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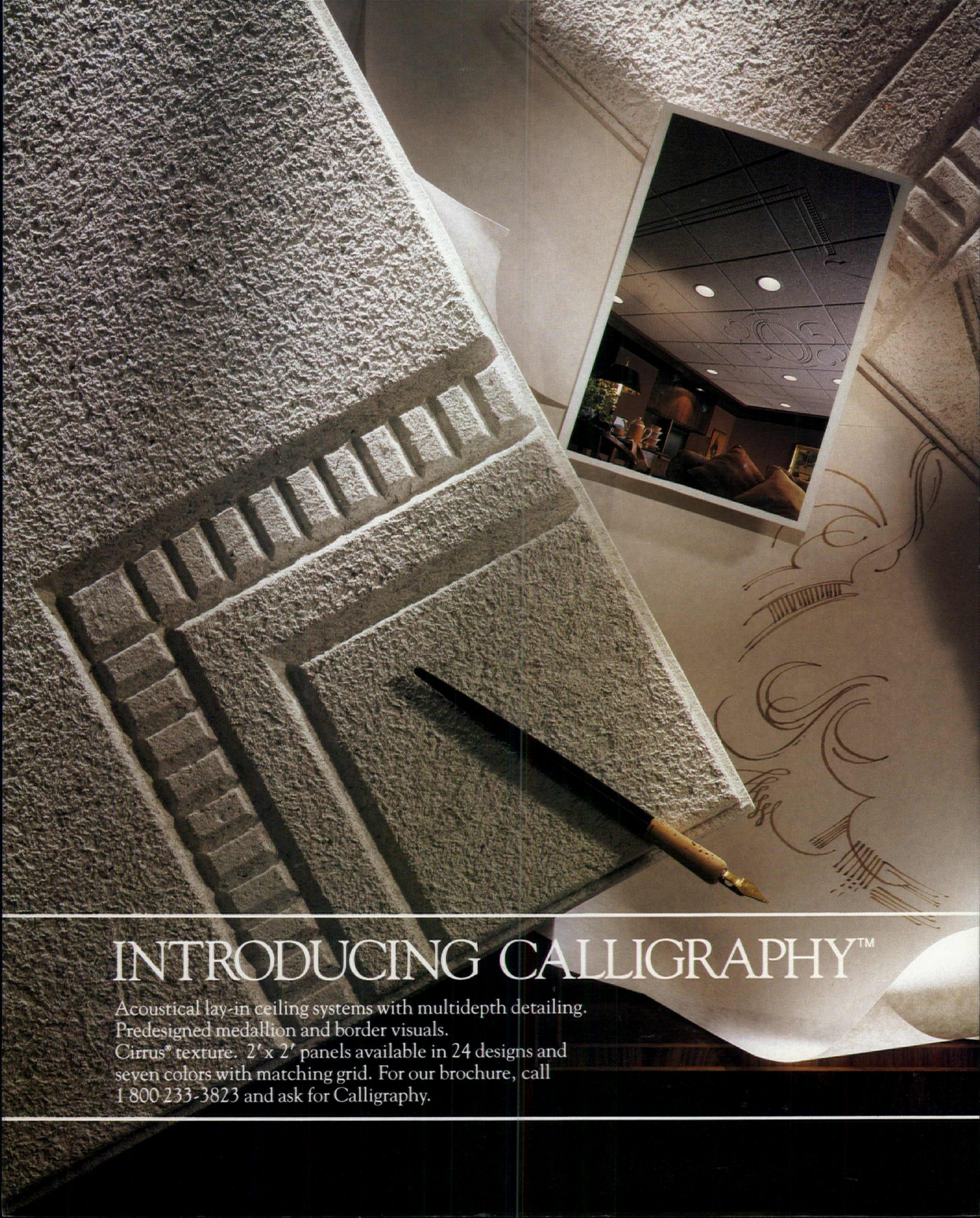

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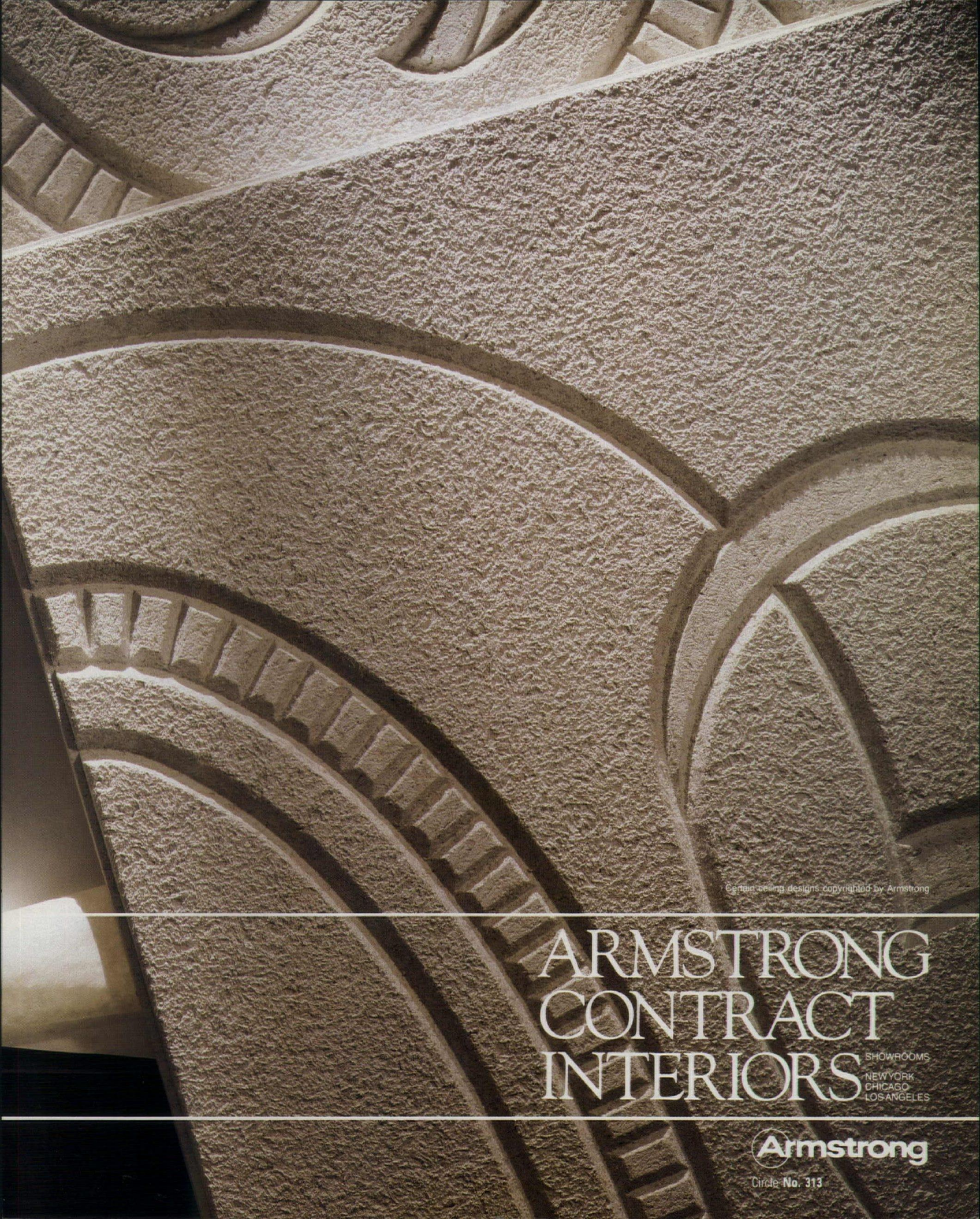

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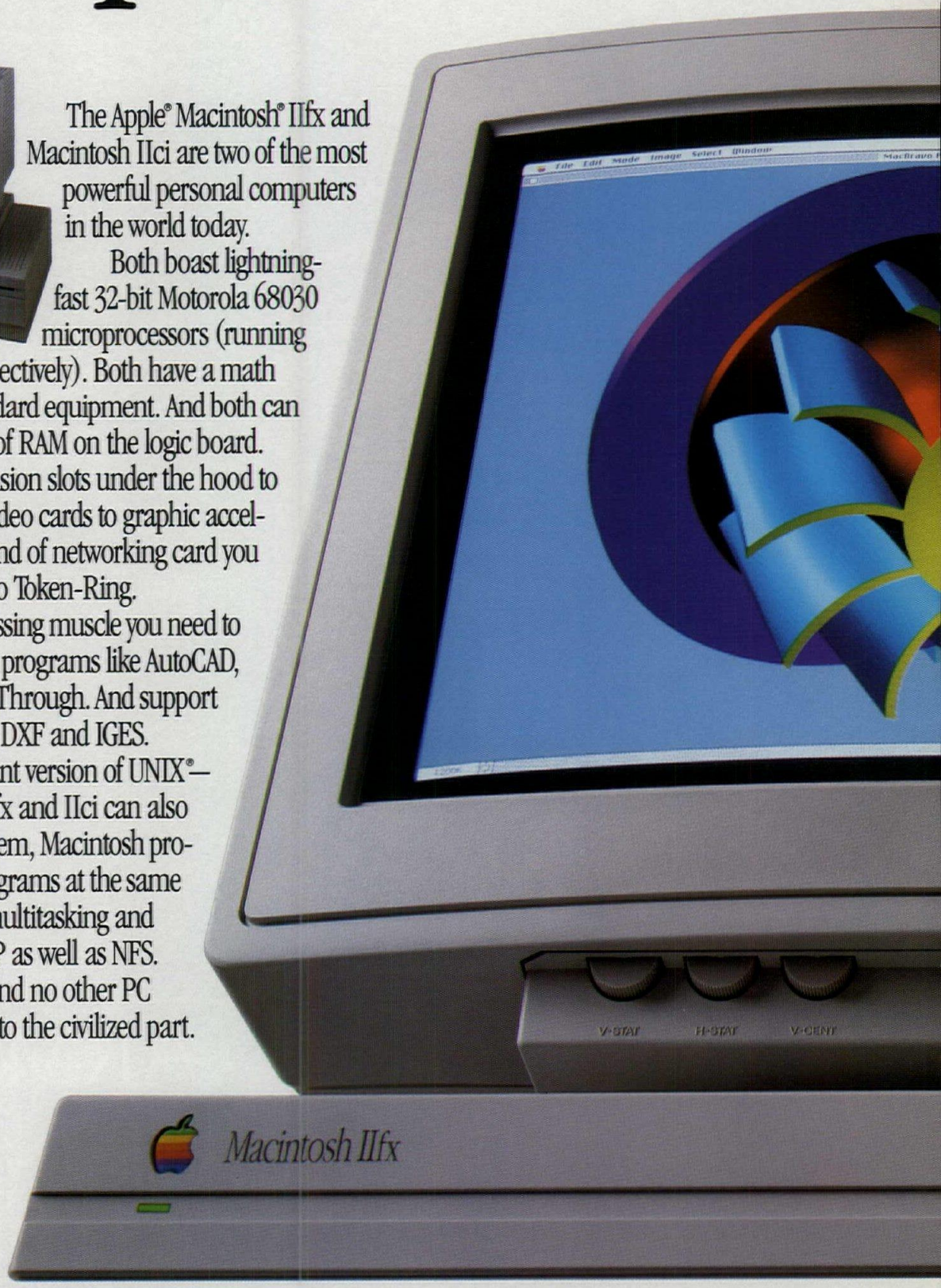

