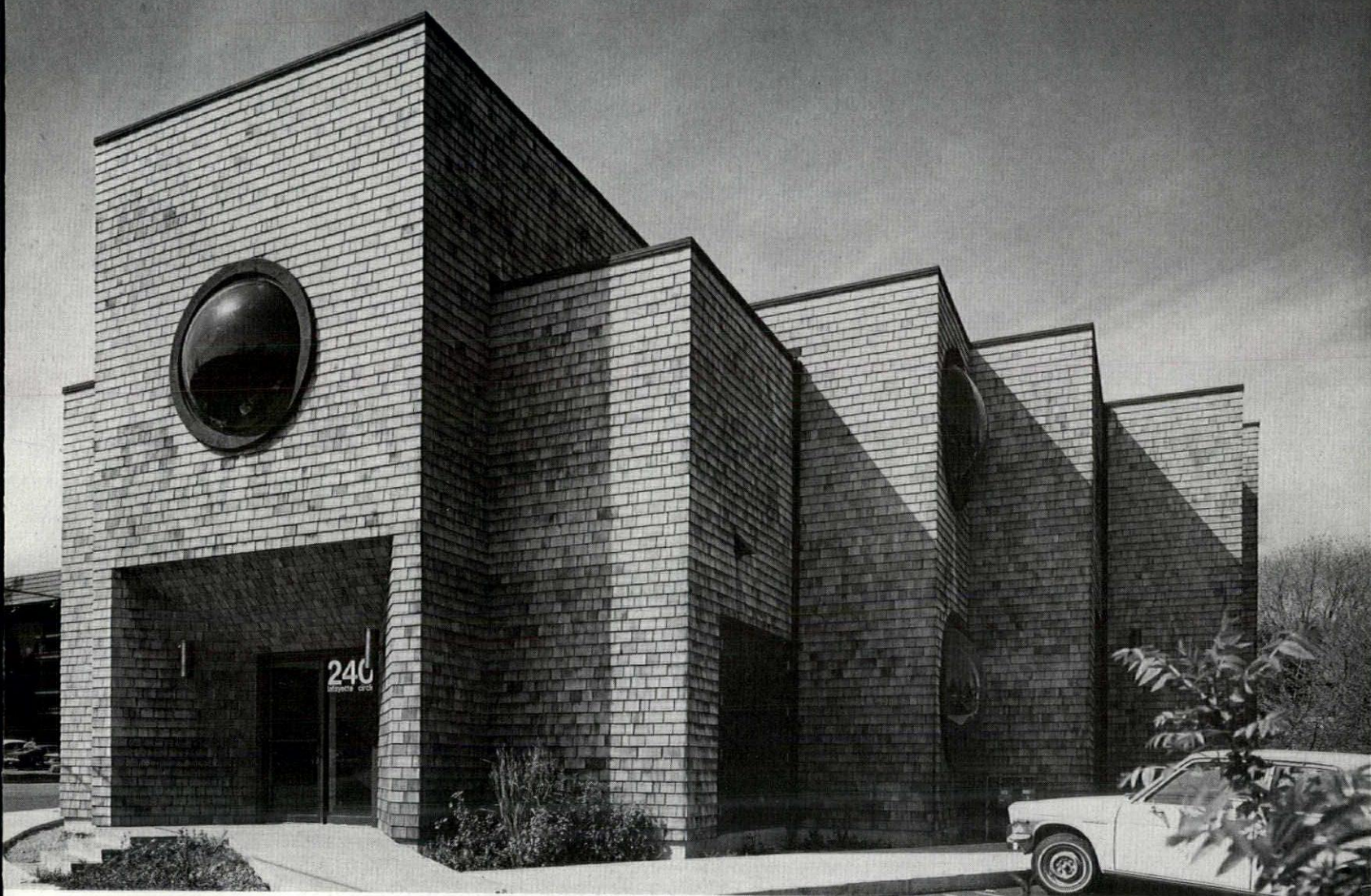
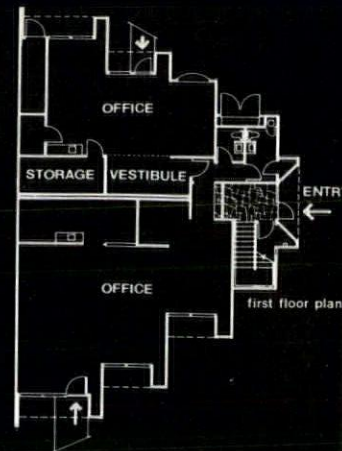
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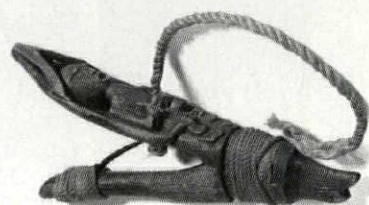
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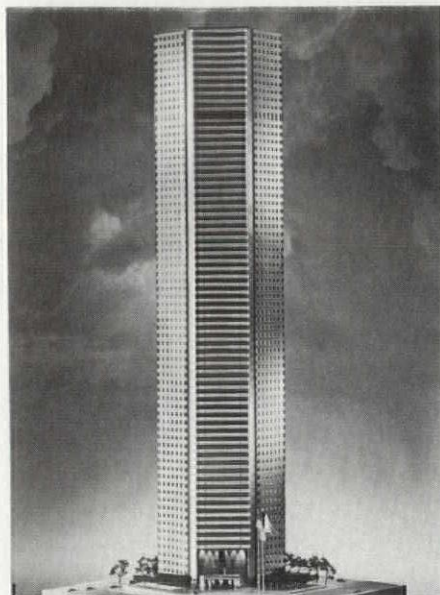
Cedar halibut hook, carved to represent man disguised in a sea otter skin. Hook is iron nail. Used by Makah, Kwakiutl and Tlingit Indians. Cedar. To touch the earth.

Red Cedar Shingle & Handsplit Shake Bureau

relatively little in common with Dallas City Hall (P/A, May 1979, p. 102) or the East Wing (P/A, Oct. 1978, p. 49), but borrows a good deal from Pei's early Pan Pacific Center in Honolulu and from his recent five-sided, 30-story World Trade Center in Baltimore, a joint venture of Pei's New York office and the Baltimore architectural firm of Richter Cornbrooks Matthai Hopkins, Inc. The Baltimore tower, a pink granite structure whose sides, articulated by uninterrupted horizontal bands of glass, spring from a three-story glass-walled lobby, will lose its claim to the title of tallest pentagonal building in the world when the Houston tower is completed in late 1980.

The El Paso tower's cut-off corner creates a triangular open plaza between the tower and Jones Hall, Houston's concert and opera auditorium. A visual link across the intervening space is suggested by the fact that the tower's five-story glass-walled lobby is the same height as the portico of Jones Hall.

Pei's tower and plaza will stand in marked contrast to Philip Johnson's Pennzoil Place (P/A, Aug. 1977, p. 66). The two are rather hostile to each other; Pei's granite shaft will rise high over Johnson's twin trapezoids, and Pennzoil will turn a



Model shot of Pei's El Paso tower.

right-angled, reflective-glass shoulder to El Paso's open diagonal façade. The designs engage the urban fabric in quite opposite ways, as well. Where Pennzoil's atria, very definitely part of the building, mediate between the private office space and the public street, El Paso stands back from a bare plaza, giving nothing to the public space it allows to exist. Interestingly enough, the man responsible for bringing

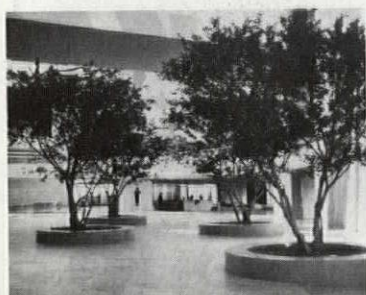
both Pei and Johnson to Houston was investment builder and noted architectural patron Gerald Hines, whose firm, Gerald D. Hines Interests, was the developer for Pennzoil and now codeveloper of El Paso.

Such a cursory comparison of the ways in which these two major corporate architects have chosen to approach what may be the boom corporate city of the decade yields an insight into their processes of image making—not only for their clients, but for themselves. Johnson says Pennzoil is his favorite building, and the aggressive building has become widely recognized as the symbol of Downtown Houston. Pei's building, a variation on a theme he has investigated in other structures and places, bears no such flamboyantly unique identity, but rather a designer label. Where Johnson strove to make Houston in his image, Pei has, in El Paso, remade his recognizable image to Texan scale.

Problematic return of the prodigal son

Late last year it was announced by a very proud Mayor and Chamber of Commerce of Atlanta that one of the nation's largest corporations was "coming back home." [News report continued on page 44]

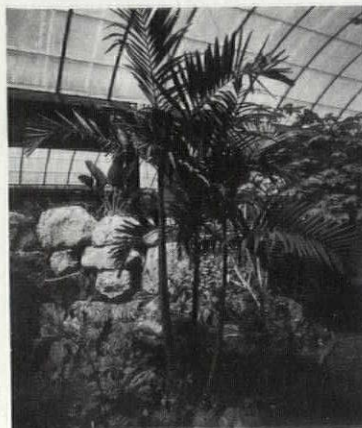
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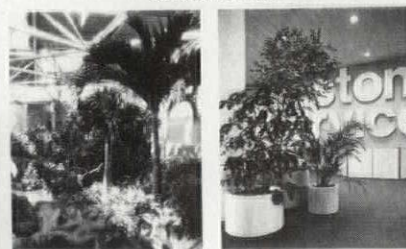
National Gallery of Art
Washington, D.C.



Broward Mall
Plantation, Florida



Sedgwick County Zoo
Wichita, Kansas



(Left) Minnesota Zoological Garden, Apple Valley, Minn.
(Right) Blue Cross/Blue Shield, Milwaukee, Wisconsin

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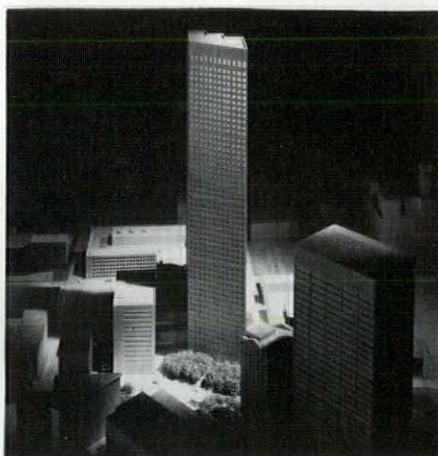
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E-7902

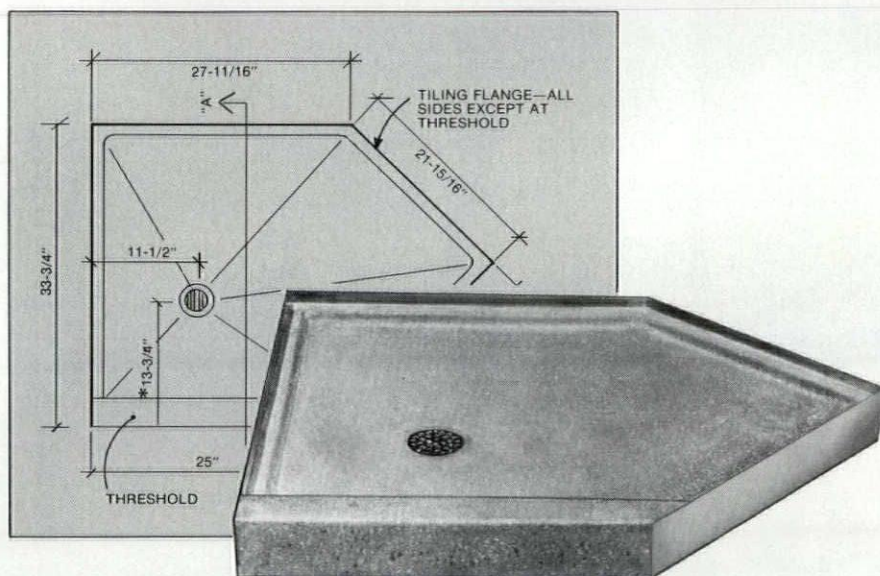
Not only was the Georgia-Pacific Corporation moving its world headquarters from Portland, Or, but it was also moving to the former site of the Loew's Grand Theater in the heart of Downtown Atlanta.

Designed by the New York office of Skidmore, Owings & Merrill, the world headquarters for this wood and paper products corporation will be a 52-story granite-clad office tower. The tower will become another in a long line of the tallest structures in Atlanta, being just a few feet taller than John Portman's 70-story Peachtree Plaza Hotel one block away.



Georgia Pacific tower, from Mitchell Sq. side.

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The tower is reminiscent of the Sears Tower in Chicago, by the same firm, in the manner in which its southeastern façade "ziggurats" or steps away from the street. Its northwest face is a sheer granite wall with deeply punched out fenestration that is at a fashionably sharp angle to Peachtree St. The angling provides for an extension of Margaret Mitchell Square.

The one-million-plus-sq-ft headquarters will have considerable impact upon Downtown Atlanta. The addition to Atlanta's skyline is obviously what the "ziggurats" are all about. Nearly everyone has fallen in love with them, in the superficial manner that many perceive the shape of the architectural silhouette above the horizon to reflect the growth and success of a city.

The south entrance to the Peachtree Center MARTA Station is to be located at the tower's base, giving the station high use and accessibility from two major office centers. There is even some speculation that this tower may be joined by a second tower on the same block, creating an even greater concentration of business activity in Downtown.

The manner in which the Georgia-Pacific World Headquarters Building addresses Margaret Mitchell Square and the existing physical environment is perhaps the weakest aspect of the scheme. Prior to the immolation of Loew's Grand Theater and Office Building in early 1978, a proposal for the development of Margaret Mitchell Square was made by the Atlanta Urban Design Commission. Their intention was to maintain the sense of urban scale that had been established by the existing buildings: the Loew's Grand, the new library by Marcel Breuer Associates of New York and Stevens & Wilkinson of Atlanta, and the Candler Building, the first corporate headquarters of the Atlanta-based Coca-Cola Company. At this important intersection there is also a fantastic neon sign flashing "Coca-Cola" in frenetic circular patterns. The sign, one of the first of its kind, has been declared a Historic Landmark, as was the Loew's Grand. For all of its traffic problems, hole-in-the-wall doughnut shops, and candy stands, Margaret Mitchell Square is the closest thing to New York's Times Square in Atlanta.

But the Georgia-Pacific Building literally has turned its back upon its neighbors and, in great arrogance, has created its own square, transforming what could have been a careful integration of existing and new forms into the front door for their headquarters. The tower's stepbacks occur on the wrong side of the site. The 730-ft knife edge of the tower thrusts itself into Peachtree St. In the architect's proposal, the candy shops and doughnut stands and the landmark Coke sign apparently have disappeared, to be replaced [News report continued on page 48]

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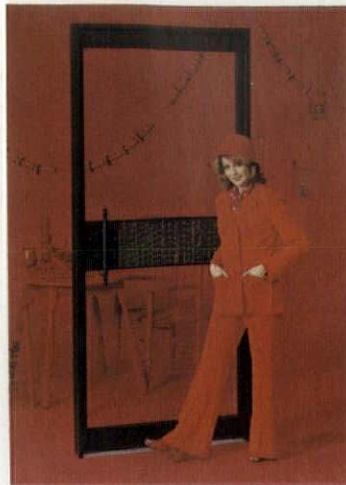
A photograph of a brick building entrance. A semi-circular glass canopy is mounted over the entrance, supported by four black poles. Each pole holds a large, white, spherical pendant light. The entrance features a set of double doors with vertical glass panels and decorative circular patterns. The building is constructed of red brick, and a concrete walkway leads to the entrance. The text "Aluminum Entrances" is overlaid in white, bold, sans-serif font across the middle of the image.

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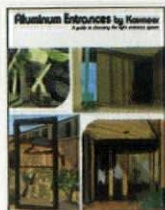
I-Line series 3000 door in Permanodic Black finish with tapered pull and Stria textured panel in Pewter finish.

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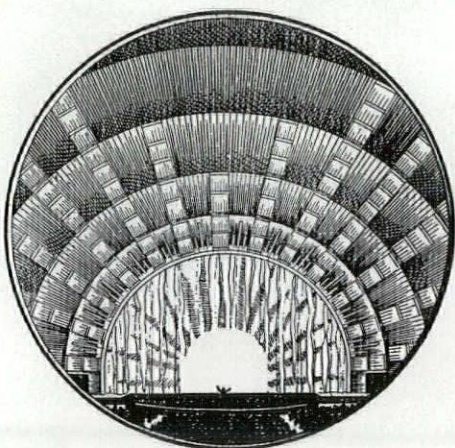


Kawneer
The designer's element

by a forest of trees (pine?) intended to draw one into the tower's entrance.

The architectural firm responsible for this scheme has a long history of indifference to existing urban landscapes. Many of their projects have carved vast and bleak plazas out of once messy but vibrant urban environments. It would be a travesty if one of Atlanta's few urban squares was turned into the pine barrens by the prodigal son. Perhaps there is a certain need for corporate identity. But does the flashy neon Coke sign need to fall to a pulp forest?

Atlanta is overwhelmingly enthusiastic about the coming of Georgia-Pacific to its Downtown. However, anyone new on the block ought to extend a few courtesies to neighbors, such as acknowledging their existence, their right to a view of the street, and the public identity of a public space. It is hoped that in all of their years away from the South that Georgia-Pacific has not forgotten the basic rudiments of polite behavior when it comes to integration with an existing urban fabric. [Jon Carlsten]



Cover of inaugural Radio City program.

Radio City reborn, or dressed to kill?

New York's Radio City Music Hall in Rockefeller Center reopened to the public on June 1 and, at least on the surface, things seem to look very good indeed. But judging from the "premiere spectacular" that will run throughout the summer, there may be trouble ahead after all.

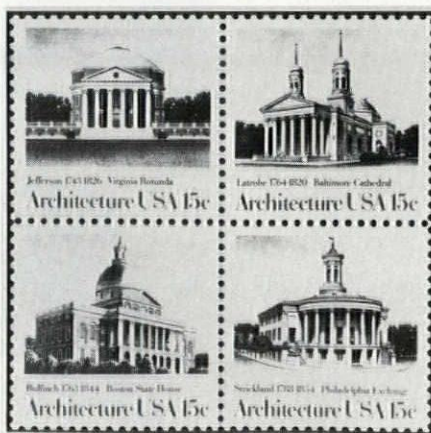
The magnificent Art Deco hall has just been given a \$5-million face-lift. It has been cleaned from top to bottom, original wall coverings and carpetings have been authentically reproduced and installed, the mightiest of all the mighty Wurlitzers has been restored to its original glory, and the vast 6200-seat theater has been equipped with new light and sound systems.

Renamed Radio City Music Hall Enter-

tainment Center, the hall has an ambitious program of "family" type entertainment, to center around three annual musical spectacles. The hall also will be available for civic events.

All of this sounds wonderful, and only the most evil of individuals could not wish the beloved music hall every success in the world. However, even though Rockefeller Center's application for demolition of the hall was denied last June, its lawsuit contesting interior landmark designation for the hall, which could help to preserve it for the future, has not been dropped (P/A, April 1978, p. 40; May 1979, p. 19). But this situation is not the only cause for uneasiness about the continued life of Radio City.

One might have hoped that the gala called "A New York Summer," and subtitled "A Magical Musical Celebration," might have offered something special. But the endless string of banal musical numbers, loosely tied together by an embarrassing yarn about dumb tourists visiting the city's attractions, was like every other production Radio City has ever produced. The only "magic" came from the Rockettes and from film clips shown, but those women and the movies are the only things that ever gave the place magic, other than the fabulous hall itself. If they and the stage shows could not have saved Radio City in the past, it is rather difficult to believe that they will be able to in the future. In fact, it is quite difficult to believe that the current premiere production has not been carefully calculated to sink the grand old hall for all time. Does Rockefeller Center still want to "redevelop" the site, and did they pay for a \$5-million face-lift that only they know is really a death mask? [DM]



Stamps to honor four landmarks

A commemorative series of stamps entitled "Architecture USA" will be issued by the U.S. Postal Service as part of the AIA's "Celebration of Architecture" campaign to increase public awareness of and appreciation for architecture and the built en-

vironment. The four planned issues of four stamps each represent the first time in recent U.S. history that works of architecture have been so honored.

The first set of four stamps, depicting neoclassical American landmarks, were first issued June 4, at the AIA convention ceremonies in Kansas City, Mo. The four buildings chosen are Thomas Jefferson's 1819 Rotunda at the University of Virginia, Benjamin Latrobe's Baltimore Cathedral, completed in 1818, William Strickland's 1834 Philadelphia Merchants Exchange, and Charles Bulfinch's Massachusetts State House in Boston, completed in 1798. All these landmarks are still in use.

Walter D. Richards designed the new stamps, modeled by Peter Cocci.

Solomon's legacy—only a memory?

Jay Solomon, the innovative administrator of the U.S. General Services Administration—the federal government's real estate and construction office—for the past two years is gone. That much is certain. What is uncertain is whether his efforts to make all federal buildings—old and new—more humane will continue.

In recent months, the scandal-racked GSA has come under increasing criticism for its policies of preservation and mixed-use of federal buildings. On top of that, Solomon's presidentially nominated successor, Navy Rear Admiral Rowland G. Freeman III, is a defense procurement specialist with little apparent interest in architecture or the arts.

Solomon, who arrived in Washington as a shopping center developer, left it as a committed preservationist. Because of his personal efforts, the Old Post Office buildings in Washington, DC, and St. Louis, among other structures, are now being recycled into a combination of federal offices and commercial space.

The GSA administrator, who resigned at the end of March reportedly under pressure from White House aides who thought he was taking too much of the credit for cleaning up GSA, believes that historic preservation made "great inroads" during his tenure. When asked if preservation had been institutionalized or was still subject to the personal whim of the administrator, Solomon told P/A shortly before leaving office, "We had hoped to try to make it so anybody could fit into it." But he added, "I don't know how it's going to work after I leave."

Solomon, who also revived—and enlarged—the Art in Architecture program for federal buildings, left a rich legacy. Architects, preservationists, and the public can hope that it will not soon be only a memory. [Carleton Knight III]

[News: Eleni Constantine except as noted]



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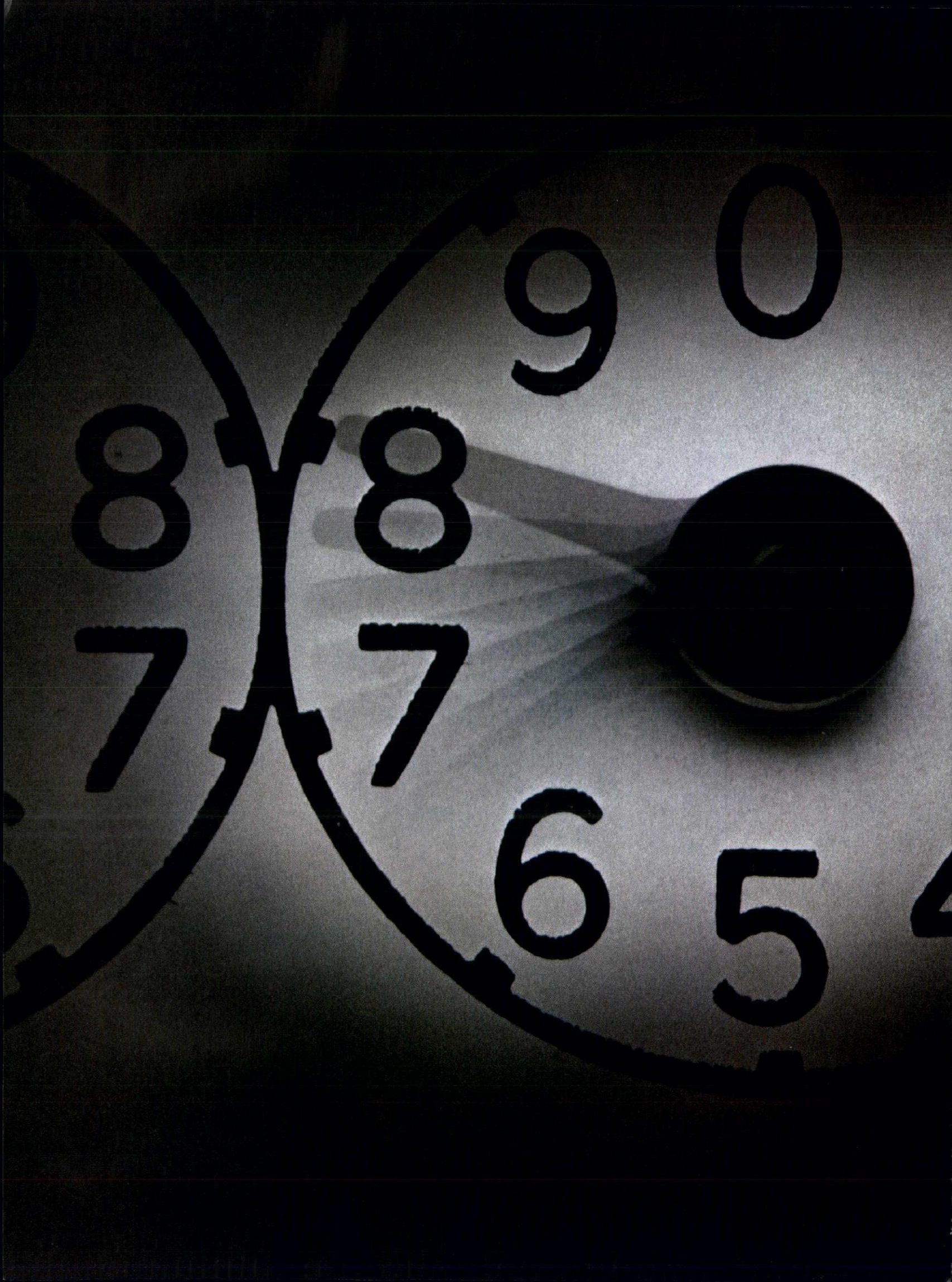
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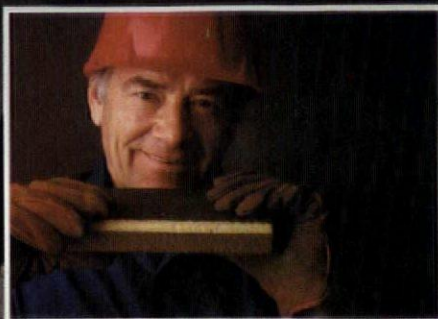


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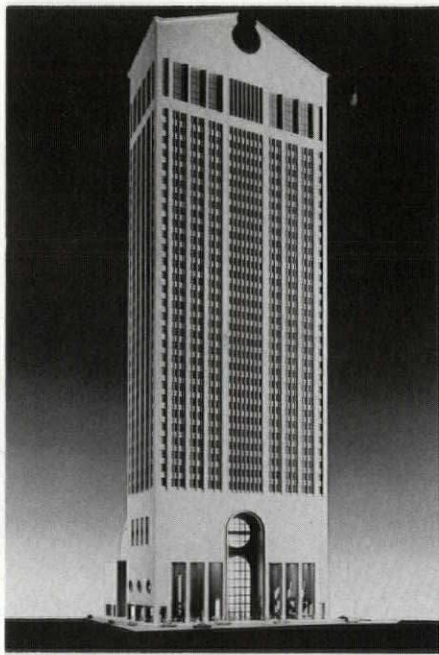
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Corporate form-givers



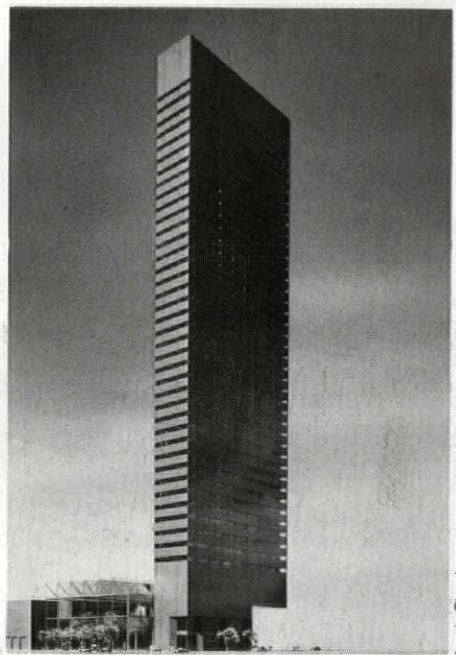
Philip Morris (42nd Street side)

Lionel Freedman



AT&T headquarters, NYC

Richard Payne



IBM regional offices, NYC

Louis Checkman

The architectural image of the corporate client, as these three New York City buildings show, seems to be undergoing a new look. Now is the time to weigh their implications for other urban areas.

Three major buildings going up right now in New York and one in Pittsburgh present in varying degrees stylistic departures from Modernism. Obviously, Philip Johnson and John Burgee's AT&T Building in New York and their PPG Headquarters in Pittsburgh (see pp. 60-61 for separate discussion) provide the most blatant examples of the changing architectural image of the corporate client. Ulrich Franzen's building for Philip Morris falls for the most part into the same camp, while Edward Larrabee Barnes's design for IBM in New York occupies a "revisionist" modern position.

The three New York buildings share similar characteristics: all are clad in granite recalling the masonry tradition of earlier skyscrapers, all attempt to be "contextual" depending on the definition, all offer urban "amenities." And while each will solve the clients' needs programmatically and symbolically, plus the city's needs economically, they also pose problems formally and urbanistically.

These buildings reflect a new architectural image of the corporate client that, for the most part, was not consciously determined by the client beforehand. The boredom corporation executives feel with the glass skyscraper could reflect a changed attitude about corporate life itself. These particular corporations have gone through a remarkable period of growth, achievement, and success in the last quarter century. They occupy a particular status now that their expansionist years have in-

sinuated them integrally into the American economy—and its social, political, and cultural life. Expansiveness towards society permeates the corporate psyche—and public relations programs. Richer than many countries and more powerful, these multinational corporations could be unconsciously veering toward an image that bespeaks solidity, tradition, benevolence. There is nothing stripped down about it. Glass and steel skyscrapers don't provide the right architectural correlative for the multilayered character.

Philip Morris

This year Philip Morris made it into the elite top 50 of the Fortune 500 with revenues of \$7 billion. Obviously as it has diversified and expanded its business interests to include cigarettes and beer, industrial products, and real estate, it has needed more new facilities. The corporation also pur-

Introduction: Big clients

sues an active sponsorship of architecture and the arts, channeling over \$1 million a year into art shows.

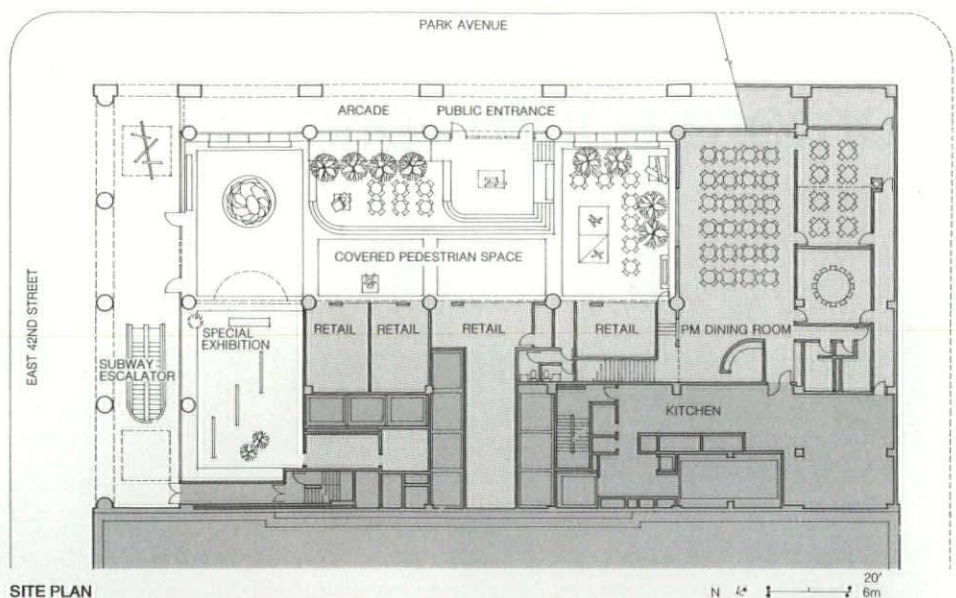
When confronting the need to expand its offices in New York, Philip Morris surveyed a number of cities nationwide. The company decided to purchase the site next door, at the southwest corner of 42nd and Park, on which stood the late and lamented (at least by some) Airlines Terminal building, an Art Moderne low-rise structure designed by John Peterkin in 1939. Because of the site's proximity to Grand Central Station, the design could take advantage of the air-rights transfer legislation that allows developers of sites near a designated landmark to purchase unused air rights, in this instance 75,000 sq ft. By incorporating a 9600-sq-ft, 42-ft-high covered pedestrian space (to be a sculpture garden with adjoining retail shops) plus an arcade, the clients were able to get an FAR of 21.6 from the City.

While the size of the site—105' x 198'—is small, the building covers it completely. Thus the 475,000-sq-ft tower may only go 26 stories high for its 1100 employees, but has no setbacks (P/A, Feb. 1979, p. 24).

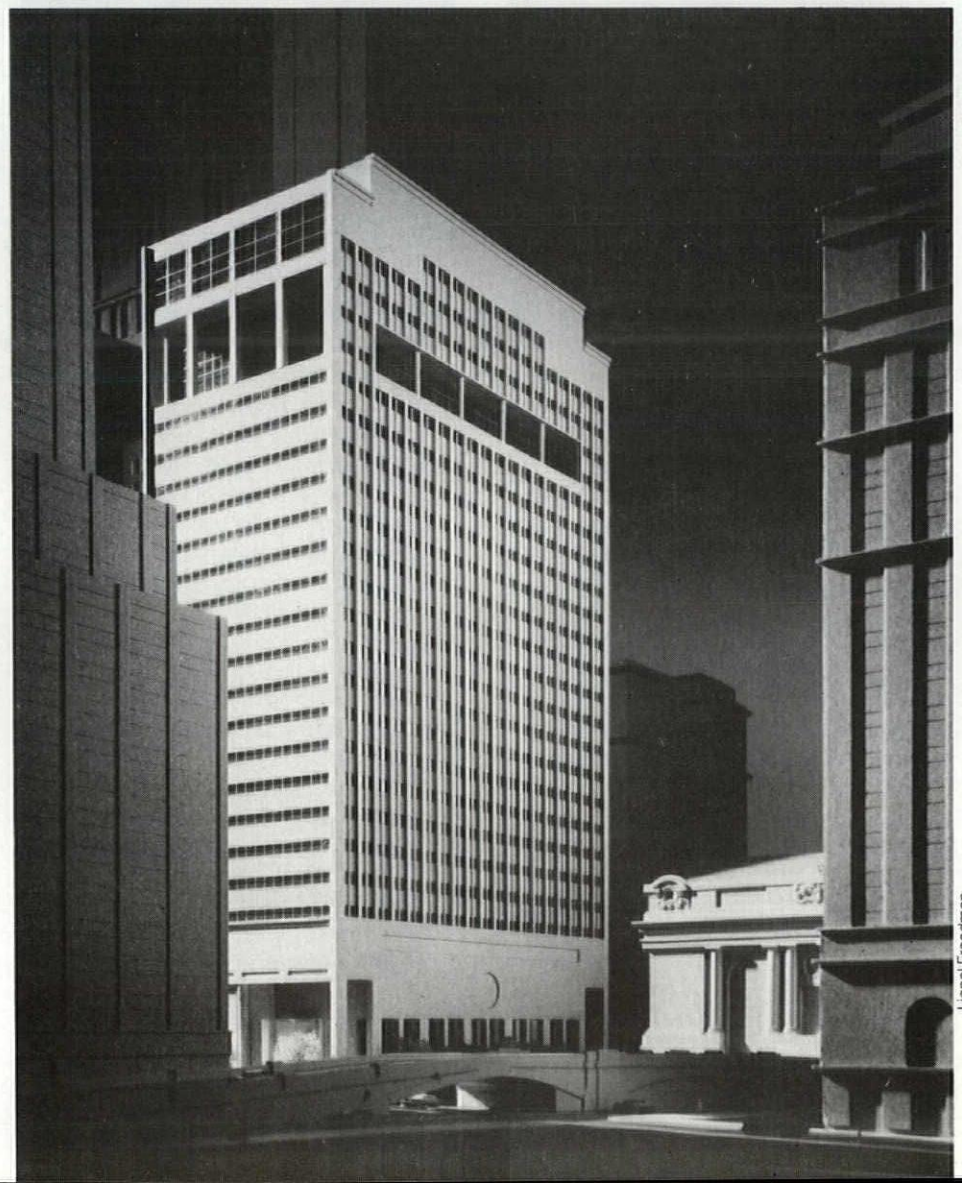
Philip Morris approached the architectural design of the building openly, once it was assured of the 20,000-sq-ft floors possible only with height and setback variances from the city. The company had not fixed on a definite architectural image, but according to George Weissman, vice chairman of the board, it didn't desire a "drop-dead" kind of building looming up on the skyline. Weissman, who lives in a house Ulrich Franzen designed 20 years ago, keeps an apartment in 800 Fifth Ave., the building Franzen designed last year (in association with Michael Schimenti), and works in offices done by Franzen in 1960, turned to his favorite architect.

Architect's intentions

Franzen designed the building's principal façade to face Park Ave., where the entrance can be perceived as important, but not vie with Grand Central. Because the headquarters building is not freestanding and the elevations fronting 42nd and 41st Sts. would read in fragments, they were treated austere, as background elements terminating the blocks in the urban agglomeration. The main façade is organized in the traditional base-shaft-capital divisions that often guided the designs of early skyscrapers. Classical references, including the oculus above the ground-floor portico, and the loggia-type fenestration at the top, plus the cornice, allude to the stylistic "context" of nearby buildings, and are intended to break down the structure's mass.



The main entrance to Philip Morris' headquarters will be on Park Avenue, leading to exhibit area.



Lyonel Freedman

AT&T

Even though only 1500 employees out of AT&T's 900,000 will work at the new headquarters at 500 Madison, the building's emblematic functions will exceed by far its programmatic ones. Since AT&T is a utility company, it cannot be ranked in the Fortune 500. It doesn't need the Fortune 500. Its \$93 billion assets indicate why it's called the largest company in the world. And it plans to grow, if the government lets it. Despite upcoming possible changes in law that will affect its size and/or status as a regulated monopoly, despite growing competition from private companies entering into electronic communication, AT&T still stays in the economic forefront.

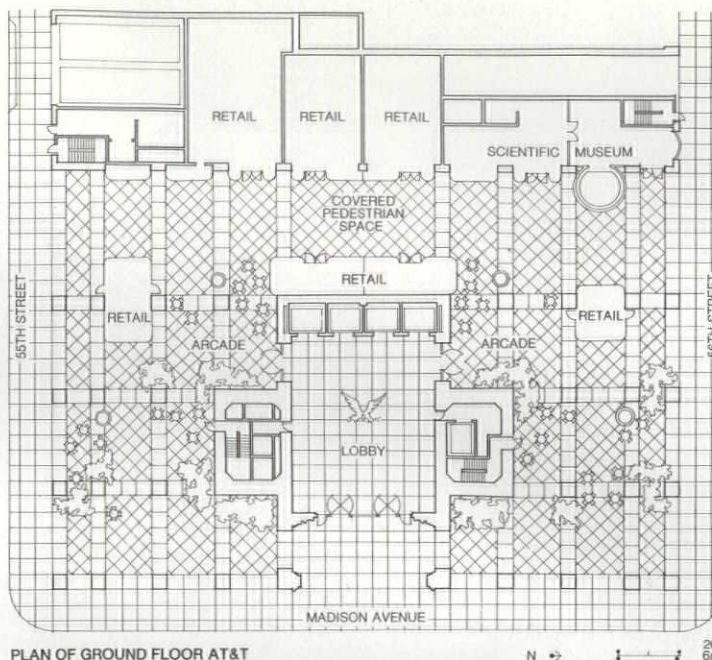
Because of tremendous expansion, the company has outgrown its old neoclassical Welles Bosworth-designed headquarters in Downtown New York at 195 Broadway. Built from 1913 to 1924, this building, laden with columns and capitals and encrusted with marble, bronze, and alabaster, understandably appeals to its personnel. They didn't want to leave the building for another shoebox stood on end. The company agreed but thought it should have a newer, more "progressive" image. An ad hoc steering committee actually selected the architects, Philip Johnson and John Burgee, after interviewing 25 architects on an invitational basis.