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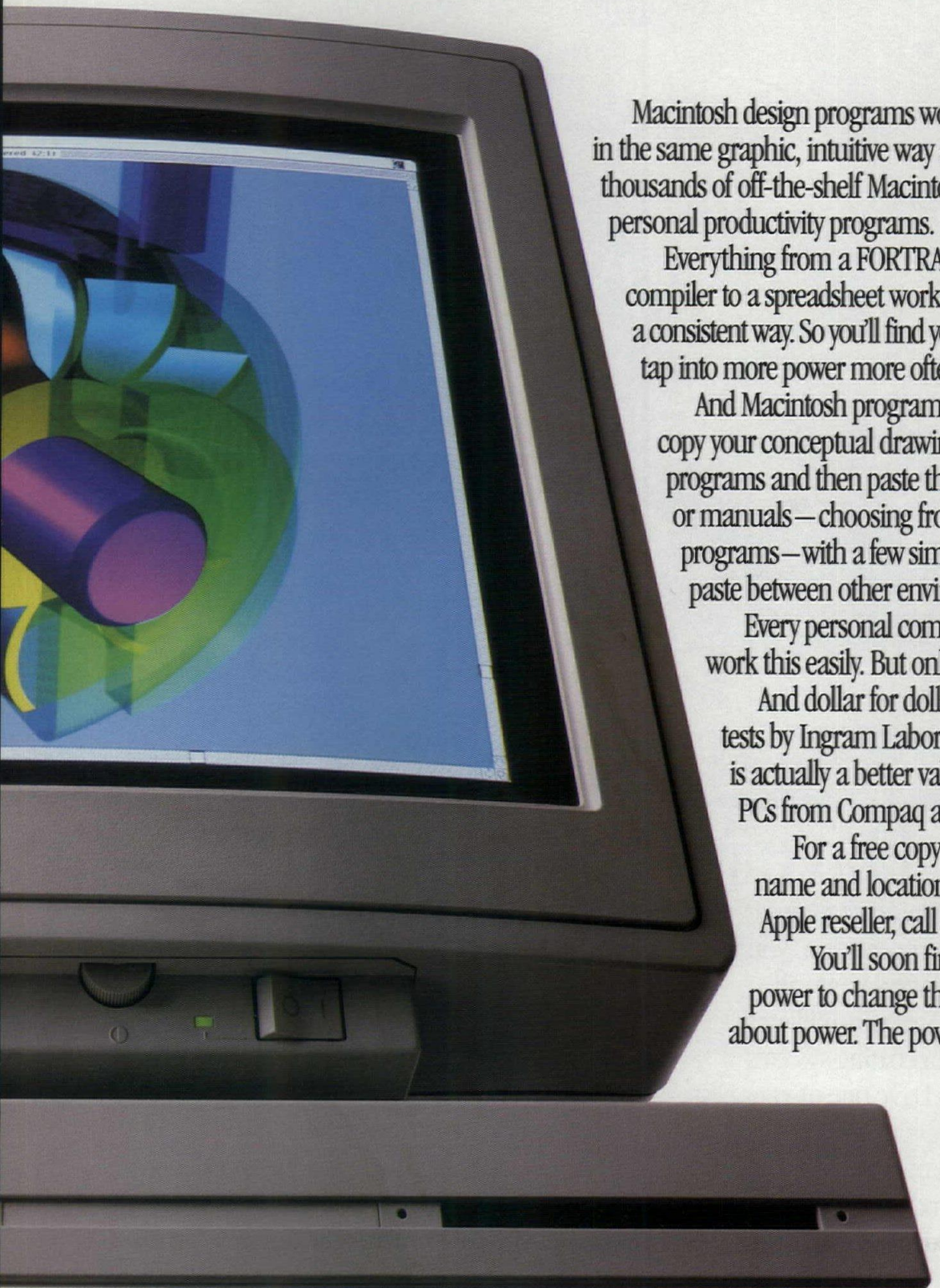

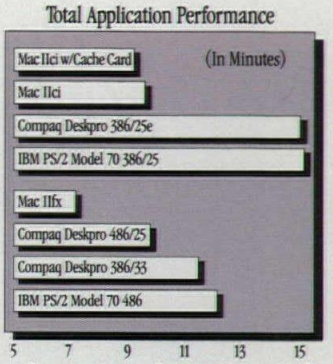

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Cover: *Nexus World Kashii housing, Fukuoka, Japan (page 59); units by Rem Koolhaas in foreground. Photo by Hiroyuki Kawano.*

Progressive Architecture August 1991

P/A

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Editorial
Global Architecture?

As U.S. firms look overseas for work, they face radically different demands for architectural services that will undoubtedly change the way the profession sees itself.

The 1990s, we hear, is going to be the decade of "global architecture." There have been a number of symposiums on the subject, such as the recent series of panel discussions on "Architecture and the Global Culture" held by the Architectural League of New York. And AIA chapter newsletters from Boston to L.A. have addressed the topic. But, in many cases, the use of the term "global architecture" is a misnomer, since most of the talk has focused on American firms doing work in Western Europe or the developed countries of the Pacific Rim. The globe, as commonly discussed, is like some map drawn up by Medieval mariners where small parts of the world are precisely defined and vast stretches of territory are left blank – *terra incognita.*

The focus of U.S. firms on work in other developed nations is understandable. Those countries are most like the U.S. and so require the least adjustment in how a firm operates or in what it designs. That strategy has also met with some success; several large American firms now have offices in England, and leading designers continue to receive commissions in Europe and Japan. But for many U.S. firms, the opportunities overseas are limited. The industrialized countries already possess large numbers of architects of their own, and clients there seem mainly interested in U.S. firms that have an international reputation or specialized knowledge not widely available. The situation there, in other words, is not unlike it is at home: Too many architects are chasing too few commissions.

Yet the demand for the services of architects, globally, has never been greater. Huge portions of the world's population – most of whom live in countries off of the architectural map – are in desperate need of better housing, hospitals, schools, and workplaces. And the number of architects and the quality of their services in many developing countries is limited at best. Why then haven't more U.S. architects, facing increasing competition and rising joblessness at home, flocked to the third world, where the demand for service greatly outstrips the supply?

One obvious answer is that the need for shelter in less developed countries derives, in part, from unstable political, social, and economic conditions, which can make it difficult to do business or to get things built. But it seems equally obvious that the work available in such countries often demands a major change in the way firms practice and in the types of services they offer. There is, in other words, a poor fit between what the people in many parts of the world need and what many U.S. firms are willing or able to provide.

Globally, for example, the greatest demand seems to be not for high-style design, but for modest solutions, appropriate to the climate, the culture, and the resources of a place. And the architectural services needed in many countries are not just the delivery of advanced building types – hospitals, labs, research facilities – but the development of more effective methods and materials of construction. There is often as much a need for a better concrete block as there is for better buildings.

Even if only a small fraction of U.S. firms ever works abroad, there is an important lesson here for the entire profession. A few U.S. companies have succeeded in foreign countries by being flexible in the services they provide and by adapting their products to the demands of various cultures. Likewise, many companies have failed miserably when they have tried to sell overseas the goods and services that were geared to the American public.

The U.S. architectural profession seems poised to make the same mistake. So far, most discussions about global architecture have focused on how U.S. firms can become established in other countries while still providing essentially the same sort of design services offered here. That approach is bound to fail, as has already begun to happen in England, where there is a growing backlash against the methods of the big American firms at work there. If the U.S. architectural profession is to thrive in an increasingly global marketplace, then it must become more demand-driven. Rather than assume, as is all too common in American business, that we just have to be better at selling our services, the profession must become better at analyzing the complex nature of the global demand and adjusting our approach to specific needs.

That is extremely difficult, as many U.S. companies have discovered, but we may have little choice. If we ignore these differences in demand or if we respond inappropriately to them, then the world will simply go elsewhere for its architectural services. However, if we choose to adjust to this new world and broaden our definition of what architecture can be and what architects can do, then this decade of global architecture may also be remembered as one of great growth and prosperity for the profession.

Thomas Fisher ■

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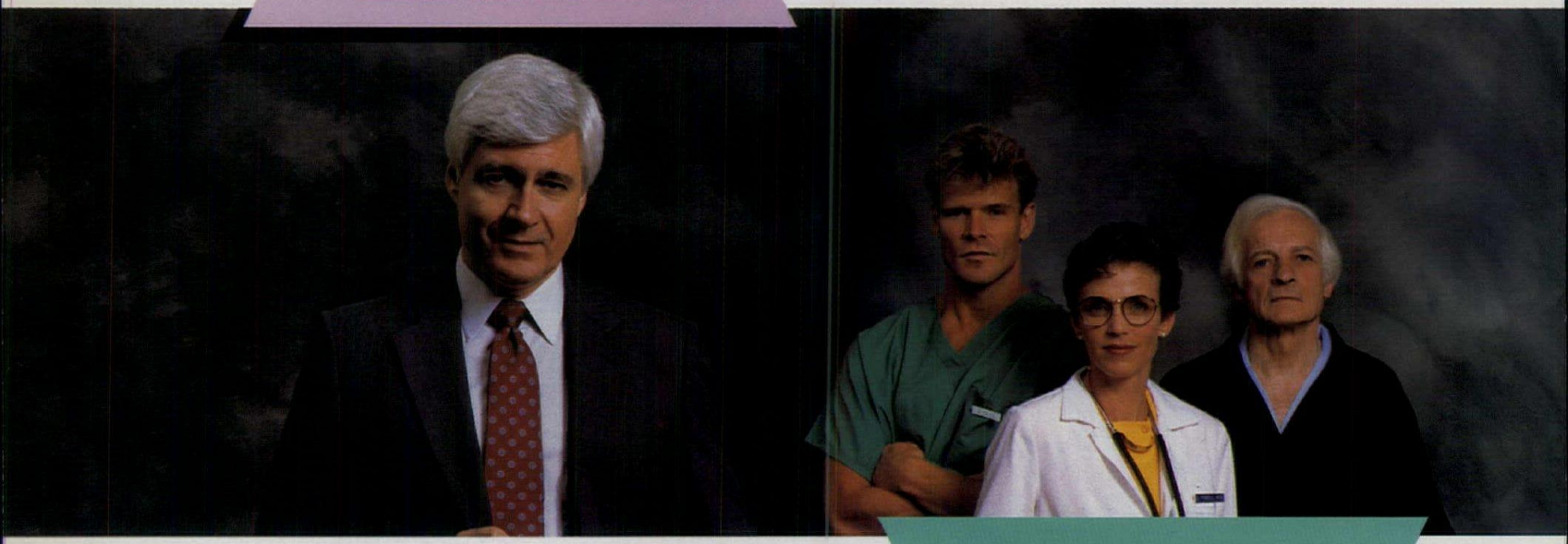

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Views

Exploitation

The May editorial (p. 9) on the patterns of exploitation of architecture students and interns is long overdue. The lack of scrutiny has resulted in the acceptance by practitioners, as well as by students and interns, of harmful and unethical practices in the profession.

The intent of education has been compromised by the inordinate attention devoted to the design jury and the colossal pressures of competition and potential failure. The inequitable demands on students for tremendous amounts of work within relentless deadlines is not supported by instruction in time management and value. The deemphasis of issues of budgeting, compensation, and project delivery are not serving the student well. The fact that issues of practice are often taught in a single course in the final semester of formal education exemplifies the great imbalance in what is called a professional education.

Students managing to surpass the obstacles in architectural education are not met with commendation, but rather with alarming low regard for their accomplishment. A common response to an inquiry for an internship position reads, "[Arquitectonica] does not compensate its interns. We can pay no salary, and cannot assist you with living expenses. If we agree that you come to our office you may do any of a number of tasks from drafting on construction documents to presentation drawings. You may file, run errands, or simply wait around. Nevertheless, we would expect that you spend eight hours per day, five days a week in our office, during our normal working hours." Unfortunately, this attitude is common among the firms we see placed on pedestals in the architectural journals.

It is the architectural community, not the general public, who deserves the blame for the devaluation of the service and contribution of the architect. It is time to abate this great disservice to the profession and the next generation of architects. Students and interns do not exist to serve the profession, but to carry on the tradition of architecture.

Alan D. S. Paradis, President
The American Institute of Architecture Students
Washington, D.C.

It is high time that the architectural profession address the issues so cogently raised in your May editorial ("Patterns of Exploitation," p. 9). Indeed, the consequences of the exploitation of recent architectural graduates may be even broader than you suggest. Too often the pitiful pay scale for recent graduates is "justified" in terms of the low compensation that architects command in the marketplace. We argue that we can pay neophyte architects only half or a third that of their law school counterparts because our own fees are so low.

In fact, we may have this argument backwards. Do we pay young architects so badly because our fees are so low? Or are we, perhaps, only able to afford those low fees, rationalized in the name of being "competitive," because we know that we can pay our junior staff so little and still turn a profit?

It is we, as well as recent graduates, who must work towards a change, and it is safe to say that this will involve more than a modification of the AIA code of ethics.

On a more positive note, it is a joy to see the article on the newly rejuvenated Furness Building, where I spent many hours as a high school student discovering architecture. In connection with the reference to subliminal messages ("Furthermore..."), almost discernible in photograph 6 is the memorable cautionary motto on the entrance to the library, "Talkers are no great doers".

Edward S. Levin, AIA
Levin Morris Architects
Santa Monica, California

Affordable Housing

I hope that my following comments about the P/A Affordable Housing Initiative Competition don't sound like sour grapes because my design was not one of the winners.

Did the jury give any consideration to the requirements for parking? I could not find any published comments by the jury about parking.

Of the published designs, only the first and second places, and one commended design showed a paved driveway but no garage. One honorable mention and one commended design had either a carport or a garage. One honorable mention design showed a garage in the background of its perspective. Perhaps parking locations were shown on the lot plans that were not published.

Also, I could not find any comments by the jury about space for boiler/heaters, laundries, or bulk storage. It appears that space for these services was not provided in the winning designs. In my opinion, these are minor requirements that should not be ignored in housing designs. Space for these services probably would have little effect on the overall design except that they probably would increase the cost.

It would be interesting to know if, when the designs were submitted, they were checked for compliance with the many requirements for budget, building code, site and zoning before they were allowed to be considered by the jury. I could not find any commments about this situation. I would appreciate your reply to these comments.

Roland K. Kuechle
Walnut Creek, California

[We did not have room to show the entire boards for the entries published in the June issue. All of the premiated schemes either showed off-street parking on their site plans or mentioned in their text how it would be accommodated. The first place winners called for a gas-fired, hot-water baseboard heating system with a small boiler/hot water tank in a closet next to the first floor bathroom. The schemes were checked for compliance during the judging, both by P/A editors and the jurors. Some violations of either the program or code requirements were accepted by the jury if they felt a scheme could accommodate the necessary changes without affecting the basic design idea. – Editors]

Juror Identification

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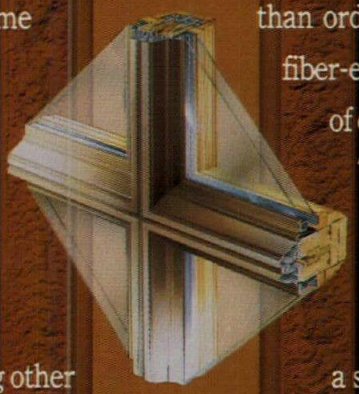

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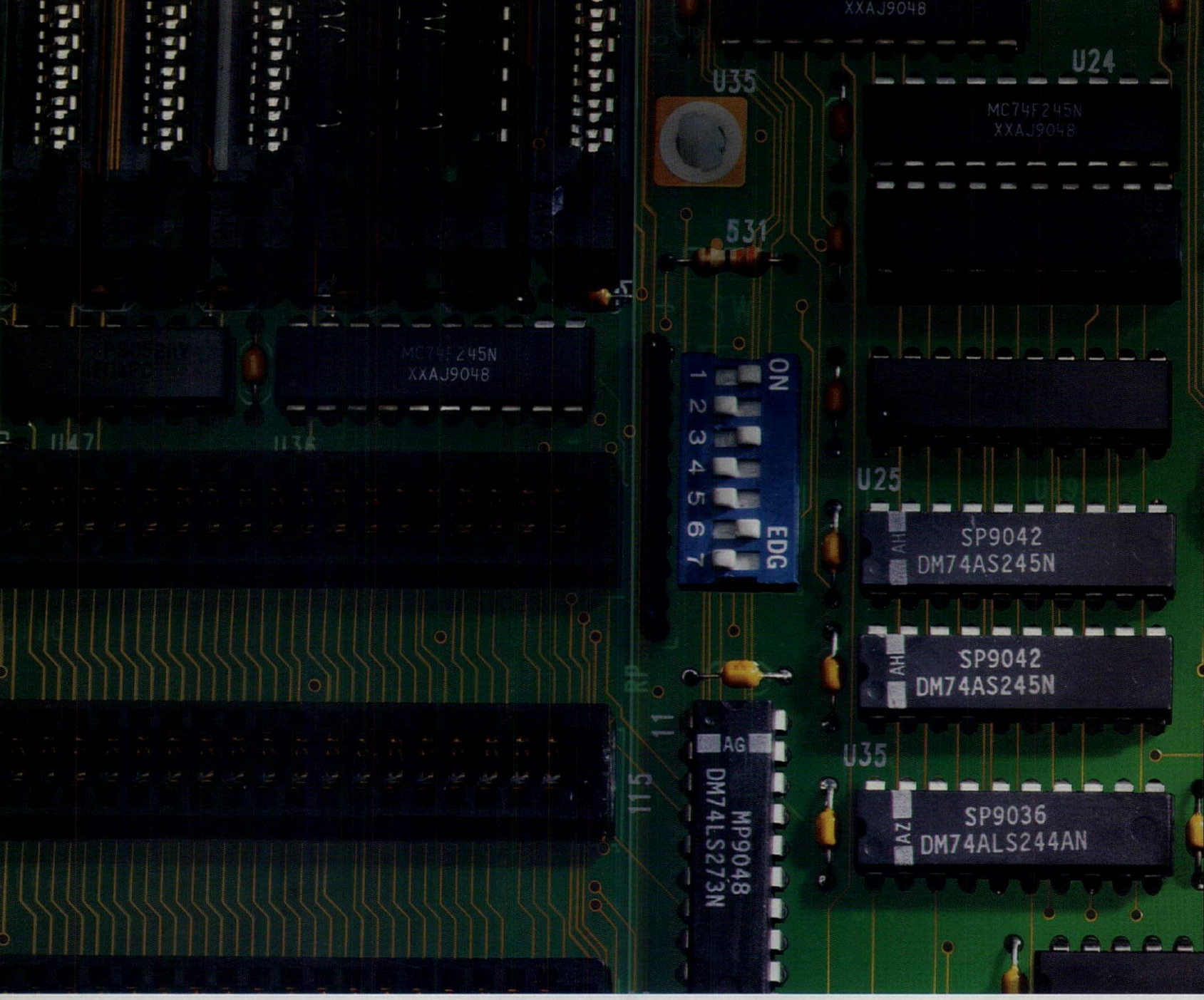

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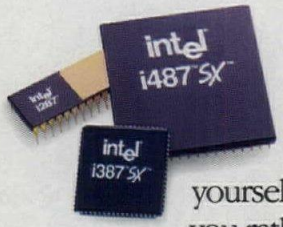