The design, drawn up in association with Harry Simmons, Jr., was presented to the Executive Policy Committee before going to AT&T's board of directors. It is no secret that the 37-story project, which generated shock waves in the public realm, caused some amount of consternation among members of the board.

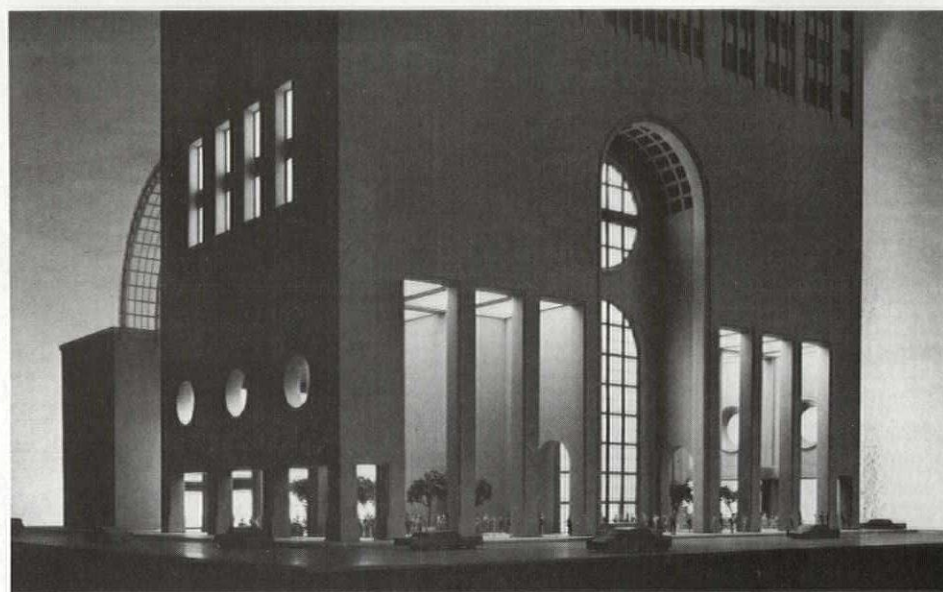
Architect's intentions

By now Johnson and Burgee's intentions have been publicized enough to conceivably *will* into reality the desired results (see P/A's Editorial, June 1978, p. 7, for details). New York's skyscrapers built before World War II, such as the Woolworth Building, the McGraw Hill Building, or the Chrysler Building, form a heritage that incontrovertibly has given New York a certain character, a character Johnson admirably would like to reintroduce to Manhattan.

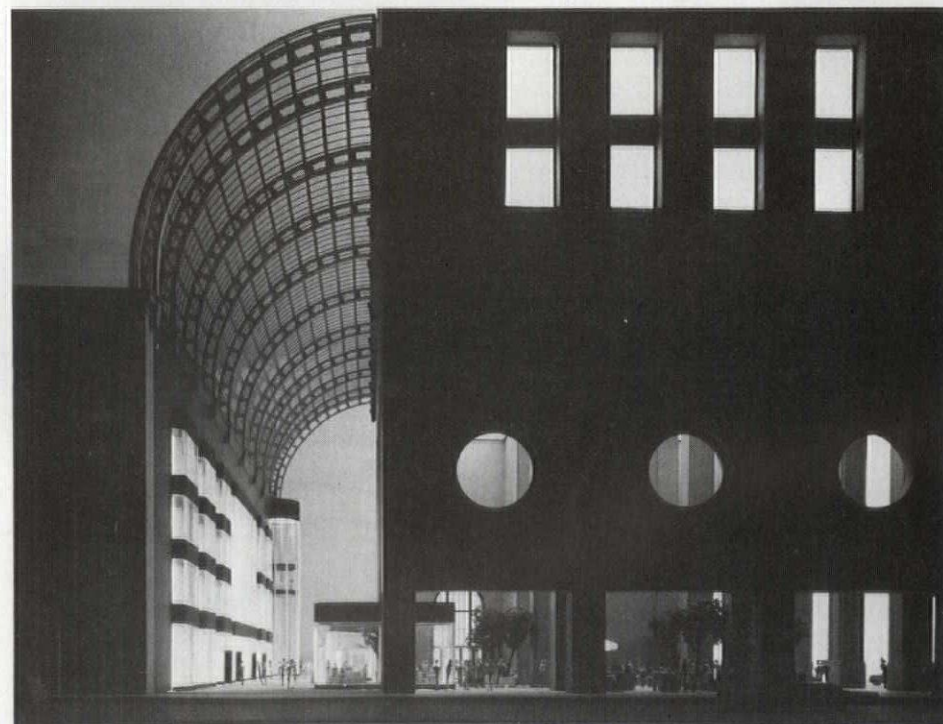
Philip Johnson and John Burgee's dramatic reinstatement of the clear-cut division of high-rise towers into three parts, analogous to a column, acknowledges a 19th-Century lesson that was first presented in Bruce Price's American Surety building of 1895. The historical elements also attempt to achieve a monumental expression through the meaningful elements gleaned from the past. As Johnson told Bell Telephone Magazine about his 130-ft-high base, "Here we are, approaching the holy of the holies, the largest company in the world; we need to feel awe."



PLAN OF GROUND FLOOR AT&T



AT&T's headquarters building sits atop a 130-foot-high base with a retail arcade in rear.



Introduction: Big clients

IBM

Next door to AT&T's new headquarters will rise IBM's 43-story office tower, designed by Edward Larrabee Barnes. Although IBM's world headquarters remains in Armonk, NY, these central offices carry symbolic weight—especially in terms of location. As IBM diversifies, it is expanding into telecommunications—a logical outgrowth of its computerized data processing services harnessing electronic technology. With a revenue of \$21 billion, IBM is eyeing AT&T's turf.

Selection of architects for IBM's numerous facilities usually proceeds through a computerized retrieval system, naturally enough. This "talent library," as they call it, includes 900 firms. A short-list of six to eight is compiled for a particular job, then passed to consultant Gerald McCue (Chairman of Harvard's Department of Architecture) for comment. Generally the final decision is left up to the Real Estate and Construction Division of IBM, with approval from top corporate management.

In the case of 590 Madison, however, I.M. Pei already had designed IBM's first building for the site. IBM maintains that, after the building was shelved, it was logical to bring in a new architect. Others contend that IBM was chary of the Boston Hancock tower's problems and not fully sympathetic to Pei's seeming predilection for triangular configurations and wedge-shaped offices seen in the East Wing.

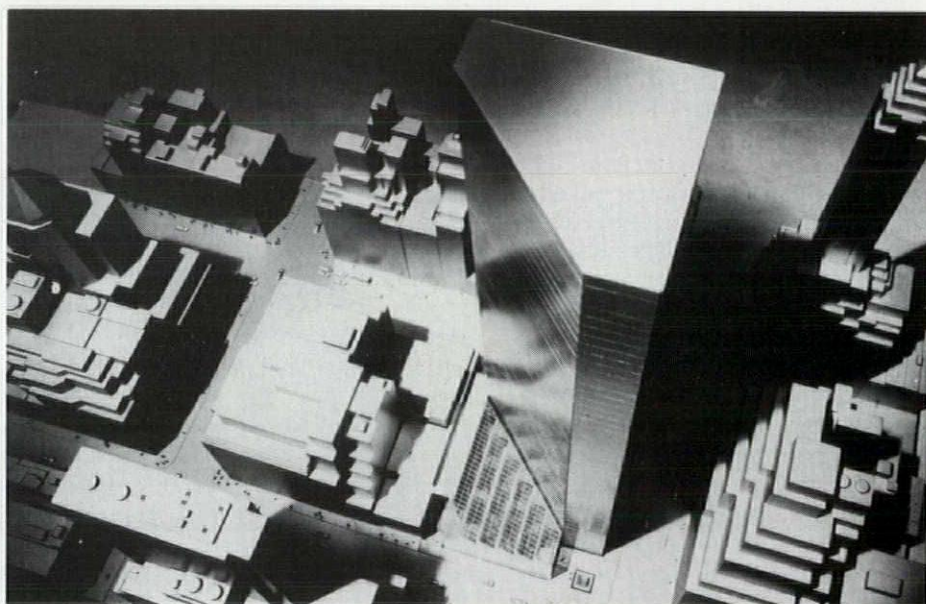
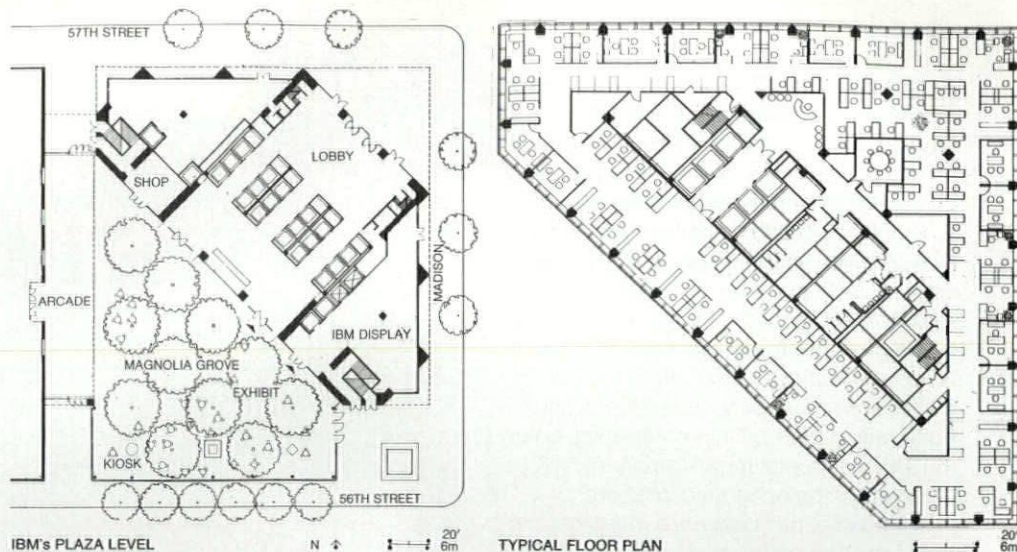
Meanwhile Barnes had designed IBM's World Trade Americas/Far East Headquarters in 1975 in Tarrytown, NY, with his entrée partially abetted by his earlier planning studies for the Rockefeller-owned land. The suburban building's understated attitude, its relationship to the site, and adherence to budget duly impressed IBM.

An important component of this new corporate symbol involves an energy-monitoring system regulating HVAC use. In addition, other measures, such as operable vents under the windows, a heat recclamation system, or the exhaustion of air to heat the plazalike conservatory, all consolidate the image.

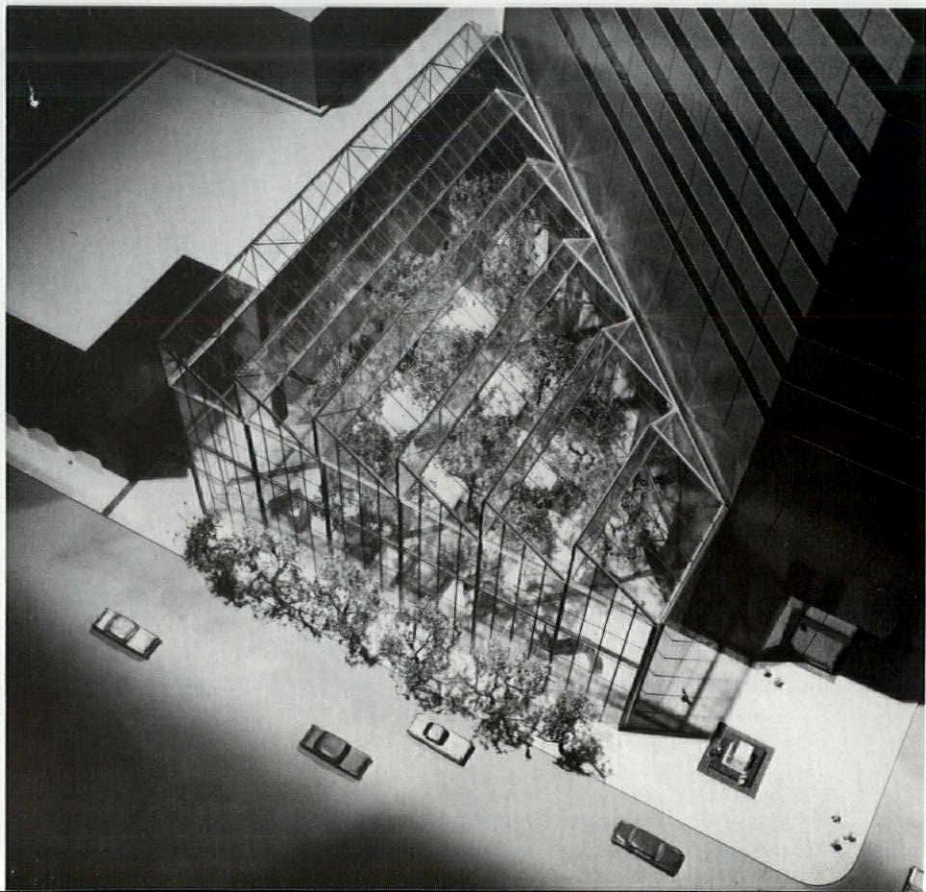
In terms of the formal design, IBM feels not all buildings need look alike, but they should fit into the environment in a dignified, sensible, elegant way.

Architect's intentions

IBM's choice of an architect could not have more closely matched its intentions if it had depended on a computer print-out. Barnes remains in the Modernist camp, albeit late Modernist: he favors abstract compositions, emphasis on smooth planes, clean lines, unornamented surfaces, geometric configuration. Barnes



IBM's regional offices will look like a normal office block from 57th, a wedge shape from 56th.



points, too, to the emphasis on the horizontal bands of glazing and granite spandrel panels at 590 as a reassertion of the Modernist legibility of structure and function often missing from scaleless reflective-glass curtain-walled buildings. These current trend-setting structures Barnes finds to be too sanitized, too remote. His design responds to human sense of scale, he maintains. Because the building holds to the city's building lines along 57th and Madison, thereby reinforcing the city's grid, its statement is contextual.

Formal issues

In some respects, the densely packed Midtown area, an assemblage of architectural styles, sizes, and scales, jumbled in variegated array, is as good a place as any to experiment. Nothing is seen often in toto.

Therefore Franzen's argument for handling the side elevations so differently from the entrance elevation can be understood. Even the vantage point where one can see two elevations of Philip Morris—across Park Avenue—will be obstructed at street level by the existing bridge bypass going around Grand Central.

Nevertheless an elevation should still communicate something about the rest of the building, including what to expect about the remaining elevations. Also, this building should be treated as an architectural entity, not because of the way the public might perceive it, but because the building does make some sort of statement about architecture. It is by an architect of high reputation, for a prestigious company in a prominent location.

Franzen has established some internal contradictions in his combination of modern and classical codes that never achieve resolution. The first problem appears at the main façade where the tripartite division of base, shaft, and top dominates. The transition from the strong, granite-clad, block-like base of the main façade to the vertical expression of the tower shaft is made abruptly, even discordantly. The narrow fins of the shaft don't maintain and extend the base's solidity the way Raymond Hood's wider, pierlike strips do in his American Radiator Building or Rockefeller Center. Franzen's fins become a screen of vertical chords placed over the building, an impression reinforced by his stripping away of such an appliqué on the side elevations.

The short side elevations, treated more austere and "modernistically"—even along 42nd where the buildings tend to be older and more ornamented—come as a shock. Their horizontality is emphasized by darker gray polished spandrel panels and glazing that promote a taut membranous reading. Yet the loggia at the top of the elevations, vertical in their proportions, puncture this plane in such a way as

to introduce yet another notion.

These few remarks must be regarded as off-hand observations: the building will tell all when completed. Following a classical code strictly may not be the answer. But neither is avoiding the fact that both modern and classical architectural languages have rules. If they are to be synthesized in a meaningful way, their basic natures must be confronted.

For this reason AT&T presents some of the same problems. AT&T's exaggerated separation of beginning, middle and end, which impedes an integrated vertical tower expression seen in the 1920s predecessors. And, for this reason, conceptually at least, the PPG tower in Pittsburgh holds more promise (see p. 60 for details).

Ironically, Johnson/Burgee's attempts with the AT&T scheme bring it closer to Citicorp than anything else. Citicorp's tower, hoisted up on table legs protruding from the center of each elevation, rather than the corners, and crowned with a shed-roof hat, is no less arbitrary or choppy. If it hasn't been subjected to the same scandalized scrutiny as AT&T it must be that its taut aluminum skin makes it look "honest" and "modern"—now acceptable for a skyscraper. Both buildings mask Modern architecture's boxy steel frame in a hat, heels, and coat; AT&T just makes the point more blatantly.

Nevertheless AT&T may not come off any better than Citicorp architecturally. Johnson has attempted to defy certain combinations here implicit in the historical codes' usage. Rules can be broken, but just how that happens successfully proves elusive. (Ah, sweet complexity and contradiction!)

IBM next door, on the other hand, will not be complex and contradictory intentionally or unintentionally. Just sleek and classy, a mute divergence from Modernism. It does run the risk of being too sleek for its monolithic 603-ft height, too mute for its large scale. Seen from 57th and Madison the smooth minimalist shaft will loom up above the variegated lower and mid-rise setting. Its drawing card, after all, the glazed conservatory will be found on 56th St., cast in shadow by AT&T and Corning Glass.

The principal difficulties with IBM and AT&T will be how they are perceived as an ensemble. Both architects for the two buildings talk of being "contextual," but define the word differently. Johnson refers to the historical architectural "context" of New York's skyscrapers; Barnes means an adherence to the pattern of development established by the city grid.

The formal qualities of these two buildings and the nearby proposed scheme for the Bonwit Teller site behind IBM (see p. 26 for details) suggest a stylistic "context" is being generated—one with disruptive

juxtapositions woven into a very visible piece of the urban fabric. If the public doesn't know from "context," no need to wonder why.

Urban design issues

IBM covers 40 percent of a corner site, and reaches 603 ft in height. AT&T occupies a site on a narrow avenue, covers 55 percent of the site, and goes to a 660-ft height. Both towers got height and setback variances in addition to bonuses to bring their FAR to 18. In return AT&T is giving the city a retail gallery (5852 sq ft), a museum, and an arcade (6790 sq ft) while IBM is offering 8500 sq ft of plazalike conservatory space, retail shops, and exhibition area.

But AT&T got more in giveaways from the desperate city. The idea behind the 1961 zoning ordinance allowing the extra floor area for certain public amenities and for towers without setbacks was that these towers cover only 40 percent of the 38,000-sq-ft site. Some light could still reach those narrowing little New York streets.

More and more the city has liberally granted height and setback variances. More and more now it is loosening up on lot coverage too. Philip Morris covers 100 percent of the site, and specially obtained an FAR of 21.6 from the city. The building may only go 26 stories high, but it does mean bulk.

The imaginative quality of the amenities cannot be disputed. Nevertheless, not only do these amenities mean less light and air for Midtown (a major issue in the 1916 zoning), they also add up to the progressive *interiorization* and *privatization* of what is defined as bonusable "public space." New York's streets, especially Madison, depend on shops edging the sidewalk to create a special urban ambience. Mid-block arcades, covered pedestrian spaces, blank elevations on the street run counter to urban character. So does less sunlight.

Few are going to dispute the corporate largesse of the decision of the companies to stay in New York, to build anew, to even encourage architectural experiment. The public probably won't really notice whether the particular architectural expression is coherent or not. But should the quality of the amenities prove disappointing, or the level of visual detail and human-scaled elements aim too low, should the buildings detract from street life, then the public will notice. Since these elements all act in a synecdochic way, where one part comes to stand for the whole, the corporate image could suffer. As for the rest of us, should these buildings be imitated and emulated without an attempt to come to grips with the formal and urbanistic issues they pose, then the *architectural* image could suffer. Sound familiar? [Suzanne Stephens]

PJ and PPG: A date with history

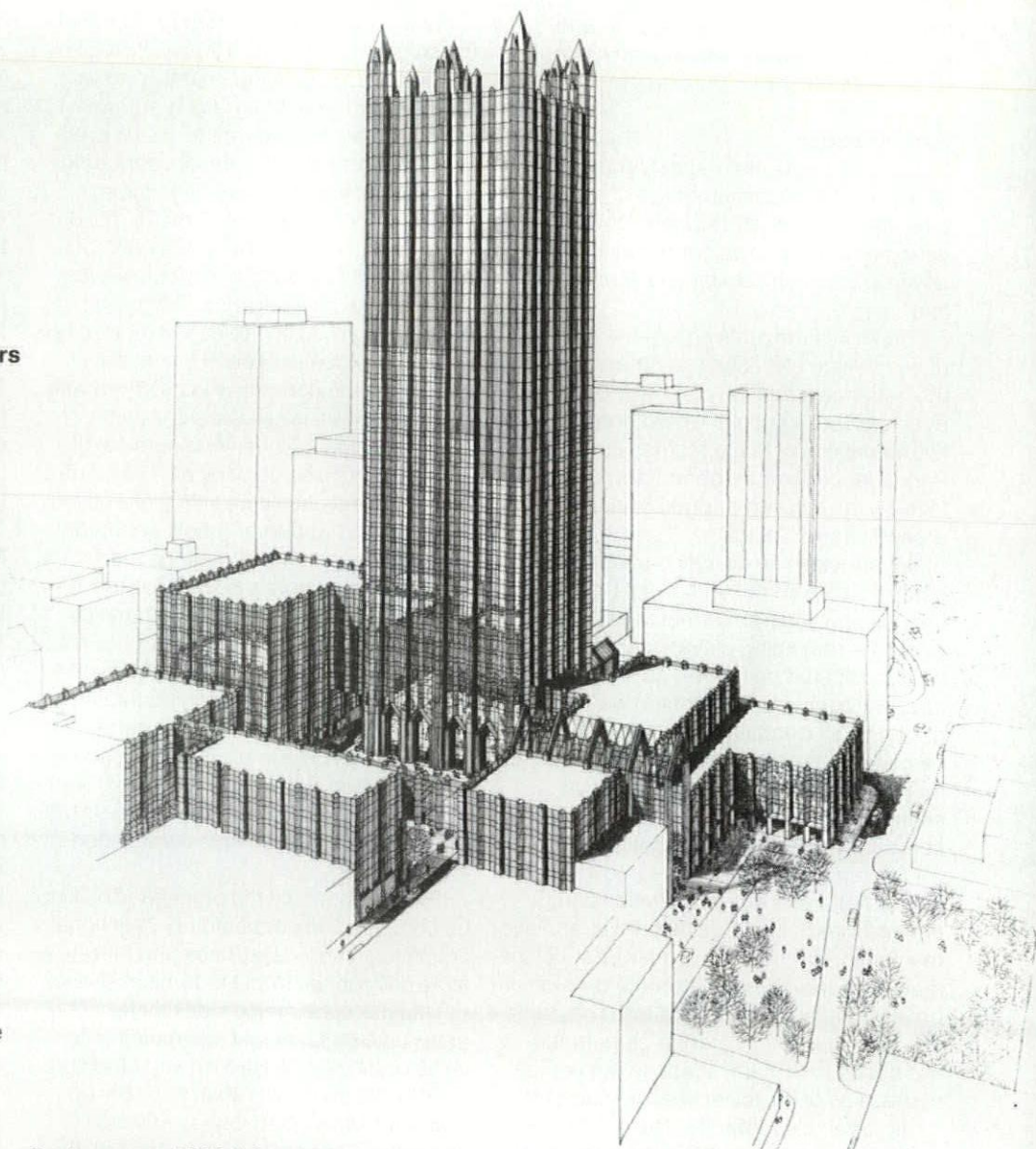
Franklin K.B.S. Toker

"We cannot not know history," says Philip Johnson. With PPG's headquarters building in Pittsburgh Johnson and partner John Burgee show they both know history and how to make it.

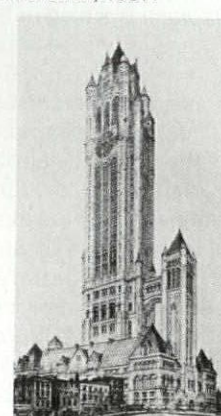
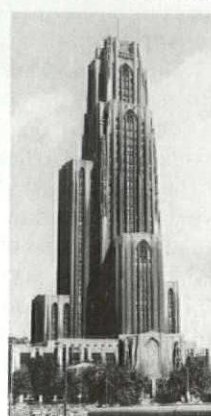
Architects have always prescribed high Gothic towers for Pittsburgh, as witnessed by H.H. Richardson's Allegheny County Courthouse, Henry Hornbostel's project to construct the world's highest skyscraper (700 ft) inside the courtyard, Charles Klauder's 52-story home of the University of Pittsburgh, aborted at the fortieth floor, and Frank Lloyd Wright's proposed tower one-fifth of a mile high for Gateway Center. Now Philip Johnson will complete the circle with a neo-neo-Gothic tower for PPG: 44 stories (40 of standard office space), costing \$100 million, to be occupied by 1983.

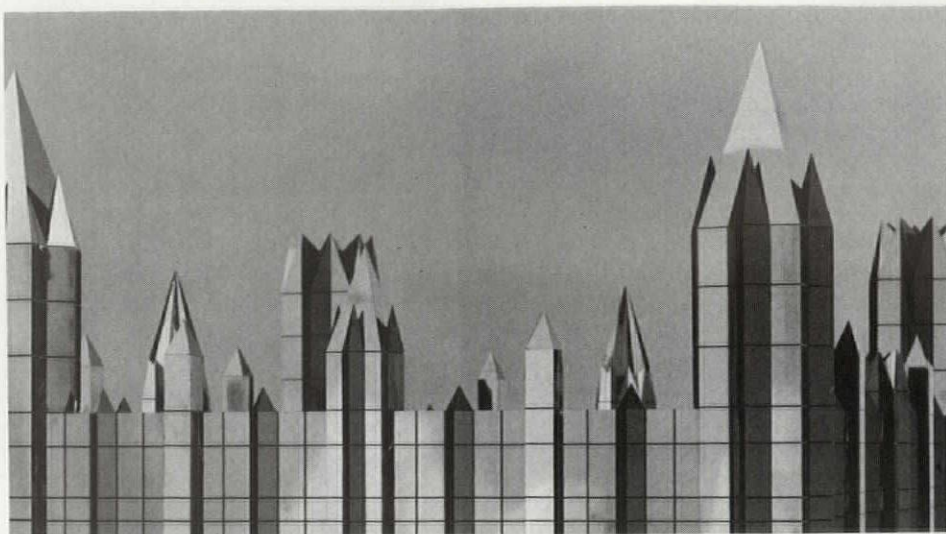
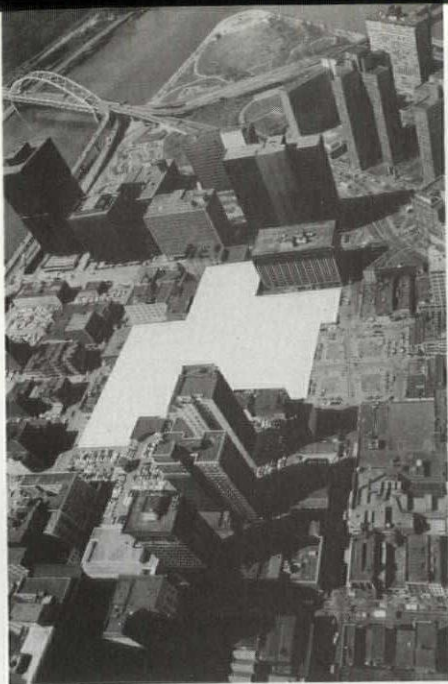
Actually no more than the corner and midpoint pyramidal turrets are even remotely Gothic—the body is simply faceted in triangular and rectilinear bays, much like Saarinen's CBS Building of 1962 or of Mies's 1922 Friedrichstrasse project. But his Gothic turrets could be his Catch-22: When built they may smack too much of revivalism—or perhaps not enough, and become merely an anemic parody of history. From either perspective the turrets focus 90 percent of attention on 10 percent of the design. The real achievements of the PPG headquarters are not style but urbanism and management.

Author: Franklin K.B.S. Toker, a historian of architecture in the Middle Ages and the 19th Century, is associate professor of architecture at Carnegie-Mellon University, Pittsburgh. He currently holds a Guggenheim Fellowship and was the recipient of the 1970 Hitchcock Prize of the Society of Architectural Historians.

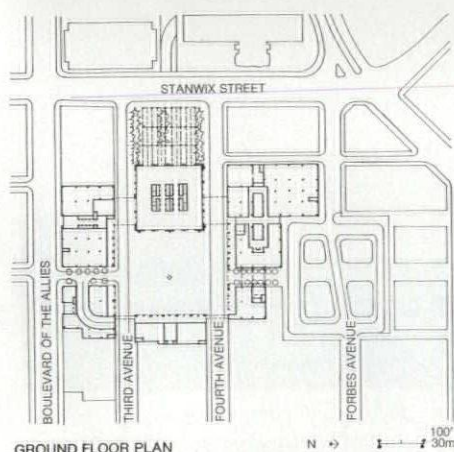


Predecessors of PPG (left to right): Victoria Tower at Houses of Parliament, Barry and Pugin, 1837; Charles Klauder's University of Pittsburgh, 1926; Cass Gilbert's Woolworth Building, 1913; and proposal of Henry Hornbostel addition to Richardson's Allegheny County Courthouse, 1907.





Spirelike crown design for PPG tower of bronze reflective glass.



Client consciousness

Johnson/Burgee singles out PPG as the best organized and most public-spirited client it has had among corporate giants. First, PPG was tightly organized in soliciting the space needs of its six divisions and 40 top managers through the year 2010. It translated these needs into a schematic program for a 50-story headquarters next to Market Square in the late-18th-Century core of Pittsburgh. Here PPG will occupy 5.5 acres as the centerpiece of 26 acres designated for renewal by Pittsburgh's Urban Redevelopment Authority. The chief difficulty of the site will be the acquisition of land from 42 separate owners.

PPG's desire to upgrade the Market Square neighborhood was translated by Johnson/Burgee into the creation of a new plaza, 200 ft square, to echo at slightly reduced scale the grassy Market Square 150 ft to the north. The new square will have vehicle access through Third and Fourth Streets, an outlet to a major artery (Boulevard of the Allies), and an underground parking garage. Emphasizing the compact, pedestrian character of the Golden Triangle, Johnson/Burgee proposed a square as the new focal point of the city for shoppers and late-evening

crowds. In contrast to Market Square, which is low-rise and discontinuous in style, uniform high-rise façades with base arcades will characterize PPG square. The complex will constitute six buildings around the plaza: the office tower and two annexes on the west side, plus three office-retail blocks on the east. The east and west ranges will be linked by bridges, while a five-story-high glass arcade will funnel visitors between the old and new squares. An aviarylike Winter Garden will extend the office tower lobby to Stanwix Street, with a bridge to Gateway Center. Johnson adduces many historic precedents for the arcade—the enclosed square, and the funneling of space—but even without Place Vendôme and San Gimignano this is self-evidently one of the most ambitious, sensitive, and public-spirited urban developments since Rockefeller Center.

Given client needs, constraints of site, and the reasonable wish to stay within the 18th-Century street grid, Johnson derived a tower 155 ft square and 680 ft tall. At some point he obviously saw the resemblance between his concept and the Victoria Tower of the British Houses of Parliament (designed by Charles Barry and A.W. Pugin, 1837–1860). The Victoria Tower, at the opposite end from the more famous Big Ben, closely approximates PPG at half-scale: 70 ft square, 325 ft tall. Stylistically it is a highly appropriate model, being itself a neo-Gothic skyscraper.

Back to form

Johnson is coyly disingenuous when he denies the Gothic overtones of his creation. But his critics are overly ingenuous to think that the process of styling the building ended with the decision to stick on turrets. This may prove to be the best of the mirror-glass buildings: a sensitively faceted wall that highlights the 60-degree triangles and "shadows" the 90-degree

pilaster strips, where the self-reflecting panels will deaden to black. PPG augurs to be the first mirror-glass building that will make a statement of its own, not merely reflecting its neighbors.

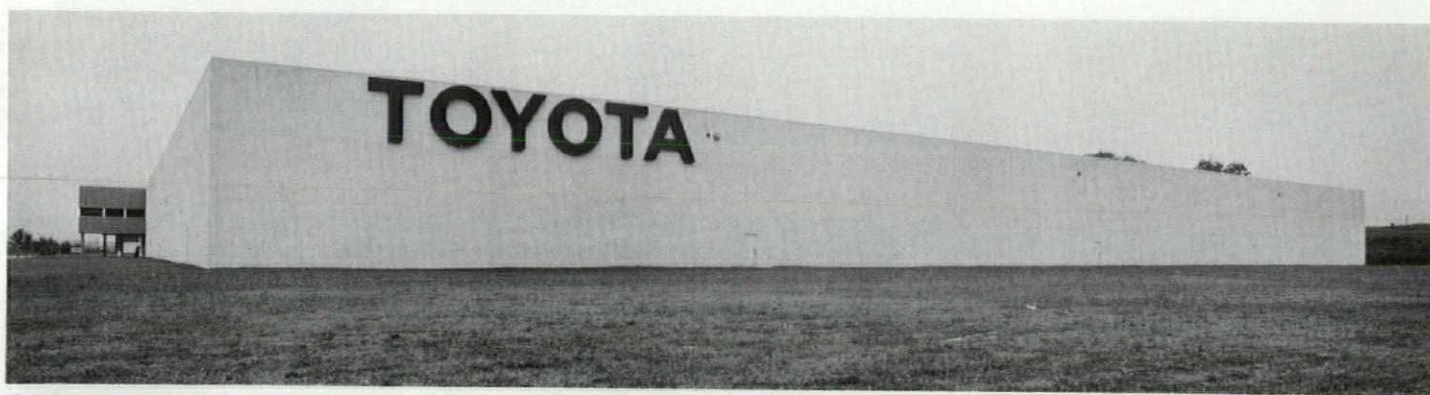
PPG does not harbor and certainly does not consciously attempt to project visual images of itself, hence it is irrelevant to ask whether the corporation sees its likeness in this design or not. One can only suspect that management saw its likeness in Philip Johnson: conservative but innovative.

If PPG gave Johnson little or no help in articulating its image, it did specify very explicitly its desire for project control and urban context. Johnson has served his client well on both counts. His management capability is fully a match for theirs, while his urban design is a rarity among corporate projects: a building complex that gives Pittsburgh more than it takes. The question remains whether Johnson, realizing that his client operated in an image vacuum, acted responsibly in creating a design that reflects so much of a personal quest for style.

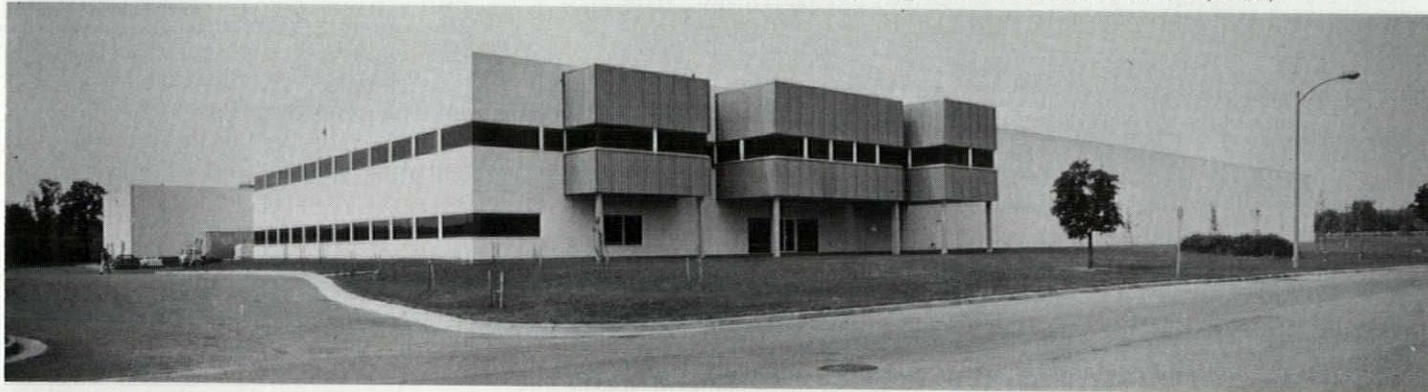
Forward to history

Johnson's Pittsburgh design nevertheless does make several meaningful statements about the evolution of America's most heroic form, the skyscraper. These statements appear to mock the functional tradition while at the same time being entirely functional. They should make us reflect on past masters of functionalism, such as Sullivan, who understood that the curtain wall has no function and hence can only express the function of the building rather than its own purpose. It is too early to guess whether PPG is a high point in Johnson's career or only one of his several dips into faddism. But the search for historical context goes beyond faddism and Post-Modernism to a much older truth: the architect must know history to make history. □

Perfectly Frank



Gehry was responsible only for the design of offices at Toyota warehouse facility, and projecting second floor bays on exterior (below).



Frank O. Gehry & Associates mixes industrial materials, delicate colors, and a brilliant, complex development of light and space in what might be that architect's best work to date.

Frank Gehry occupies a place in American architecture roughly equivalent to that held by Robert Venturi in the early 1960s. Although he has been heralded as one of the rising stars in the architectural firmament, Gehry has continued to perplex some people who are unsure that they really "get" what he is all about. Like Venturi, Gehry has pioneered an aesthetic that is far less alluring than—for example—the nostalgic charm of a Charles Moore or the

tidy, precise geometries of a Richard Meier. Gehry's earlier work had been distinguished by a certain awkwardness of expression that, whether intentional or not, prevented the kind of easy reading that is reassuring when one is confronted by innovative art of any sort.

But now Frank Gehry has produced a major new work that should put his accomplishments into sharper focus. The unlikely location of this building is the flat and torpid landscape just south of Baltimore; no longer rural and not yet suburban, the countryside is only now being carved into industrial "parks." As one whizzes by on one of the vast freeways that encircle the city, it might seem that the Toyota warehouse briefly glimpsed is much like its

neighbors, or like any other low-rise industrial building anywhere else in the country, for that matter. But there is something about it: the crisp white box is much cleaner than usual, and the bright red "Toyota" emblazoned on one corner of the building has an iconic snappiness that would do Ed Ruscha proud.

The only relief from its orthogonal severity is seen as one enters the access road that winds up to the building: three staggered, protruding bays of corrugated steel one story over the entrance on thin supporting members. There is something about the proportions and the detailing that lets you know that this can't possibly be some developer's building. It's just too good for that. Forming a kind of portico

over the main access to the building, the bays signify the entrance with an unusual degree of emphasis in a setting where the ambiguity of automobile arrival most often leaves the whole question of the pedestrian arrival sequence totally ignored.

Entering the main door, one sees an unusually shaped, glass-walled stairway ahead that leads suggestively toward the source of (sky)light that streams down over it. If one's business happens to take one up to the second floor of this immediately intriguing building, curiosity will be satisfied. Otherwise, to tarry on the ground floor is to feel a certain sense of deprivation, despite the quality of the interior design of those nether regions. The grim and limiting sense of most industrial park offices is entirely absent here. A prevailing feeling of spaciousness is created by the light and lacy network of support elements overhead. The typical suspended ceilings of low-rise office buildings have been for the most part eliminated to allow the exposure of the structural members that Frank Gehry frequently incorporates as active design elements in his buildings.

Abutting the back of the office space is the warehouse proper, a vast and immaculate storage area. Even the goods stored there seem as if they could have been minutely detailed by Frank Gehry, were it not for the fact that the warehouse resembles so many other similar installations, save for its neatness and its openness. One of the subsidiary effects of the High Tech aesthetic (of which Gehry has been a leading exponent in architecture) is to make us look more appreciatively at industrial components, which are often superior in design quality to run-of-the-mill building materials.

Thus the decision to have Gehry design this industrial building was nothing short of inspired. The commission came from Frederick Weisman, president of the Mid-Atlantic Toyota distributorship. Weisman, who with his wife Marcia has assembled a noteworthy collection of contemporary art, lives in Los Angeles and was familiar with the Santa Monica-based architect and his work. But what makes Weisman's patronage so unusual is that he did not turn to the "name" architect for the design of a show-piece headquarters building—the most common reason corporate clients hire well-known designers—but rather sought out an innovative solution for a building that would never be seen by the general public. This is a gesture that shows a real devotion to art.