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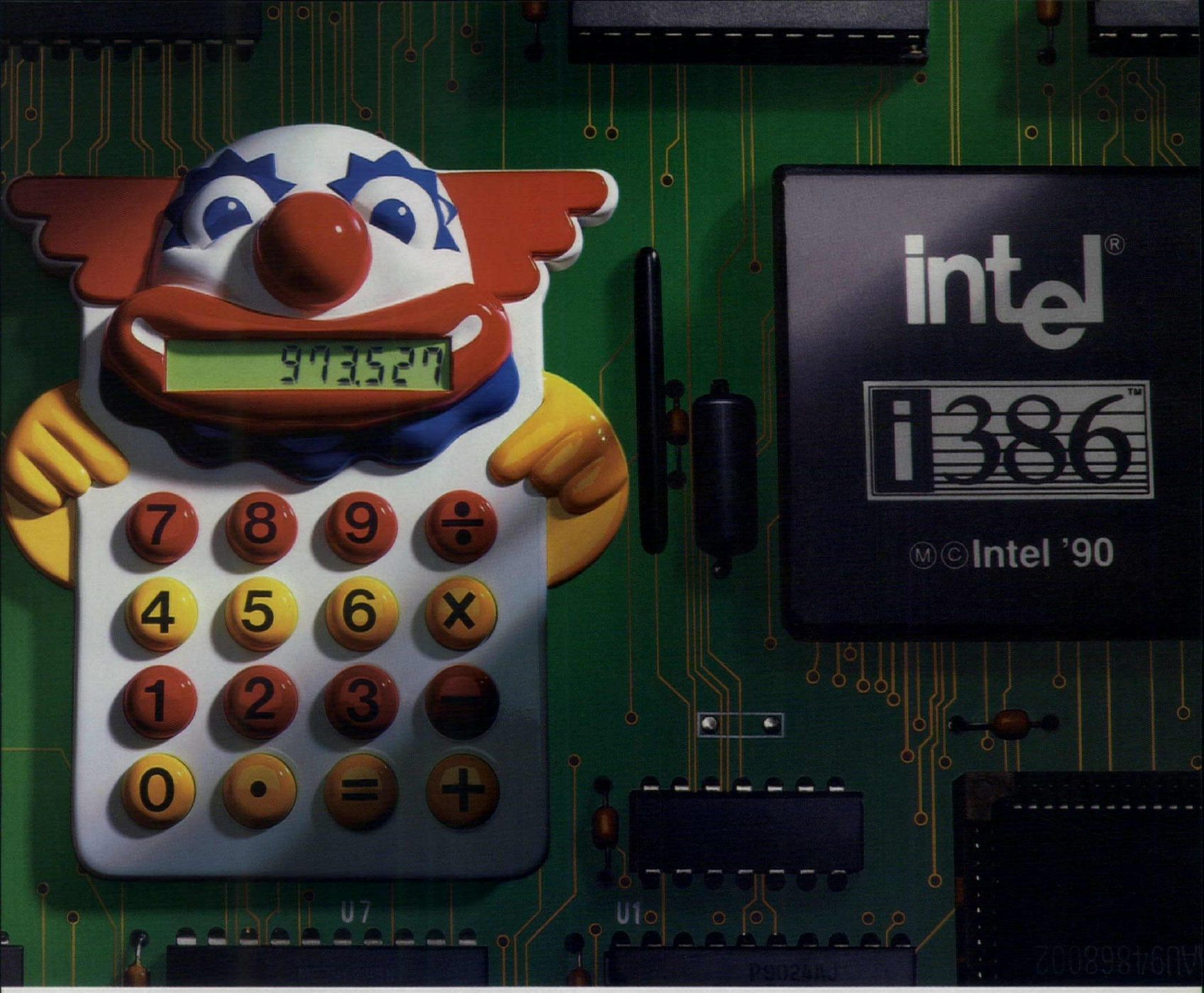

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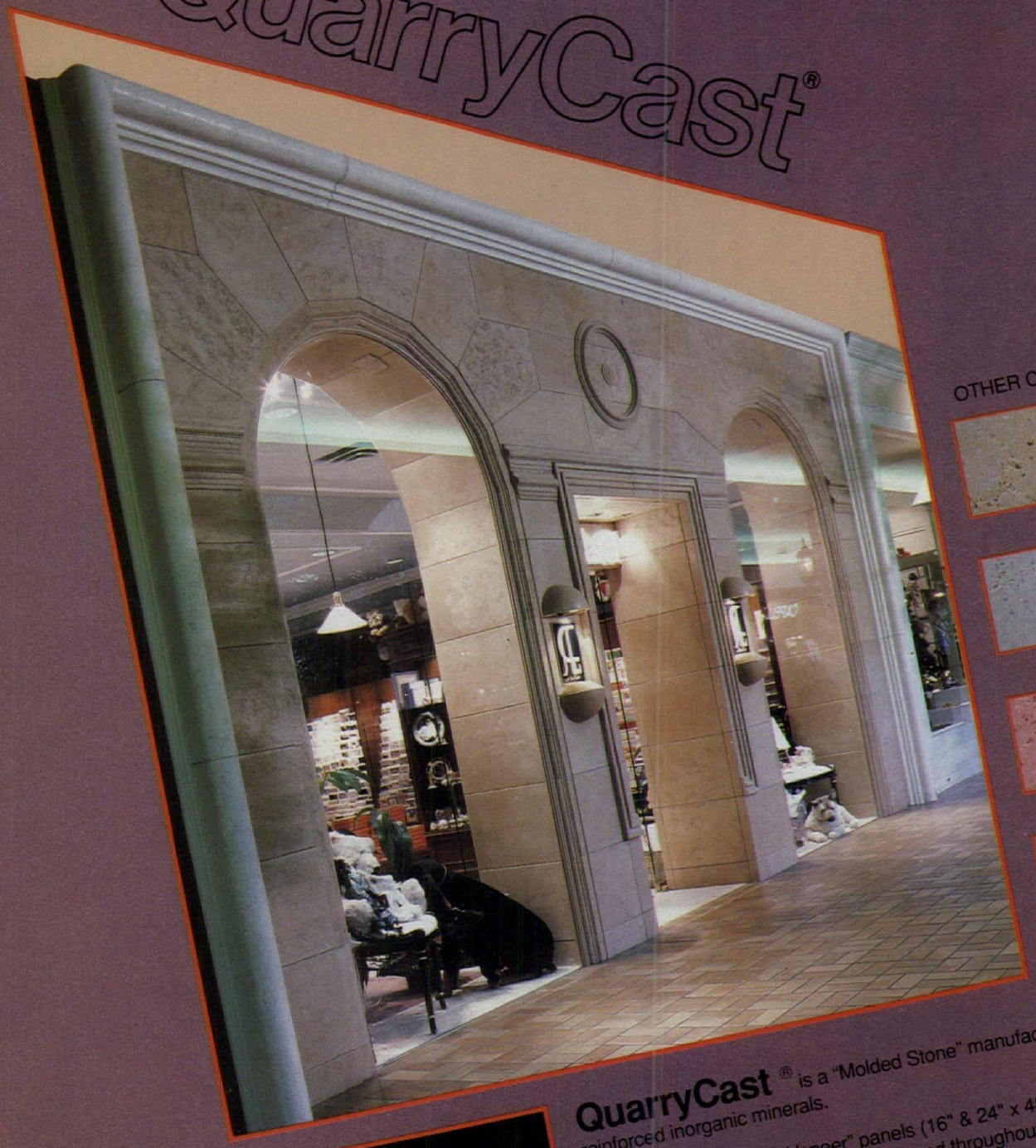

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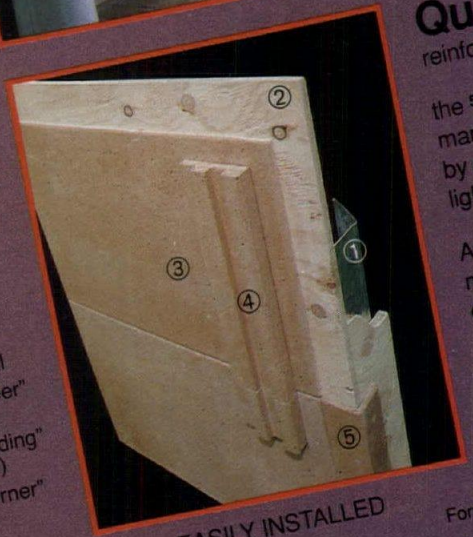

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Wolf D. Prix, Principal, Coop Himmelblau, West Los Angeles and Vienna, Adjunct Professor, Southern California Institute of Architecture, Santa Monica, and Professor, Hochschüler für Angewandte Kunst, Vienna;
Stanley Saitowitz, Principal, Stanley Saitowitz Office, San Francisco, and Professor, University of California, Berkeley.

Urban Design
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Jorge Silvetti, Principal, Machado-Silvetti Associates, Inc., Boston, and Nelson Robinson, Jr., Professor Of Architecture, Harvard Graduate School of Design, Cambridge, Massachusetts.

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Turn page for rules and entry forms.

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3 Prior publication does not affect eligibility.

4 Architectural design entries may include only buildings and complexes, new or remodeled, that are scheduled to be completed after January 1, 1992. Indicate *schedule* on synopsis page (Item 12).

5 Urban design entries must have been accepted by a client who intends to base actions on them. Explain *implementation plans* on synopsis page (Item 12).

6 Research entries may include only reports accepted by the client for implementation or research studies undertaken by entrant with intention to publish or market results. Explain basis of eligibility on synopsis page (Item 12).

7 The jury's decision to premiate any submission will be contingent on verification by P/A that it meets all eligibility requirements. For this purpose, clients of all entries selected for recognition will be contacted by P/A. P/A reserves final decision on eligibility and accepts no liability in that regard. Please be certain entry meets above rules before submitting.

Publication agreement

8 If the submission should win, the entrant agrees to make available further graphic material as needed by P/A.

9 In the case of architectural design entries, P/A must be granted the first opportunity among architectural magazines for feature publication of any winning project upon completion.

Submission requirements

10 Entries must consist of legibly reproduced graphic material and text adequate to explain the proposal, *firmly bound* in binders no larger than than 17" in either dimension (9" x 11" preferred). No fold-out sheets; avoid fragile spiral or ring bindings. Unbound material in boxes, sleeves, etc., will *not be considered.*

11 No models, slides, films, or videotapes will be accepted. Original drawings are not required, and P/A will accept no liability for them.

12 Each submission *must include* a one-page synopsis, in English, on the first page inside the binder, identifying the project and location, clarifying eligibility (see Item 4, 5 or 6), and summarizing principal features that merit recognition in this program.

13 To maintain anonymity, no names of entrants or collaborating parties may appear on any part of submission, except on entry forms. Credits may be concealed by any simple means. Do *not* conceal identity and location of projects.

14 Each submission must be accompanied by a signed entry form, to be found on this page. Reproductions of this form are acceptable. All four sections of the form must be filled out, *legibly*. Insert entire form, intact, into unsealed envelope attached inside back cover of submission.

15 For purposes of jury procedure only, please identify each entry as one of the following: *Education, Houses (Single-family), Housing (Multiple), Commercial, Industrial, Governmental, Cultural, Recreational, Religious, Health, Urban Design, Applied Research*. Mixed-use entries should be classified by the larger function. If unable to classify, enter *Miscellaneous.*

16 Entry fee of $90 must accompany each submission. An early submission fee of $75 per entry will be accepted for entries dispatched (with postmark or other evidence) by August 19. (Canadian office please send drafts in U.S. dollars.) Fee must be inserted in *unsealed* envelope containing entry form (Item 14, above). Make check or money order (no cash, please) payable to *Progressive Architecture.*

17 P/A intends to return all entries intact, but can assume no liability for loss or damage.

18 Deadlines for sending entries is September 6, 1991. Deadline for early-submission fee is August 19 (Item 16). Entries must show postmark or other evidence of being en route by midnight, September 6. *Entries must be received* at P/A on or before September 27 to be eligible. P/A accepts no liability for the failure of any carrier to deliver entry to this address by that date. Hand-delivered entries must be received at street address shown here, 6th floor reception desk, by 5 p.m. on September 6 (August 19 for early submissions).