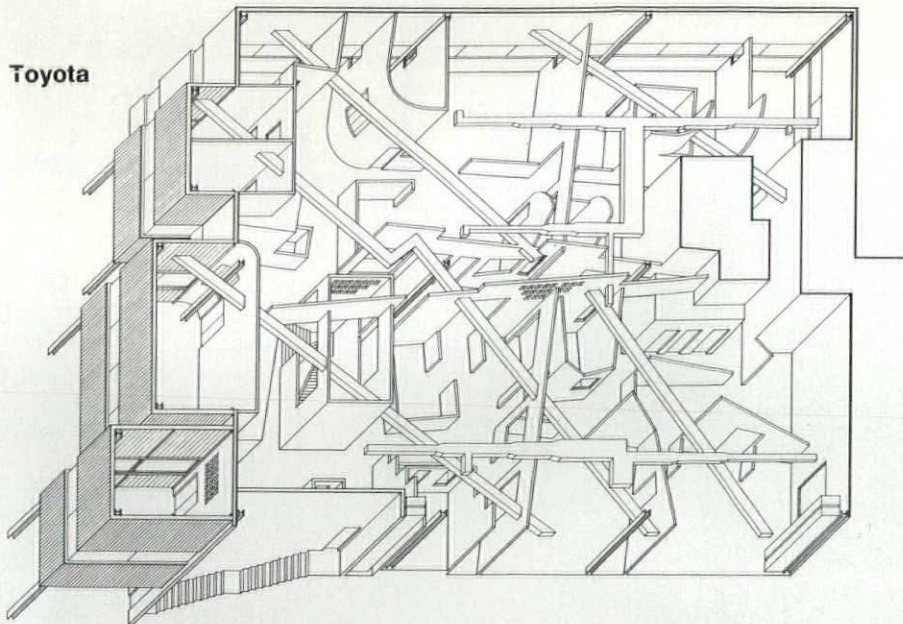
Actually, Gehry and his firm were responsible only for the design of the offices at the Glen Burnie facility. The warehouse itself (more or less definable as the windowless part of the building) was the work of the general contractor, although Gehry did make suggestions about some elements of the warehouse's general design.



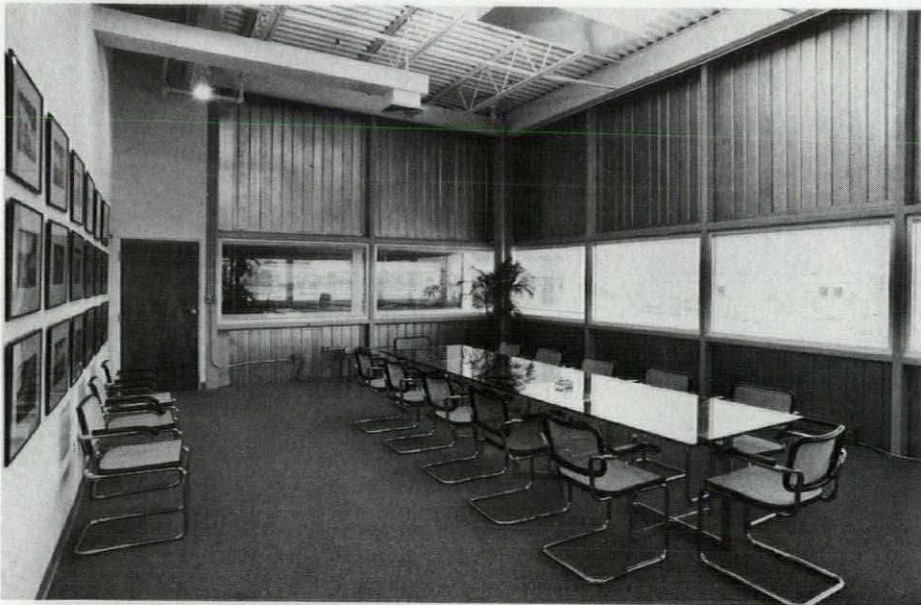
Skylit stairway leads from vestibule behind main entrance (above) to second office floor (below).



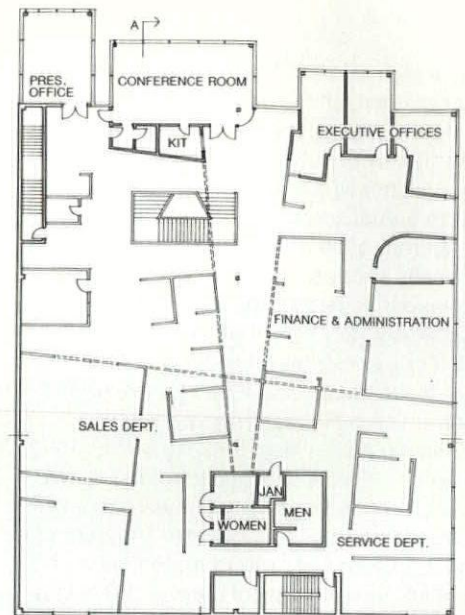
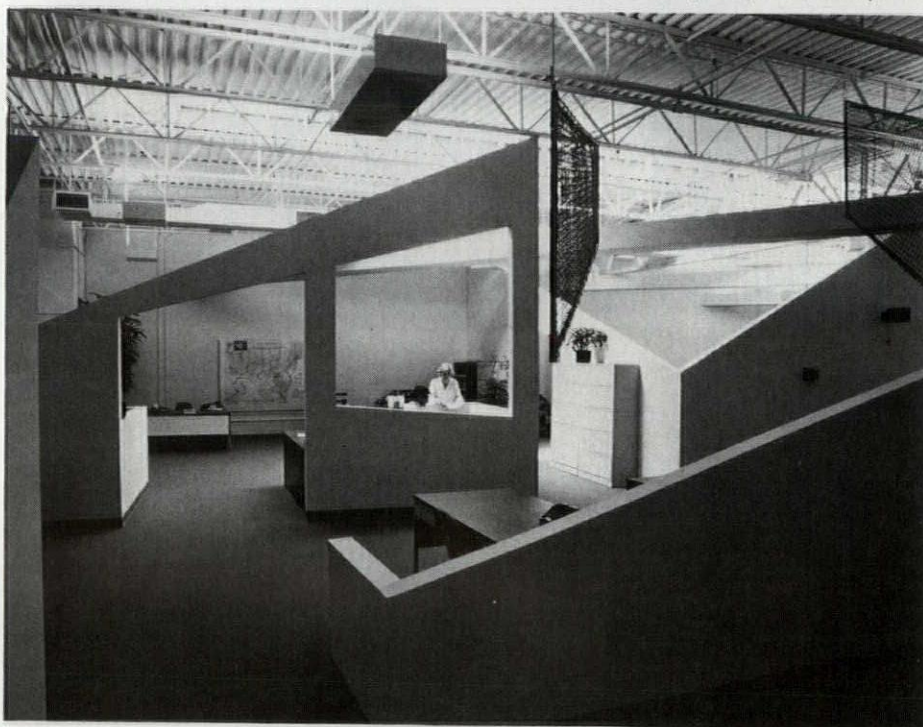
Toyota



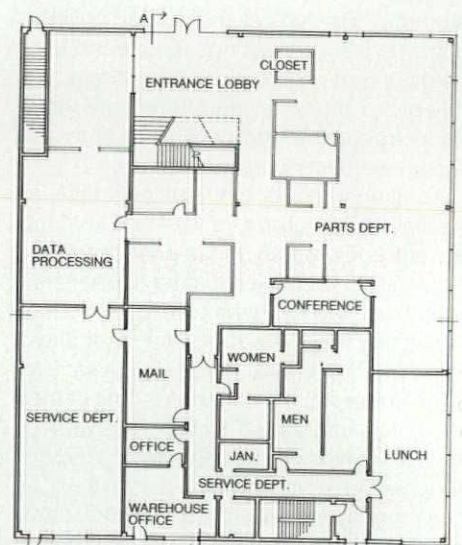
AXONOMETRIC—SECOND FLOOR OFFICES



Conference room (above) has steel paneling. Offices (below) show complex spatial development.



SECOND FLOOR



FIRST FLOOR

20' 6m

Data

Project: Mid-Atlantic Toyota Distributors Offices, Glen Burnie, Md.

Architects: Frank O. Gehry & Associates; Frank O. Gehry, C. Gregory Walsh, Frederick Fisher, design team.

Program: offices for import automobile distributorship, attached to warehouse facility.

Site: 7.7 acres in planned industrial community close to a large Eastern city.

Structural system: steel frame, columns, beams, open-web joists, concrete slab on grade.

Major materials: stucco over concrete block exterior walls, insulated double-skin wall, galvanized both surfaces at second-floor office bays. Painted drywall over metal studs interior walls, carpeted and VAT floors (see Building materials, p. 126).

Mechanical system: package roof units.

Consultants: Athans Enterprises, electrical.

General contractor: Dickerson-Heffner, Inc.

Client: Mid-Atlantic Toyota Distributors, Inc.

Costs: withheld at request of client.

Photography: Tim Street-Porter.

Once a circuit of the ground floor has been made, one finds oneself back at the main stairway. Moving into the stairwell, you lose your sense for just a moment that this is a warehouse, and that you are somewhere outside Baltimore: all you are really aware of is that this is Architecture. Looking upward one sees the first bit of delicately colored, luminously lit and layered space that is the second floor. The stairway is hung with some of the numerous works of art—paintings and prints, for the most part—that give further definition to the rather abstract spaces that Gehry has designed. As office interiors, the second floor areas seem to work exceedingly well. The twin requirements of openness and privacy that have been the focus of so much tortured discussion about the comparative merits of open office vs private office design are here made almost irrelevant by a masterful sense of spatial composition. Even the unexceptional design of the office furniture—obviously moved intact from the previous headquarters—is held in check by the strong visual environment Gehry has created.

The striking results that the architect has summoned up from a repertoire of materials with strong industrial references is indicative of the ability that good design has to supersede aesthetic expectations. The executive conference room, located in the largest and central of the three protruding bays, is paneled on three of its four walls with corrugated steel paneling that looks quite as rich as any rosewood veneer in some Wall St. brokerage house. Adding to the feeling of surprising refinement are the black-framed Breuer chairs that surround the glass-topped conference table, and the black-framed Japanese prints that seem simultaneously precise and sensuous in this setting.

The rest of the second floor is a constant series of almost kaleidoscopic impressions of light and space. Skylights admit sunlight that subtly alters the pale colorations of the converging wall planes which define the spaces here. Pale pinks, blues, yellows, and greens combine with the natural light and trapezoidal planes to make volumes of great beauty. Cutouts, both regular and unexpected, add further depth to the compositional field. Suspended parallelograms of chain-link fencing (another Gehry hallmark) further filter our perception of depth, making this a difficult space to understand with ease, but certainly not inhibiting our real enjoyment of it. With the assurance of a mature artist, Frank Gehry here stands among our most accomplished architects, achieving what few others have: interior architecture combining a sculptural space with an almost playful compositional sense that transcends mere office design and becomes true art. [Martin Filler]



Layering effect in second-floor offices is aided by cutouts (above) and chain-link panels (below).



Silver Bell

In their new building for Indiana Bell CRS and Boots-Smith & Associates have elevated mirror glazing to a new high.

There can be little doubt that for a town its size, Columbus, In, can easily be ranked number 1 in architecture with a capital A. Nor is it possible to find a town with a more prominent patron of design than Columbus and J. Irwin Miller. Still, to apply such blessings to a telephone switchgear building with only 20-25 occupants seems little less than a coup. But then, we've come to expect that of Columbus.

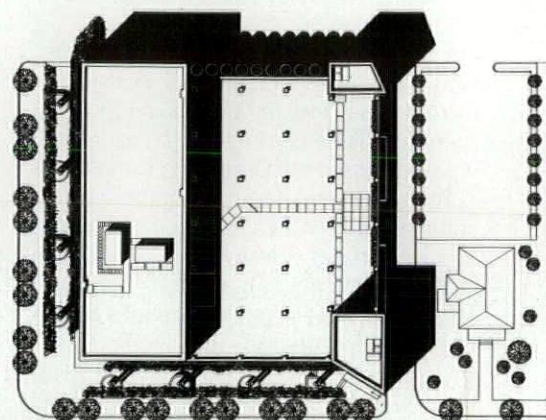
Officially known as the 37X ESS Building of Indiana Bell (P/A citation winner, Jan. 1976, p. 70), this facility on the corner of Seventh and Franklin is startling. For trivia fans, 37 is the first two digits of the exchange (X), and the facility is an electronic switching station (ESS). And for those who are tired of reflective glass buildings, this may look like yet another shiny box, the same cliché which has anesthetized, if not disgusted, many of us. But it isn't. While it is shiny, and some could fault it as not being contextual in its execution, look closer.

An existing building which housed the switching equipment occupied the site—and still does, newly clad. But the cladding is not the same trite thing now showing in almost every American city; it is an exquisitely crisp set of details, a system that wraps both old and new portions of the facility in an elegant silver skin. But as skillful as the skin is, the architects added still one more layer to two sides—the street façades—of the building. The freestanding space-frame trellis panels will one day be covered with deciduous vines of various types; the past two severe Indiana winters, however, have taken their toll. Indiana Bell's Bob Smith estimates that, while the plants grow between three and four feet during the warm season, winter frost has killed off about the same amount. Although

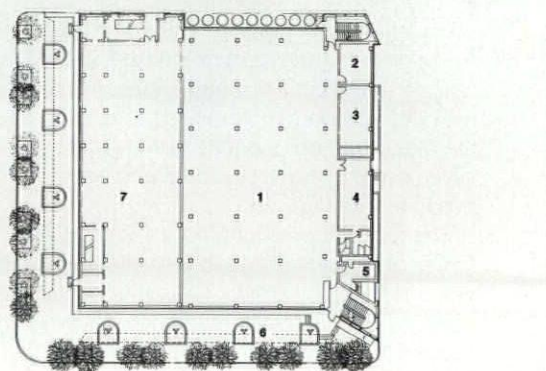
the greenery will unquestionably be a nice touch when it takes hold, and given the fact that it was a key element in the design concept, the trellis itself already does some nearly magical things in juxtaposition to the reflective walls. As Paul Kennon, CRS president and design principal notes, "Contextual images that are reflected from the angled stairtower-end become fractured, distorted, and layered in with new images of the trellis grid—thus presenting new juxtapositions of forms and abstractions. It is reality portrayed symbolically."

From several vantage points down the street, the façades almost dematerialize; the viewer experiences the trellis as a sort of ethereal wall, reflected and multiplied, becoming a visual part of the real walls. When the plants get established, another layer of mystery will be at work, and should prove interesting. In the meantime, the elements that are there already perform an intriguing sleight of hand.

When deliberating about this project, the P/A Awards Jury mused about its context. William Turnbull questioned whether the scale was appropriate for a basically residential area. But even though the immediate neighbor on the north is a house, the neighborhood is not exclusively residential. Because the Bell façade is of such high quality, and since it is almost downtown, it does not seem intrusive. Its reflections of not only the trellis, but of the sky, the trees, or the church across the street all do what reflective buildings are said to do, but with added dimension. At twilight and beyond, the stair towers reverse their image and become illuminated volumes. These are virtually the only spaces with vision glass, since the building is more for equipment than for people. The interiors are brightly painted, with color-coded piping which carries through to the exterior intake and exhaust tubes in the alley. Both the existing and new spaces are spotless. Although much of the



SITE PLAN



LEVEL 1

N → 1 50' 15 m

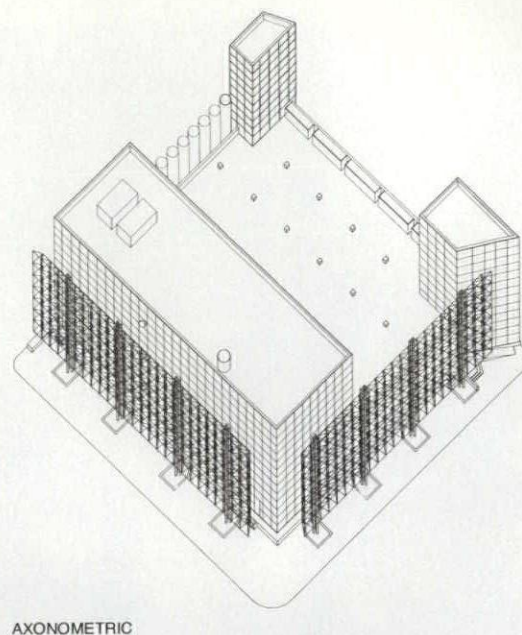
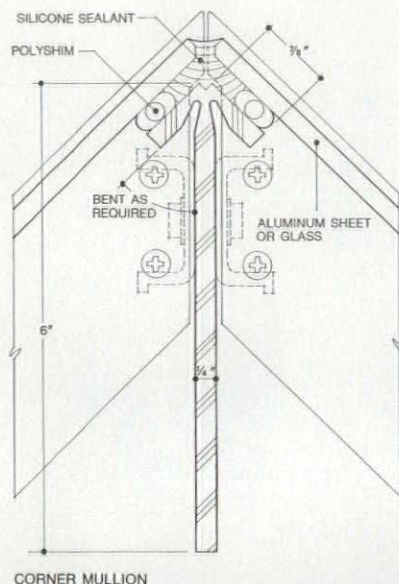
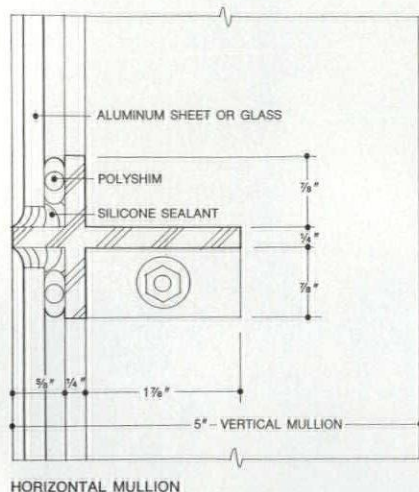
Legend

- 1 Equipment
- 2 Office
- 3 Work
- 4 Storage
- 5 Service
- 6 Plaza
- 7 Existing

At night, stair towers (opposite) are visually transformed from masses to volumes, virtually the only parts of the building not for machines.



Switching facility, Columbus, In



old portion has been freed of its equipment and is currently empty, Indiana Bell will be moving some offices there. At that time, the windowless nature of the structure may well be a drawback.

It is reported, however, that the new insulation on the old building behind the reflective glass has resulted in significant energy savings. In fact, according to Bob Smith, the boiler was fired up only twice last winter, and he doesn't anticipate using it at all next year. Since some of the telephone equipment generates heat, that is redistributed to other occupied areas, further saving energy.

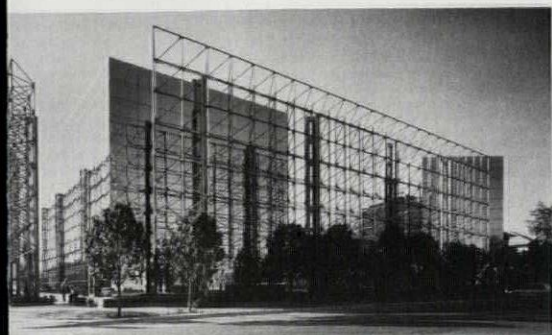
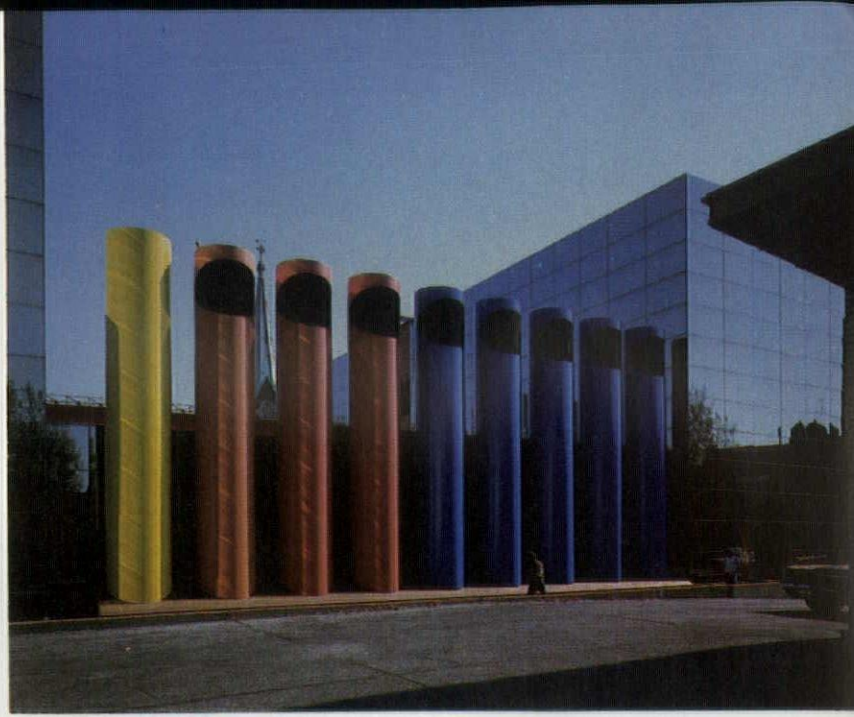
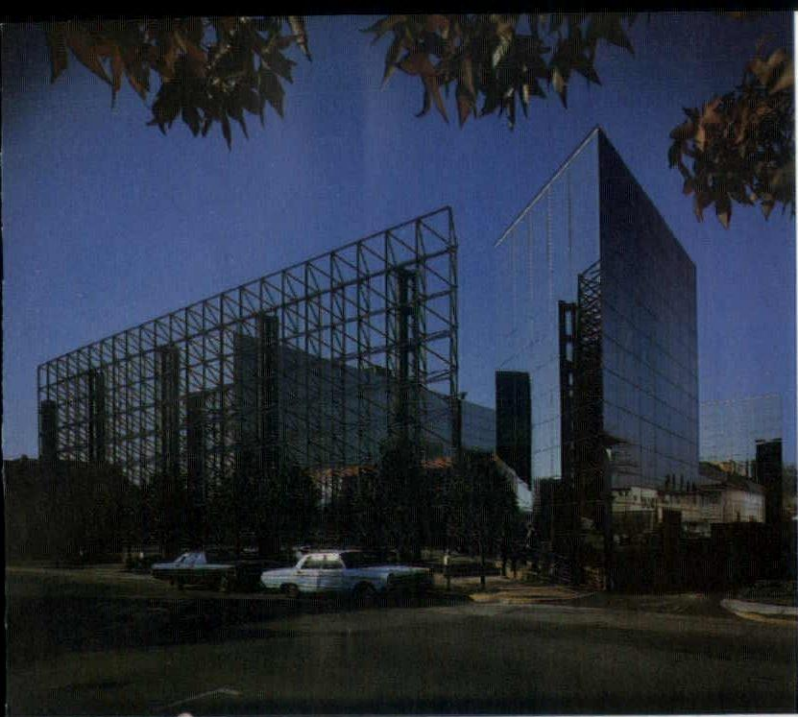
Associated architects for the project were Boots-Smith & Associates of Indianapolis (formerly Burkart, Shropshire, Boots, Reid & Associates). Max Boots and James Smith both feel that it was a rewarding experience to collaborate on the Columbus facility, and had high praise for CRS and for the contractor.

Another of P/A's jurors, Arthur Cotton Moore, called the building "a very nice piece of camouflage" for what could be an obnoxious element in the neighborhood. It is that, and more. Columbus has gained another gem, in many ways an impressive one, considering the mechanical requirements of its program. As in most of the architectural "events" of which the town can boast, this is to some degree an isolated object. But the sites of most of these dictate that. Only between Pei's Rogers Library (1969) and Eliel Saarinen's First Christian Church (1942) is there a felt interaction, a sense of place.

Indiana Bell's building is a response to quite different parameters. It will prove to be a good neighbor, getting more interesting with age. [Jim Murphy]

Glazing details (top) are extremely minimal in execution, with interior support visible as in stairs (right). Tall block is existing building.





Data

Project: Indiana Bell Telephone switching center, 37X ESS addition, Columbus, In.

Architects: Caudill Rowlett Scott Inc., Houston, Tx; Paul Kennon, design principal; Jay Bauer, designer.

Associated architects: Boots-Smith & Associates (Burkart, Shropshire, Boots, Reid & Associates at the time building received P/A Citation); Max D. Boots, partner in charge; James F. Smith, project architect.

Site: corner of a city block near downtown.

Program: upgrade and add to a very ordinary existing building housing switching equipment.

Structural system: flat plate concrete, with 20' x 20' bays. Structure sized to carry two additional floors.

Mechanical system: heat wheel used to capture heat from telephone equipment, heating incoming air; unconditioned outside air used whenever possible.

Major materials: concrete and concrete block, painted, interior; silver reflective glass; brick, space frame trellis, exterior (see Building materials, p. 126).

Consultants: structural, Robert Crooks; mechanical, M&E Engineering Service; landscape architects, Kiley, Tyndall & Walker.

Client: Indiana Bell Telephone Co.

General contractor: Bruns-Gutzwiller, Inc.

Cost: \$2,015,203; \$40.11 per sq ft.

Photography: Balthazar Korab.



Chicago traditions

Two recent facilities for a corporate client in Chicago respect and honor traditions important to their location.

It is certainly no secret that corporate architecture has always, and with very few exceptions, leaned heavily toward the conservative or even reactionary side of design. In this respect, Illinois Bell Telephone, at least with two of its recent buildings shown here, has foraged no new pathways. However, these structures—one in, and one near Chicago—respect and honor the tradition of Miesian aesthetic that has been especially pertinent to that city. The buildings' architects, Holabird & Root, who trace their own lineage back to the first "heroic" phase of Chicago building through the illustrious offices of Holabird & Roche and Burnham & Root, have left a no less significant impact on that city. And, from the early years of that period, or at least for more than the past 70, Holabird & Root in all of its guises has often been under contract to Illinois Bell. Part of what these buildings are about, then, is tradition—the tradition of an aesthetic particularly important to a certain place, and the tradition of the long-standing relationship between architect and client.

4-A Telephone Equipment Building

Although construction of the equipment building in Northbrook was completed in 1973, the building is only now being actually finished in the sense that all of its intricate equipment will soon be finally assembled and bolted in place. During the years of installation, the structure has had more people in it than it will ever have in the future, since it is designed solely to house equipment that will be attended by a very small staff. This situation explains one of the building's primary characteristics, which led directly to its suburban



neighbors' campaign to stop its construction. The structure is located next to an interstate highway and is very visible. Except for a very few vision panels, its black-glass skin is just that—skin. The glass, which has a 14 percent light-transmission quality, produced a shiny black box the neighbors did not like. Both the Chicago chapter and the national AIA had a different opinion, though, and each gave the facility honor awards. Eventually, however, the neighbors' problem was countered through the aid of a large planting budget for grown trees.

The meticulously crafted flat-slab concrete and steel curtain wall structure is glazed with six levels of 7'-6" x 20' panels that enclose three floors, each of which is the 15-ft height required for the telephone switching equipment. The curtain wall is designed to be unbolted and relocated elsewhere to ease the future 100 percent expansion of the 123,000-sq-ft structure. But that is not the only addition the company has in mind. The 13.5-acre site is also planned to accommodate a 200,000-sq-ft office structure that will eventually house a new suburban office center.

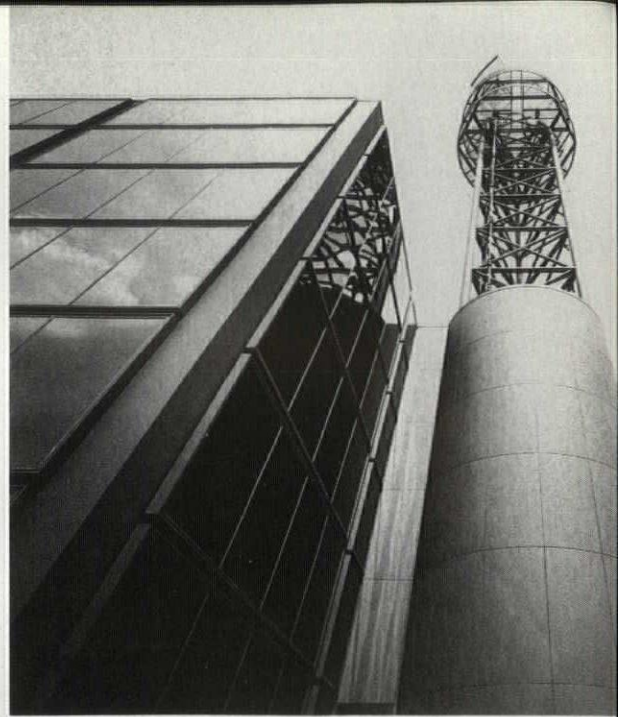
In a rather bold gesture for such an understated building, the architects have placed the four 20-ft-high cylindrical

exhaust stacks directly in front of the building. These stand at the outer edge of a low, paved terrace where they are precisely aligned before the structure's two middle bays, which are flanked by two identical bay-wide entrances that are in turn flanked by a system of bay-wide air intake grilles. The symmetrical arrangement is broken only by the tall microwave tower that is attached to the east side of the building where it counters the tightly ordered façade to establish a dynamic tension the composition would otherwise lack.

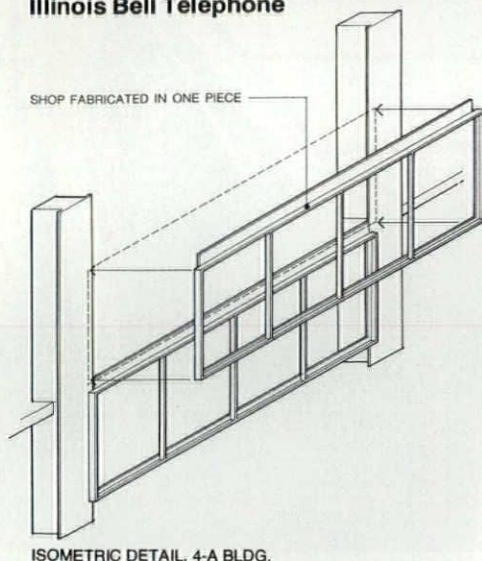
Phone Center Store

Although similar in style to the Equipment Building in being a rationalized, panel-enclosed structure, the Phone Center Store is much smaller and is the opposite of the former in that it is almost completely transparent and is designed primarily for use by people. In the early design stages, the structure was seen as nothing more than a vestibule that would become a new entrance to the telephone company's main Loop office building in Downtown Chi-

The 4-A Equipment Building (above and right) has paired industrial elements with a refined Miesian aesthetic to solve potentially mundane building requirements with elegance and grace.



Illinois Bell Telephone



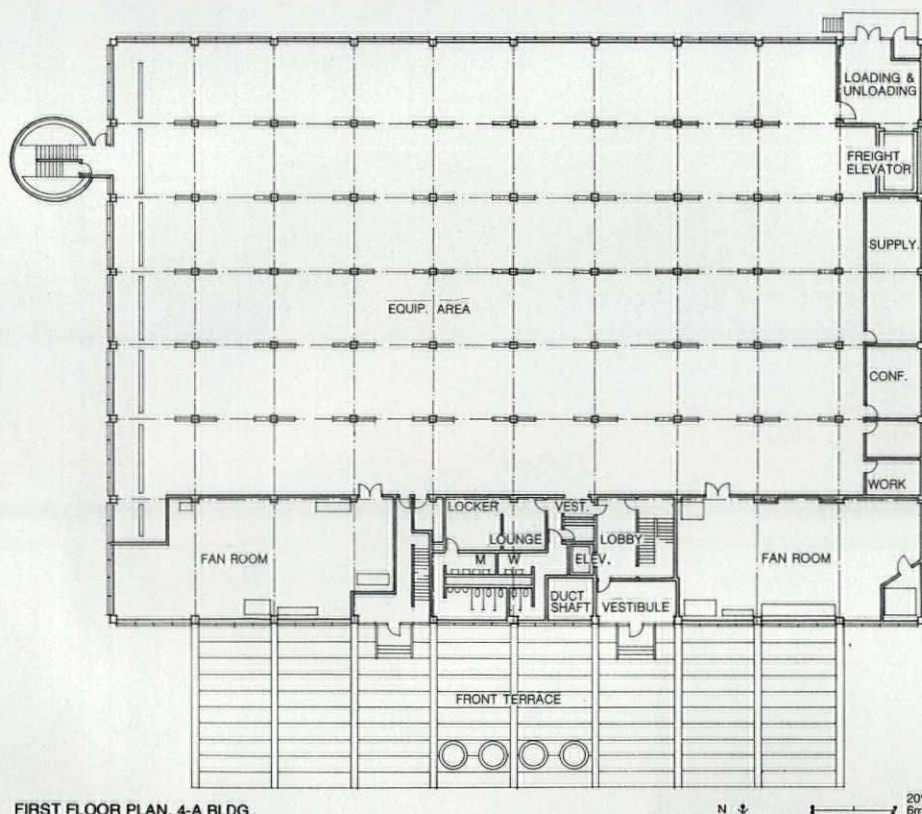
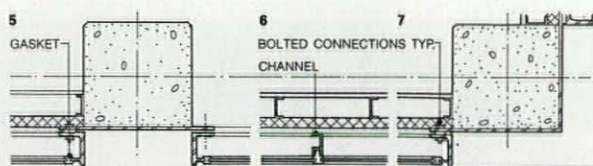
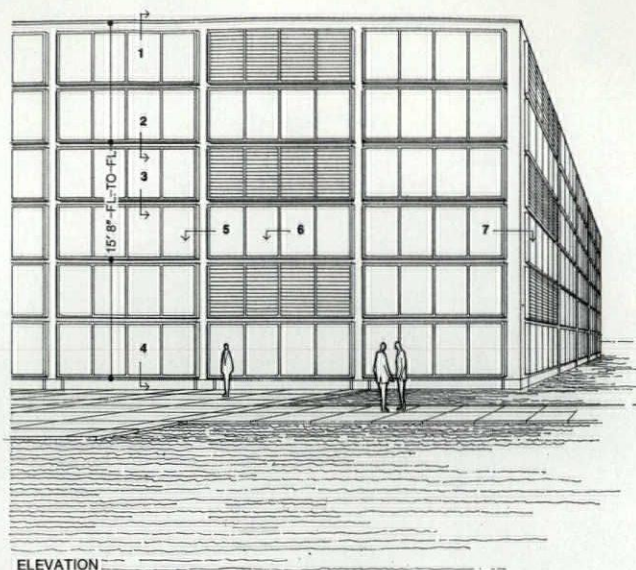
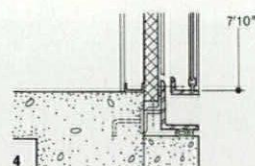
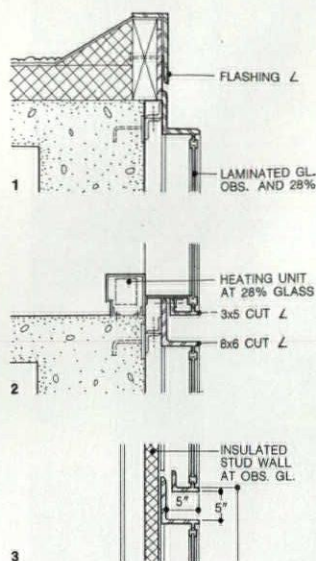
ISOMETRIC DETAIL, 4-A BLDG.

cago. But this planning occurred at the same time that people began to take interest in specialty types of telephones, and the small addition soon evolved into a new telephone retail store (facing page).

The 3560-sq-ft steel and glass building is located at the corner of a 16,000-sq-ft vest-pocket park the phone company created 15 years ago when it demolished one of its own surplus buildings. The new structure was put up in only 12 weeks, with its steel columns spliced to the basement columns of the structure that formerly occupied the site.

The architects originally proposed a structure that would give a more fragmented and playful form to the park, but the client wanted a building that definitely occupied the corner and that had a corner entrance. This eventually led to a rectangular building that has been detailed as a rather highly systematized, largely transparent pavilion where the threat of too much orderliness has been countered by the crisply detailed, asymmetrical knife-edged corner entry. The austerity of the structural frame is further relieved through its contrast to the well-lit goods inside, and to the telephone company's own brightly colored signs.

While both the Equipment Building and the Phone Center Store break no new ground in terms of architectural styling, imagery, or technology, they go even further than that in expressing no awareness whatsoever of the emerging attitudes in architecture that call for a more relaxed and pluralistic approach toward the rendering of built form. What they do accomplish, however, they do exceedingly well. Both of the buildings' programs were fundamentally mundane and as such could, and normally would, have justified equally mundane resolutions. But here the architects have applied the refined Miesian aesthetic to potentially banal situations that have been transformed through



FIRST FLOOR PLAN, 4-A BLDG.

elegance and grace. Although the style could be seen as somewhat retardataire today, classics, nevertheless, remain classics. There are times when the basic black dress or the well-tailored suit is not only appropriate, but welcome. [David Morton]

Data

Project: 4-A Telephone Equipment Building, Northbrook, Ill.

Architects: Holabird & Root; Gerrard Pook, partner in charge; Gerald Horn, project de-

signer, Janis Lazda, project architect.

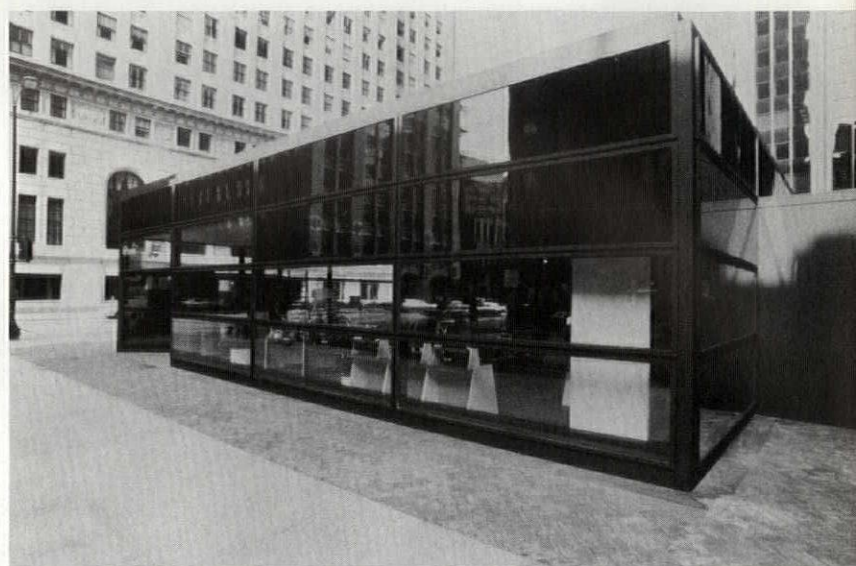
Program: a 123,000-sq-ft structure for housing equipment, with minimal supporting facilities, designed for 100 percent expansion.

Site: 13.5 acres in suburban location, adjacent to I-294 toll road.

Structural system: flat slab concrete.

Major materials: steel curtain wall with dark gray glass of 14 percent light transmission (see Building materials, p. 126).

Mechanical system: fan rooms located on each floor; 100 percent standby turbine



The Phone Center Store (this page) is basically a transparent "box" for the retail selling of the now-popular specialty telephone instruments.



generators located under four stacks at front terrace.

Consultants: Norm & Carlson, landscape; Holabird & Root, structural, mechanical.

General contractor: Pora Construction Co.

Client: Illinois Bell Telephone.

Cost: withheld at owner's request.

Photography: Henrich-Blessing except p. 70, p. 71, top right, Philip Turner.

Data

Project: Phone Center Store, Chicago, Ill.

Architects: Holabird & Root; Gerrard Pook, partner in charge; Gerald Horn, director of design; Jeff Case, project designer; Frank Castelli, project architect.

Program: a 3560-sq-ft retail store for specialty telephone instruments, designed as expendable addition to existing structure.

Site: a 16,000-sq-ft corner site adjacent to client's headquarters in minipark developed by client 15 years ago, in the Chicago Loop.

Structural system: steel columns spliced to a former structure's existing basement columns; metal roof deck with poured concrete.

Major materials: steel curtain wall with dark gray and clear glass (see Building materials, p. 126).

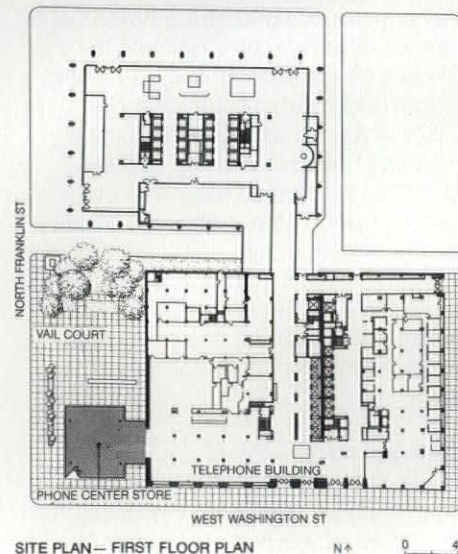
Mechanical system: perimeter hot-water fin-tube heating from central steam boiler plant; variable air volume supply air-conditioning unit with plenum ceiling return to exhaust fan with economized control.

General contractor: B.H. Janda Construction Co.

Client: Illinois Bell Telephone.

Cost: withheld at owner's request.

Photography: Jim Norris.



Rooms at the top

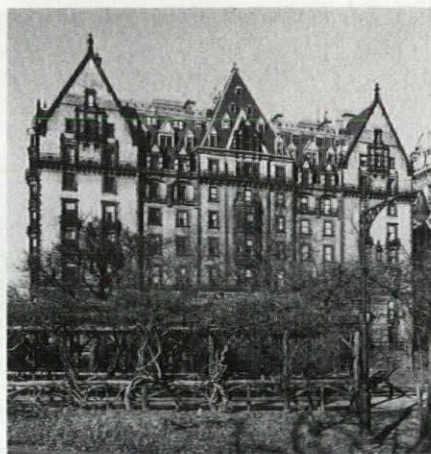
Designer Ward Bennett's own apartment atop New York's fabled, gabled Dakota is a distillation of his philosophy of minimal, carefully crafted interiors.

The names of the residents at the legendary Dakota apartments in New York read like the passenger list of an incredible voyage onward and upward with the arts: John Lennon, Paul Goldberger, Rex Reed, Leonard Bernstein, Lauren Bacall, and other glitterati too numerous to mention all live in the landmark structure. But up on the roof lives a man whose tenancy long predates the Dakota's relatively recent rise to chic. Ward Bennett, the bearded guru of a whole younger generation of interior designers (*P/A*, Sept. 1978, p. 82) has lived at the Dakota since 1942. And for the past 15 of those years, he has occupied—and has just renovated—a unique collection of spaces within the central, pyramidal gable that overlooks Central Park.

Built in 1884 to the designs of Henry J. Hardenbergh, the Dakota is like that architect's other major New York landmark, the Plaza Hotel, in that its interior spaces tend to be either wonderful or horrendous. The odd, left-over rooms beneath the Dakota's picturesque roofline were long thought to fit into that latter category. Originally, the gables were designed to be the province of servant girls and scullery maids. But to Ward Bennett, who bought the main garret in 1962 when the building became a cooperative, it was an opportunity to create a distinctive apartment that has become, in the past decade and a half, an ever-changing, but always consistent, expression of his approach to design.

5 rms, prk vu

Access to the Bennett apartment is, by usual New York standards, rather astonishing. Halfway through a journey that in-



George Csereza

Bennett apartment is located in central gable of landmark Dakota building overlooking Central Park. Designer acquired garret in 1962.

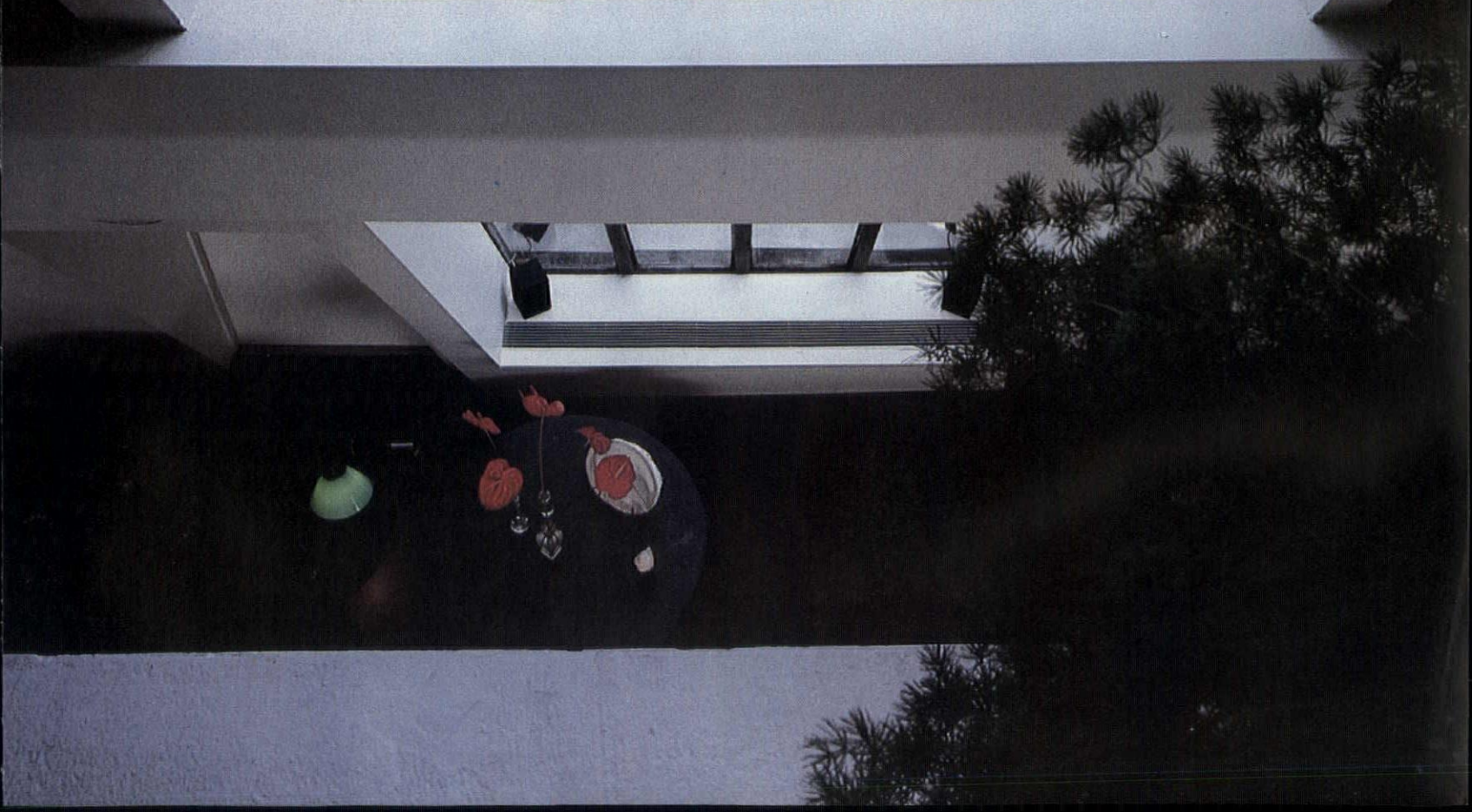
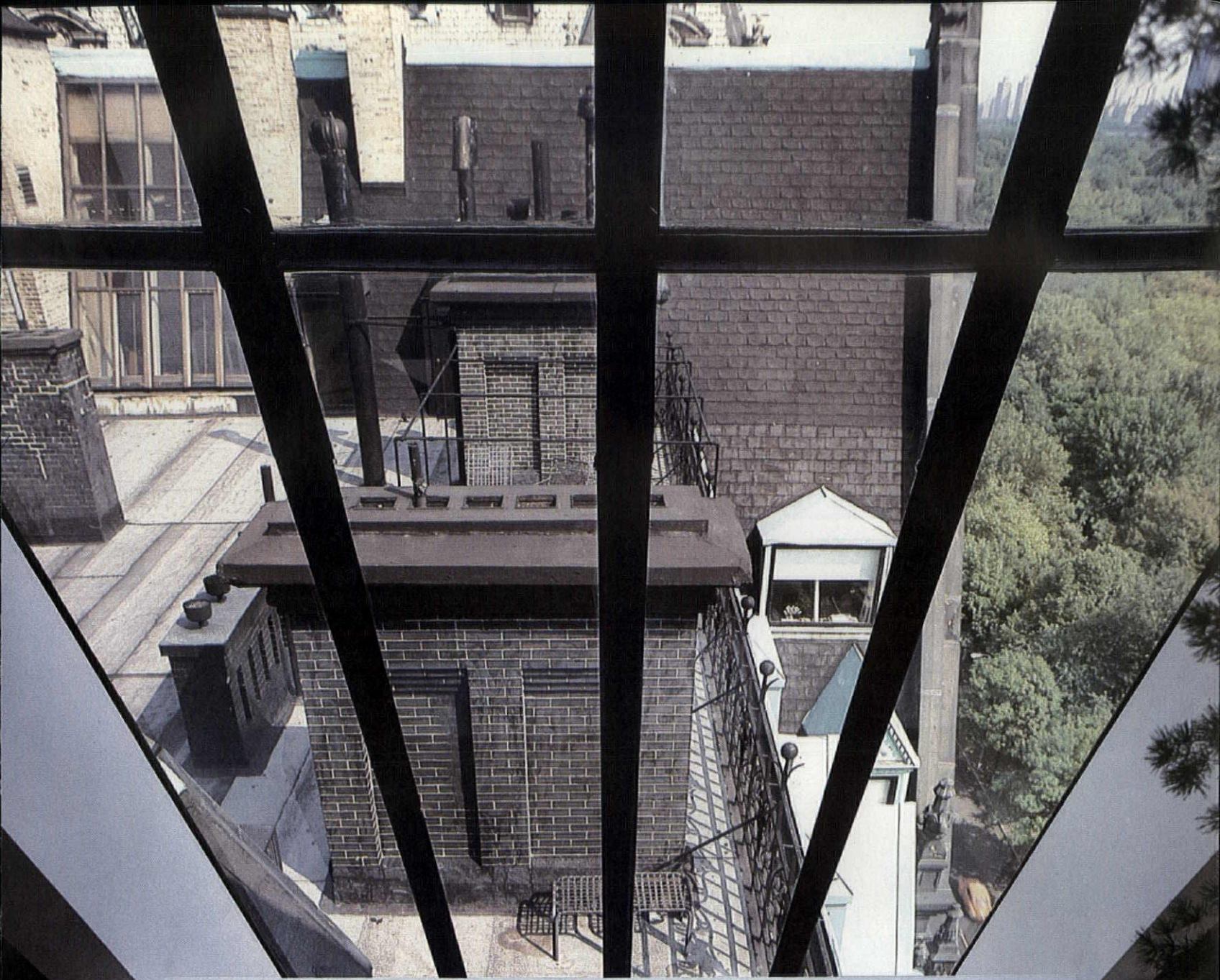
cludes mazelike corridors, elevators, and stairways, one wonders whether one ought to have left behind a trail of pebbles in order to retrace the tortuous route. Finally, one passes through a door—outside again, onto the roof of the building! But momentary consternation fades as the visitor gains sight of the breath-catching vista that lies below: Central Park, and its Lake (spanned by Calvert Vaux's graceful Bow Bridge), set off by the limestone backdrop of Fifth Ave. This is surely one of the great views of New York.

The contradictory aspects of the Dakota roofscape are inescapable: it is at once as quaint as some Graustarkian duchy, but it is quite powerful, too, in the strong geometry of its forms. Small wonder that it has great appeal to Ward Bennett, whose own work, despite its seeming simplicity, is suffused with a certain ambiguity of contrasting forces. Most emblematic of that condition is the Dakota's enormous flagpole, which becomes a dominant indoor/outdoor part of Bennett's scheme, and which also neatly summarizes his attitude toward design.

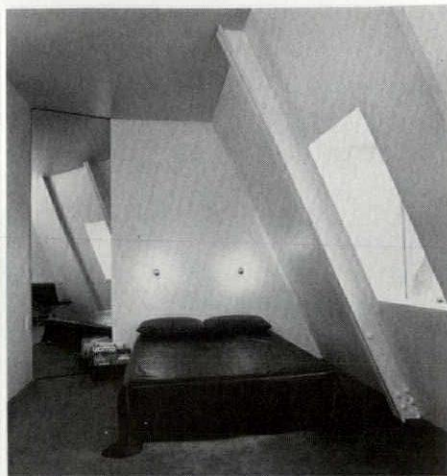
The flagpole plunges down through the apex of the gable pyramid. Inside, in his upper-level study, Bennett has appropriated the flagpole's ample girth as the base of a table, made by adding a circular wooden plane to complete what the existing elements had already started. Craning one's head near the dramatic, two-story studio window that dominates the north slope of the pyramid, one can catch a foreshortened glimpse of the Stars and Stripes billowing overhead, a bright splash of primary colors amidst the black and white. Devoid of the iconic significance it would attain at the hands of a Venturi or a Moore, the flag here becomes just another striking design element, incorporated without special reference to its meaning. This almost studied neutrality is at the heart of Bennett's style, a style that does not seek to conceal its artfulness (as some have supposed), but which rather leaves it up to the viewer to discern what was intended, and what was not.

This happens throughout the apartment. In the living room is Bennett's desk, which at first glance looks like a Gurney for the very rich: black stone slab on a tubular chrome base with large black rubber casters. One assumes that this is an appropriated piece of hospital equipment, but no—it was custom-made to Bennett's own design. It is preferable, to be sure, to an ormolu-encrusted *bureau-plat*, but its associational references do intrude into our reaction to it, whether or not its designer so intended. Entering the apartment from the roof, one is confronted by a pair of striking metal sculptures. These vertical, deeply fluted, hourglass shapes (reminiscent of the rough-hewn wooden bases Brancusi crafted for his own sculpture)

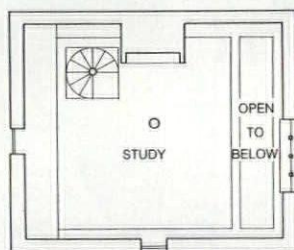
Upper level study is open on one side to living room below (opposite page). Two-story studio window frames view of roof and Central Park.



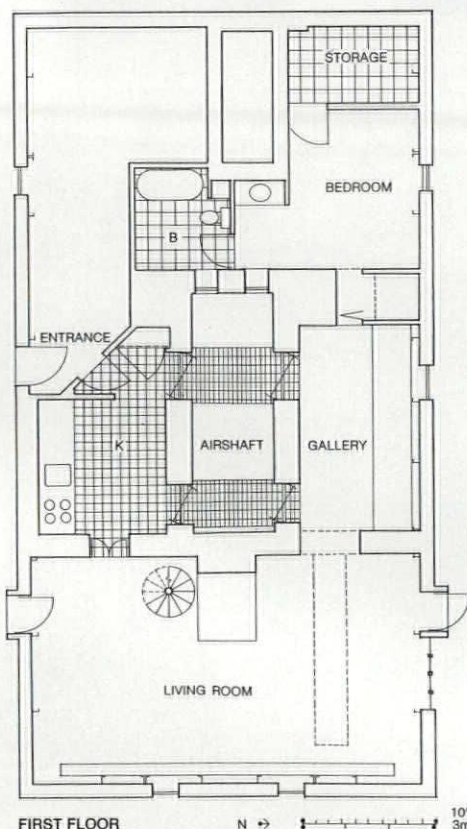
Bennett apartment



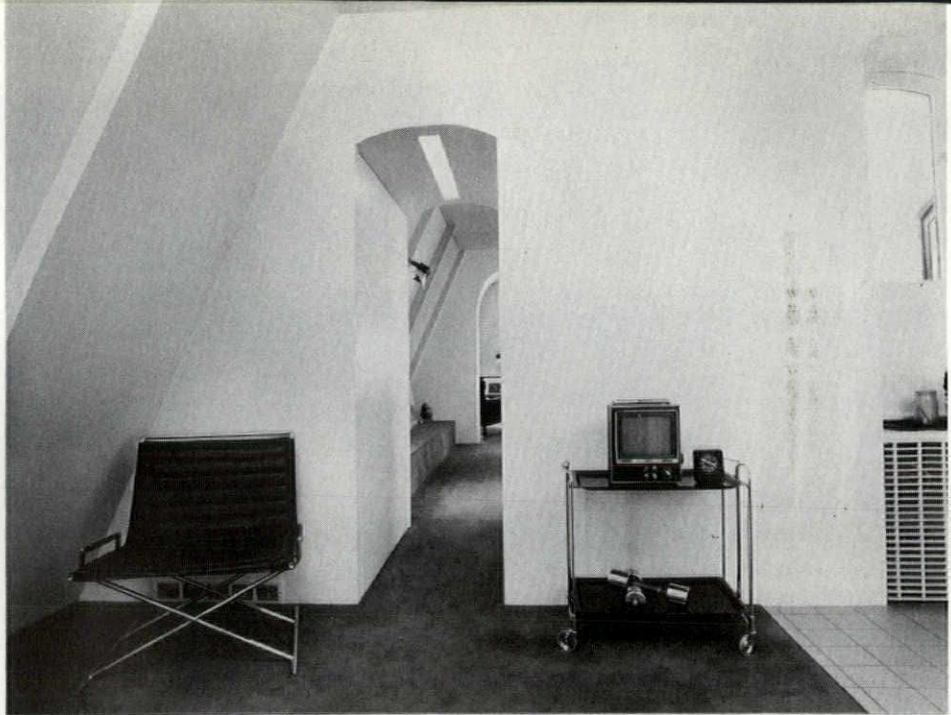
Bedroom (above left) is reached through gallery (above right) connecting with living room (right). Low, narrow archway entrance to bedroom (above right) reflects shape of original arched window at right. Sense of compression created by archway makes relatively small bedroom seem initially larger by contrast, a device often used by Frank Lloyd Wright. In living room (right), seating was kept deliberately low to compensate for sloping walls.



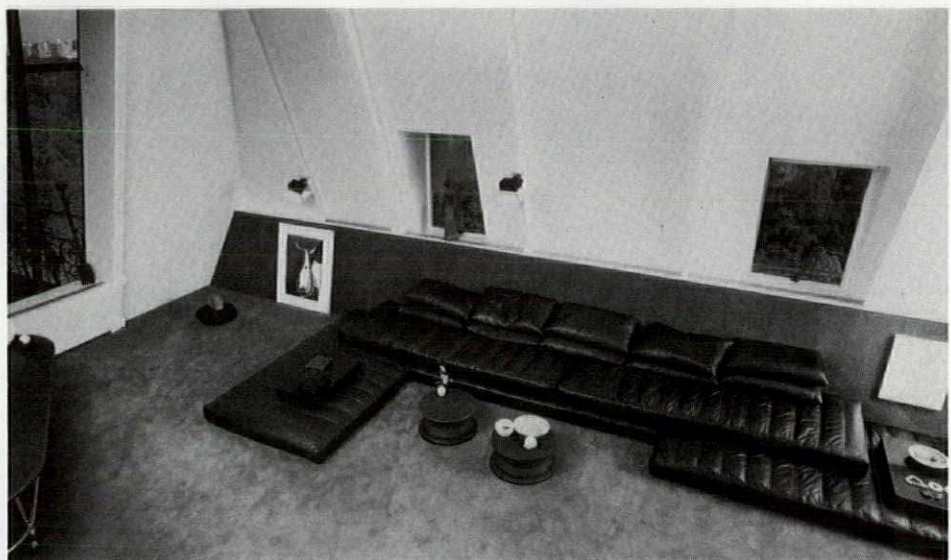
SECOND FLOOR



FIRST FLOOR



Ward Bennett



turn out, conversely, not to be *objets d'art*, but *objets trouvés*: they are actually cog-wheels used to strip bark from logs at lumber mills.

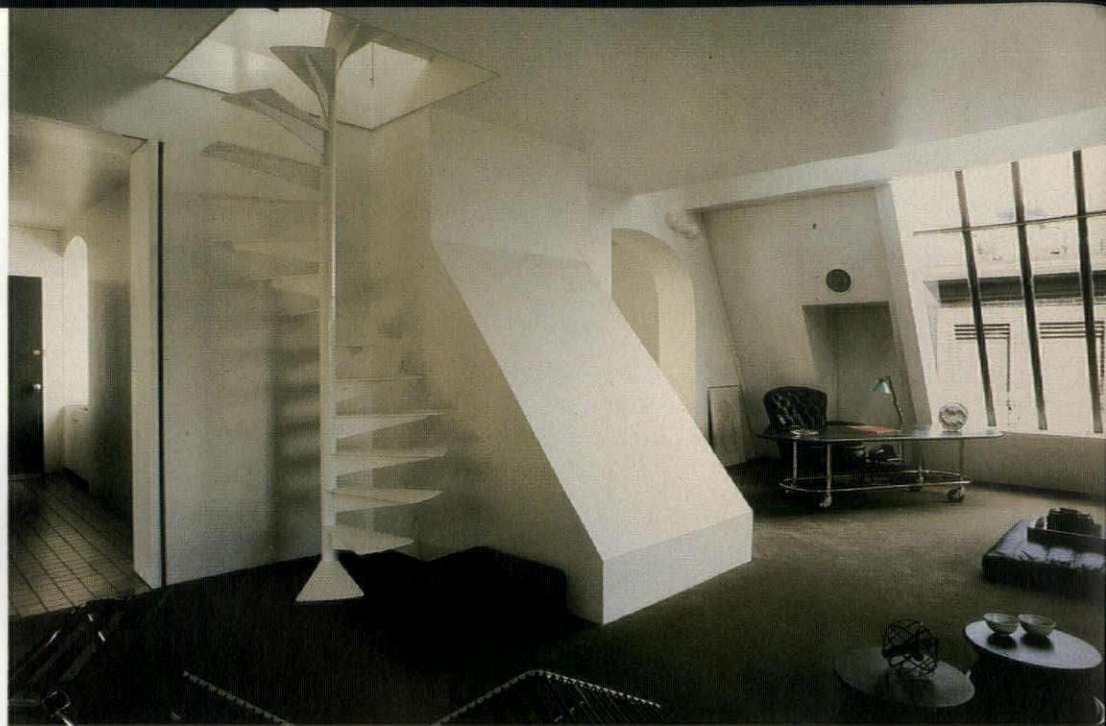
I'm looking through you

To one side of this entry area is an aligned series of windows. The first two windows flank an air shaft, over which Bennett has set a nonstructural deck of industrial grating, in order to cut the sense of an abyss below. On the other side of the air shaft is a gallery with a similar alignment of two windows, which in turn lead the eye into the apartment again, and then out the other side of the pyramid. This intriguing visual sequence of indoor and outdoor spaces verges on the illusionistic. One then passes through the kitchen, which is barely recognizable as such, since there are few signs of the preparation or consumption of food (save for some Bennett-designed utensils). This immaculate galley is a great deal neater than many formal entrance foyers.

Next comes the living room, which extends along the full width of the gable. Its

steeply sloping walls clearly define the exterior shape of the pyramid. In explaining his original remodeling of the space, Bennett says, "I stripped away everything I could which would still leave the place standing." He acceded to the strong diagonal thrust of the existing space in a number of ways. The emphatic slant of the flagpole base in the living room is the mirror opposite of that of the walls, and it occupies a position in the room that approximates that of a fireplace in conventional interiors. Seating in the room is kept deliberately low: the usual chairs and sofas would have made the space seem a great deal smaller. A vaguely Oriental feeling is heightened by an exquisite Cambodian head of Buddha, resting horizontally on a round black pillow, the color of its stone echoed most closely by the gray-beige wall-to-wall carpeting that is used throughout living room, gallery, and bedroom.

The gallery connecting living room and bedroom is little more than a walkway, save for its low shelf, on which are displayed framed drawings and etchings by



Le Corbusier, Picasso and Miró. Beyond is the bedroom, which some might find a bit stark. Its bed, draped in black leather, looks rather uninviting. Here the uncomplicated ease of the rest of the apartment gives way to a stringent sense of denial. The adjacent bathroom, though, is a fine corrective to the mirrored and marbled excesses of "decorator" remodelings. The original ball-and-claw-foot bathtub is here, and what must be the world's most famous towel rack: Bennett's black tubular steel man-hole surround, widely published as part of the High Tech craze.

But the best room of all is at the very top. From a circular stairway in the living room, one ascends to a small study, with white walls and white tile floor, carved out of the top third of the pyramid. A wall of books, some light oak Bennett chairs surrounding the circular table, lush plants, art objects, and that glorious view all combine to make this a special and solitary retreat. Sitting there, Ward Bennett must certainly feel that it has been well worth the climb to the top. [Martin Filler]

Data

Project: Bennett apartment, New York.

Interior design: Ward Bennett.

Program: renovation of two-level apartment for owner-designer.

Major materials: steel and plaster walls, tile and carpeted floors.

Client: Ward Bennett.

Cost: withheld at request of client.

Photography: Henry Wolf, except as noted.

Spiral stairway in living room (top right) leads to upper level study (top left). Dakota flagpole is incorporated to create table by addition of circular wooden top. Flagpole is anchored in massive diagonal base in center of living room (top right). Low seating, precisely framed landscape views, and Oriental art objects (right) give living room an Eastern feeling.



B.A.T.V.

The color TV studios in Buenos Aires are in public parkland, but they give back much more than they take away.

When Buenos Aires was selected as host city for the 1978 world cup soccer finals, Argentina found itself caught short with no facilities for color television production. The games would be broadcast world-wide, and the state had exactly 18 months to design, build, furnish, and move into a new color production center. Because time was so short, a program was written and a competition was held for the building's design even before the site was selected. Although the rush was on, the State did not take the easy way out by planning for the most expedient solution. The facilities would be around after the play-offs were over, so a decision was made to go ahead and build an adequate and permanent production center in the first place that could satisfy all future needs for color broadcast.

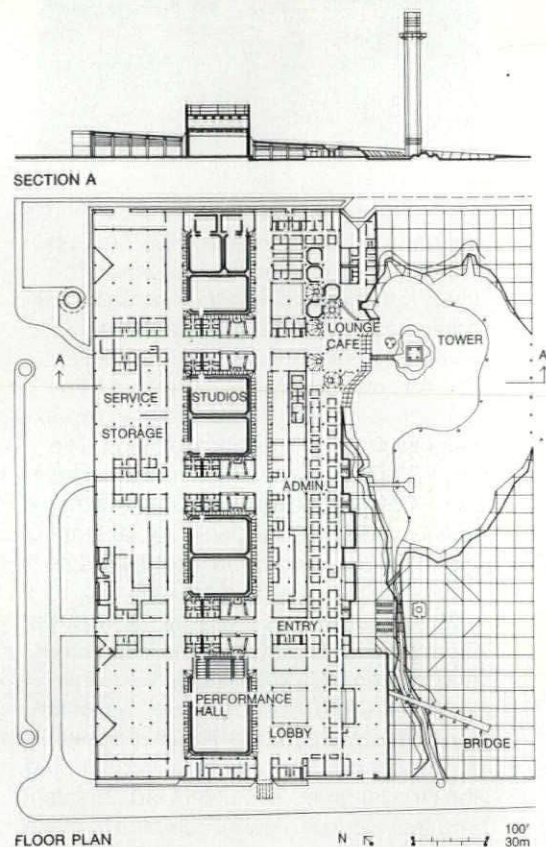
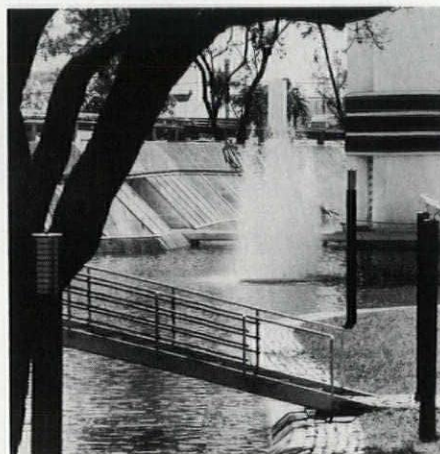
The program was not simple. It called for a 265,000 sq ft complex of interrelated facilities that included seven technically complicated, soundproof studios. The largest, of 400 seats, would be for public performances and would have a separate exterior entrance. Five more of half its size would be for standard television production, and of two acoustically variable smaller studios, one would be reserved for recording popular music, and the other for classical. To all of this would be added the necessary offices, lounges, cafeterias, service, storage, and technical space required for such a large complex.

On the basis of their preliminary functional scheme, Manteola, Sanchez, Gomez, Santos, Solsona y Vinoly Architects were selected from the competition entrants to bring their design to completion. This young firm already had a major body of work to its credit in Buenos

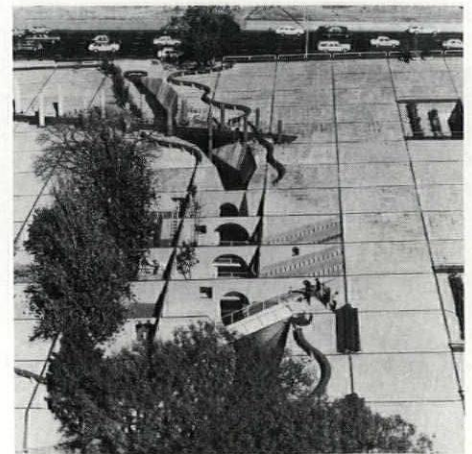
Aires that included a large complex of public housing and a number of office towers for the Municipal Bank of Buenos Aires (P/A, Nov. 1973, p. 86). One of the advantages of their scheme for the TV center was that it both recognized and took advantage of the generally flat nature of the city's terrain; their rationalized one-story plan, which is essentially divided into a grid of 12 blocks separated by circulation corridors, had a degree of adjustability built into it that made the scheme easily adaptable to most site configurations.

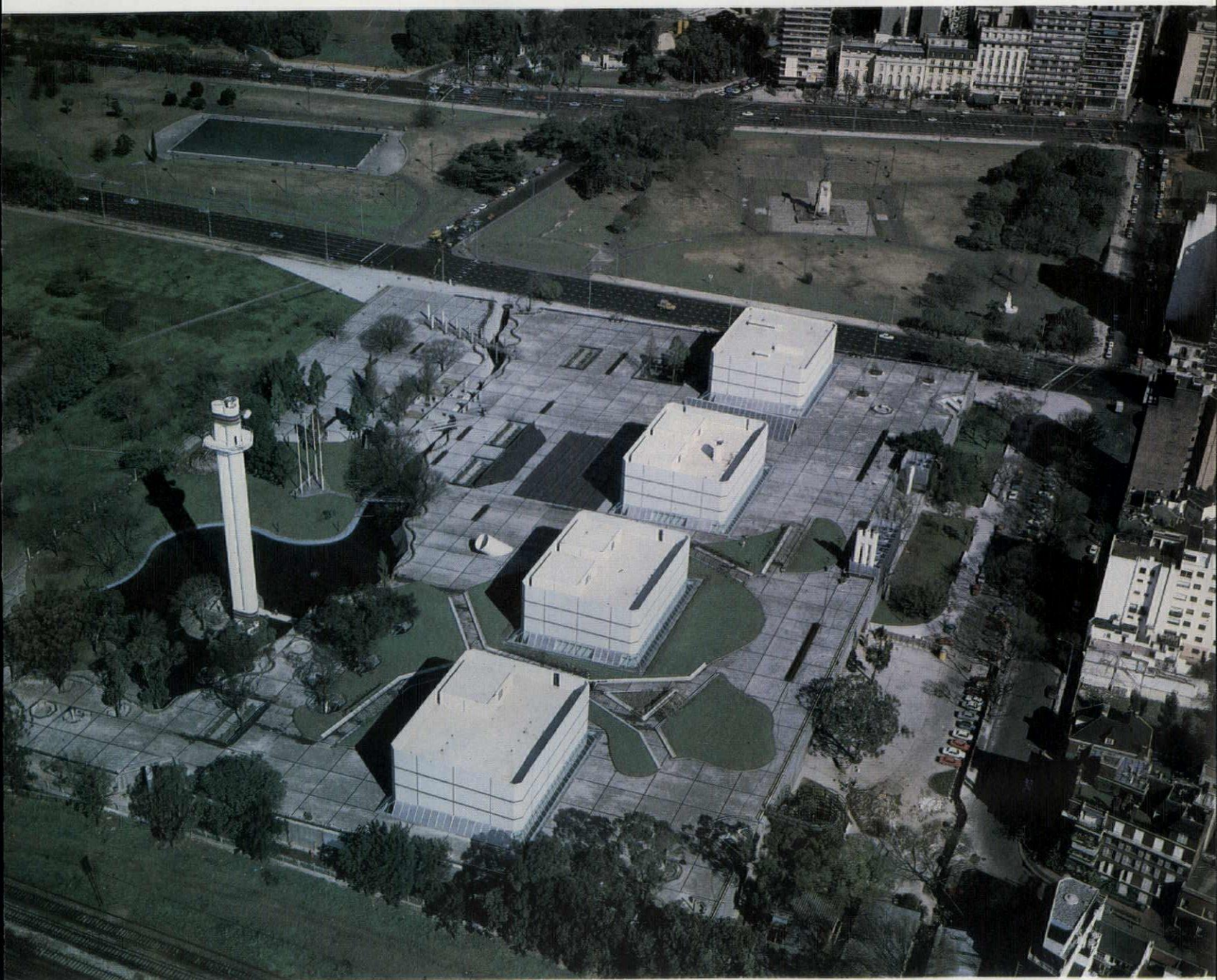
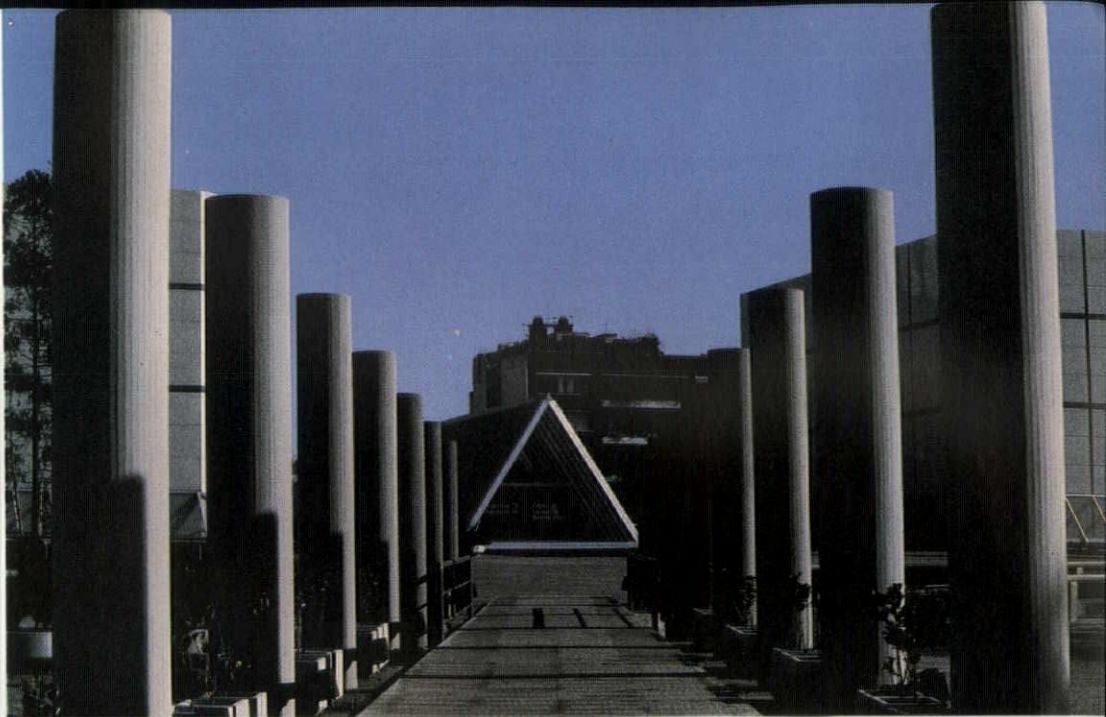
The site finally chosen was the last parcel of a strip of public parks laid out at the edge of the city by a French designer in the last century. The selected plot had always been underutilized, and it was also the only readily available land in the city that fulfilled the space and location requirements of the program.

Because of the city's flatness, the architects designed the major portion of the complex as a very low structure, triangular in section, that would give some topographical variety to the city and would also allow the return of most of the parkland to the public as a new paved and landscaped rooftop pedestrian plaza. The reinforced concrete base structure slopes at



The huge color TV production center in Buenos Aires turns underused park into a new fantasy land. Public entrance (facing page, top right) is through "Colonnade of the Stars" bridge, and from there into an A-frame greenhouse. A stream with jets d'eau runs through the site (below left) near the children's maze (below right) and sunning benches (facing page, top left).





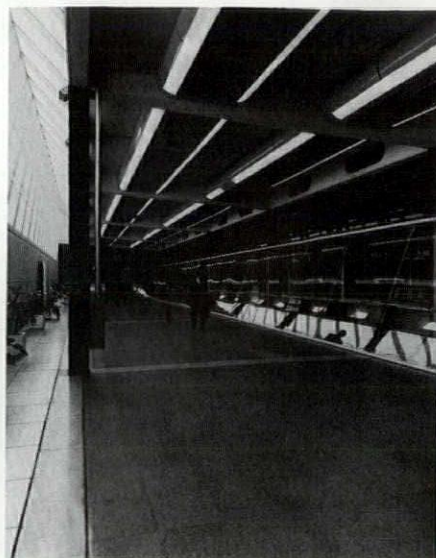
Buenos Aires TV Production Center

five degrees from the rear, northwest perimeter, over two-thirds of the site before it terminates in an irregular configuration along an artificial stream and lake where rain water is collected for the air-conditioning system. All of the complex is "underground" then, except for the upper portions of the four high structures that house the large performance hall and the six studios. These massive, double-walled concrete blocks rise out of the podium base, banded with sedate strips of dark brown "Florentine" marble. Given the scale of the whole complex, they look like huge presents tastefully wrapped up by Christo. But they are not the only surprise in this thoroughly delightful place.

The rooftop plaza has been designed with an extraordinary variety of "events" that transform the whole complex into a rather sophisticated kind of amusement park. One enters the plaza by a bridge over the stream that is flanked by columns. This monumental Colonnade of the Stars is inscribed with the names of popular television personalities. Holes punched throughout the plaza are either courtyards for bringing natural light into the lower portions of the facility, or sunken playgrounds for the amusement of children.

Entry to the public performance hall is through a large, A-frame greenhouse near a public amphitheater. Across the plaza, a gigantic tube, which is a microwave antenna, angles out of the ground to project its messages to a broadcast tower that rises out of the lake, and that also houses firefighting water in its shaft. In some places where the podium structure meets the water, its walls have been glazed, and such functions as lounges and cafeterias placed there. Where the same structure meets an existing tree, a glass funnel has been built to preserve the tree and to bring natural light into the building. A grassy lawn with flower beds and trellised walkways curls around one of the studio structures, and around all four of them skylights have been installed at the podium level to take natural light down to the lower circulation system and to give the public a glimpse of the goings-on inside.

Almost everything on the interiors is in some shade of gray, including the guards' and workmen's uniforms, because the architects reasoned that since the purpose of this complex was related solely to considerations of color and its transmission, the only color should be in the television sets themselves and on the stages being filmed before them. However, this does not mean that the interiors are drab. Although the studios are completely enclosed, and the major part of the facility is "underground," the architects have provided



so many sunken courtyards and other sources of natural light, coupled with the extensive use of glass block and glazed partitions inside, that the interior is much more animated than would normally be presumed under such circumstances. The real achievement of this complex, though, is that it covers a public park with building but gives back quite a bit more than it took away. [David Morton]

Data

Project: Buenos Aires Color TV Production Center, Buenos Aires, Argentina

Architects: Manteola, Sanchez, Gomez, Santos, Solsona y Vinoly; Rafael Vinoly, principal in charge of design.

Site: a flat, underutilized 10-acre park at the edge of the city.

Program: 265,000 sq ft for color TV production.

Structural system: podium structure of reinforced concrete with columns 23' 6" on center, studio structures of poured-in-place reinforced concrete bearing walls.

Major materials: exposed concrete, paving tile, glass skylights and partitions, glass block, terrazzo.