Pointers for submission

based on recent jurors' observations.

- *Document site and surroundings with photos and drawings.*
- *For additions and remodelings, clearly indicate old and new.*
- *If design projects involved substantial research, explain it concisely.*
- *For research entries, indicate applicability to design.*
- *For buildings and urban design, give basics of funding, rental of space, etc., as applicable.*

Deadline summary

August 19: Early entry deadline (Item 16) – out of entrant's hands before midnight, as shown by postmark or other evidence on entry.

September 6: Regular entry deadline – same conditions as above; hand-delivered entries must be at P/A (Item 18) by 5 p.m.

September 27: Must be in P/A's hands, regardless of method of delivery.

Deadlines are strictly enforced.

Address entries to:

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Progressive Architecture
600 Summer Street
P.O. Box 1361
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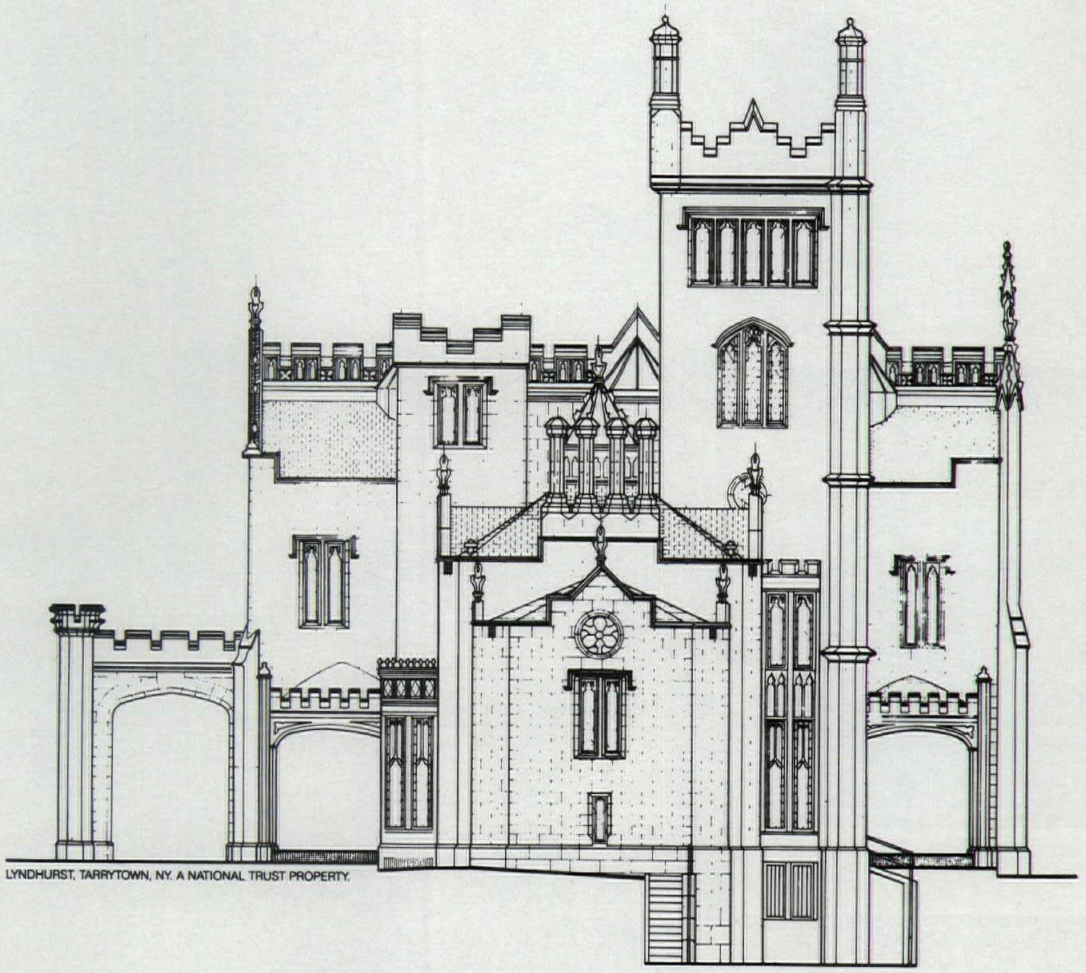

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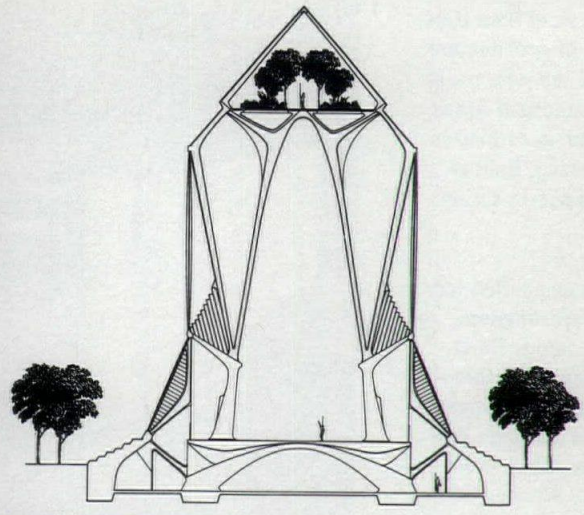
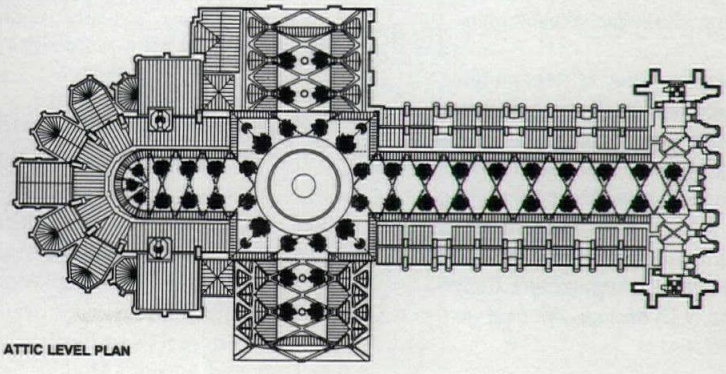
Model of Calatrava's scheme for St. John the Divine transepts.



SECTION THROUGH TRANSEPT



ATTIC LEVEL PLAN

Calatrava to Design Cathedral Biosphere

Out of an initial field of 65 invited entrants, Santiago Calatrava has won the competition to complete the design of the Cathedral of St. John the Divine in New York. The five other semi-finalists included: Tadao Ando; Holt Hinshaw Pfau Jones; Antoine Predock; David Sellers; and Keenen/Riley. The program called for the design of the transepts of the cathedral, with 100,000 square feet of space integrating the working laboratories and the ongoing permanent exhibits of the Rene Dubos Biosphere with liturgical space, a sacristy, classrooms, and offices.

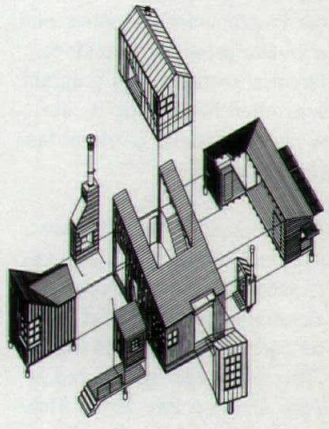
Under Calatrava's design, the proposed transepts as well as the attic of the existing nave will become a Gothic greenhouse of tendril-like structural cast steel and stone. Calatrava has likened his design of the largely glazed enclosure to that of a tree, in which the attic is the leafy canopy above a structure of trunks and branches. By selecting Calatrava's design, the cathedral has recognized the eloquence of his structural engineering (P/A, April 1989, p. 98) as an appropriate expression of the functions of a biosphere. The Very Reverend James Parks Morton of the cathedral has stated that the design "represents the marriage of architecture and natural systems that must become the norm in the 21st Century."

A rain forest of trees, vines, and lichen in the transept and attic of the nave will provide cooling for the interior of the cathedral. To implement this plan, the attic level will be partially open to the space below, allowing for natural convection. Biologists at the two ecological think tanks sponsored by the cathedral, the Gaia Institute and the Institute for Ecological Studies, calculate that this system, which will take advantage of a natural spring flowing through the cathedral grounds, will reduce the building's dependence on fossil fuel by as much as 145,000 gallons per cooling season.

The cathedral has a diverse commitment to social responsibility, ranging from teaching and employing local individuals in stone cutting for the ongoing construction of the cathedral (P/A, June 1983, p. 95), to sponsoring international symposiums on the merging of science and religion in order to address environmental issues. As the cathedral's policy on environmental ethics states: "In the microcosm of the cathedral new ideas are knit into a view of the world in which science is not only inclusive and planetary in scope but also a glimpse into the fullness of sacred creation."

Stuart Brodsky ■

The author, a summer intern at P/A, is a candidate for an M. Arch. at Rice University.



In Projects, current work by the California firm of Fernau & Hartman. Page 98.

Pencil Points

Alan Balfour, dean of Rice University's School of Architecture, has been named the new chairman of the Architectural Association in London, according to an AA spokesperson. Balfour will move to London in spring 1992.

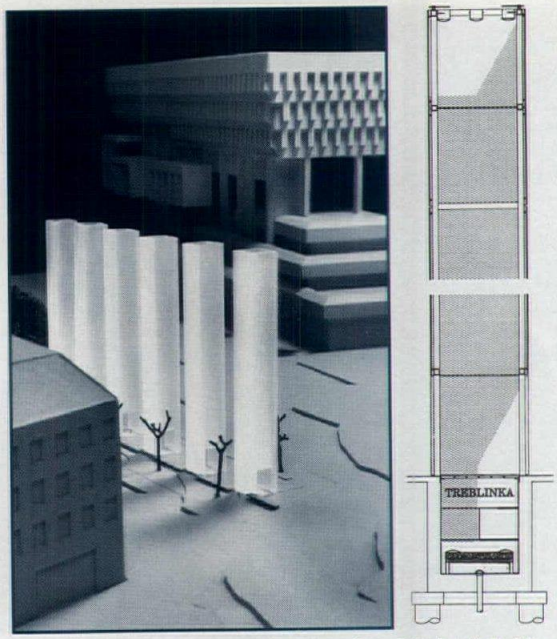
A design/build competition for a new State of Washington Department of Ecology Headquarters in Olympia, Washington, has been won by the team of Keating Mann Jernigan Rottet, Los Angeles; MMA Architecture, Tacoma, Washington; The Berger Partnership, Seattle; and M.A. Mortenson Company, Bellevue, Washington.