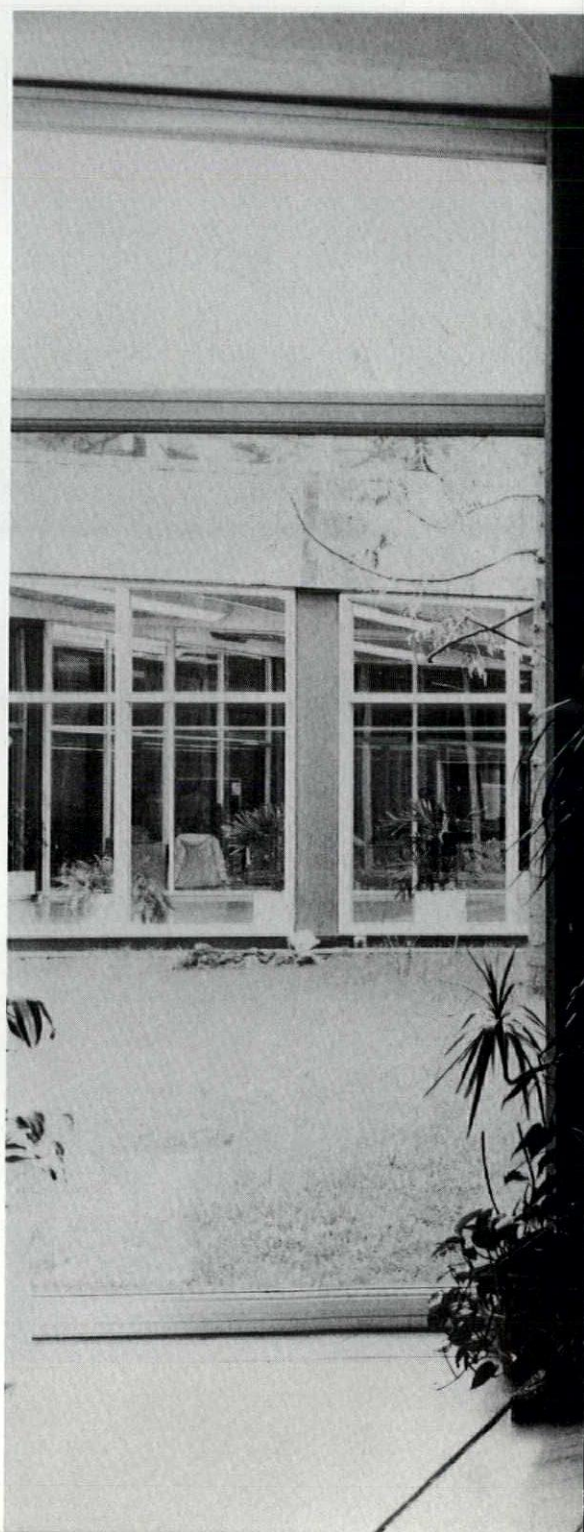
Consultants: Rafael Vinoly, landscape, interiors; F. Malvares, acoustical; Pedregal y Peral, mechanical.

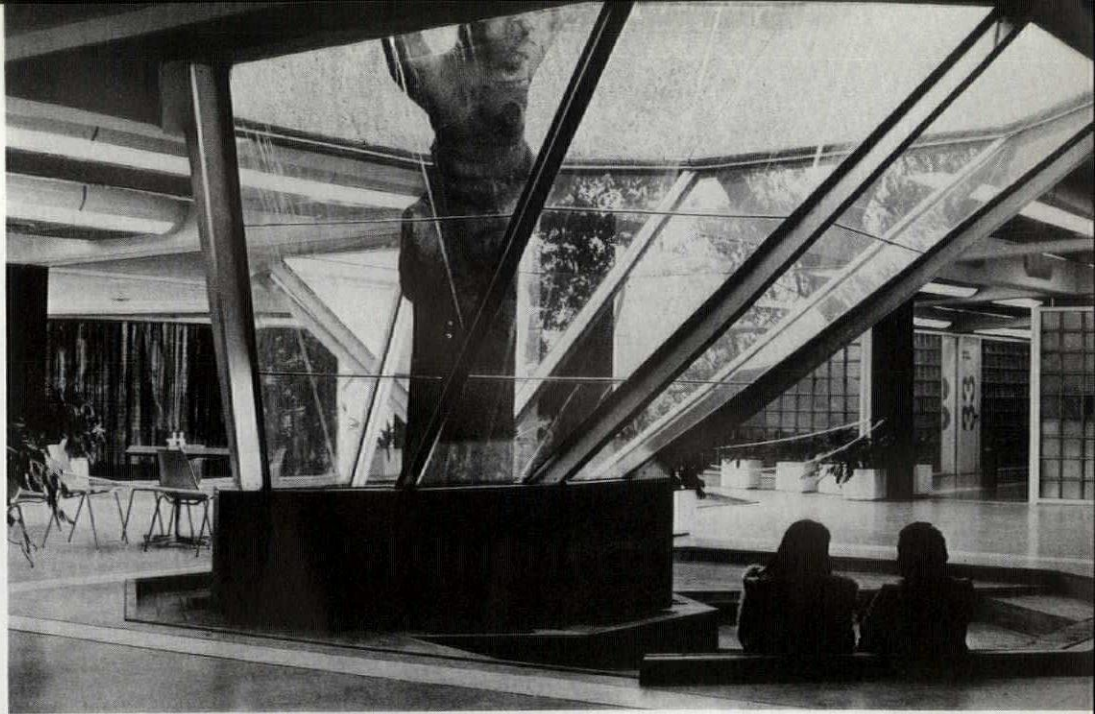
General contractor: Benito Roggio, Petersen Thiele y Cruz, Sebastian Maronese e Hijos; job captains: Ricardo Kehiayan, engineering, Roberto Spinelli, architectural.

Costs: \$20 million, \$75 per sq ft.

Photos: Dulitzky.

Under the plaza, the interior is done mainly in shades of gray; the only color is in the TV sets and on the stages. Throughout the inside, skylights over the halls (top left), sunken courtyards (right), and glass funnels that preserve existing trees (facing page, top right), bring in natural light, which is additionally distributed through the use of glass block.





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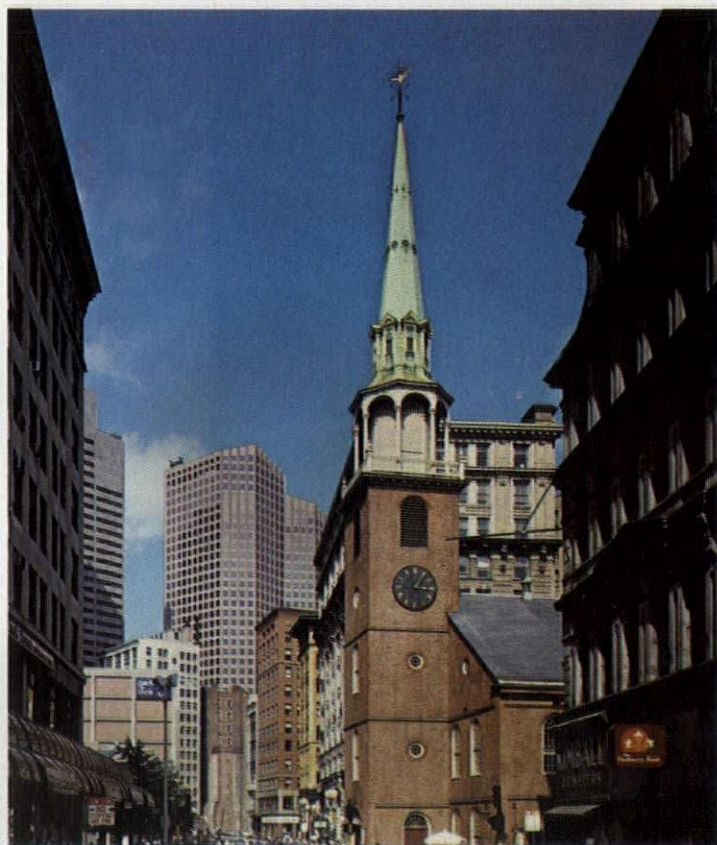
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That's the conclusion of Consulting Engineer Frank T. Andrews of Fullerton, California, who's had long experience in dealing with Las Vegas hotel complexes. When he was given the MGM Grand Hotel energy-saving assignment, Andrews knew that because of the many variables and intricacies involved, the job required a computer solution with a flexible input format and almost unlimited scope. After investigating several energy analysis programs, he selected E CUBE because it was the best way to:

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- Existing fan coil units for tower

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- Economy cycle cooling for public spaces in conjunction with airside balancing should be implemented.
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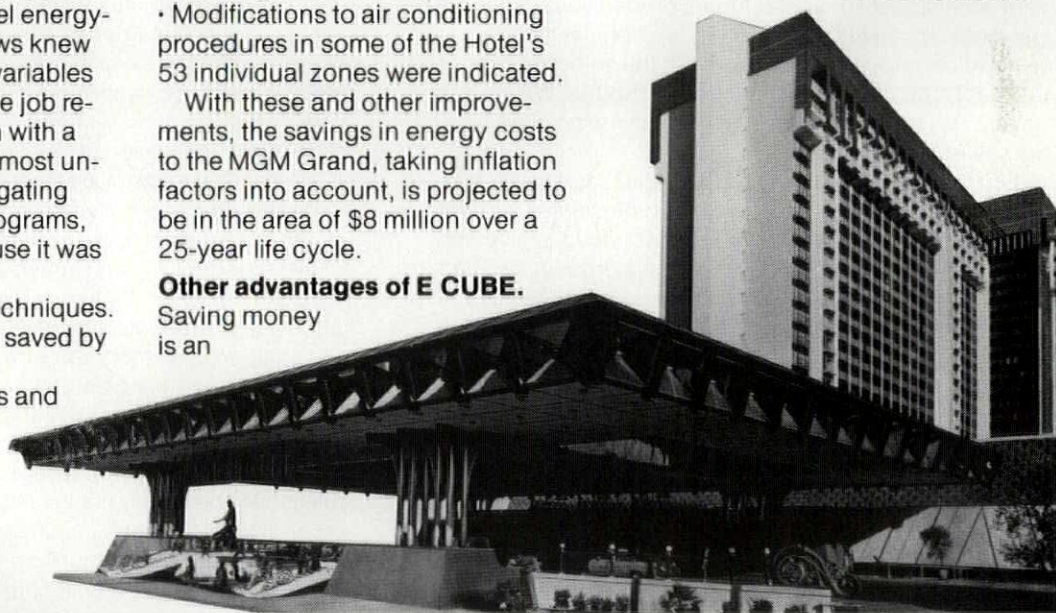
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Changed formulas and private labels

Alvin D. Skolnik, FCSI

Specifiers must be wary of blind repetition of product use. Products can change while maintaining the same labeling.

Among the many factors that design professionals take into consideration before specifying a product are the past performance of the product and the manufacturer's credentials. This is not to suggest that these are the only considerations, but they are two pieces of information a/ways involved in the selection process. It is reasonably predictable that things will change. We must deal effectively with these changes. Let us examine how this relates to product selection.

In using the past performance of a product as a basis for predicting its future performance, a design professional is relying on what is perceived to be finite data in assessing, in a given environmental situation, the ease with which a product can be handled, its demonstrated behavior in place over a known period of time, and many other factors which are germane to the value judgment he must make in order to predict its likely future behavior under similar conditions of use. However, let us consider the situation in which a product with a well-established brand name is now being marketed with that same brand name, but is, in fact, being produced with a modification to the formulation.

The oil embargo a few years ago created shortages and higher prices for ingredients used in many products. Manufacturers were faced with the need to either cut back drastically on production while raising prices or, alternatively, to modify or find new formulations to produce their products. The new formulations involved either an alternative chemical in a compound, or a change in the proportions of the original chemistry within a compound, or a change in the compounding method which would accommodate their needs. It must be recognized that, even without an oil embargo, manufacturers are constantly doing research and development in order to improve their products, create new ones, or find ways to produce their established products more profitably. It does not necessarily follow that a change in formulation means a downgrading of the product. Quite to the contrary, it may well mean an improvement.

It is quite possible that published data giving the physical properties of a product or its performance characteristics can remain unchanged even though a product formula changes. Most manufacturers in publishing such data allow "tolerances" in what they report in order to provide themselves a "margin of safety" against variations in their quality control (no matter how stringent their program) and to avoid problems which may arise when actual field conditions vary from the optimums for which the product was intended.

In some cases, manufacturers will choose to keep a brand name even when modifying the formulation because of the high cost of having promoted the product and the acceptance it has had. There is no intent to be fraudulent when a product is generically the same and its published properties remain unchanged or when the published data are revised. However, the question arises as to how valid the past performance record of a product is as a criterion for evaluating its suitability for future use, when the product is, in fact, somewhat different. Since this information is usually proprietary, it is most often not available to the specifier. The design professional should seek to determine when such changes take place and to then judiciously apply his own research skills in the critical areas when making his judgments.

Another area of change which continuously must be monitored is the ownership or management of manufacturing firms. In our economic environment it is somewhat commonplace for conglomerates to acquire established firms (for a variety of business reasons). Changing management often results in changing business concepts which are not necessarily consistent with what has been traditional in the trade. New marketing philosophy may stress sales rather than service, may place less emphasis on research and development, or may be less responsive to the design professional seeking information from which a judgment can be made. Occasionally, this changed management philosophy results in a previously dependable product being less available or being misused (due to inadequate attention to service during the selection or application period). In short order, such a product may lose its reputation and value to the industry. Again, this is not to suggest that whenever there is a change in ownership of a company the demise of its products will follow. Often, the added financial resources and improved management skills result in better products or greater responsiveness to the user. However, once again, the design professional must judiciously apply his skills in critical areas of judgment.

Many products are manufactured under "private label" for others. This is much more prevalent than many of us are aware. Often, a product is manufactured at a single source and sold to several other "manufacturers" under their respective private labels. Such products are sometimes even packaged, labeled, and shipped to distributors or project sites without ever being handled by the "manufacturer" whose label the product bears! Occasionally, it is more profitable for a company desiring to have a "complete line" to have certain of their products made for them by others—under private label. For those of us making product selections, the quality control program of a manufacturer is an important factor. Under circumstances where "manufacturers" are not actually manufacturing a product, one wonders how carefully *they themselves* monitor the products they offer for use bearing their labels. Are samples taken at random from bulk shipments and tested to determine if what company "A" is making for company "B" meets the specifications in the agreement between them? Are the data and literature which company "B" offers as representing their product accurate descriptions of the product? The design professional has a right to assume that the published data are accurate; yet, in the event of a failure, everyone involved loses time, money, and reputation. It is of little comfort to an architect, his client, a contractor, or anyone else involved if company "B" can subsequently seek recourse in the courts from company "A".

In summary, the specifier must remain alert to the changes which constantly take place and must rely not only on past experience (a valued tool), but also on his investigative skills and sound judgment when making his choices.

Author: Alvin D. Skolnik, FCSI, is Director of Research and Specifications for Skidmore, Owings & Merrill, New York.

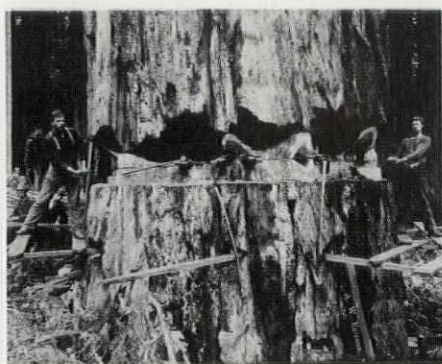
ditionally, of course, lumber is cut from the inner tree with the outside, irregular-cut portions going to other uses. The designers of Comply point out that their product can use the outer layers for the veneer construction and the inner growth for the reconstituted panel core.

There are other benefits from use of veneer that have been well learned from the plywood industry. Peeling veneer from a log is done with a knife not a saw, and without sawdust there is significantly less waste. Trus Joist engineer James Lyons points to "30 percent to 40 percent more usable material" when veneers are used instead of lumber (economics again). If the material is more expensive than the labor, and we are clever, the expense of peeling a log will be recovered.

Buck beating: Once the veneer has been cut, the next step is to use less wood to do the same job. Wood as it comes from the tree is heterogeneous. The grading of lumber is based upon being able to evaluate the strength of a piece of lumber from its knots, its grain, etc. Structurally, the wooden beam takes special care in design against shear failure. Another limitation of conventional lumber is the availability of certain lengths and sizes.

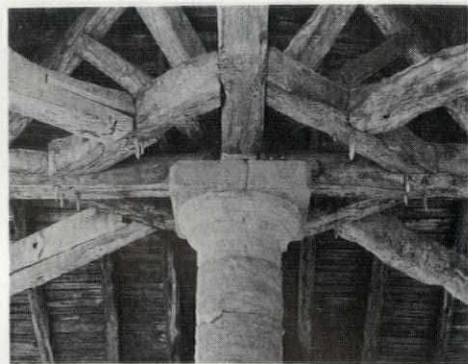
The leader in the field of parallel laminated veneer has been Trus Joist. By laminating veneers with their grain parallel instead of perpendicular, as in plywood, Trus Joist product designers take advantage of the same principles which have been in effect for both plywood and Glulam. Knots, for example, which appear in the tree, can remain in a whole section of solid lumber. When the tree is peeled and then glued back together, as in parallel laminated veneer, the same flaw will exist in a given section for only the thickness of that veneer. The resulting material comes closer to the homogeneous characteristics of an ideal wood beam. On the compression side of a beam, the layers of the veneer act like slender columns, but they are glued together mechanically instead of subject to natural variation from nature. On the tension side of the beam, all the fibers are aligned to produce maximum tensile strength. In the Trus Joist product, called Microlam, joints must occur in the veneer layers. They are lap joints, patterned to avoid excess section density, and have been found to be as strong as the veneer itself. All of these strengths inherent in the assembly mean that Trus Joist need only use C- and D-grade veneers to compete in strength with a conventional stud or joist.

These advantages alone, however, still do not allow manufactured lumber to compete economically with standard lumber sizes. Microlam is priced between \$600-\$700 per thousand board feet as compared to \$300-\$500 for standard lumber. Why then are the layers so thin? The first



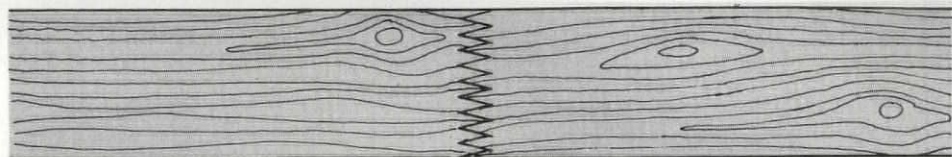
California Redwood Association

1

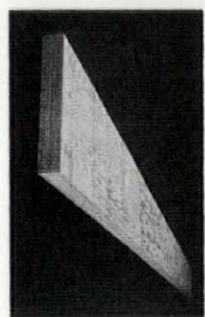


Richard Rush

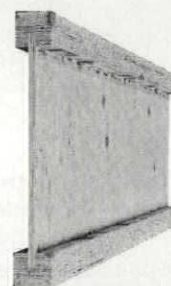
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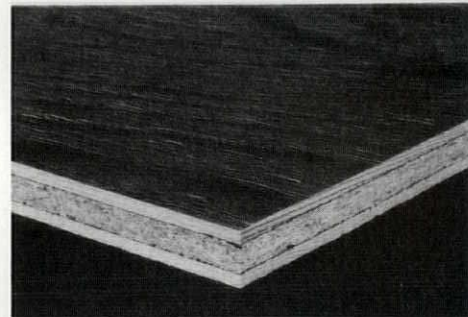
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Trus Joist



5



U.S. Forest Service

6



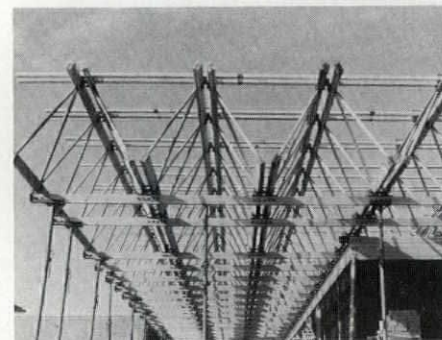
Wood Fabricators

7



U.S. Forest Service

8



KKBNA

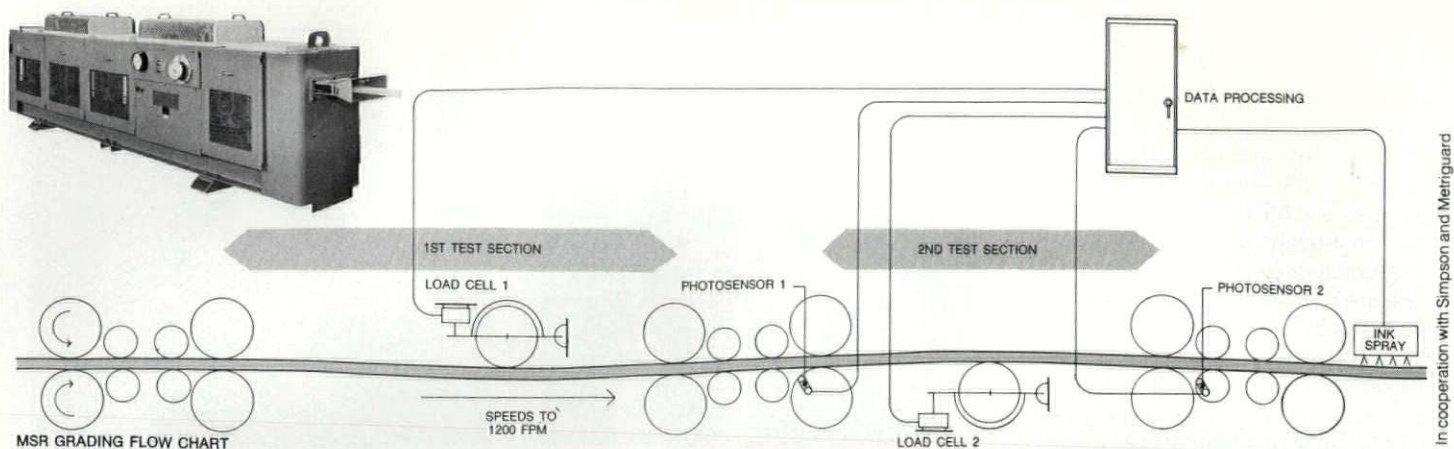
9



Alpine Engineered Products

10

1 The American forest has been a great source of wealth. 2 Wood conservation has been a reality in Europe for many years. A wood pegged trussed wooden roof in Montpellier, France, is over 500 years old. 3 Finger jointing joins wood end to end for economy and unlimited length. 4 Parallel laminated veneer is a new direction for veneer and 5 is very effective in I-beam flanges. 6 Reconstituted wood core and plywood veneer form Comply. 7 A wood Vierendeel truss eliminates unnecessary material for economy and 8 competes with a Comply joist. 9 Tilted parallel chord trusses have been imaginatively used in a space frame. 10 The wood floor truss makes headway into the residential floor construction market. It also has great promise for commercial use.



1. Kiln-dried, surfaced and visually graded lumber enters the Continuous Lumber Testing machine.

2. Mechanical rollers exert bending stress in two directions. Measurements are taken at six-inch intervals.

3. Electronic sensors measure resistance to bending and flash information to computer center.

4. Computer analyzes sensor readings and accepts or rejects the lumber according to stiffness characteristics.

5. Computer activated grade stamp automatically identifies each piece with appropriate symbol.

Microlam plant opened in 1972. The first samples designed used 1/4-in. veneers. There simply wasn't enough available veneer. The 1/8-in., 1/16-in., and now 1/32-in. have been tried. The thinner veneers are available from the plywood industry and seem to provide the best economy.

Engineering to the rescue: Actually the wood I-beam is the horse, not the cart. The I-section made of a split 2" x 6" for flanges and a plywood web came before Microlam. The parallel laminated veneer proved, however, to be the ideal match for the I-section. The flanges, if made of standard lumber, had to be high-grade lumber. With Microlam, the stress rating could easily be achieved. Microlam for an I-section does not need to conform to standard sizes. A smaller flange section can be used. The "I" shape of the beam is, of course, accompanied by all of the shape advantages of a good beam section modulus. The wood I-beam is about 55 percent of the weight of an equal rectangular member. Trus Joist estimates that 2 1/2-3 times more wood is used in a conventional section over their I-beam. The light weight means advantages in shipping. The use of Microlam and plywood permits unlimited length of members.

At last, a horse race! Trus Joist could compete for the residential market where a short 2" x 10" could not reach. It also had less shrinkage than the 2" x 10" and more nailing surface. It found ready commercial markets. Today Trus Joist is trying out a T-section to use with Glulam beams for roof panels. The "T" can replace a 4" x 14" solid purlin 24 ft long. Another possible area of innovation may be the creation of H-column sections for farm buildings. Microlam takes wood treatment for inground use very well and is not so likely to warp. It is aiming to compete with a 6" x 6" partly buried in the ground.

Still to be investigated is the possibility of using different species of wood within

the same wood section. At the moment only Douglas fir is used. Recent discoveries in glue technology have meant the creation of southern pine plywood and may soon mean southern pine Microlam.

The "new" wood truss

A plywood Vierendeel: Another competitor for the 2" x 10" market has been a different orientation of plywood and 2" x 4"s, our old friend the Vierendeel truss. Really just a box beam with the waste removed, the "Woodbar" has been computer designed for optimal structural performance, and encompasses many of the weight and speed advantages of the conventional floor truss with adhesives instead of metal connectors.

Truss plates: According to engineer Lev Zetlin, "The key to wood construction is the connection." In the case of the recent surge in wood truss manufacture and use, he could not be more accurate. The perfection of the metal truss plate connector and suitable plate engineering methodology have been major keys to the development of the roof and floor truss industry. Since the first light frame truss designs and testing were done back in the 1950s, the idea has blossomed. By the early 1960s, the Truss Plate Institute was formed and by the late 1960s, TPI had developed industry standards and appropriate engineering methods of design for roof trusses. Further research and development led to formation of the Component Manufacturers Council of TPI to discuss their common problems. The formalization of the industry has occurred simultaneously with the emergence of a major new wood product industry. Of the 25 to 30 billion board feet of soft wood lumber cut in America (and the 10 billion supplied by Canada), about 4 billion board feet are used by the wood truss industry. Dr. Stanley K. Suddarth of Purdue University has worked with the wood truss solution and

accurate engineering methods for the truss design since its inception in this country. He points with pride to the statistic that 90 percent of today's residential roof framing is done with the roof truss. Says Suddarth: "The really cost-competitive builder has got to be building it this way."

The economics of truss use, like Microlam, are not simply the saving of wood. The use of the truss allows longer spans, (to 70-80 ft), reduces cleanup and pilferage, allows ease and speed of mechanical distribution, and, like most premanufactured construction products, makes up for its manufacturing costs in construction.

News: The most recent development of the truss market has been the revolution in new townhouse construction caused by the introduction of the parallel-chord floor truss. The parallel-chord wood truss is also being used for flat or low-pitched roof construction for commercial and industrial buildings. TPI has just developed standard design criteria for parallel chord trusses, PCT-77, which provides a standard for the industry. A further key to the efficiency and success of the truss industry has been the invention of Machine Stress Rated lumber.

Machine testing

The freedom to replace sound structural lumber with a manufactured product is coupled with the responsibility of greater precision in design. When the material has been chosen and the structural configuration adopted, the design formula must contain an approximation of the safety factor as well as the predicted stress capacities of the material. The more consistently a material conforms to its expected stress value, the less "fat" has to be added to the member. Wood has been unique as a building material because designers have very little control over its ingredients. They have instead the task of making an educated guess about the material's strength.

As early as the 1920s, the U.S. Forest

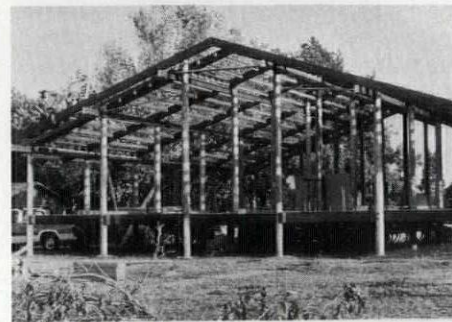
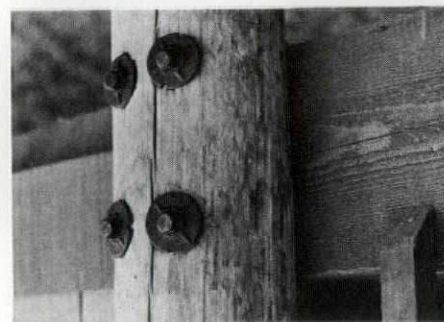
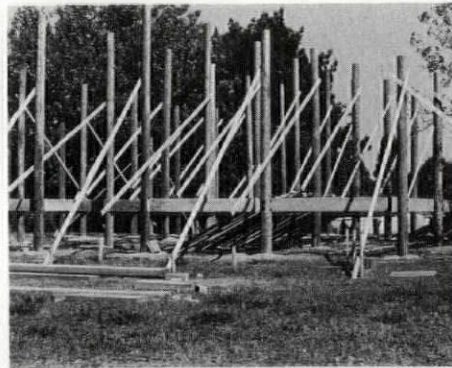
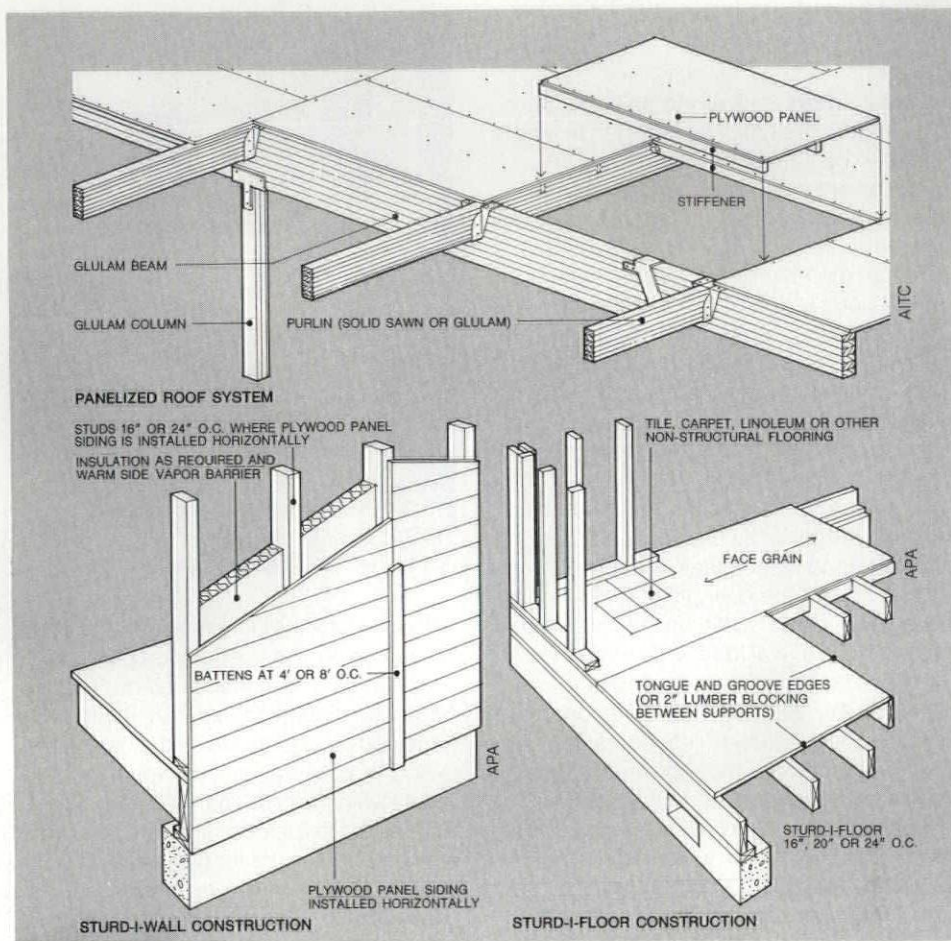
Products Laboratory created standards for grading the strength of lumber. As recently as 1970, the American Lumber Standards Committee published their uniform system by which lumber of all species is visually graded. As welcome as the uniform standard is, to use the words of Dr. James Goodman: "Grading is a less than exact science at the moment." (The visual inspection lasts only about three seconds.) Dr. Goodman is quick to point out that, in an average frame house, once all of the individual members are assembled, so much "undesigned" structural coordination exists that the structure is over-designed, regardless of the grading system used.

MSR: Machine stress rating of lumber began in the Pacific Northwest in the early 1960s. Put simply, the idea is to insert a piece of lumber in one end of a testing machine and test its stiffness before it comes out the other. If all the lumber is to be tested in this way, it must be a nondestructive test. It is then followed by an abbreviated back-up visual grading. If one knows the bending moment applied to the specimen as well as its section geometry, measurement of the deflection and curvature of the lumber under deformation will yield its modulus of elasticity. Knowing the stiffness (modulus of elasticity) and the strain (from the deformation), one can calculate the stresses (five stress values in all).

Machine Stress Rated lumber did not really take off as a concept until its use in the 2" x 4" and 2" x 6" chords in roof trusses. More recently, the parallel-chord floor truss and manufactured wood products have become interested.

A basic advantage is that lumber that has an MSR rating is practically 100 percent usable. Very little lumber is discarded because of visual grading errors. The MSR rating system is not restricted by species. Therefore, there are only 23 MSR ratings for 2" x 4"s where there are approximately 80 stress ratings used for the visual system. At the moment there are only half a dozen lumber companies in the U.S. which produce machine stress rated lumber, and only in fir, hemlock, and some southern yellow pine. MSR lumber from Canada is available in spruce-pine-fir. At first, only lengths from 12 ft to 20 ft were available. Now lengths from 10 ft to 20 ft are produced with 8-ft MSR lumber a future probability. MSR proponents predict a ready market in end-jointed MSR lumber of any length, and width.

Proofloading: Modern finger jointing has also been around for about 20 years. As long as the labor cost outweighed the material, the 10 percent saving of material innate in finger jointing was not extensively used. Chiseled fingerlike cuts in the mated ends of lumber enable lumber



Shown above is a "pole house" under construction. Architect Fred Hummel of Sacramento, Ca, has proven that such houses can be built at a saving of 25 percent over conventional construction. There are no foundation walls or concrete footings. The pressure-treated timber poles are sunk into holes drilled in the ground and pass through the house to the roof rafters. The system shown is both rapid and flexible. Although the concept is obviously restricted to certain soil and climate situations, pole buildings have been constructed to quite a large scale and for many uses. The key to the designs is wood treatment. P/A Technics article "Protecting wood from its enemies" in April 1977 is a good reference source for choice of the proper preservative. Photos are by the architect.

Loadbearing wood construction

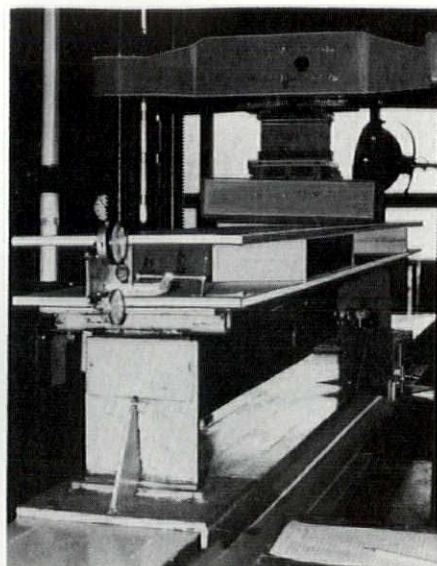
manufacturers to lift all length restrictions. The fingers are typically one inch in length and can be horizontal or vertical. The grooves are cut, the adhesive is spread, the members are joined, and the assembly is cured.

When glue-laminated beams came to this country in the 1930s, several methods of end jointing were tried. They were tested at the U.S. Forest Products Laboratory with long-span structures their primary use. It was the war industry which gave the glue-laminated beam the necessary incentive, market, and technology. The beam's horizontal glue joints gave it added horizontal shear strength while the end joints absorbed bending stresses. Machines now in use will test the strength of the end joints for a glue-laminated beam. Two types of machines are available. One machine stresses the joint in tension, the other stresses the joint under bending load. The test process is called "proofloading." The bending method is most commonly used. In the past, manufacturers had to carefully disperse the end joints within the beam so as to avoid weakness in a critical layer of laminate. By means of proofloading machines, joints are tested at 4000 psi in bending, and they can occur wherever they please in a laminated member. In the words of Robert Eby of Weyerhaeuser: "We feel that proofloading has been a major breakthrough in quality control and has meant the general upgrading and structural adequacy of glue-laminated members."

Panel news

Fifty percent of the glue-laminated beam consumption in this country is in panelized roof systems. Largely used for commercial installations, the system was invented and first used in the early 1960s in Southern California. Known originally as the Berkeley Panel system after the plywood company which first promoted it, the system capitalizes on the longspan capacity of Glulam and the stiffened strength of plywood panels. Sub-purlins, 2" x 4" or 2" x 6", are nailed to 4' x 8' sheets of plywood on 16-in. or 24-in. centers. Metal hangers are attached to the panels on the ground. Glulam beams serve as the major structural members ranging in length from 30 to 80 ft. Purlins commonly 24 ft long are spaced at 8-ft intervals along the beams to receive the panels. In panel construction, the larger the panel the less labor in the air. Some installations assemble the purlins and panels on the ground and lift them ensemble, for greater erection speed.

Other recent developments in panel construction have added Sturd-I-Floor and Sturd-I-Wall to the residential building vo-



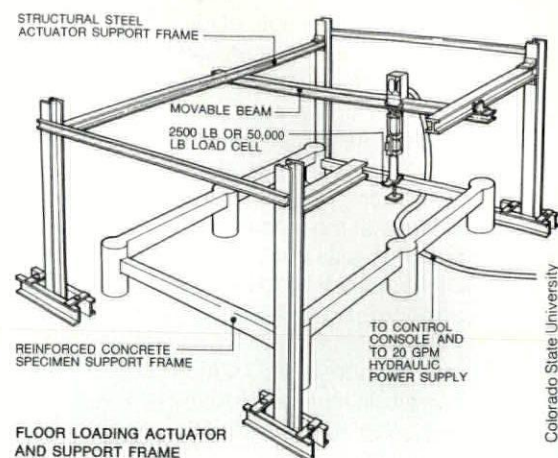
cabulary. Sturd-I-Floor is simply the use of tongue-and-groove edges on plywood floor panels glue-nailed in place. The added continuity gained from the stronger edge joint and glue allows the use, for example, of 5/8-in.-thick plywood floor panels with joists at 16-in. centers. Sturd-I-Wall system is a combination panel which eliminates the need for two layers of wall sheathing on the exterior. A single plywood panel is nailed directly to the exterior studs over nonstructural fiberboard, gypsum, or rigid foam insulation.

Research towards accuracy

Clearly many new products are profiting from materials economy by the greater influence of engineering expertise and greater accuracy of predicting strength of materials. In addition, engineers must estimate the loads expected to act on the structure and attempt to approximate the composite action of wood structures.

ANSI Committee A58.1 is in the process of revising current load standards. The committee is attempting to coordinate the loading criteria used in structural design of all materials regardless of design approach. Expected to be completed by 1980, the standard will incorporate sophisticated "probabilistic limit state design." These new standards will affect all structural design including wood.

The other task of the ANSI committee is to eliminate inconsistencies and try to seek a common basis of design for all materials. Steel and concrete design are already somewhat coordinated out of their necessary proximity in reinforced concrete design. Masonry design has also taken steps recently to perfect computerized models and analysis techniques which someday could involve limit state design. In order for wood to become part of the overall structural design coordination, researchers are doing general work on limit state design and investigating the complexities of com-



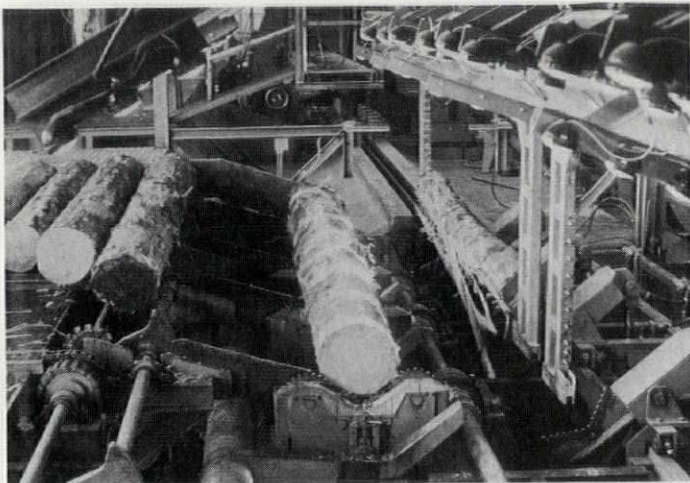
Test machinery helps researchers accurately predict composite strength of frame floors and walls (l.) Oregon State U. (r.) Colorado State U.

posite action which occurs in wood-frame structures while trying to more accurately model this structural phenomenon. The research is attacking the most common applications of wood in buildings, simple floor and wall framing. These and other "nonengineered" situations represent 85 percent of the total volume of wood construction. The ultimate goal is to create a computer analog of a total building in wood and then to reduce this information to simple hand design methodology which can be used by architects and builders.

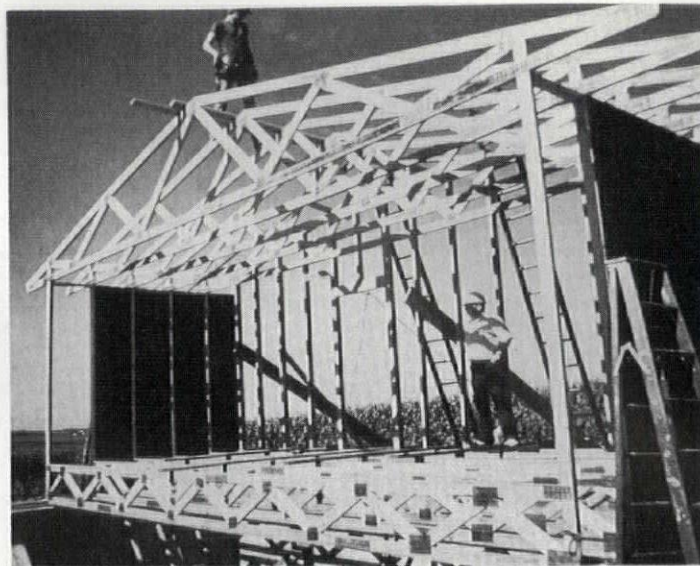
Research at Colorado State: Colorado State University is currently in the process of spending over \$1 million in grants for wood research. Some of that research is in the area of Glulam beam and arch technology and a significant area of concern is the light framed wood floor.

When wood house construction consisted of diagonal floorboards, floor joists, bridging, and the finish hardwood floor, each member had its own independent structural job to do. Even in the old days there was some composite action between the various members. Today, a 3/4-in.-thick subfloor panel nailed or glue-nailed to a 2" x 10" floor joist is essentially performing as a T-beam, and also, as research coordinator Dr. James Goodman points out, "We are getting tremendous diaphragm action." In other words, joist floors are also performing two-way spanning action.

Says Goodman: "The first thing we do is build a mathematical model." Then CSU performs tests to confirm the accuracy of the model. CSU research has unearthed several significant findings so far. Of great strength significance is closing "the gaps" in the floor (the joint between joist and floor panel) and between the panels themselves (through layering). The newest area of research for the CSU labs is to create a new generation of tables which will replace member span tables with assembly tables. The ensemble will be rated for strength



The myriad types of research by the U.S. Forest Products Laboratory range from programming complex computerized log sensing devices (Best Opening Face) to a design idea for a residential truss frame.



and serviceability not unlike the fire rating of a wall. The work is being done in close cooperation with USFPL and NFPA. When this project succeeds, the result will be a more efficient and appropriate floor design, and the tables will include the probability of risk, as per the new ANSI A58 standards.

Oregon State University research: Dr. Anton Polensek is in charge of research at OSU in light-framed wall construction that closely parallels the work of the CSU labs. The wall situation is different from the floor because the wall stud has panels to stiffen it on both sides. The presence of a stiff panel, usually gypsum board instead of plaster and sheathing, has again presented the possibility of load sharing or composite action of plywood sheathing, studs, and the interior panels. To consider and design the assembly together, the joints between the various materials must be investigated and slippage evaluated. The wall stud receives considerable additional strength from the panels to the extent that it acts more like an I-beam, with added diaphragm action from the wall, than a rectangular column. The ultimate goal of recent Oregon research is to plug into the ANSI plans, as explained, but several interesting results have been learned along the way. Douglas fir studs with a 1/2-in. thickness of gypsum wall board and 3/8-in. plywood siding can increase the bending stress of the stud by a strength factor of 1.56. The modulus of elasticity can be increased by a factor of 1.35. Applying a rigid adhesive to stud nail surfaces can increase the ultimate wall load by 152 percent.

Research towards product innovation

Some of the most creative research in America occurs under the auspices of the U.S. Forest Products Laboratory. Its very existence establishes a unique governmental relationship to the wood indus-

try and building products in general. Over the many years of research, most of the concepts we have so far touched upon have at some point passed through USFPL. Lumber grading, flakeboard, adhesive research, glue-laminated beams, parallel laminated veneer construction, and trusses all have been researched by USFPL, and all the findings are in the public domain.

It is no accident that USFPL is helping to lead the way to more intelligent use of wood products. Four years ago, USFPL initiated "Project Stretch." The goals were threefold: "increasing lumber yields by improving existing processing systems; developing new technology for producing high-yield, high-performance products; and attacking inefficient use of wood by perfecting product design."

Best Opening Face: Thomas Ellis of USFPL extols the virtues of the logging industry. "There has been an explosion in technology for logging," says Ellis. Loggers now have a tremendous family of logging equipment. To add to that family, USFPL has written a program for a computerized electronic scanning device that can automatically survey a log and determine the precise place where the first cut should be made down the log. The first cut, or "Best Opening Face," is critical for ultimate best yield of the log for lumber. When installed for mass production, the USFPL researchers claim, the machinery can increase the yield of a lumber mill by 10 percent. Over 100 mills are currently using BOF.

Yellow poplar for studs: One way to increase production is to make use of presently unused wood. Using conventional techniques, yellow poplar does not make very good studs. The studs are sound enough but warped beyond specified permitted levels. The logs are straight, the studs are crooked. Researchers examined the production techniques. Conventional

techniques cut the studs from the tree while it is still green and then kiln dry them. Experimenters reversed the production process. The logs were sawn green but left tree width in flitches 1 3/4 in. thick and kiln dried. Once dry, the flitches were sawn further to stud dimensions. Over 99 percent of the studs met the warp limitation requirements.

Edge glue and rip: One problem that manufacturers must contend with is a smaller diameter tree. How do you get wide lumber from a narrow tree? NFPL saws the logs first into tree width flitches and dries them. The lumber is then trimmed square and glued edge to edge into wide panels. These panels can be ripped to any width. Hence the abbreviation: EGAR, edge glue and rip.

Truss frame: The truss frame originated in studies done by researchers at USFPL of wood houses under unusually high loading from natural disasters. Failures in these homes seemed to occur most commonly at the floor-sill connection and at the roof-plane connection. In cooperation with the Truss Plate Institute and the University of Wisconsin, Roger Tuomi, an engineer at USFPL, literally put two and two together. The roof truss had proven itself on the roof, and the parallel-chord floor truss was a success as a long-span floor. Moment connections of vertical studs to either end of the trusses completes the frame. The truss frame is constructed entirely of 2" x 4" wood members and connected with standard truss plates. The end wall of the house is built of standard framing to provide the initial bracing stability. The truss frames are then equally spaced, usually 16 in. on center, for the length of the house.

And more: Space could not contain all of the product research the U.S. Forest Products Laboratory has produced. A defectoscope uses sound waves to detect defects in lumber. Sound waves travel faster with the grain than against the grain. "Pres-

National Wood Construction Associations—Information Sources

- 4 **American Hardboard Association**
205 West Touhy Avenue
Park Ridge, Illinois 60068
- 2,5 **American Institute of Timber Construction**
333 West Hampden Avenue
Englewood, Colorado 80110
- 2,4 **American Plywood Association**
POB 11700
Tacoma, Washington 98411
- 1 **American Wood Council**
1619 Massachusetts Avenue, N.W.
Washington, D.C. 20036
- 6 **American Wood-Preservers Association**
7735 Old Georgetown Road, Suite 444
Bethesda, Maryland 20014
- 6 **American Wood Preservers Bureau**
2772 S. Randolph Street
Arlington, Virginia 22206
- 6 **American Wood Preservers Institute**
1651 Old Meadow Road
McLean, Virginia 22101
- 8 **Appalachian Hardwood Manufacturers Association**
Room 408, NCNB Building
High Point, North Carolina 27261
- 9 **California Lumber Inspection Bureau**
POB 6989
San Jose, California 95125
- 2,3 **California Redwood Association**
1 Lombard Street
San Francisco, California 94111
- 8 **Fine Hardwoods—American Walnut Association**
666 North Lake Shore Drive
Chicago, Illinois 60611
- 1 **Forest Products Laboratory**
U.S. Department of Agriculture, POB 5130
Madison, Wisconsin 53705
- 1 **Forest Products Research Society**
2801 Marshall Court
Madison, Wisconsin 53705
- 4 **Hardwood Plywood Manufacturers Association**
POB 2789
Reston, Virginia 22090
- 8 **Maple Flooring Manufacturers Association**
1800 Pickwick Avenue
Glenview, Illinois 60025
- 1,2 **National Forest Products Association**
1619 Massachusetts Avenue, N.W.
Washington, D.C. 20036
- 8 **National Hardwood Lumber Association**
332 South Michigan Avenue
Chicago, Illinois 60604
- 8 **National Oak Flooring Manufacturers Association**
804 Sterick Building
Memphis, Tennessee 38103
- 4 **National Particleboard Association**
2306 Perkins Place
Silver Springs, Maryland 20910
- 2,3 **Northern Hardwood & Pine Manufacturers Association, Inc.**
305 East Walnut Street
Green Bay, Wisconsin 54301
- 2,3 **Northeastern Lumber Manufacturers Association, Inc.**
4 Fundy Road
Falmouth, Maine 04105
- 9 **Pacific Lumber Inspection Bureau**
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Seattle, Washington 98101
- 7 **Red Cedar Shingle & Handsplit Shake Bureau**
515-116th Avenue, N.E., Suite 275
Bellevue, Washington 98004
- 9 **Redwood Inspection Service**
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San Francisco, California 94111
- 6 **Society of American Wood Preservers**
1401 Wilson Boulevard, Suite 205
Arlington, Virginia 22209
- 2,3 **Southern Cypress Manufacturers Association**
805 Sterick Building
Memphis, Tennessee 38103
- 2,3 **Southern Forest Products Association**
POB 52468
New Orleans, Louisiana 70152
- 8 **Southern Hardwood Lumber Manufacturers Association**
805 Sterick Building
Memphis, Tennessee 38103
- 9 **Southern Pine Inspection Bureau**
POB 846
Pensacola, Florida 32594
- 9 **West Coast Lumber Inspection Bureau**
POB 23145
Tigard, Oregon 97223
- 2,3 **Western Red Cedar Lumber Association**
1500 Yeon Building
Portland, Oregon 97204
- 6 **Western Wood Preservers Institute**
1021 Yeon Building
Portland, Oregon 97204
- 2,3 **Western Wood Products Association**
1500 Yeon Building
Portland, Oregon 97204

Legend

- 1 Wood, Wood Products, Wood Construction
- 2 Wood Engineering - Design Methods and Stresses
- 3 Softwood Lumber
- 4 Panel Products
- 5 Glue Laminated Timber
- 6 Treated Wood, Poles, and Piling
- 7 Wood Roofing
- 8 Hardwood Lumber, Flooring and Veneer
- 9 Grading Rules

lam" uses parallel laminated veneers $\frac{3}{4}$ in. thick to extend wood use efficiency.

Other good research and information:

Good research in wood usually combines forestry, materials science, and engineering. It is a combination not readily available to many laboratories. In addition to those examples already given, Virginia Polytechnic Institute has been doing research into tension failures of wood, and Purdue University continues its leading role in truss research and design. Washington State University's Department of Materials Science has been responsible for much of the research which has brought proofloading to reality. The University of Wisconsin works closely with the National Forest Products Laboratory. The impetus for wood research can come from many quarters: economy and availability, code restrictions and product liability, changes in design procedure and computer technology, or competition from other building industries.

Besides research there must be a constant interface of the wood construction industry with the architect and engineer. One source of information is the national organizations which specialize in various aspects of wood construction. A list is provided here to try to simplify the problem of finding the correct organization.

The other interface which the industry has, of course, is through architectural and technical journals. *Progressive Architecture* has not been lax in its presentation of wood ideas, problems, and solutions. The October 1975 issue of P/A was devoted to "Wood in Architecture." In addition to feature buildings in wood, "Tales of the American Woods" explored the problems of forestation and wood availability. The April issue in 1977 contained a couplet of *Technics* articles which dealt with the problems of wood detailing and treatments. The innovative all-weather wood foundation and plenwood system were introduced to you at that time. The problems of wood decay and fire protection were discussed and the selection of the proper preservative analyzed.

Wood detailing continues to demand the attention of good designers. As wood ideas move from one part of the country to another, the decay hazards and codes vary, along with the weather. Robert Hewett of the National Forest Products Association explains: "The typical wood structure is far more involved than a steel structure." The members are smaller and there are more of them.

Engineer Lev Zetlin alludes to a new direction in structural engineering in general. Says Zetlin: "There is a tendency today to

use combinations of materials, and we will see more of it." The idea therefore is to "use wood in the portions of the structure where it is best suited."

Glulam detailing: The accompanying illustrations show some of the problems and solutions of Glulam exposed to weather. A Glulam beam which has been correctly treated, flashed or capped, and ventilated has excellent weathering characteristics.

Roof ponding: As roof spans get longer and we profit from more efficient and often lighter construction, the roof gets "springier." If the slope of the roof is not adequate to shed the load from rain or snow, the deflection of the roof will start to overcome the drainage slope, and ponding can occur. The problem can be great in areas of the country where small design loads are used. The annual rainfall is small but an occasional torrential rain cannot be shed fast enough. Blockage of the drain system can of course also destroy the effectiveness of even the well-designed roof.

Wood giants

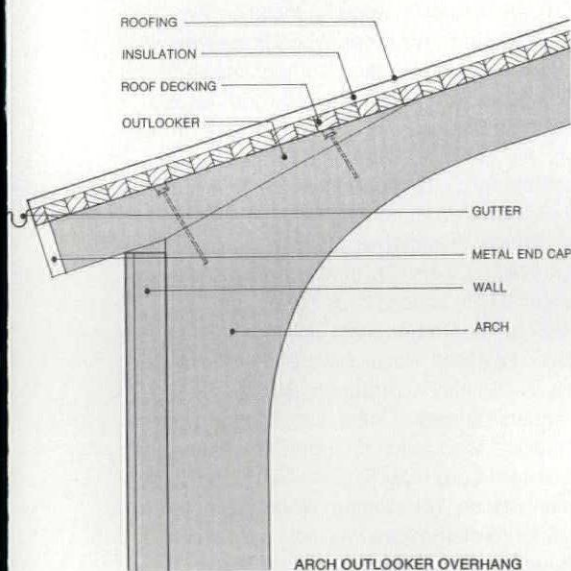
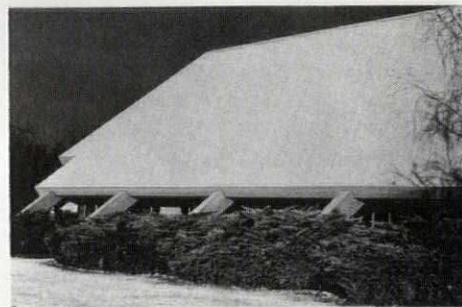
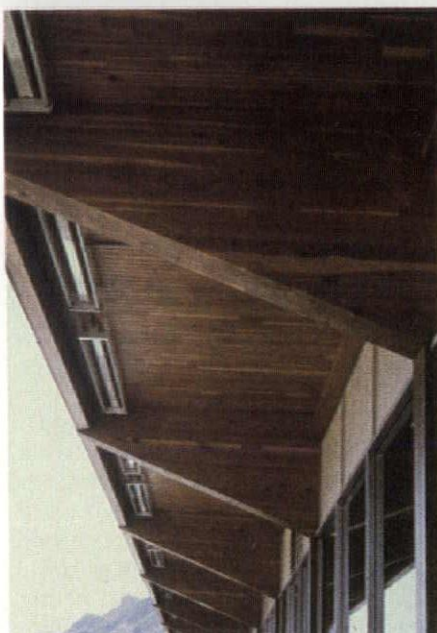
While the emphasis of much of the innovation in the wood industry seems to be oriented towards the smaller-scaled building, we are also witnessing the emergence of wood as a material for very large structures. Where the small building uses of



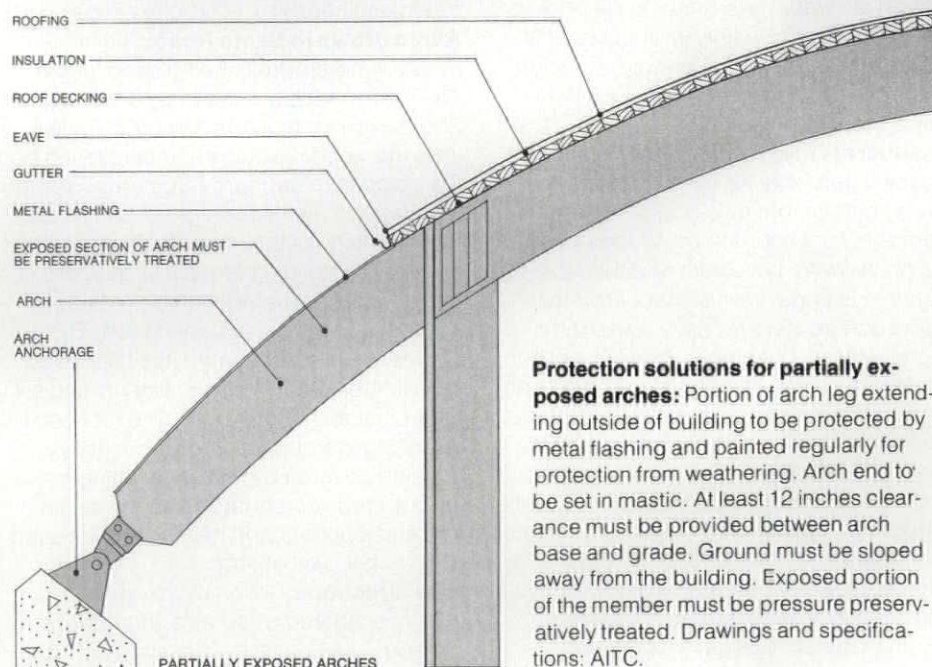
Wood which comes in contact with moisture must be detailed to shed the moisture either directly or through evaporation. Bad design can cause decay (above and below) and rot.



An overhang often makes very good engineering sense when using glue-laminated beams. Care must be taken, however, to limit the contact which the overhang has with the weather. The end grain of all wooden beams is susceptible to moisture penetration. One answer is to angle the cantilever ends (right). Bushes and plantings which are watered daily should be kept away from the exposed bases of wood arches (far right). All photos: AITC

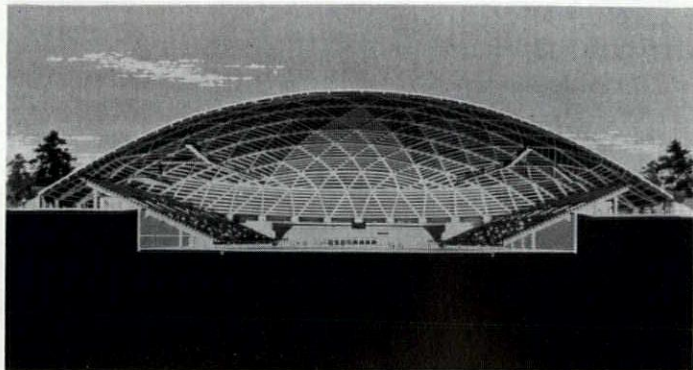


The top and end grain needs protection on an arch outlooker overhang. Such protection shields the outlooker from direct weather exposure.

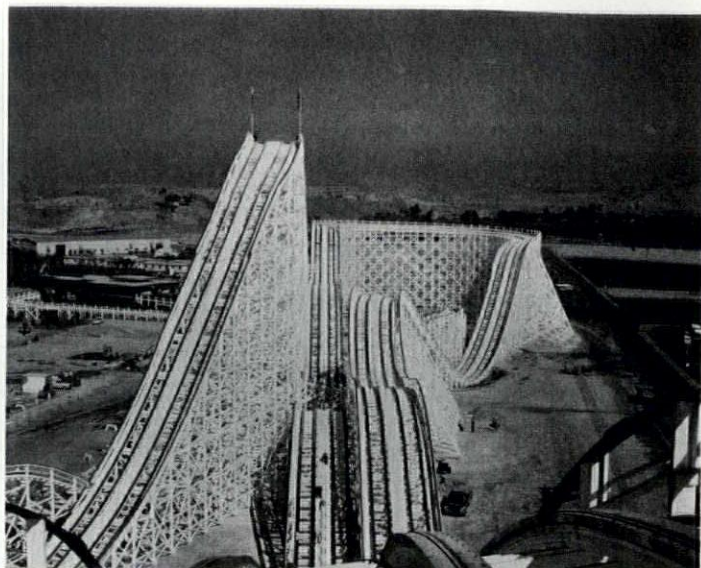


Protection solutions for partially exposed arches: Portion of arch leg extending outside of building to be protected by metal flashing and painted regularly for protection from weathering. Arch end to be set in mastic. At least 12 inches clearance must be provided between arch base and grade. Ground must be sloped away from the building. Exposed portion of the member must be pressure preservative treated. Drawings and specifications: AITC.

Loadbearing wood construction



The Ensphere wood dome (above) and roller coaster Colossus at Magic Mountain, Ca (right) represent a new generation of wood "giants."



wood might be concealed in the finished building, these new wood giants bare their wooden bones for all to see.

The wood ride: Robert Hewett of the National Forest Products Association alludes to the new roller coaster, Colossus, at California's Magic Mountain as "the feat of the decade." Not many people take the time to recognize that the great roller coasters of this century have been typically made of wood. Aficionados of the roller coaster refer to the "click, click, click, and whoosh" of a wood coaster as the "real ride." Aside from the ride, the 1978 debut of Colossus was the opening of the highest, fastest, and largest roller coaster in the world; 1,209,687 board feet of lumber were used. Because of the size of the structure and the number of pieces involved, each piece had to be sized to a great degree of accuracy. The structure was constructed simultaneously in three large sections which had to merge exactly together. The result was an allowable tolerance range of $\frac{1}{8}$ -in. While its size is certainly impressive, it is also a structure of great beauty, a trait attributable to its architect, Lorenz & Williams Inc., of Dayton, Oh.

Ensphere: While the resilience of wood makes it desirable for roller coasters, its strength-to-weight ratio and cost make it desirable for wood domes. Wood domes are not new. As Lev Zetlin reminds us: "Eastern Europe is full of timber domes." Wood domes more recently have had a spotty history. The timber dome is a proprietary business, exclusive to certain construction companies. These construction companies have had their financial problems. The Ensphere Group, largely in Phoenix, Az, has overcome such problems with a team approach. The group consists of architects, contractors, engineers, and other specialists. The first "Ensphere" was constructed at Northern Arizona University, in Flagstaff. Basically a covered stadium, the dome is just over 500 ft in

diameter. Repetitive use of glue-laminated wood timbers triangulated with six spoked steel hubs form the superstructure. The wood roof planking rests upon Glulam purlins. The architects for the Ensphere Group are Rossman & Partners. Dr. Wendell E. Rossman has led the team and predicts that Enspheres will soon be constructed which exceed 1000 ft in diameter.

Air Force Trestle: Another giant just finishing construction is the Air Force Trestle Project at Kirtland Air Force Base in Albuquerque, NM. The Air Force needed a structure which would simulate the electromagnetic pulse level that a large aircraft would witness in the event of a nuclear explosion. In order to accomplish the task, the nonmagnetic properties of wood were put to good use. Even the bolts used to join the members are made of wood. Thirty-ft-long, 5-ft-deep laminated members are dwarfed by the trestle's total size. Over five million board feet of laminated beam and nearly 94,000 bolts will be used.

A tree grows in Santa Rosa: The laminated wood products being used for the Air Force Trestle are made by Standard Structures Inc. of Santa Rosa, Ca. To illustrate the wood products and orientation of the company, Standard Structures went to architects Williams & Knight of Santa Rosa for the design of their new conference center. The building forms a large cross of barrel vaults. Its foundation is pressure-treated glue-laminated wood piles. The arches are glue-laminated; the floor uses four different floor framing systems and six different subfloor materials. The roof decking is exposed Inland Red Cedar heavy decking covered by red cedar shingles. Resawn redwood boards perform as siding, and a hem-fir and hemlock grill is used to modulate skylighting.

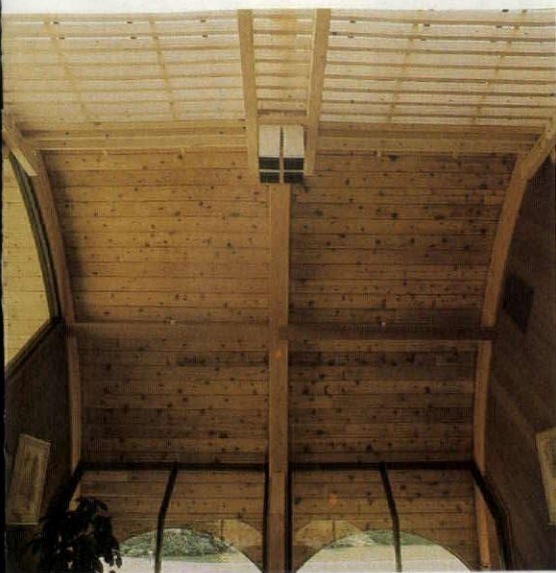
New directions: "I don't think we have fully investigated wood as a structural material," Lev Zetlin continues: "How do you use wood to its fullest capacity?" In-

dustrial experts feel the future of wood engineering is great. Wood domes have been a great breakthrough as have wood trusses. We can expect bigger laminated beams in the future. A project like the Air Force Trestle is adding to the technology for the "super beam." Greater engineering clarity can be expected to filter up to the laminated wood industry with more use of the bow-string truss with laminated wood members, or even Glulam Vierendeels or I-beams. Even hidden from view, manufactured lumber promises to affect the economy and form of our buildings. From sawdust to 1000-ft-diameter stadium, wood resembles the tree from which it comes: a beautiful form of shelter. [Richard Rush]

Acknowledgements

We wish to thank the following architects, engineers, organizations, educational institutions, and manufacturers for their help in preparing this article: Alpine Engineered Products Inc.; AITC; American Plywood Association; American Wood Council; American Wood Preservers Institute; Automated Building Components Inc.; Boise Cascade; California Redwood Association; The Champlin Co.; Colorado State University, Dr. James R. Goodman; Forest Products Laboratory, USDA Forest Service; Forest Industries; Forest Products Research Society; Georgia Pacific; Hummel, Schroeder, Marshall; KKBNA; Koppers Co., Inc.; Lorenz & Williams; Material Fabrication Corp.; Metriguard Inc.; NBS; NFPA; Oregon State University, Prof. Anton Polensek; Potlatch Corp.; Purdue University, Dr. Stanley K. Suddarth; Rossman & Partners; Simpson Timber Co.; Southern Forest Products Association; Standard Structures, Inc.; Trus Joist Corp.; USFS, Southeast Forest Experiment Station; The Western Wood Preservers Institute; Western Wood Products Association; Weyerhaeuser; Williams & Knight; Wood Fabricators Inc.; Lev Zetlin.

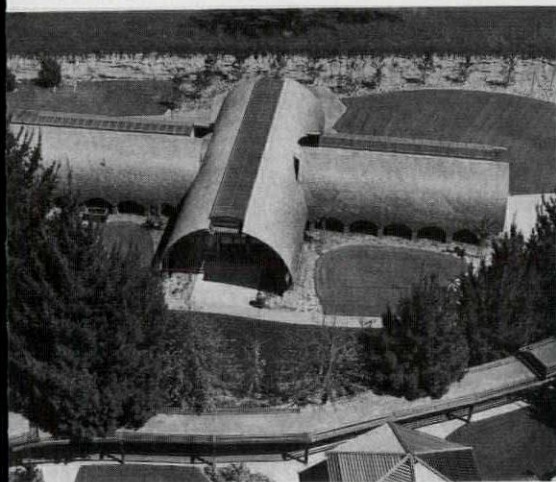
For wood product and literature information see p. 108.



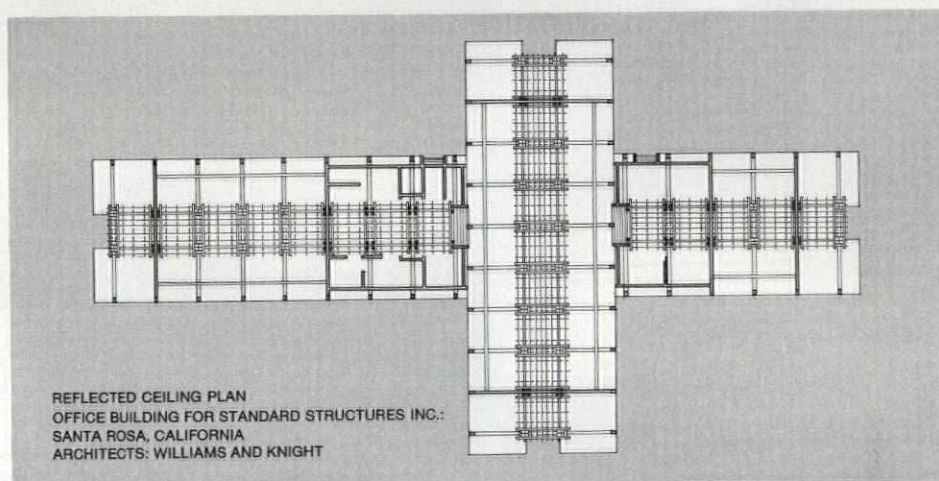
Don Silverak



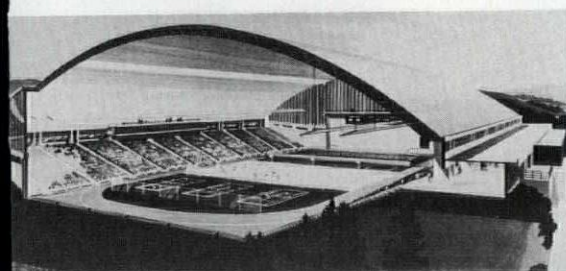
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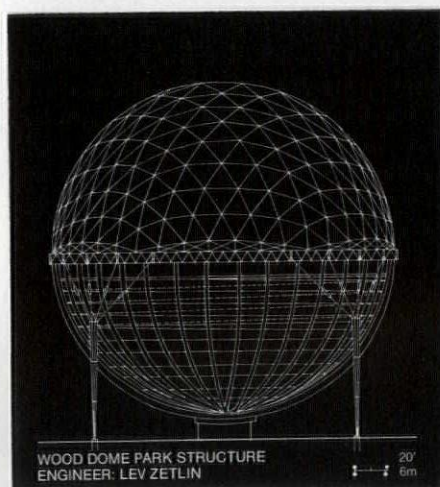
SSI



The cross-vaulted SSI office building shown above is a showcase of wood products by Santa Rosa architects Williams & Knight.

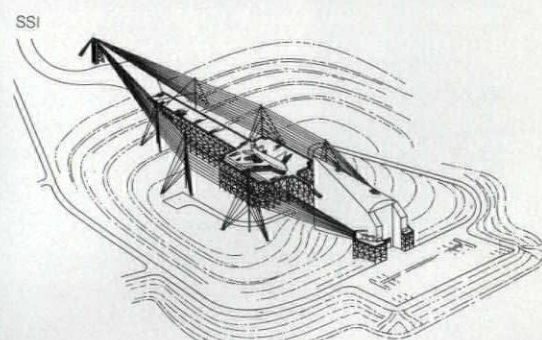


KKBNA



Lev Zetlin

Shown at left is the wood vaulted stadium at the University of Idaho, Moscow, Id. The innovative double-layered shell for the roof is made of Microlam members. The engineering design was done by KKBNA of Denver, Co. Shown directly above is a project for a park structure by Lev Zetlin. The wood dome design caps a hollow hemispherical steel base, cable-wound and stay-braced against the wind. The wood trestle at the right will function as a testing platform for the Air Force. Its huge Glulam beams are bolted together with wooden bolts, a solution not unlike the Montpellier market on page 91.

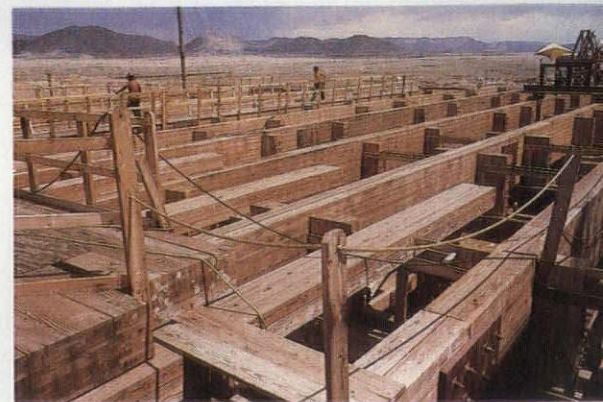


AIR FORCE TRESTLE: AERIAL VIEW

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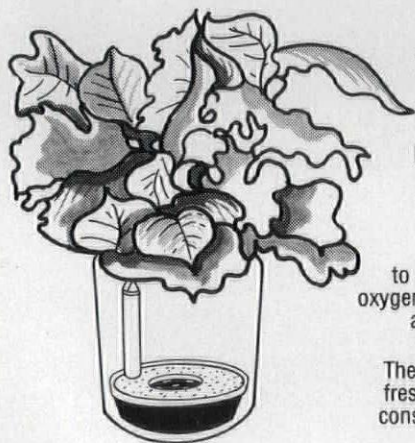
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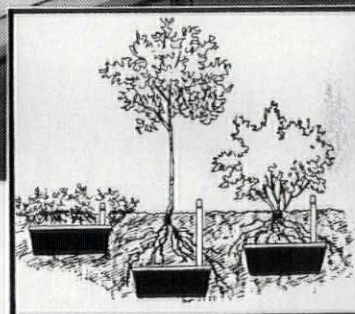
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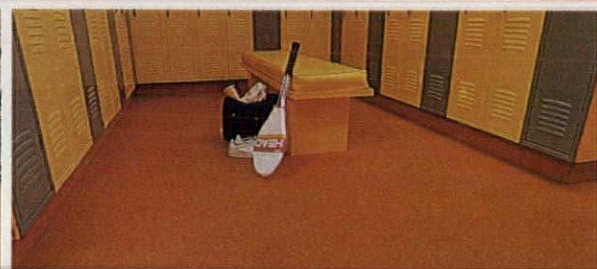
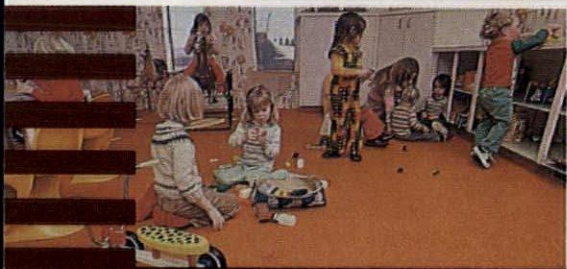
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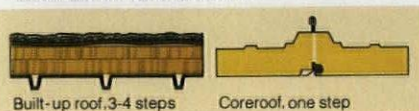
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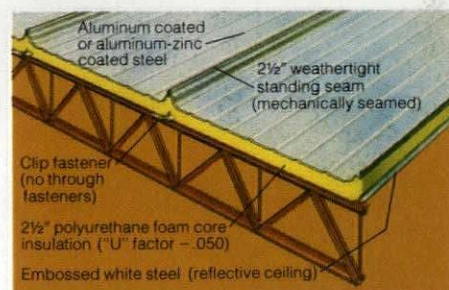
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Products and literature

The following items are related to the article on wood construction appearing in this issue beginning on page 90. They are grouped here for the reader's convenience.

Wood products

'Trusspurlins' are flat, parallel-chord wood trusses for use in place of solid wood dimensional lumber as roof purlins in structural steel-framed buildings. They replace steel bar joists in 20-ft to 30-ft spans. Batt insulation is accommodated between bottom chords. Trusspurlins, spaced on 24-in. to 48-in. centers, can be used on flat or pitched roofs, with corrugated metal or asphalt roofing panels, or plywood sheathing. Material Fabrication Corp.

Circle 100 on reader service card

Prefinished Siding/Panel 15 is plywood panel overlaid with aluminum with a baked-on acrylic finish. For exterior use and decorative panel application, the product comes in 20 colors, with custom color matching also available. The panel has a 5/16-in. core of exterior grade structural plywood, pebble-textured 10-mil-thick aluminum facing sheet, acrylic coating, and 1.5-mil-thick reflective foil insulation on panel back. Weyerhaeuser Co.

Circle 101 on reader service card

Wood literature

Selecting and specifying western lumber is covered in Catalog A, a 16-page manual describing standard sizes and grades of structural light framing materials, and providing other selection, specification, and use information. Span tables for joists, rafters, and decking, and information on machine stress-rated lumber and end-jointed lumber are included. Western Wood Products Association.

Circle 200 on reader service card

Machine stress-rated lumber folder offers design value comparison chart for various wood species. Values are for modulus of elasticity and for fiber stress in bending, compression, tension, and horizontal shear. Machine stress-rating is a nondestructive method of predicting

the structural strength of lumber. There are Canadian and United States editions of the charts. Simpson Timber Co.
Canadian: Circle 201 on reader service card
U.S.: Circle 202 on reader service card

Technical publications about wood construction listed in brochure include construction cost saver series, wood construction data series, and technical report series. Also listed are miscellaneous publications related to the subject of wood construction. Price list and order form is included. National Forest Products Association.

Circle 203 on reader service card

'Lumber and Wood Products Literature' is a 52-page bibliography of informative literature and audiovisual material offering technical information on forestry and on the properties, processes, and uses of lumber and wood products. National Forest Products Association, Technical Services Division.

Circle 204 on reader service card

Roof and floor structural systems product manual provides load tables, outrigger capacity, allowable hole sizes, typical bearing conditions, and general information about the different Trus Joist series available. Included in the 32-page manual is a description of the Micro-Lam flange. Suggested specifications for TJI joists and open-web joists are also provided. Trus Joist Corp.

Circle 205 on reader service card

'Redwood Buyer's Guide' shows in tabular form the redwood products available from seven members of the California Redwood Association. Cross-section drawings show patterns available, along with dimensions for each. A glossary of lumber definitions is included. California Redwood Association.

Circle 206 on reader service card

Specialty timbers in Douglas Fir and Hem-Fir can be obtained up to 24 in. square and 28 ft long. In-stock sizes, however, are 4" x 4", 4" x 6", 4" x 8", 4" x 10" and 4" x 12". A four-page color brochure discusses timber vs. dimension lumber and provides specification information. Simpson Timber Co.

Circle 207 on reader service card

American Softwood Lumber Standard, prepared by the National Bureau of Standards, provides standards for grades of flooring, ceiling, partition, siding, and other softwood products. Included are commercial, common, and botanical names of wood species, a glossary of terms, and a list of lumber industry abbreviations. The 28-page publication is 40 cents a copy. Order by SD Catalog No. C13.20/2:20-70 from: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

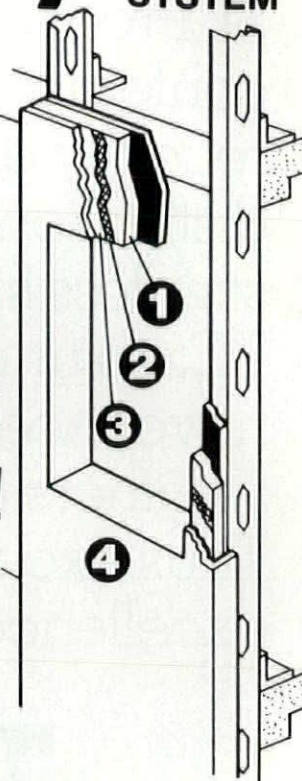
Building Products catalog contains information about materials, sizes, finishes, patterns, code, assembly, and installation of paneling, exterior siding, and gypsum products. The 88-page booklet is illustrated in full color. Georgia-Pacific Corp.

Circle 208 on reader service card

[Literature continued on page 113]

THE dryvit[®] SYSTEM

Learn Why It Makes Sense!