Terence Riley of Keenen/Riley Architecture, New York, has been named curator of the department of architecture and design at the Museum of Modern Art in New York. Riley, currently director of the Columbia University Architecture Galleries, will assume the post in October.

The 1991 Rudy Bruner Award for Excellence in the Urban Environment has been given to the New York City Council on the Environment's Greenmarket, a 25-site program of outdoor farmers' markets. The program was cited for helping to "reweave the social fabric of the New York region."

Two Midwestern architecture and design magazines have selected new editors: *Design Quarterly*, the Walker Art Center's journal, has named Martin Filler as its new editor; and *Inland Architect* has named Richard Jay Solomon as its editor.

The Rancho Mirage Civic Center design competition has been won by Arthur Golding & Associates, Los Angeles. Competition finalists included: Coleman/Caskey, Irvine, California; Architects Lorimer-Case, San Diego; Sahakangas + Mathews, Burbank; and Vitols/Rapp, Mill Valley.



Model (left) and tower elevation (right) of Saitowitz's New England Holocaust Memorial design.

Saitowitz Wins New England Holocaust Memorial

With a scheme of considerable power and refinement, Stanley Saitowitz of Stanley Saitowitz Office in San Francisco was selected among a field of 520 competitors from seven countries to build the New England Holocaust Memorial in Boston. The presence of the memorial will be further strengthened by its significant downtown site near City Hall and Faneuil Hall.

Members of the jury included political scientist Marshall Berman, architectural historian Rosemarie Bletter, historian Henry Friedlander, himself a holocaust survivor, architect Frank Gehry, art historian Katy Kline, landscape architect Michael Van Valkenburgh, and Elyn Zimmerman, sculptor and environmental artist.

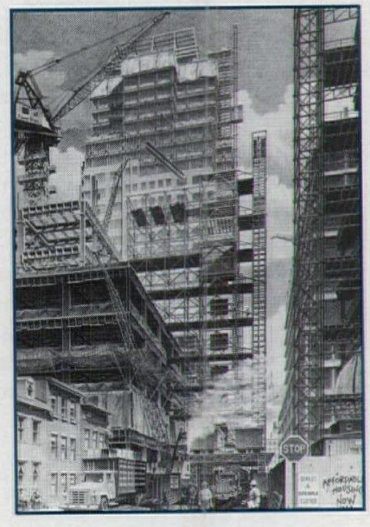
In the winning scheme, six glass towers, arrayed in a slightly curved line, rise 68 feet above six pits, which are lined with black granite incised with the names of six major Nazi death camps. At the bottom of each pit is a layer of heated lava rock; metal grates, measuring eight feet on a side, cover the mouths of the pits. A pedestrian path on ground level threads through the towers, exposing passersby to the warm air wafting up through the grated maws, rising, as Saitowitz puts it, "like human breath as it passes through the glass chimneys to heaven." By night, the crystalline shafts are lit from above and below to glow like a row of votive candles.

In a gesture typical of the overall design for its chilling symbolism and subtle expression, the design team, including Ulysses Lim, Thomas Gardner, and John Bass, proposed that the glass surfaces of the towers be entirely covered with etched numbers, from 0000001 to 6000000. The six million Jews murdered by the Nazi Third Reich are thus accounted for in a ghostly ledger, three entries to the square inch.

The project is expected to cost about $1 million, which the memorial committee plans to raise through private contributions and foundation grants. Groundbreaking for construction is planned for the spring of 1992.

The jury lauded the scheme not only for its dignity and "sense of exaltation," but also for its urbanistic strengths, noting how its scale mediates between the buildings of old Boston to the east and those of new Boston to the west, offering a memorable image from a distance, as well as "immediate and intimate individual experience" on the site.

It is to the great credit of Saitowitz's design that, while rife with meaning drawn from Jewish life – the seven-branch menorah, for instance, with one branch missing – its metaphors of heaven and hell, ephemeral and earthbound, are universal; the abstraction rendered by the architect's formal restraint in itself transcends limited cultural connotations. And so, even though the memorial was specifically commissioned by a committee of prominent members of Boston's Jewish community to commemorate the Jewish victims of the holocaust, it becomes a marker for all the millions who perished then, and for all who have been persecuted by prejudice since. **Ziva Freiman** ■

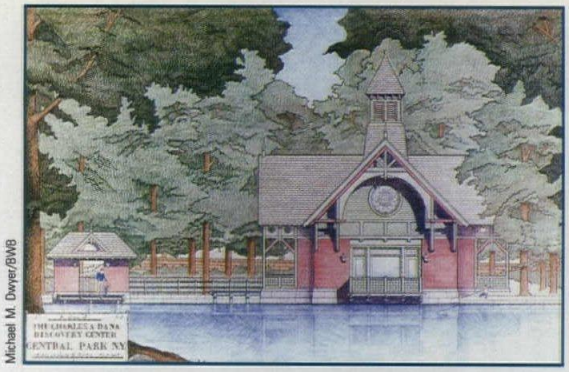


Ferriss Prize rendering by Luis Blanc.

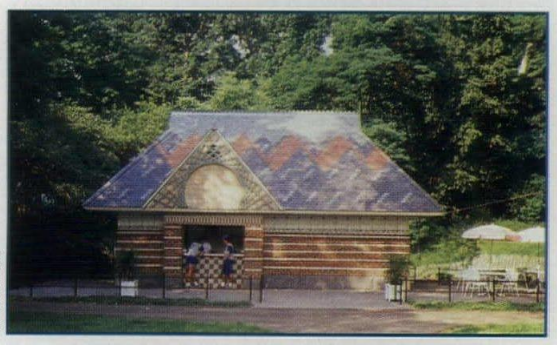
New York Architect Wins Ferriss Prize

This year's Hugh Ferriss Memorial Prize for rendering, sponsored by the American Society of Architectural Perspectivists and Van Nostrand Reinhold, has been awarded to Luis Blanc of Brooklyn, New York. Blanc was premiated for his pencil drawing titled "Affordable Housing, Now," a work depicting large-scale developer projects encroaching on inner-city housing.

Of 399 entries submitted, 60 were chosen for the Architecture in Perspective VI exhibition scheduled to open at the Urban Center Galleries in New York on October 22. Jurors included: Thomas Fisher, P/A Executive Editor; David Childs, Skidmore, Owings & Merrill, New York; and Ralph Johnson, Perkins & Will, Chicago. ■



Michael M. Dwyer/BWB



Walter Dufresne

Buttrick White & Burtis in Central Park: proposed restaurant/discovery center (top) and ballplayers' refreshment stand (above).

Flirting with Folly in Central Park

What is the most appropriate way to design 20th-Century buildings for New York's revered Central Park, a product of the 19th Century? The New York firm of Buttrick White & Burtis, the New York Landmarks Commission, and the Central Park Conservancy come down on the side of tradition: Unlike some somber 1960s additons to the park, three new park buildings by BWB strive to maintain a 19th-Century air and retain the elements of fancy that were part of the original buildings by Frederick Law Olmsted and Calvert Vaux.

BWB's first major commission in the park was the ballplayers' refreshment stand at Heckscher Field, completed in the spring of 1990. With striped brick walls, tile frieze, aluminum cresting, and latticework, it plays on the picturesque nature of existing park buildings and stands as a folly in the Olmstedian tradition. Two other projects, a restaurant/discovery center discovery center at the Harlem Meer and a renovation of the North Meadow Center at 97th Street, will be completed next year. Like the refreshment stand, they lean toward the picturesque without lapsing into parody. **Mark Alden Branch** ■

Montreal Exhibit on the Urbane 1920s

"The 1920s: Age of the Metropolis" at Montreal's Musée des Beaux-Arts is strategically disposed so that its 729 works can be visited at a slow, entranced pace, or as a purposeful, scholarly quest. The show – which closes November 10 and will not travel – should be required viewing, for in it the urbanity of Berlin, Paris, and New York in the 1920s appears not only in the rooms devoted to architecture and city planning (by Jean-Louis Cohen), but everywhere in the exhibition.

This show gives priority to rendering the complex and contradictory modernities of the 1920s accessible. Artists, types of objects, and works from the three cities are joined together by themes, rather than by art-historical categories. Mixed and matched are not only photography and painting, art, high and applied, but canonic masterpieces (a Picasso) and those objects still not really ready for serious consideration, even if collectible (a society portrait by Tamara de Lempicka).

The 1920s emerge here as irreducible to a simple correlation of opposites, of the conservative, nationalistic call to order and the luxurious "Art Deco" vs. the internationalist visionary Bauhaus or the rigorous New Objectivity. The decade's ever-quickening, crisscrossed comings and goings established two cities as way stations to the modern: Berlin, quintessential image of the metropolis, archetype of the *Grossstadt*, and Paris, archaeological ruin turned surrealistic jungle, where the beau-monde invites the avant-garde into its salons and the work of art turns into the multiple. New York is a destination, a Promised Land with canyons for streets, an enlarging lens where syncopated motifs imported from Paris were enlarged on the sky-high commercial ziggurats and *pied-à-terre* for fallen angels. New York is less present than the other cities, although among the to-be-expected Hoppers and Walker Evanses there are surprises, such as working drawings for Ely Jacques Kahn buildings and a magnificent Jules Guérin painting of the New York Regional Plan.

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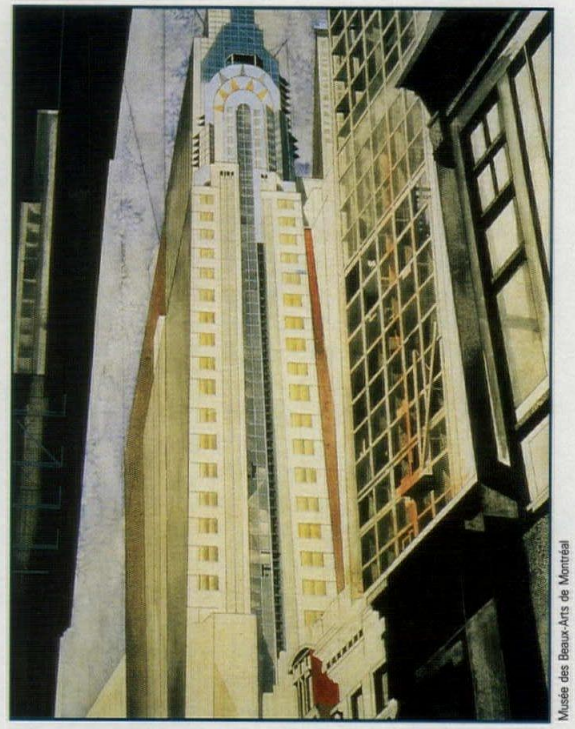


Musée des Beaux-Arts de Montréal

"The Chrysler Building under construction" (1931) by Earle Horter, from Montreal show.