- 1 First a rigid panel of Expanded Polystyrene that offers optimum insulating qualities. It becomes the foundation of any "U" value that is required to really control heating and cooling costs.
- 2 Our specially woven and treated Fiberglass Fabric that prevents surface cracking and that's important — no cracks mean no leaks or maintenance.
- 3 Our special Primus/Adhesive, a unique plaster material mixed with Type I Portland Cement to adhere Dryvit Insulation Board to the back-up surface and to embed Dryvit Reinforcing Fabric on the face of the board.
- 4 Dryvit Finish; a synthetic plaster material having high bond strength, extremely pleasing in appearance in a choice of 14 integral colors and various textures. It provides a water resistant, jointless exterior that is maintenance free.

Lightweight Is Important

Only 7½ pounds per square foot, so you can reduce your steel usage substantially. Thinner walls also increase useable floor space.

DRYVIT SYSTEM, INC.
Warwick, RI—Tulsa, OK

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OUTSULATION™



Out'·su·lā·tion (n)

**1: placing insulation on the exterior of the wall.
2: eliminating all thermal bridges. 3: the wall structure itself goes inside the building.**

Frankly, the world needed this new word. The phrase "energy savings" has become so abused it is almost hackneyed. From a pup tent to a light bulb, its credibility is being challenged.

On the other hand, DRYVIT has been used as the exterior wall and insulation system on hundreds of projects in the last

decade. From 42-story prestige hi-rises, like the Tiara condominium above, to office buildings, sporting arenas, shopping centers, hospitals, schools and more. The actual energy dollars saved with the DRYVIT "Outsulation" System was much greater than design calculations projected (applying conventional heat loss calculations—R values and U factors).

DRYVIT places insulation on the outside of the structure, the most efficient placement for all building construction.

Thermal bridges are eliminated and the insulation value of the DRYVIT System is constant... unaffected by changes in temperature and moisture.

Make us prove it. We have meaningful case histories on all types of new construction and retrofit. Write or call stating your application.

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SYSTEM
INC.

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420 Lincoln Avenue, Warwick, RI 02888 (401) 463-7150 Plant Locations: Warwick, RI and Tulsa, Oklahoma

Seal in low life-cycle cost with Dow Corning building sealants.

Everyone knows that the most important cost of any construction material isn't first cost. It's life-cycle cost. That's where Dow Corning building sealants for glazing, sealing and expansion joints are unbeatable for both new construction and renovation.

Years after typical organic sealants have crumbled away, Dow Corning trouble-free silicone sealants will still be on the job. They virtually eliminate the high maintenance and replacement costs that are common with organics.

Choose the permanently flexible, long-lasting sealant that's best for your building. Both exceed federal specifications and are available in several standard architectural colors.

Superior glazing/sealing.

For sealing jobs on glass and metal, specify Dow Corning® Silicone Rubber Sealant (Part No. 732). It provides superior adhesion in most curtainwall sealing applications, as well as all types of glazing systems. Silicone sealants are, in fact, the only sealants that will work with structural glazing and all-glass vision systems.

Unequaled flexibility for expansion and control joints.

For weatherproofing expansion and control joints and perimeter glazing of troublesome metal-to-masonry joints, specify Dow Corning® 790 Building Sealant. It will take all the stress and strain your building can give because it's the lowest modulus sealant around. Up to 1000% more elongation than any other one-part sealant. And even after it stretches or compresses a full 50% in a joint, it will totally recover its original shape, year after year!



Send for more information.

Want to know more about the sealants that save you money in the long run? Just write Dow Corning Corporation, Dept. H-7510, Midland, Michigan 48640.

DOW CORNING

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Circle No. 321,





ENERGY MANAGEMENT VIEWS FROM THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION VOL. III NO. 5

DON'T TURN DOWN THE LIGHTS — TURN UP THE TECHNOLOGY.

As utility bills continue to go up and up, building managers and executives continue to look for ways to cut energy costs. One of the most obvious ways is to reduce the wattage used by lighting systems.

But this isn't as simple as it may seem. In fact, a general reduction in overall lighting may even lead to a rise in overall costs. How? Well, it has been proven that lighting levels greatly affect working efficiency. For example, when the lighting level in a Social Security Administration office was reduced from 110FC (footcandles) to 50FC, worker productivity fell twenty-eight percent. To make up for this lost efficiency, more workers and more overtime were needed and overall costs increased. When original lighting levels were restored, productivity increased immediately and eventually reached its original level.

So now the question is, "How do you reduce lighting energy costs and still maintain working efficiency?" And the answer is "new lighting technology," in both the way lighting systems are designed and the kinds of lamps they employ.



Today, most offices, plants and stores have uniform lighting systems. They were designed to provide proper lighting in almost all situations (e.g. the

moving of desks or work stations). But uniform lighting does have disadvantages. It can cause uncomfortable glare, it can produce unwanted shadows, and most important, it uses energy very inefficiently.

Now, however, with advances that allow lighting panels to be easily relocated, uniform lighting is no longer necessary. And a new "non-uniform" lighting system may be the perfect answer to cut your high lighting costs.



Nonuniform lighting creates a more attractive visual environment, which eliminates visual boredom and results in higher productivity. It lowers initial installation costs because it takes less time to install and uses fewer fixtures and lamps. The fewer number of fixtures can reduce lighting energy costs by as much as thirty percent. Less fixtures also reduce maintenance costs. If offices or equipment are rearranged, a well-designed nonuniform lighting system can be easily changed to meet the new requirements.

Recent technological advances have also produced new kinds of lamps that produce far more light per watt of electricity. In some cases you may want to replace traditional types of lamps with new, more efficient versions of the same thing, such as fluorescent lamps. Other situations



may call for the new high-intensity discharge lamps. These include the mercury vapor, metal halide, and high-pressure sodium lamps, now made for office applications and other indoor uses. While these lamps are more expensive than their fluorescent or incandescent counterparts, the savings they generate result in long-term cost savings, and in some cases, initial cost savings as well.

If you're thinking about putting in a more energy-efficient lighting system or installing more effective lamps, it's a good idea to talk to a qualified electrical contractor first. He can survey your lighting needs, make recommendations, give you an estimate of the initial cost and possible operating cost savings, and answer your questions about installation.

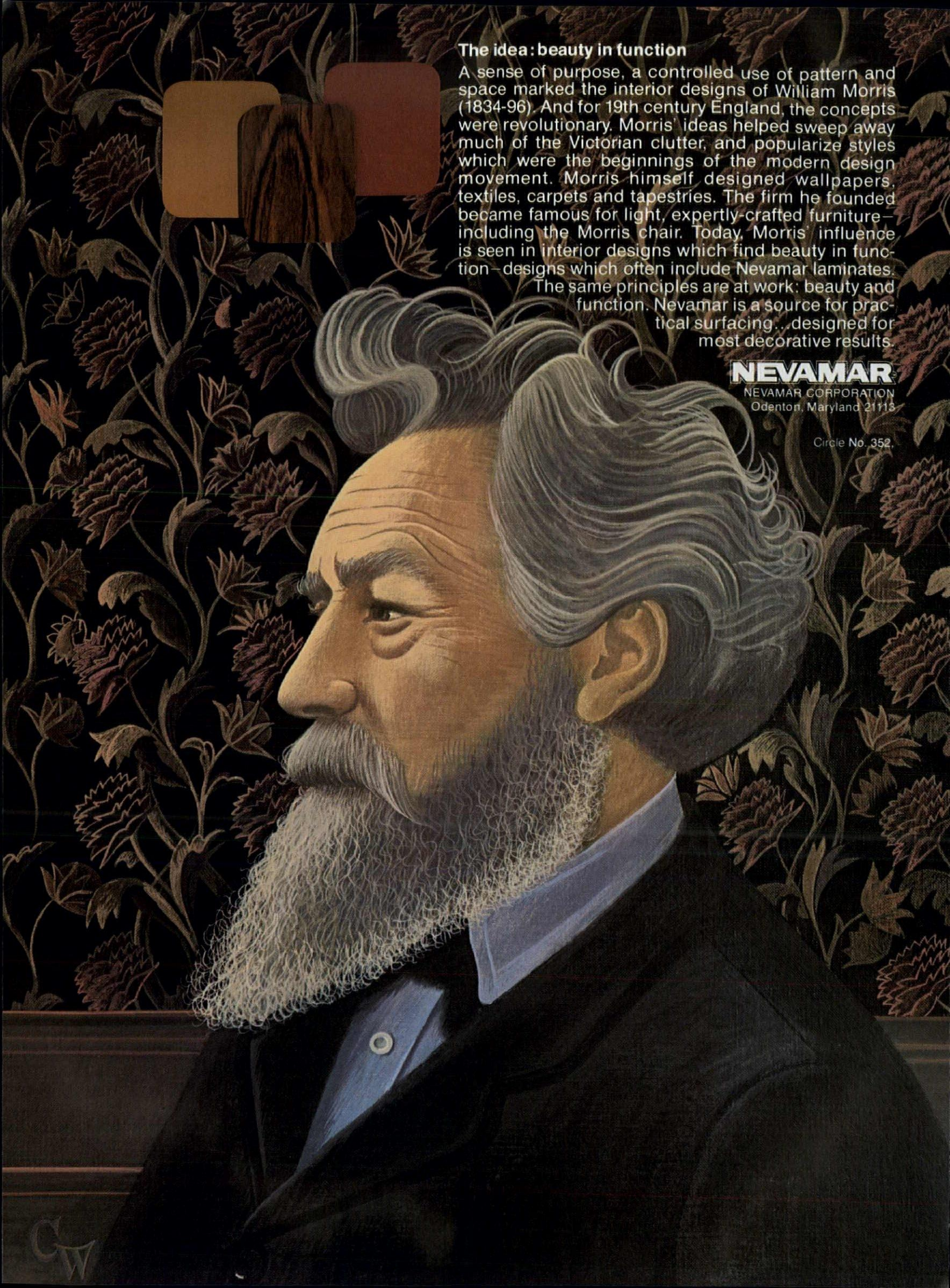


For more information, request, on your letterhead, a free copy of the NECA publication "Let There Be the 'Right' Light...", Index No. 30045.



**THE NATIONAL ELECTRICAL
CONTRACTORS ASSOCIATION**
Department PA-79
7315 Wisconsin Avenue
Washington, D.C. 20014

Circle No. 351, on Reader Service Card



The idea: beauty in function

A sense of purpose, a controlled use of pattern and space marked the interior designs of William Morris (1834-96). And for 19th century England, the concepts were revolutionary. Morris' ideas helped sweep away much of the Victorian clutter, and popularize styles which were the beginnings of the modern design movement. Morris himself designed wallpapers, textiles, carpets and tapestries. The firm he founded became famous for light, expertly-crafted furniture—including the Morris chair. Today, Morris' influence is seen in interior designs which find beauty in function—designs which often include Nevamar laminates.

The same principles are at work: beauty and function. Nevamar is a source for practical surfacing...designed for most decorative results.

NEVAMAR
NEVAMAR CORPORATION
Odenton, Maryland 21113

Circle No. 352

Literature continued from page 108

Redwood plywood information sheet provides technical characteristics, product descriptions, and pattern illustrations. Ruf-Sawn plywood siding comes in four patterns, from plain to inverted batten, all with uniform color-toned face veneers. Panels are $\frac{3}{8}$ -in. and $\frac{5}{8}$ -in. thick, 8, 9, and 10 ft long. Simpson Timber Co. Circle 209 on reader service card

'Laminated Wood Products' brochure covers decking, beams, arches, and bridges, with photos of typical installations. Discusses wood types, construction, assembly, and installation. Preliminary design data, guide specifications, and detail drawings are included. Weyerhaeuser Co. Circle 210 on reader service card

'The Residential TJI' is an eight-page brochure that explains the use of this laminated floor joist in home building. Drawings show installation details, and tables provide design data. Trus Joist Corp. Circle 211 on reader service card

Triax® laminated wood domes are spherical structures framed with curved, glue-laminated segments, in triangular modules, joined by steel connectors. Eight-page brochure has color photos that show the use of Triax domes in several types of structures: gymnasium, field

house, restaurant, theater, etc. Specifications are included. Koppers Company, Inc. Circle 212 on reader service card

Laminated pine decking, specifically for ceiling applications, consists of a softwood core bonded with waterproof glue to face and back boards. The core is offset to provide tongue-and-groove configurations. Eight-page brochure provides detail drawings, load charts, property data, and insulation information. Color photos illustrate installations. Boise Cascade Corp. Circle 213 on reader service card

'Dimension Lumber,' Vol. 1 of Western Wood Species Book, illustrates in color the various grades of structural light framing, light framing, and structural joists and planks. Characteristics that determine the different grades are also described and shown, as are grade stamps and their meanings. Cost of the 32-page brochure is \$1 per copy. Order from: Western Wood Products Association, Yeon Building, Portland, Or 97204.

'The Engineered 24" Framing System' provides information about the labor and material efficiency of the 24-in. framing module. Advantages of the system are discussed by builders and architects. Cost comparisons and clear span tables are included. American Plywood Association. Circle 214 on reader service card



Laminated beams and roof systems are described and illustrated in a 12-page brochure. Tables show load-carrying capacities and number of laminations for various beam sizes. Typical column and beam connection details are included. Boise Cascade Corp. Circle 215 on reader service card

'Glulam Systems' catalog is a four-color, 40-page publication of product descriptions, technical data, specifications, design information, and connection details for glued laminated timber. Included are product application illustrations of a variety of installations. American Institute of Timber Construction. Circle 216 on reader service card [Literature continued on page 116]

The Collection.

Focal Point, the unquestioned leader in architectural accent through modern polymers, presents its award-winning collection of cornice mouldings and other accents.

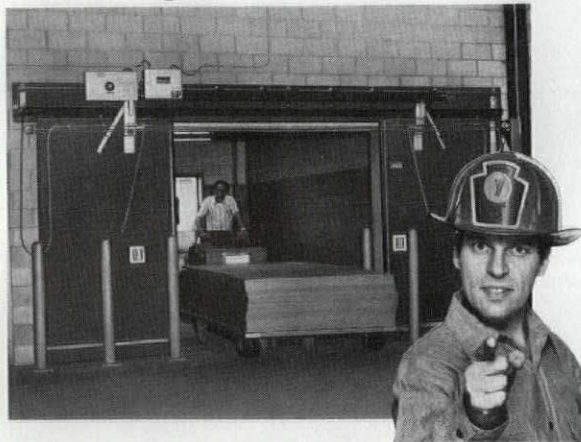
Delicate beauty...incredible strength. Absolute integrity...pre-engineered installation.

There's far more to The Collection than moulding. Focal Point has prepared a catalogue featuring its recessed domes, niche caps, medallions, mantels, overdoor pieces, stair brackets and more. Ask for THE COLLECTION.

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(After Sept. 1, 1979: 2005 Marietta Rd. N.W. Atlanta, GA 30318)

"Clark's FIRE CHIEF® is the fire door for companies that don't have money to burn."



Light weight FIRE CHIEF is Class A, 3-hour rated by U.L. Available in manual or power-operated models; single or double slide. Installs easily.

This is really a superior traffic door that also meets all fire barrier requirements.

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STRAIGHT TO THE HEART; The Detector Module Itself

Unless you know the difference, you don't know enough about smoke-actuated door control. Lives depend upon detector effectiveness.

SMOK-CHEK V:
For any cross-corridor application
(above).

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(with integral positive latch): For any
room-to-corridor application (below).

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EXCLUSIVELY RIXSON-FIREMARK

- Listed by U.L. as limited open area ionization detector device . . . superior detection capability, significant economy
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- Absolute systems compatibility . . . to eliminate complexities of specification and installation
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- A detector module designed by us, manufactured by us . . . without compromise

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Circle No. 360, on Reader Service Card



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Your stain can turn your natural look into a natural disaster.

Stains are *not* wood preservatives. Even the expensive, leading brands let water soak right in. And within a matter of months that can cause ugly, permanent watermarks, pigment wash-off, mildew. And eventually even rot.



Ordinary stain



Cuprinol

With Cuprinol® Stain & Wood Preservative, water just beads up and rolls off, protecting the wood as it beautifies.

Cuprinol is so effective, it's registered with the Federal Government as a wood preservative.

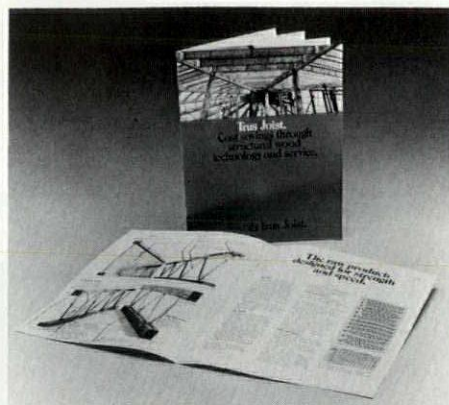
The protective Cuprinol formula penetrates deep into wood to keep water out. And beauty in.

Specify only Cuprinol Stain & Wood Preservative. Don't settle for stain. Protect that natural look with Cuprinol Stain & Wood Preservative. In 10 semi-transparent. 10 solid colors. And Clear Wood Preservative.

Free. Cuprinol literature portfolio. Just write Darworth Company, Avon, CT 06001 for literature and color charts.

Cuprinol
Stain & Wood Preservative
When it's wood against weather.®

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Plywood-web and open-web wood-and-steel joists with 37 different profiles are discussed in company capabilities brochure. Guidelines for writing specifications for both types of joists are included. All have broad nailable wooden chords and flanges for application of decking and ceiling materials. Trus Joist Corp. Circle 217 on reader service card

'Standard Specifications for Grades of California Redwood Lumber' discusses grading provisions and provides descriptions of the various redwood grades. Charts show dimensions of the products and physical properties. In-

cludes general and special purpose grades, structural grades, sidings, and miscellaneous products. Pocket-size booklet, approximately 110 pages, is \$1.25 per copy. Order from: Redwood Inspection Service, One Lombard St., San Francisco, Ca 94111.

'Redwood Lumber Patterns' illustrates in cross section tongue-and-groove, shiplap, bevel, and decking patterns, plowed fascia, fencing, and moldings. Dimensions and pattern numbers are provided for all shapes. Suggested nailing methods for each type are also described and illustrated. Pattern Book No. 10, 36 pages, is \$1.50. Order from: California Redwood Association, One Lombard St., San Francisco, Ca 94111.

'All-Weather Wood Foundation System' manual presents structural design recommendations, fabrication standards, and on-site preparation and installation procedures for the system. Although it is primarily about wood foundations, much of the content regarding good design and fabrication can be applied to all foundations. Diagrams and charts amplify the text of this 74-page manual. The manual is \$5 a copy. Order it from: National Forest Products Association, 1619 Massachusetts Ave., NW, Washington, DC 20036.

'National Design Specification for Wood Construction' covers general requirements for structural design, design values, general de-

sign provisions and formulas. It discusses structural lumber, glued laminated timber, timber pilings, and fastenings. Tables show lumber properties and fastening design values. The 84-page specification, \$6 per copy, can be ordered from: National Forest Products Association, 1619 Massachusetts Ave., NW, Washington, DC 20036.

Truss terms poster provides technical and general information on some of the better known roof and floor structural systems. It includes terms for common, flat, System "42," and variations of these trusses in a presentation designed for quick reference. For a free copy, write on professional letterhead to: Alpine Engineered Products, Marketing Department, P.O. Box 2225, Pompano Beach, Fl 33061.

Architectural Woodwork Quality Standards defines three grades of architectural woodwork quality available. The 112-page publication provides tests by which the quality of work can be measured, standards to ensure that bidders are competing on an equal basis, and guides to the specification of architectural woodwork. The current edition has a new section that provides specifications for architectural flush doors. Copies are available to architects and interior designers at \$4 each. Write on professional letterhead to: Architectural Woodwork Institute, Chesterfield House Suite "A," 5055 S. Chesterfield Rd., Arlington, Va 22206. [Literature continued on page 118]

Problem Wall? Flexi-Wall!

Flexi-Wall® is the one-step process in covering walls for renovation or new construction. Goes up like wallcovering... over many surfaces... hiding blemishes, bridging gaps. Dries hard as plaster. Easy to put up, easy to clean, easy on the budget. In 23 colors. Problem wall? Flexi-Wall! Write for samples. Flexi-Wall Systems, P. O. Box 88, Liberty, SC 29657.

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Or, WRITE for specific literature!

Solar Components Division, KALWALL CORPORATION
P.O. Box 207, Manchester, N.H. 03105

Cedar can have bottom line beauty, too.

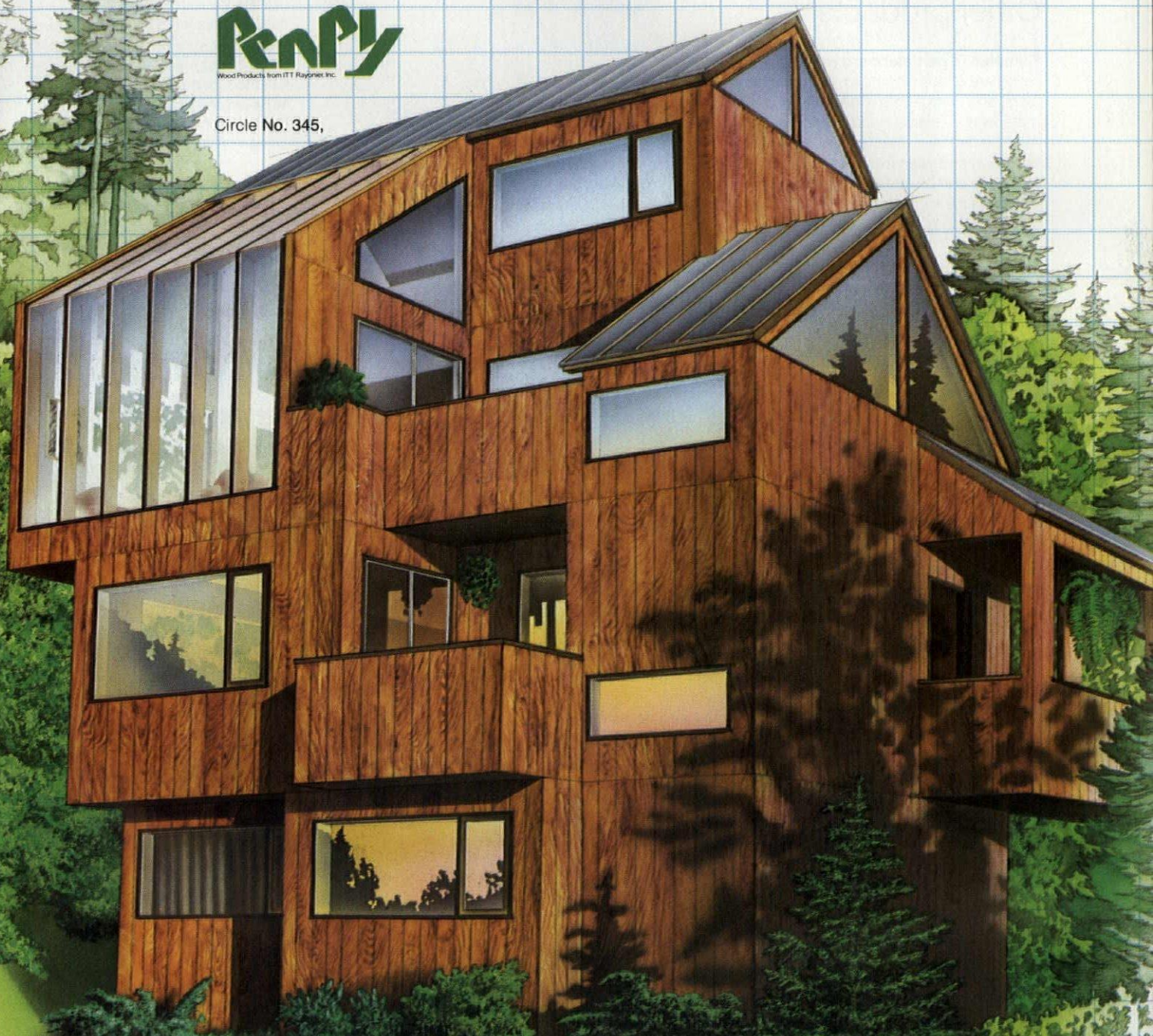
Designs can be beautifully realized in Western red cedar. That's a given. But when you specify quality PenPly exterior 303 *plywood* panels, beauty becomes more than a surface thing. The savings are also beautiful. The bottom line is *real* economy that comes from reducing labor intensity. For example, a 2,000 square foot surface requires only 62 panels, minus windows and doors. And, PenPly goes on in less time, using less manpower than masonry and other piecework sidings. This means faster completions, and quicker sales with greater profits.

Our Western red cedar plywood panels also give you the advantage of low maintenance, weather resistance and the ability to take a wide variety of stains. Side with PenPly and show a good-looking bottom line, too.

For additional information, contact your nearest wood products distributor or see Sweet's General Building and Light Residential Files under Siding/Cladding Section (7.6 Pen).



Circle No. 345,



RAYONIER
WOOD PRODUCTS

Residential design concept by:
Phillip Brown, A.I.A., Seattle, WA

Literature continued from page 116

Strong-Tie catalog includes hold-downs, jack piers, floor-beam jacks, compression wall bracing, truss plates, ornamental black-plated strap ties, joist hangers, column caps, and column bases. There are extensive design details. Simpson Co.

Circle 218 on reader service card

Wood siding catalog offers information on patterns, textures, grooves, thicknesses, sizes, and surfaces of each siding product. Woods include redwood, fir, cedar, and pine for either interior or exterior use. Installation details and photos of applications included. Georgia-Pacific Corp.

Circle 219 on reader service card

Other products

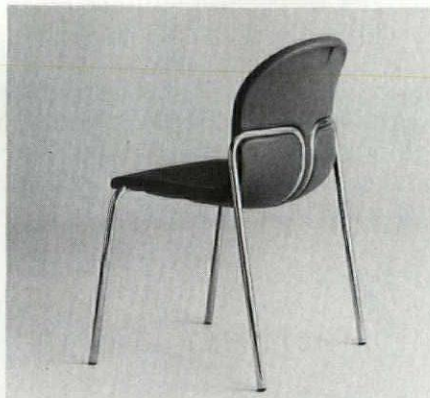
Samples of particleboard with a Class 1 fire rating are offered in kit form to architects, specifiers, and contractors. Called Duraflake FR, the material is available in thicknesses from $\frac{3}{8}$ to $1\frac{1}{4}$ in. It can be drilled, routed, bullnosed, beveled, and precision machined. Application information and physical property data are included in the kit. Duraflake FR Kit.

Circle 102 on reader service card

Kompakt movable shelving is said to save up to 46 percent of floor space compared to con-

ventional shelving and up to 86 percent compared to file cabinets. Modular units of either single or double-faced shelves move on track-mounted carriages. Movement of units is manual, mechanically assisted, or automatic. Various shelf depths provide storage flexibility, and the system provides versatility of layout configuration. Kardex Systems.

Circle 103 on reader service card



Binar stackable chair, designed by Reiner Moll, integrates frame with polypropylene seat shell to eliminate protruding frame parts. The chair is lightweight for easy stacking and transportation, and is designed for comfort, even without upholstery. It is available unupholstered, with upholstered seat, or with upholstered seat

and back, all with or without arms. Additional equipment includes ganging devices, seat numbers, writing tablets, and transportation carts. Hanseatic Furniture Co.

Circle 104 on reader service card

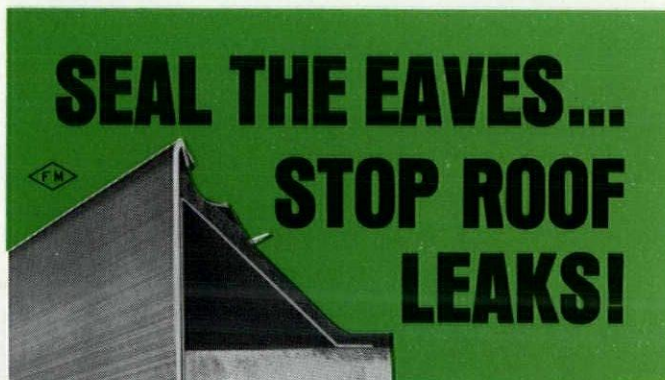
A litter receptacle for indoor use in areas where a large quantity of lightweight trash is generated comes in two sizes: 24" x 24" x 42" high and 12 $\frac{1}{2}$ " x 12 $\frac{1}{2}$ " x 37" high. Panel finishes are wood grains, aggregates, solid colors, and graphics. They can also be customized with logos or similar graphics. The larger size receptacle has push doors and permanent plastic liner. Clean City Squares, Inc.

Circle 105 on reader service card

Vola sanitary fitting system comprises mixing valves, outlets, plates, and accessories such as holders for soap, glass, towels, and tissue. Fittings are available in polished chromium or brass, or epoxy-enameled in a choice of ten colors. Designed by Arne Jacobsen, they were selected for the Design Collection of the Museum of Modern Art, New York. Architectural Complements.

Circle 106 on reader service card

Automatic sliding doors convert to swinging doors for emergency evacuation, with a push in the direction of traffic flow. They can be equipped with manually operated hinged side doors for use when center doors are locked. [Products continued on page 123]



SEAL THE EAVES... STOP ROOF LEAKS!

Hickman Gravel Stop prevents leaks at eaves by clamping out the moisture — permanently. It's a complete three-piece system thermally-compatible galvanized water dam; free-floating extruded aluminum fascia; patented compression clamp with neoprene-

washed fasteners. Our system excludes water so effectively, nobody's ever found a failure in a Hickman Gravel Stop. And permanent, foolproof protection like this is actually less expensive, installed, than less dependable gravel stops. Next time you're roofing (or re-roofing), specify Hickman and stop worrying.

Hickman's FREE "Roof-Line" . . . 1-800-438-3897

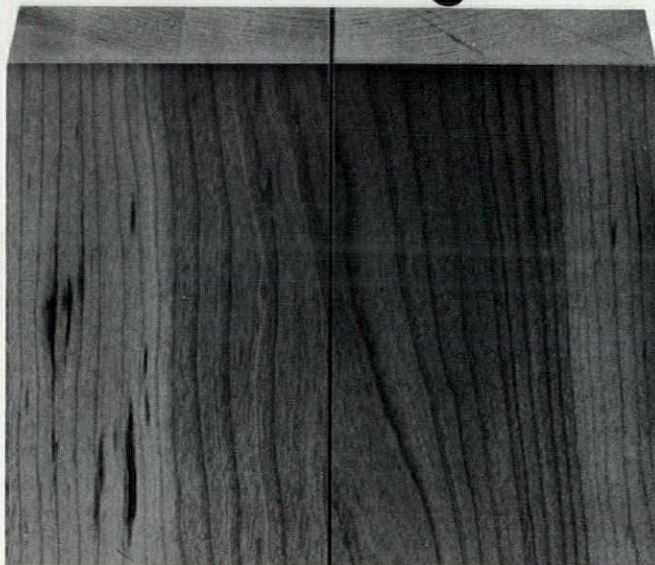
See our catalog (7.3 Hi) in Sweet's.

Available in Canada

HICKMAN ALUMINUM CONSTRUCTION PRODUCTS

W. P. Hickman Company □ 175 Sweeten Creek Road
P.O. Box 15005 □ Asheville, N.C. 28803 □ (704) 274-4000

Just like no hinge at all



Now you see it. Now you don't!

the SOSS Invisibles

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. of Core Industries Inc., P.O. Box 8200, Detroit, Mi. 48213.

Circle No. 343, on Reader Service Card

Circle No. 369, on Reader Service Card

Steel framing saved more than \$150,000 in four-story retirement complex

Local code restrictions for wood frame construction would have limited Casa de los Amigos in Redondo Beach to only three stories, but four stories were needed to provide the desired 136 living units on the land available for this HUD approved senior citizens' project.

In seeking alternatives, a structure combining steel framing on the first floor with three stories of wood framing above was shown to have many problems. The accepted solution, a design prepared with the help of Inryco engineers, used Inryco/Milcor roll-formed steel stud and joist framing throughout. It solved construction problems and also reduced costs by \$155,470.

You Get More Than Just Product When You Specify Inryco/Milcor Steel Studs and Joists:

1. Architectural and structural design assistance from our experienced staff.
2. Counsel for owner, designer and contractor based on our longtime involvement in steel frame construction — including an honest appraisal of its suitability for your project.
3. The combination of benefits inherent in our systems: design flexibility . . . construction speed through advance fabrication of framing assemblies . . . thermal energy efficiency . . . capacity to withstand heavy seismic and high wind loads . . . numerous one- and two-hour fire rated assemblies . . . insurance advantages of non-combustible components.

Let us help you increase construction efficiency and reduce costs on your projects. See the information on our steel framing systems in Sweet's: General Building File, section 5.3/In, and Light Construction File, section 5.3/Inr. (Or write for Catalogs 37-1 and 37-2.) Then give us a chance to discuss their application to your projects.

Milcor Division; INRYCO, Inc.; Dept. G-4069; P.O. Box 393; Milwaukee, WI 53201.

Inryco/Milcor[®] Steel Framing Systems

Casa de los Amigos, Redondo Beach, California

Architect: Arthur Hugh Kensler, A.I.A., Los Angeles, CA

General Contractor: J. R. Slaughter Construction Co., Irvine, CA

Framing Contractor: W. C. Froelich, Inc., Buena Park, CA

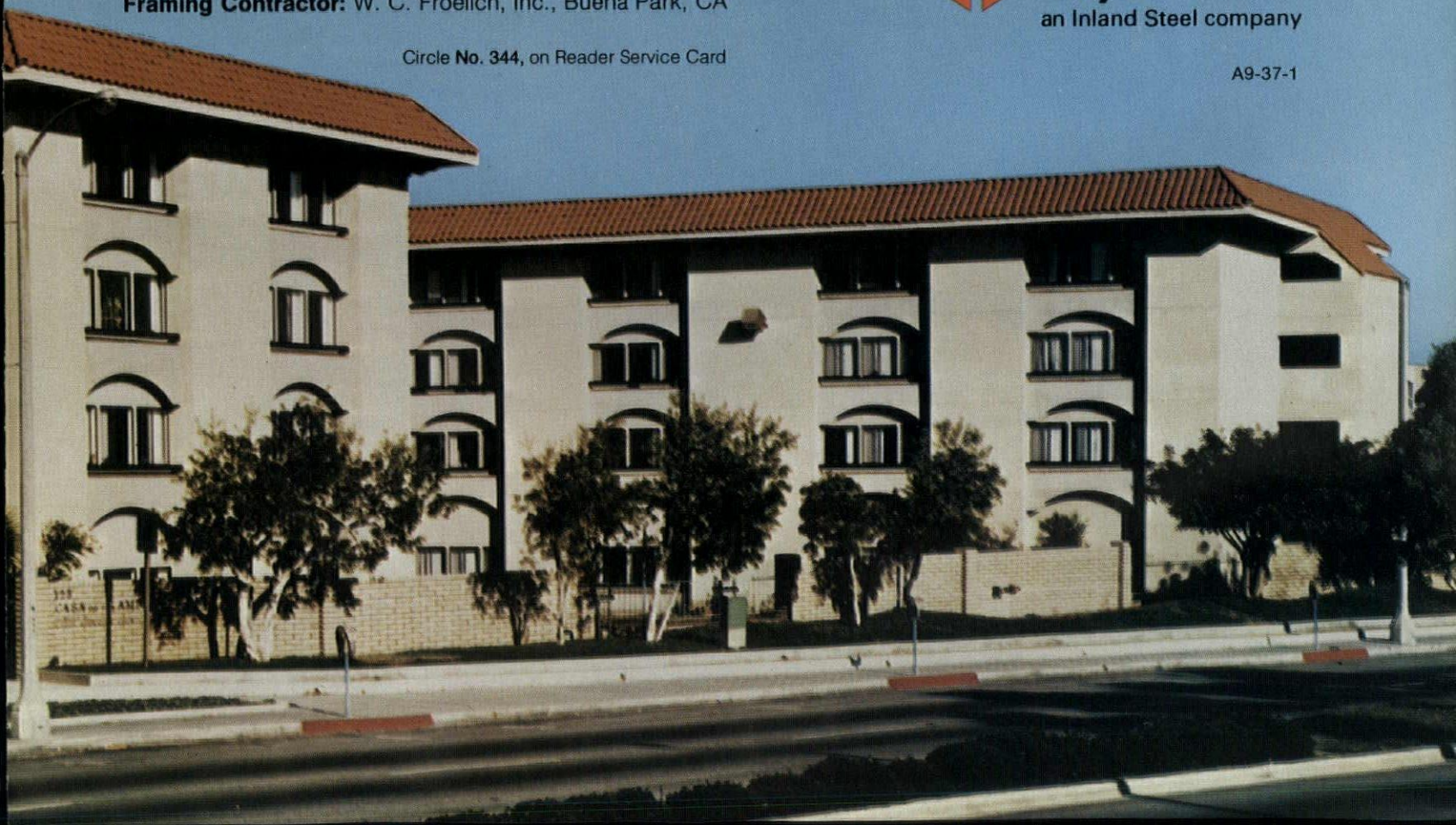


Inryco

an Inland Steel company

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A9-37-1



Bally created the state of the art

...backing your judgement all the way when you specify
Bally Prefab Walk-In Coolers/Freezers and Refrigerated Buildings

CLASSIC EXAMPLE: WHAT WE DO WITH PANELS

We make them for energy-saving efficiency and designer-choice adaptability in Bally Walk-In Coolers/Freezers/Refrigerated Buildings. The modular metal-clad panels have the world's top insulation rating. Our 4" thick urethane which is foamed-in-place (not frothed) earns an "R" Value of 33.90. Compare this with ratings of 14.34 for 4" thicknesses of extruded polystyrene, 16.00 for fiberglass, 13.80 for cork. The prefab panels are available in your choice of stainless steel, stucco aluminum or economical galvanized steel which can be decorated on location with paneling or dramatic materials to compliment the surroundings . . . such as in liquor stores, florist shops, convenience stores or outdoor applications. Bally Walk-In Coolers/Freezers/Refrigerated Buildings can be assembled in any size for indoor or outdoor use . . . easy to enlarge or relocate. Refrigeration systems from 50°F. cooling to minus 40°F. freezing. Subject to fast depreciation and investment tax credit (ask your accountant).

Write today on your letterhead for our 182-page Working Data Catalog
or see your Sweets Catalog 11.23b/Ba for immediate information.

Specify a Bally—it's something special.

The diagram illustrates the construction of Bally Walk-In Cooler panels. It shows a cross-section of the panel structure with the following labels and features:

- 4" URETHANE INSULATION FOAMED-IN-PLACE (POURED NOT FROTHED)**: Points to the thick insulation layer within the panel.
- "R" FACTOR 33.90 (TWICE THE VALUE OF 4" FIBERGLASS)**: Points to the insulation layer.
- EASY TO DECORATE - YOUR WAY!**: Points to the exterior finish options.
- YOUR CHOICE OF STANDARD METAL FINISHES**: Points to three finish options shown in a separate diagram:
 - Stucco aluminum
 - Galvanized steel
 - Stainless steel
- NOW GUARANTEED FOR 10 YEARS**: A circular seal in the top right corner.
- Bally Case & Cooler, Inc.**: The company name and logo are at the bottom right.

A woman in a nurse's uniform is shown standing inside the open door of the cooler, holding a tray, to demonstrate the interior space and ease of access.

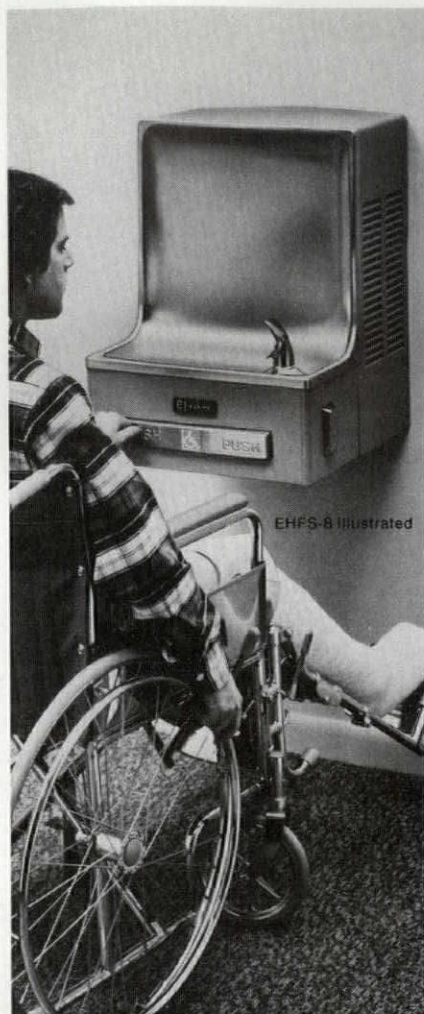
Bally Case & Cooler, Inc., Bally, PA 19503

Phone: (215) 845-2311

Address all correspondence to Dept. PA-7

Circle No. 310, on Reader Service Card





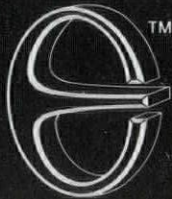
EHFS-8 illustrated

Specify Elkay's barrier-free line—and more!