Washington Report

On the eve of rancorous debate in Congress over new employment-related civil rights legislation, the AIA addressed the issue of workplace discrimination against homosexuals (and the related issue of discrimination against HIV-positive persons) during its annual convention here in May. AIA president C. James Lawler announced that the Institute's board of directors had approved a revised civil rights public policy calling for "fair, impartial, unbiased, and nonprejudicial treatment of all persons in every employment, social, and business transaction." Also, the board approved a new position statement opposing "denial or abridgement of equal rights by the United States or by any state on account of race, creed, ethnic origin, age, disability, or sexual orientation."

A final sentence in the position statement, representing what one observer termed a compromise among AIA board members, states that neither the policy or position statement "nor any ethical standard shall be construed as establishing special privileges for any group or member of a group." The phrase may reflect reservations among some board members about "listing" – the naming of specific groups or issues in broad policy statements – which is a controversial practice because some people fear such lists will be interpreted as granting special status.

How prevalent is discrimination against homosexuals within the architectural profession? No formal complaints have been brought before the AIA on these issues, but, as the AIA general counsel notes, AIA's ethical standards make no specific reference to such discrimination. If the AIA's national judicial council decides and the board agrees – possibly later this year – that changes to the Institute's ethical canons are warranted, there could be means for employees to take discrimination charges against member employers to the Institute.

Cases may be waiting. One architect in Texas believes he was dismissed from employment by a large firm because of his homosexuality. Discrimination

(continued on next page)

Washington Report

(continued from previous page)

that he believes to be widespread among principals in many firms caused him to replace a "gay" résumé with a "non-gay" version while searching for a new job. The latter résumé omits mention of his activism in gay rights groups, work that he regards as evidence of important community service and leadership ability.

But judging from anecdotal evidence (all that seems to be available on the subject), work-related discrimination against homosexuals in architecture is not perceived to be widespread. Several AIA convention participants privately expressed the view that the architectural profession is less discriminatory in this regard than most other professions and fields. And – judging from the new policy statement, Lawler's comments, and statements by several members – the AIA is now at least aware of and responsive to concerns expressed by homosexual and HIV-positive members.

Announcement of the AIA policy revisions came at the outset of an informative convention panel discussion led by Baltimore architect Stephen A. Glassman. Panelists were lawyers Vincent P. McCarthy of Boston and William Rubenstein of New York, civil rights activist Karen Friedman, Congressman Barney Frank (D-Mass.), and Dr. Mary Lou Clements, a principal researcher at Johns Hopkins.

The panel ended with an exchange on the matter of "companion rights." A questioner wondered whether her employer (a large Mid-Atlantic architectural firm that has adopted a broad non-discrimination policy) should grant full health benefits to her female companion, as it does to heterosexual companions. ACLU lawyer Rubenstein replied that few employers (not just in architecture) understand fully the implications of well-intentioned employment policy statements, and may not be prepared to extend equal benefits to unmarried partners of the same gender. "But they should," he said. "You who are in architecture will have to work with them, help them to understand and follow through."

Thomas Vonier ■

Montreal

(continued from previous page)

There can be no complaint, however, about the three sections devoted to architecture and city planning, which are structured as collages of comparisons, reestablishing the multiplicities of modernities. Refusing a dogmatic view, they are open to the bipolarities of traditional and Modern Movement views and reveal their shared qualities. Their careful ordering also invites rich and subtle cross-readings within the exhibition. The expected – Le Corbusier's Plan Voisin – is illustrated by the unexpected – the seminal sketch adaptation of the City for Three Million into the Plan Voisin. Since, regretfully, the very expensive catalog ($95.00 Canadian) records the works, but not the collisions and collages of the rooms, a visit to Montreal is the only way to seize the Metropolis. **Hélène Lipstadt** ■

The author, a frequent contributor to P/A, is a professor of history and theory at the Université de Montréal.

"Geological Architecture" as installed at Riverside.

Stanley Saitowitz's Geological Architecture

From the first moment in the retrospective "Geological Architecture: the Work of Stanley Saitowitz," visitors find themselves entering new terrain. In the show, as installed in the architect's remodeled California Museum of Photography in Riverside (P/A, September 1990, p. 130), the San Francisco-based architect obliges the viewer to clamber up a long ramp, then walk down a narrow bridge made from perforated steel decking. The display consists of wooden models set on a continuous glass shelf – the metaphorical horizon of this dream landscape – which accompanies the viewer throughout the exhibit. Along the steel gangplank, finely detailed wooden models of projects, as well as the elegant wooden balusters supporting the glass shelf, present themselves as a sequence of events in a single, abstract landscape.

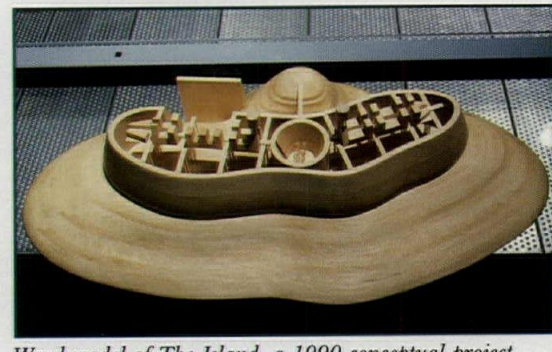
The bridge terminates in a set of stairs, which doubles as a miniature theater for viewing Kamal Kozah's reverie-like video of Saitowitz projects in their real-life settings, interspersed with inspirational shots of Stonehenge, Macchu Picchu, and the Pantheon. "I was trying to construct a common ground for all my work," Saitowitz said of the exhibit structure in a recent interview. His objective in so doing is to create an architecture of museum-going, appropriate for viewing a procession of objects in a ritual way.

Unlike other shows that originated as part of the Walker Art Center's "Architecture Tomorrow" series, which tended toward abstraction and could be bewildering, Saitowitz's stresses intelligibility and focuses on actual projects. The effect is poetic, ethereal, and, in some ways, dissatisfying.

The dissatisfaction comes from a realization that Saitowitz's work is very much about particular terrains and contexts. His buildings respond ingeniously to topography, views, and sunlight. His fine Halfway House in South Africa, with its barrel-shaped roofs, seems a direct response to the wind, the light, and the barrenness of the Transvaal. In this show, however, Saitowitz's buildings are presented as abstract creations floating above the earth in Platonic clarity. The notion that all these buildings can be combined into a single landscape robs them of the site-specificity that is arguably their strongest virtue.

Some of that abstractness, however, may have been remedied in the current installation at the Museum of Modern Art in San Francisco (through August 25) for which Saitowitz provided a long photo wall, four feet in height, paralleling the models on the exhibit-bridge, "so you can look up and see the real buildings."

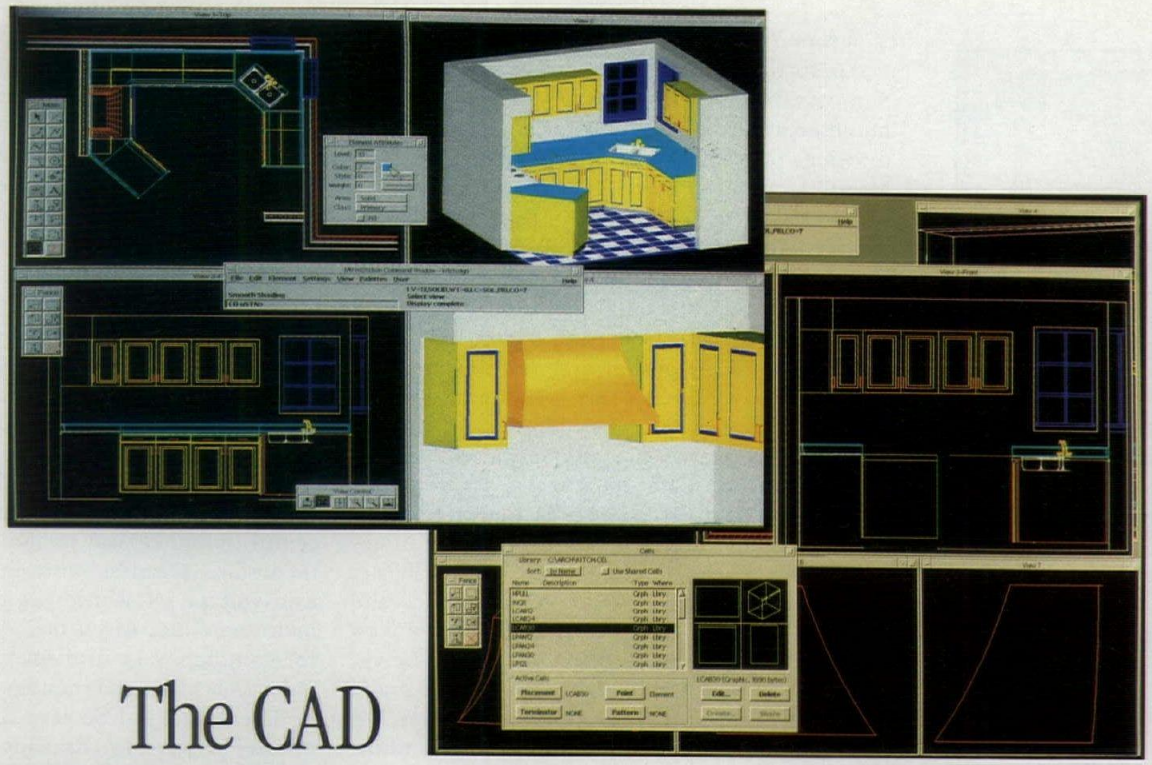
Notwithstanding the missing sense of context, the Saitowitz exhibit provides something unusual for an architectural show in a museum: an installation that is a fine piece of construction in itself, and equal in strength to the works it displays. Saitowitz has found a way to make viewers conscious of the ground beneath their feet. As milestones on a journey, the projects grow in strength, culminating in a recent series of California houses, which seem to spring up from their rolling sites like rocky outcroppings. They live up to Saitowitz's notion of geological architecture as "the remaking of the crust of the earth to capture space on the horizon." **Morris Newman** ■



Photos: Richard Barnes

Wood model of The Island, a 1990 conceptual project.