Start with Elkay's non-pressurized storage tank—a system that prevents flooding, if failure ever occurs, because only stored water is released.

Other features on most Elkay models include anti-splash basin, fast recovery rate, and "open interior" design for easy installation. Complete selection of wall, floor, semi- and fully-recessed, and barrier-free applications. Write for free literature, or contact your Elkay representative.

Elkay Manufacturing Company
2222 Camden Court
Oak Brook, Illinois 60521



Circle No. 326, on Reader Service Card

Products continued from page 118

and the slide-swing doors can be folded back to leave door area open for better access. Door controller actuation is by microwave radar, contact mats, photo cells, elbow switches, kick plates, or push buttons. Besam, Inc.
Circle 107 on reader service card

Prest-On Clip II is a galvanized steel device for supporting wallboard at corners or ceiling intersections. Its use eliminates one nonstructural 2" x 4" at corners and intersections, and ceiling backup lumber. It also permits full insulation at corners. Prest-On Clip Co.

Circle 108 on reader service card

Circlite is a circular fluorescent lamp that operates in ordinary incandescent portable lamp or ceiling sockets. It is 10 in. in diameter and uses only 44 watts, yet is said to produce as much light as a 100-watt household bulb and to last ten times longer. Ballast adapter is designed to last an average 50,000 hours. General Electric Co.

Circle 109 on reader service card



Tall, thin, polished chromium floor lamp, designed by Paul Mayen, accommodates either incandescent or fluorescent tubular bulbs up to 160 watts. It has a dimmer control and a plastic diffuser that covers the entire bulb opening. Architectural Supplements, Inc.

Circle 110 on reader service card

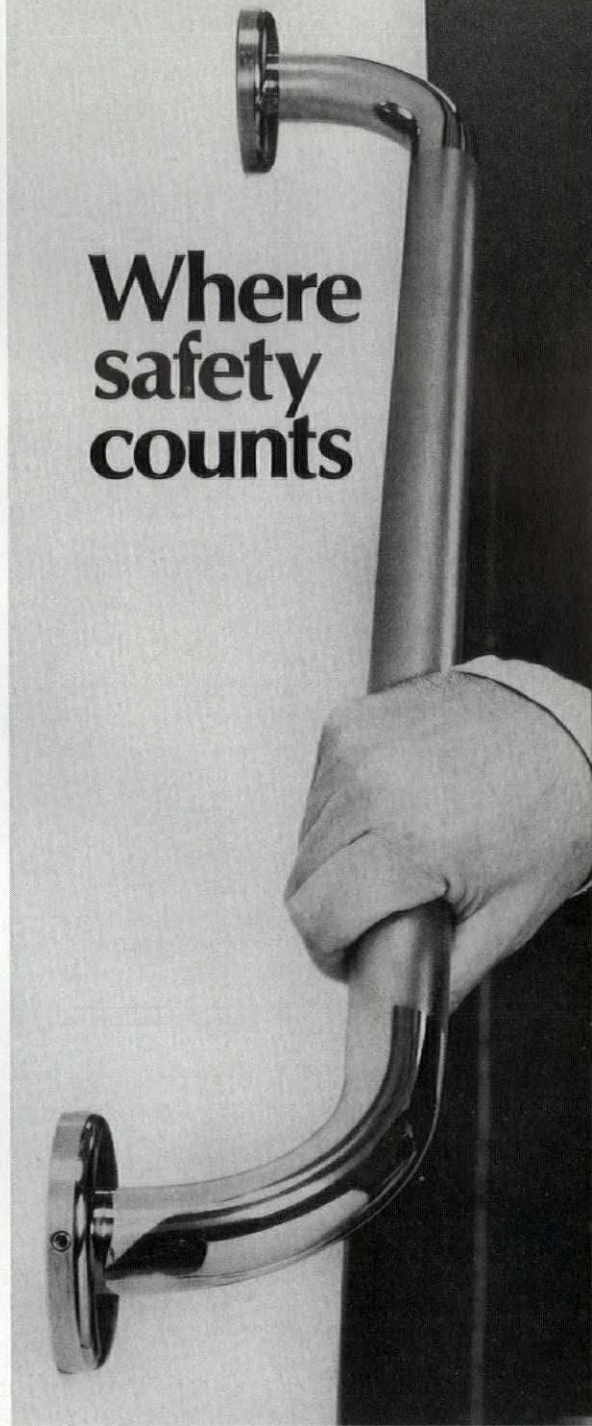
Other literature


Air-supported structures for recreational, industrial, bulk storage, and construction use are described in a four-page brochure. A thermaliner of polished aluminum, with a white vinyl coating facing the interior, reduces heat loss. Diagrams and photographs illustrate special features and components. Air-Tech Industries.

Circle 220 on reader service card

Shrinkage-compensating cement is the subject of a 20-page guide for testing, handling, and placing the material. It includes a description of the product, how it works, concrete slab [Literature continued on page 126]

Where safety counts



 **Complies with all building codes for physically handicapped**

Bobrick's stainless steel grab bars are available in 1", 1 1/4", and 1 1/2" diameters, with satin or peened, non-slip finish. Flanges are heliarc welded for extra strength. Concealed or exposed mountings. Full line of safety railings and anchoring systems. Send for catalog.

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in Washroom Equipment

BOBRICK

Bobrick Architectural Service
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Our new automatic shut-off valve gets the soft touch.

Bradley introduces a sensitive metering valve.* Touch 'N Flo. So sensitive that it takes less than three pounds of pressure to get it started. And that really takes the pressure off small children and the handicapped.

It's a metering valve that's sensitive to water conservation, too. Team it up with a flow control showerhead for maximum savings. Or combine it with a modified sprayhead and you can expect your Washfountain to use

as little as two gallons of water per minute. And timing can be set from as little as two seconds to as much as two minutes.

Bradley metering valves. Our soft touch makes a world of difference.

Contact your Bradley representative, or write Bradley Corporation, 9101 Fountain Boulevard, Menomonee Falls, WI 53051. *Patent Pending

Another
right idea
from  **Bradley**

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October 17th is Architects Day

At last, a major building show with a special focus for architects.

Designed so you can quickly pick your specific interests, and timed so you can organize your day in advance.

Free Architects Conference Program. Leading industry experts concentrating on the latest building techniques to reduce costs without restricting design flexibility.

Exhibits. Grouped into specially focused divisions:

1. Residential 2. Commercial 3. Energy 4. Machinery and Equipment.

The calibre of our some 250 exhibitors makes Build Expo an important event.

These will include nearly all the innovative giants of the building and construction industry—from ALCOA to Owens Corning, from AT&T to Kohler.

These and scores of other companies will use live demonstrations with technical experts to unveil their most significant new products and services—the ones that could affect your future for years to come.

But Build Expo '79 offers you much more than its exhibits.

Free building and design conferences.

Other building shows often charge you up to \$100 for their conference programs. But at Build Expo '79, a single \$5 advance registration fee entitles you to attend all the exhibits and all conferences for all three days.

Learn all you can about the latest in building technology and new products—the information you must have to compete successfully in the years ahead—all for only \$5.

**BUILD EXPO '79. OCT. 16/17/18
McCORMICK PLACE, CHICAGO, ILL.**

Sponsored by The Producers' Council

TUES., OCT. 16 Contractors Day

(In cooperation with A.G.C.)

10:00 A.M.
Ribbon Cutting
10:15-11:45 A.M.
"Who Guarantees What To Whom"
12:00-1:45 P.M.
LUNCHEON
F. Stuart Fitzpatrick Award
"Your New Office Of Construction"
Chairman: Mr. Thomas E. Dailey
2:00-3:15 P.M.
"Effective Methods of Contracting"
3:30-4:45 P.M.
"The Changing Building Materials Market...Who's Buying What From Whom"
Exhibition Hrs. 10 A.M.-5 P.M.

WED., OCT. 17 Architects Day

(In cooperation with A.I.A.)

9:00-10:15 A.M.
"Barrier-Free Design"
10:30-11:45 A.M.
"Solar Energy Systems"
12:00-2:00 P.M.
LUNCHEON
Speaker: Elmer E. Botsai, FAIA
2:15-3:15 P.M.
"Engineered Brick Masonry Development and New Innovations"
3:30-4:45 P.M.
"Glass and Glazing Design"
IMPORTANT: The A.I.A./P.C. Continuing Education Program will provide Continuing Education Units for participating A.I.A. visitors.
Exhibition Hrs. 9 A.M.-5 P.M.

THURS., OCT. 18 Builders Day

9:00-10:15 A.M.
"What Builders Need to Know in Today's Market"
10:30-11:45 A.M.
"How to Get Front-end Funds for Residential Development"
LUNCHEON
2:15-3:30 P.M.
"Marketing Ideas for Better Market Penetration"
1:00-4:00 P.M.
"Truss Plate Institute and Component Manufacturers Council Market Meeting"
Exhibition Hrs. 9 A.M.-4 P.M.

Exclusive at Build Expo. Product Technology Theatre.
Exhibitor's products that most interest you presented live every day.

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If you wait until the opening of Build Expo to register, the fee is \$10. But mail this now and it will only cost you \$5 for the entire show with all exhibits, conferences and related activities.

At Build Expo you'll get specific answers to your specific problems.

Build Expo conferences will be no-fat, no-nonsense, down-to-earth affairs. You'll be able to ask tough questions and get immediate answers—and from the people who really know.

Our conference leaders are industry experts who will share their knowledge and with whom you can talk over your problems.

Build Expo is organized so you can make the best use of your time.

Build Expo '79 lasts for three days. Tuesday, October 16th is Contractors Day. Wednesday, October 17th is Architects Day. And Builders Day is Thursday, October 18th.

If you only attend a single show this year, Build Expo is the one to see. You can come for the whole show, or attend only during your day, but either way Build Expo is completely open to you for a one-time \$5 registration fee.

Build Expo '79
331X Madison Ave., New York, New York 10017
Yes, I will be at McCormick Place for Build Expo '79. Please register me now and send my Official Badge, which admits me free to all conferences and exhibitions, and my Build Expo Information Kit.
Enclosed is my advance registration fee of \$5.

Important: Please Type Or Print

NAME _____
TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____

Note: If you are coming with additional members of your firm, please attach a separate sheet with all above information. We will be happy to include Official Badges in their names if you will enclose their \$5 advance registration fees with your own. Please make your check out to "Build Expo." We'll be happy to answer any questions you may have about Build Expo '79. Just call (212) 682-4802.

BUSINESS

☐ Architect
☐ Engineer
☐ Builder/Developer
☐ Bldg. Owner/Oper.
☐ Contractor
☐ Apt. Owner/Oper.
☐ Manufacturer
☐ Dealer/Distributor
☐ Interior Design
☐ Please Indicate (Govt., Mktg. Assn.)

JOB FUNCTION

☐ President/Owner/Principal/Partner
☐ Vice President/General Manager
☐ Superintendent
☐ Project Manager/Job Captain
☐ Specifier
☐ Sales/Marketing/Advertising
☐ Purchasing/Plant Engineer
☐ Foreman
☐ Public Official
☐ Other _____

Literature continued from page 123

joints, general mixing considerations, trial batch procedures, placement, finishing, and curing. Drawings show construction details. A specification for ChemComp® cement is included. Medusa Cement Co.
Circle 221 on reader service card

Dispensers for powdered hand soap for washrooms, some with mirrors, towel dispensers, and/or shelves, are described and illustrated in a four-page brochure. Also shown are several types of powdered hand soaps for use in the dispensers. U.S. Borax.
Circle 222 on reader service card

Prefabricated bridges, either arched or flat-span, come in lengths from 10 to 160 ft. In weathering steel or painted, the vandal-resistant bridges install quickly. Bridges over 65 ft long are preassembled in sections that can be bolted together at the site. Continental Custom Bridge Co.
Circle 223 on reader service card

'Ceiling Design Ideas/Retailing' is a 12-page booklet containing full-color photographs of 19 installations. Shown are a variety of ceiling systems for retail stores, restaurants, and malls. Integrated Ceilings, Inc.
Circle 224 on reader service card

Thermo-ply insulative sheathing is compared with other forms of sheathing in this 12-page brochure. Thermal performance, strength, and technical considerations are covered, along with architectural specifications. Simplex Products Group.
Circle 225 on reader service card

Insulation retrofit techniques with Styrofoam™ extruded polystyrene are outlined in a 16-page brochure. Areas that can be insulated include sidewalls and roofs. An energy audit form is included which can be filled out and returned to the company for computer processing with a specially prepared program that will make recommendations for retrofitting. Dow Chemical U.S.A.
Circle 226 on reader service card

Thermax® sheathing is an insulation board ranging in nominal thickness from 1/2 in. to 2 1/4 in. The closed-cell structure and aluminum foil facing make it an efficient moisture barrier. Its use in interior and exterior frame walls, masonry walls, A-frame roofs, ceilings, and interior foundations is described and illustrated in a 20-page brochure. A table of typical physical properties is included. Celotex Corp.
Circle 227 on reader service card

'Urethane Insulation Energy Saver Manual' is a guide to designing upgraded insulation in commercial, institutional, industrial, and resi-

dential construction. Included in the 18-page manual is a work pad to aid in calculating energy demands of different insulation systems. Mobay Chemical Corp., Polyurethane Div.
Circle 228 on reader service card

Roll Runner™ is insulation for buildings designed with standard purlin spaces such as those found in pre-engineered buildings. The system, described in a color brochure, enables trained crews to install up to 40,000 sq ft of blanket insulation in a single day. According to the manufacturer, advantages include: less restriction on roofing operations on windy days, faster installation, better appearance, and increased thermal efficiency by eliminating compression and voids. Roll Runner.
Circle 229 on reader service card

Metal doors, frames, and specialties are covered in a 28-page brochure that provides product descriptions, use and application information, materials and finishes, and specifications. Chart shows data on fire doors, fire door frames, and special fire door and fire window frames. Illustrations show construction details, door styles, feature details, and hardware available. Pioneer Industries.
Circle 230 on reader service card

Zonolite® Roof Deck is composed of insulating concrete, Insulperm insulation board, and base ply fastener. Sixteen-page brochure covers benefits of its use, results of performance testing, U-factor table, built-up roofing warranty, and specifications. W.R. Grace & Co., Construction Products Div.
Circle 231 on reader service card

Building materials

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

4-A Telephone Equipment Building, Northbrook, Ill (p. 70). Architects: Holabird & Root, Chicago. Reinforced concrete foundation: Portland Cement. Curtain wall: Chicago Ornamental & Iron. Interior partitions: U.S. Gypsum, PPG. Waterproofing: Tremco. Windows: PPG. Hardware: Sargent; Rixson. Lockers: Lyons. Elevators: Dover. Sanitary fixtures: American Standard.

Phone Center Store, Chicago, Ill (p. 70). Architects: Holabird & Root, Chicago. Windows: Chicago Ornamental & Iron. Ceiling surfacing: Armstrong. Waterproofing: Tremco. Paint: Detroit Graphite; Pratt & Lambert. Hardware: Sargent; Rixson. Lighting: Lightolier.

Mid-Atlantic Toyota Distributors Warehouse and Offices, Glen Burnie, Md. (p. 62). Architects: Frank O. Gehry & Associates, Santa Monica. Windows: Kawneer Co., Pella. Skylights: Bohem. Doors: Kawneer, SECO, Porvenc. Carpet: Stratton Heathrow. Metal panels: Binkley Co. Roofing: Owens-Corning Fiberglas. Paint: PPG Industries. Lighting: Lithonia, Phoenix, Specified Products, Prescolite. Electric distribution system: Square D Co. Heating: Rheem Mfg., Lennox Industries. Blinds and draperies: Levolor Lorentzen.

NO MORE VANDAL DAMAGE! WITH "KICK-PROOF" FLUSH PANEL WALL AND CEILING TREATMENTS

Rugged panels for
use in security and
high abuse areas

Available
in acoustical
perforated or
unperforated



Refer to
SWEET'S
ARCHITECTURAL
CATALOG
Section 9.1

Reinforced aluminum pans
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Especially useful for prisons
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Circle No. 367, on Reader Service Card

Back to nature with Franciscan New Naturals.

Inspired by Nature, four new colors have been added to the Franciscan Terra Grande palette. The "new naturals" have been designed to work equally well with each other as well as individually. Popcorn, a clean, clear white and Vanilla, a warm creamy white are subtly neutral. Mesa is a rich, red clay color and Chocolate is a deep warm brown.

The "new naturals" available in both 3" x 6" and 6" x 6" work beautifully with other natural materials such as wood, stone and woven fibers. They also coordinate with the newest kitchen appliances and bathroom fixture colors. The naturals are suitable for floor as well as counters and vertical surfaces.

The new naturals...a natural choice for today's living and years to come.

For further information see Sweet's Architectural or Interior Design Files or contact Franciscan Tile, 2901 Los Feliz Blvd., Los Angeles, California 90039.

ceramic tile
Franciscan®

Circle No. 332, on Reader Service Card



Job mart

Situations Open

Architect: Strong design, graphic and working drawing ability required. Minimum 5 years experience. Send resume to MacIlroy and Parris, Architects, 1603 Santa Rosa Road, Richmond, Va 23288.

Architect—Department Head: Candidates should have demonstrated thorough professional and administrative-managerial experience. The successful candidate should be prepared to assume leadership position in the architectural work of a major multi-discipline Midwest A-E firm and continue its nationwide reputation for excellence. Our city provides outstanding opportunities for cultural and athletic activities and an environment for family-oriented activities. All qualified individuals are encouraged to reply in confidence for prompt consideration. Send resume, including discussable compensation range, to Box 285, *Progressive Architecture*.

Architectural Draftsmen: Positions available with expanding architectural firm for persons with 2-5+ yrs. experience in preparation of working drawings. Florida East Coast firm offering outstanding location, advancement opportunities and company benefits. Send resume, work samples, salary range to: Riegler/Orr Associates, 4931 Oleander Ave., Midway Plaza, Ft. Pierce, FL 33450.

Architectural Job Captain: Position available with young and developing architectural firm in small mid-south town. Wide range of projects throughout the South. Three to five plus years experience desired in all phases of architectural production. Degree desired but not mandatory. Ledbetter Associates Architects, 908 Main Street, Corinth, Ms 38834, (601) 286-9202.

Architectural Technology Faculty: Two positions: Instructor/Assistant Professor leads to tenure; Visiting Instructor/Assistant Professor does not lead to tenure. Bachelor's degree in architecture and professional experience required; master's preferred; registration and teaching experience desirable. Positions include duties in instruction, other related duties assigned by program supervisor, and normal duties required of all faculty members. Rank and salary commensurate

with qualifications. Positions begin Fall, 1979. Apply by July 16, 1979, to: Dr. Dorothy R. Bleyer, Chairperson, Division of Graphic Communications, School of Technical Careers, Southern Illinois University at Carbondale, Carbondale, IL 62901. SIUC is an Affirmative Action/Equal Opportunity Employer.

Department Head: Department of Architecture at Tuskegee Institute. Appointment to begin May, 1980. Responsibilities include administration of educational program, teaching and program development. Tuskegee Institute is committed to continuing development of an innovative architectural program. Applicants should have prior teaching and professional practice experience. Prior administrative experience is desirable. Rank and salary commensurate with qualifications. Interested persons should send vita, letters of recommendation and other supporting information to: Professor W. T. Hooper, Chairman, Search Committee, Department of Architecture, Tuskegee Institute, Tuskegee Institute, AL 36088. Applications should be received by September 15, 1979. Tuskegee Institute is an Equal Opportunity Employer.

Faculty: The Department of Civil and Architectural Engineering at the University of Wyoming is seeking a candidate to fill a full-time position in the Architectural Engineering program beginning in late August, 1979. Required are Master's degree in Architecture or Ph.D. in Engineering; or Professional Degree and extensive practice. Teaching experience at college level and licensed experience in practice are desirable. Teaching areas in the undergraduate program include (a) building materials and construction methods, (b) architectural illumination, (c) junior and senior architectural design, and (d) specifications and estimating. Appointment will normally be made at the level of Assistant Professor for the two semester academic year, in the salary range of \$20,000-\$22,000. Candidates should send application and resume to Philip M. Hoyt, Department of Civil and Architectural Engineering, University Station Box 3295, Laramie, WY 82071.

Manager, Architecture and Engineering: Leading national firm has an exceptional opportunity in its St. Louis office for a registered Architect with knowledge of the Health Care profession. Experience in management of an architectural department preferred. The individual selected will be a member of the management team and will have the opportunity for substantial personal and professional growth. Compensation includes excellent salary, profit sharing, pension and incentive bonus potential. Relocation expenses will be paid. Please send complete resume detailing education, employment and earnings history to: R.A. Laird, Personnel Director, BBC Health Care Facilities, 1130 Hampton Avenue, St. Louis, Mo 63139. An Equal Opportunity Employer M/F.

Manufacturer's Rep: Wanted by Simplex Ceiling Corp., 663 Fifth Ave., New York, NY 10022. TERRITORY AVAILABLE: All territories except Metropolitan N.Y.C. PRODUCT LINE: Flush Panel Aluminum Ceilings—snap-in and lay-in. We need representatives to call on Architects, Ceiling Contractors, Engineers, Building Material Suppliers, Interior Designers, Industrials, Hospitals, Specifying Agencies, etc. Best prices and commissions. Nationally advertised. Write Attn: Martin Nassof.

Manufacturer's Representative: Wanted by Walter Sign Corporation. We fabricate and install customer architectural signage. Rep. must be proficient in blueprint reading. He will be calling on architects, space and graphic designers. Liberal Commission—call Noel Walter at (212) 899-7000.

Marketing Director: For medium-size quality Architecture and Planning firm, Baltimore-Washington area. Training, knowledge of architecture, commitment, energy, follow-thru and some experience necessary. Business acumen and capability in architecture or planning helpful. Send detailed resume and salary range to Box No. 286, *Progressive Architecture*.

Project Architects/Managers/Designers: Nationwide personnel consulting service. Superior positions. Emphasis on health care, institutional, industrial, commercial buildings. All expenses company paid. For career advancement, inquire: William E. Engle Associates, Inc., 909 Investors Trust Bldg., Indianapolis, IN 46204, (317) 632-1391.

Project Designer: Leading Midwest A-E firm with major institutional, corporate, and industrial clients needs project designer to work directly with design partner in programming, concept design, preliminary design and definitive details. Minimum five years experience required. Excellent opportunity for growth with firm. Submit complete resume in confidence to establish a basis for discussion. Box 287, *Progressive Architecture*.

Project Architect: Design Oriented A-E firm in the Midwest has an opening for an architect experienced in the design of research laboratories, institutional, commercial, and industrial projects. Applicants must have an architectural degree and registration, and must have demonstrated achievement and ability in planning, design, preparation of final documents, client relations, and project management. Qualified applicants should submit detailed resume and salary history in confidence to Box No. 1361-280, *Progressive Architecture*.

Senior Architect: Position for a production oriented registered architect to head a small department of a multi-disciplined design and construction firm in the Midwest serving commercial and industrial clients. Excellent salary and fringe benefits with potential for associate status. All replies will be acknowledged. Please send complete resume including training, experience, goals and priorities to Box 288, *Progressive Architecture*.

VISTA: Needs volunteers for architecture, planning, housing, weatherization, and solar energy projects. One-year commitment; your expenses paid; singles & couples. Information: Linda Friedman, VISTA, A-2, Washington, DC 20525. An Equal Opportunity Program.

Situations Wanted

Architectural Firm-Buyer: Very profitable, established, small architectural firm located in beautiful resort area of northeast Wisconsin. Owner moving to South for family reasons. Practice shows strong record of growth. Financial statement available for

[continued on page 130]



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acrylic sheet

cuts overhead in energy costs

And glazing of ACRYLITE SDP double skinned acrylic sheet is just as energy efficient in a long list of other applications. Large area industrial glazing and curtain walls. Patio roofs and enclosures.

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Where thermal efficiency, weatherability, low maintenance, and high rigidity are called for, ACRYLITE SDP sheet is a top performer. And it's equally outstanding where design and an aesthetically pleasing appearance are the determinants. CYROLON™ SDP double skinned polycarbonate sheet is the material of choice where higher service temperatures are required, or extraordinary impact resistance is needed. Choose either ACRYLITE acrylic or CYROLON polycarbonate SDP double skinned sheet — and count on top performance, year after year. For more information, contact: Ingrid Martin, CY/RO Industries, 697 Route 46, Clifton, N.J. 07015, (201) 546-7900. In Canada, Chemacryl Plastics Limited, 73 Richmond St., West, Toronto, Ontario, M5H 2A2 (416) 869-0013.

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A Partnership of Cyanamid Plastics, Inc., and Rohacryl, Inc.

Circle No. 316, on Reader Service Card

review to serious party. Box 289, *Progressive Architecture*.

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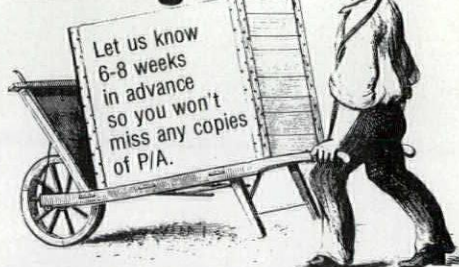
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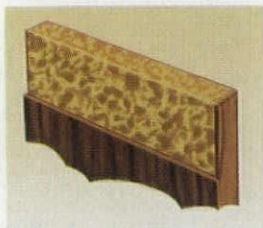
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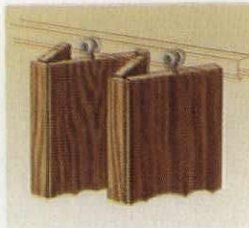
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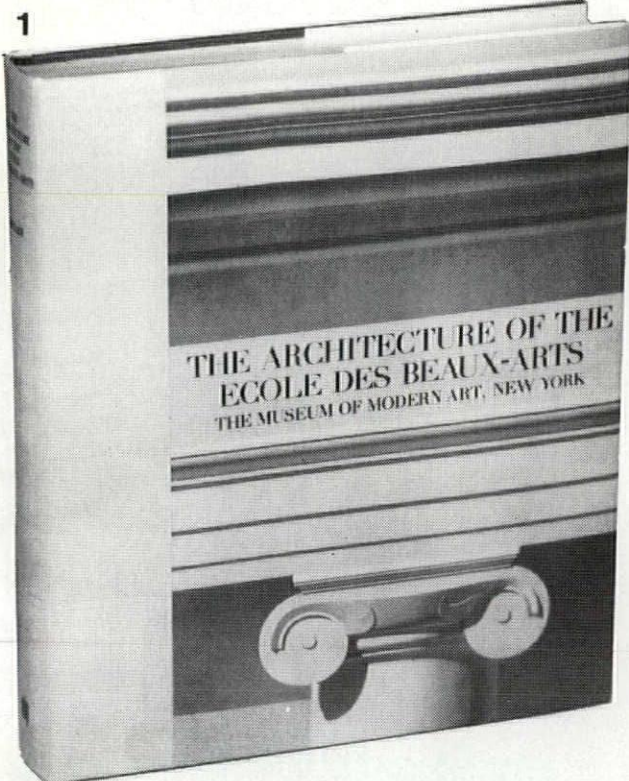
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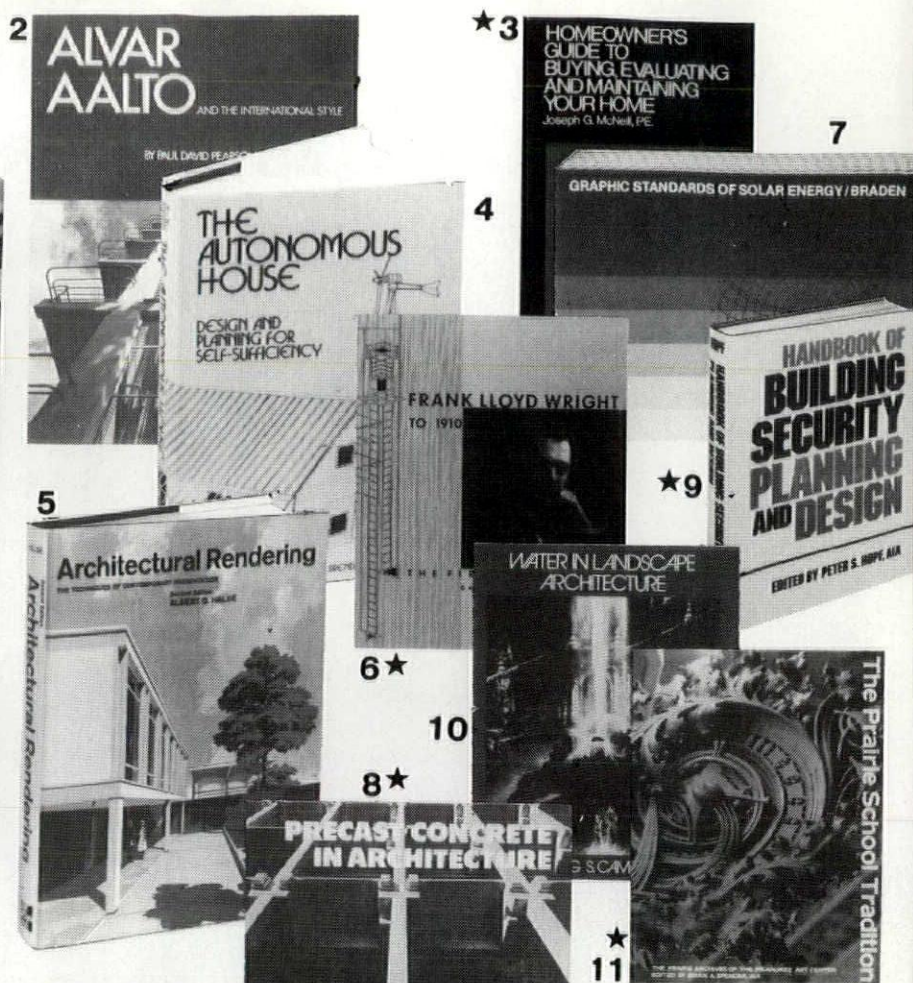
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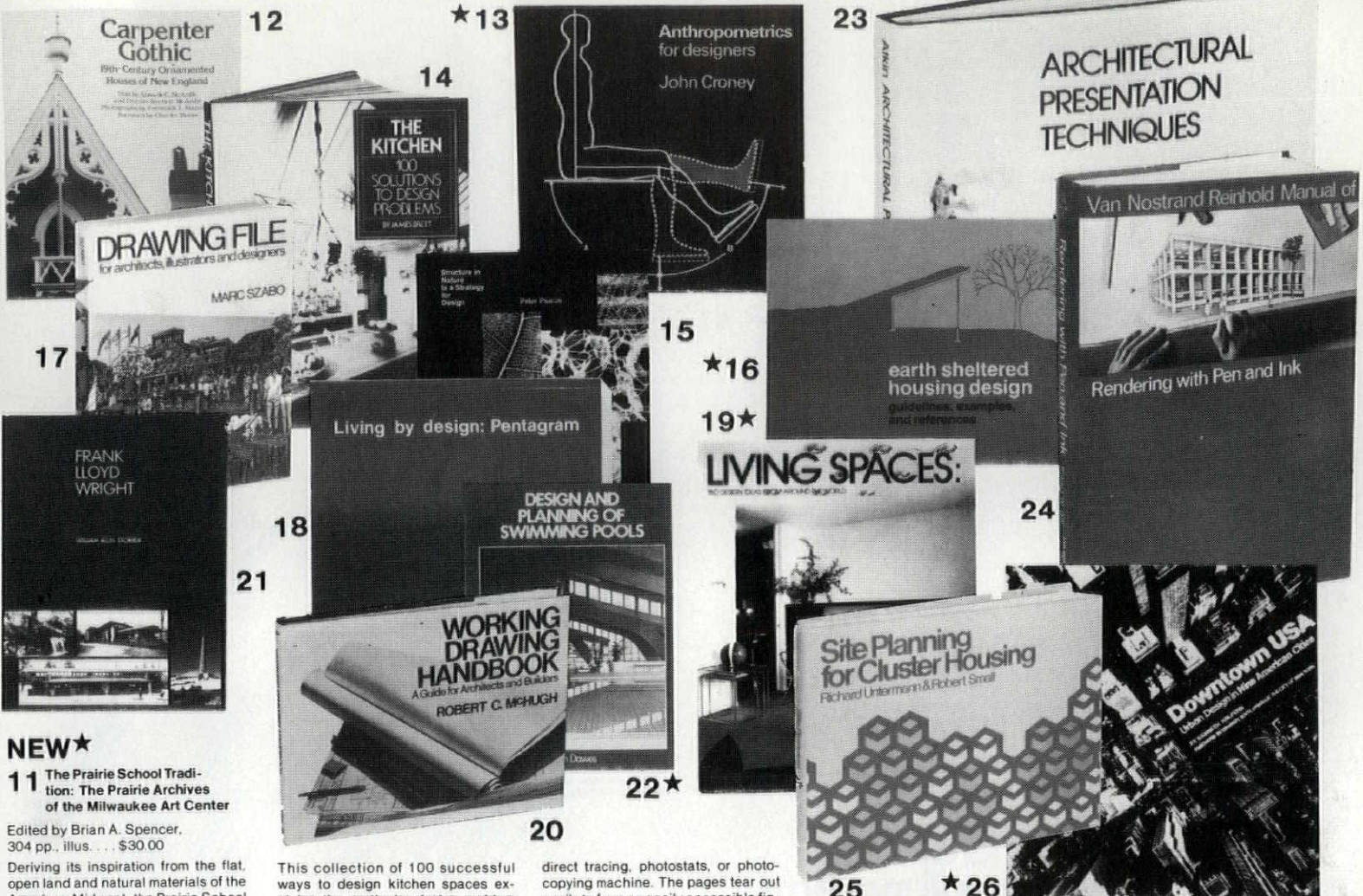
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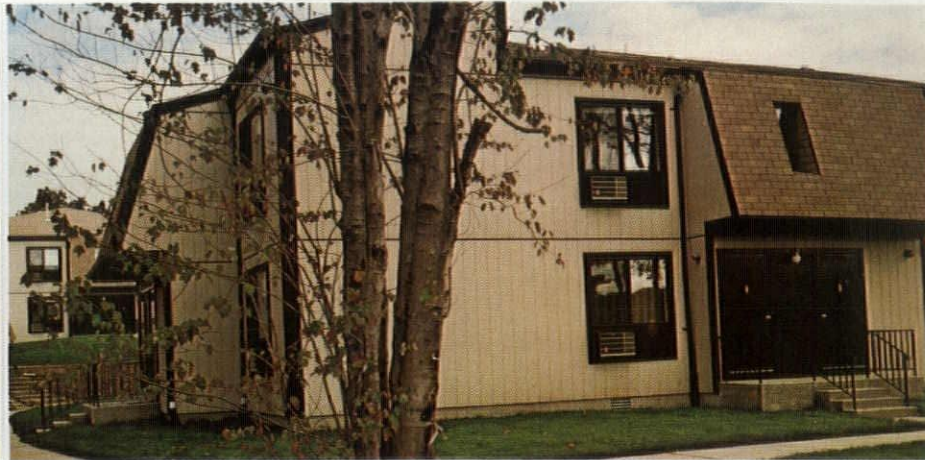
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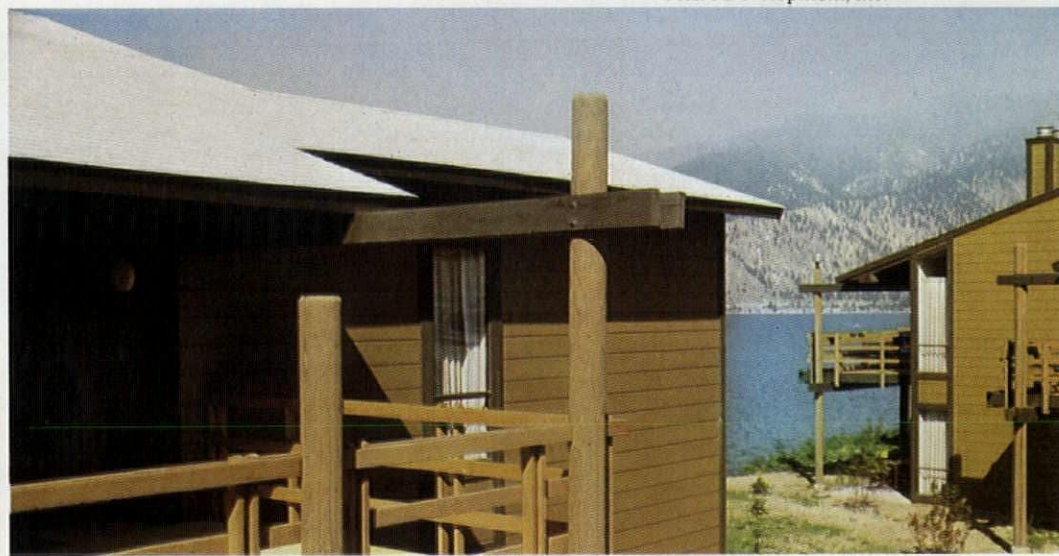
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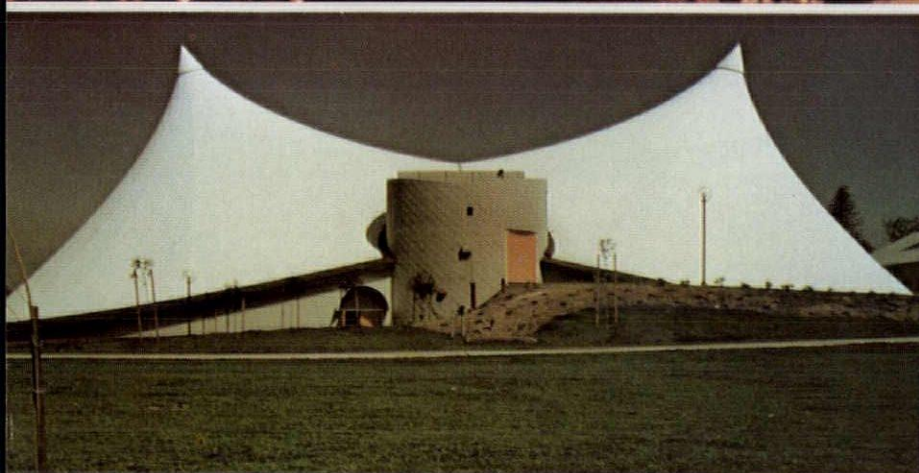
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Top: Pontiac Silverdome Left: LaVerne College Right: Duval County Service Center

PERMANENT FABRIC STRUCTURES... AN IDEA WHOSE TIME HAS COME

The wide span air-supported roof on the Pontiac, Michigan Silverdome Stadium, the dramatic tensioned fabric roof of LaVerne College's Student Center in California, and the sweeping arch of a new outdoor stage at the Duval Center in Florida show how the architectural vocabulary of space and form has been enriched by permanent architectural fabric. Spatial and volumetric relationships that used to be impossible to build are now possible. The Birdair/Chemfab team has turned more of these new concepts into reality than anyone else.

Since their first appearance just five years ago, SHEERFILL® architectural fabric structures, combining the steel-like strength of fiberglass with the durability of Teflon®, have gained rapid acceptance around the world. Unlike other building materials, the SHEERFILL architectural

fabric and cable network form both the structure and the finish.

Modest in initial cost, rapidly erected, exciting and dramatic in appearance, SHEERFILL architectural fabric structures are an idea whose time has come.

With over 30 years experience in weaving, coating, patterning, fabrication, and erection of fabric structures, the Birdair/Chemfab team offers you a single source of highly skilled assistance that is unmatched in the world.

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