(News Report continued on page 28)



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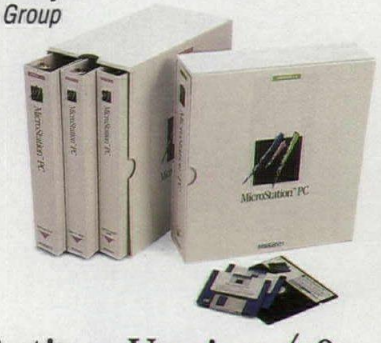

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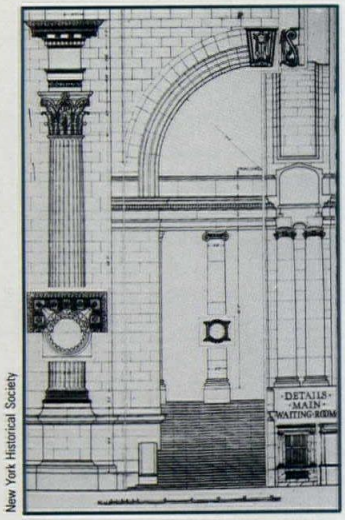

New York Historical Society

Details of Penn Station's main waiting room from McKim, Mead & White exhibition.

A New York Legacy

For its first exhibition, the Architectural Collection of the New-York Historical Society has mounted a show of 60 of the original ink-on-linen drawings of 30 New York projects from McKim, Mead & White's monograph. The exhibition, which runs through August 17, displays this series for the first time since it was donated to the Society in 1950. The Society has been collecting drawings since 1897, but has only begun to make them accessible in the last two years. It now has one of the top six collections of architectural archives, rivaling that of the Library of Congress or of Columbia University's Avery Library. The collection contains over half a million pieces, most of which belonged to McKim, Mead & White.

McKim, Mead & White was the largest and most prestigious architectural firm in the country at the turn of the century. Founded by Charles Follen McKim, William Rutherford Mead, and Stanford White in 1897, the firm's legacy in New York consisted of more than 300 Classical civic, institutional, and residential buildings and more than 280,000 drawings, photographs, letters, office records, and clippings that are now part of the archives of the New-York Historical Society.

The drawings, which comprise plans, sections, elevations, and details, were executed by four of the firm's draftsmen in the Beaux-Arts "working drawing style" for the Architectural Book Publishing Company. The two-dimensional drawing technique emphasizes variation of line weight and freehand detail to create the illusion of depth. Several views are often combined on one sheet to give a sense of the three-dimensional space. (There are no perspectives or rendered presentation drawings in the monograph.) These drawings are works of art in themselves for the precision and skill of their execution and intricate detail.

The *Monograph of the Work of McKim, Mead, and White* was the first visual documentation of architects' work to be published in the United States. Although it is now common for a firm to publish a collection of of its own work, most turn-of-the-century architectural publications were primarily theoretical treatises with few illustrations. The four-volume set, which was sold by traveling salesmen to architecture firms, served both as a guide for contemporary draftsmen and as a model for today's architectural monograph.

The Historical Society show makes the connection between the drawings and the firm's built work by including buildings familiar to the New York audience. A map of New York City, with McKim Mead & White's projects marked in red

ink, shows how the firm's influence was spread throughout the city. As the first American firm to capitalize on the use of historic eclecticism in America (much to the chagrin of the Modernists), they won many of the City's most important commissions. These included the Pennsylvania Railroad Station (demolished 1963–1964), the Pierpont Morgan Library, the Columbia University Campus, the Brooklyn Museum, the Washington Square Arch, and additions to the Metropolitan Museum of Art. Influenced by the École des Beaux-Arts in Paris (of which McKim was a graduate), the firm promoted the City Beautiful Movement, using Renaissance architectural forms and planning to create the image of the orderly city. Their infusion of white granite, pink marble, and copper roofing dramatically altered the brownstone fabric of the city's neighborhoods. Photographs, a lecture series, and walking tours that accompany the show further explore the work in its urban context.

Julie Meidinger Trelstad ■

Gae Aulenti Wins Praemium Imperiale

After two years of playing catch-up – honoring only past winners of the Pritzker Prize – the Japan Art Association has awarded its third Praemium Imperiale in architecture to Gae Aulenti of Milan. The Praemium Imperiale, a $100,000 prize established in 1989 to "demonstrate Japan's growing commitment to support of the arts," is awarded annually in five categories not addressed by the Nobel Prize: painting, sculpture, film, music, and architecture.

The previous architecture winners, Pritzker laureates I.M. Pei (P/A, Nov. 1989, p. 25) and James Stirling, were difficult to dispute on the basis of the prize's criteria for "lifetime achievement." But the 64-year-old Aulenti, whose architectural *oeuvre* is comparatively obscure (the biography accompanying the prize announcement concentrates on her furniture, exhibitions, and stage designs) is a more curious choice. Best known among architects for her controversial interior rehabilitation of the Gare d'Orsay in Paris as the Musée d'Orsay (P/A, Feb. 1987, p. 35), Aulenti has more recently restored the Grassi Palace in Venice and, currently, is converting the Palau Nacional in Barcelona into a museum.

In the other categories, the 1991 winners are: Ingmar Bergman, Sweden, film; Klossowski de la Balthus, France, painting; Eduardo Chillida, Spain, sculpture; and Gyorgy Ligeti, Austria, music. The prizes will be awarded on October 30 in Tokyo. **Mark Alden Branch** ■

Howard J. Rubenstein & Assoc.

Gae Aulenti.

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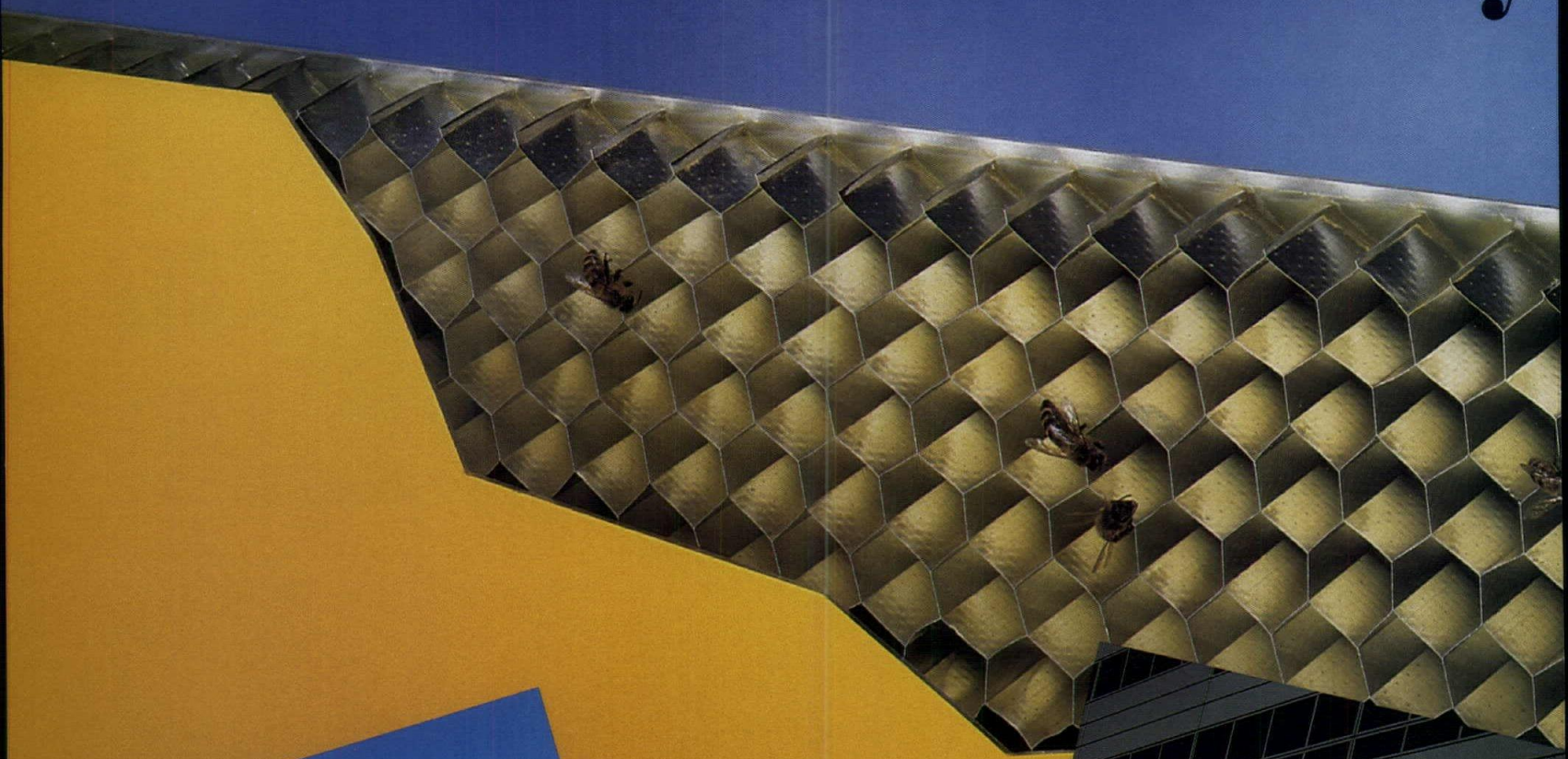

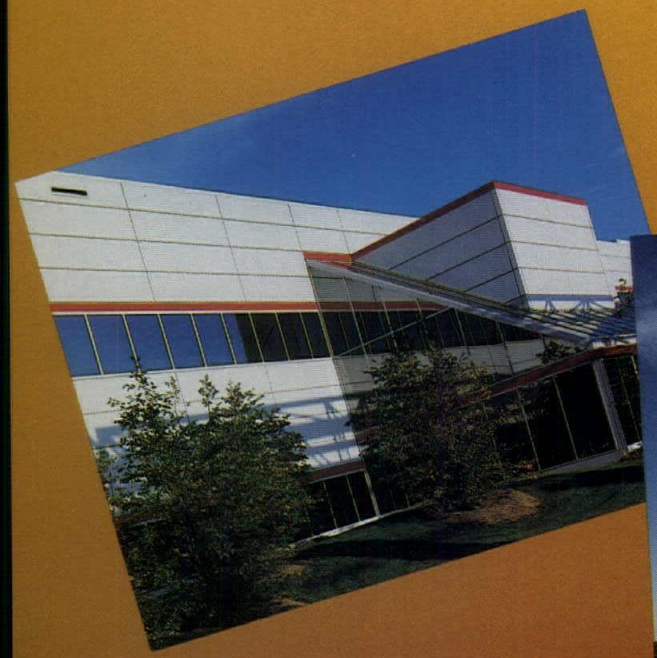

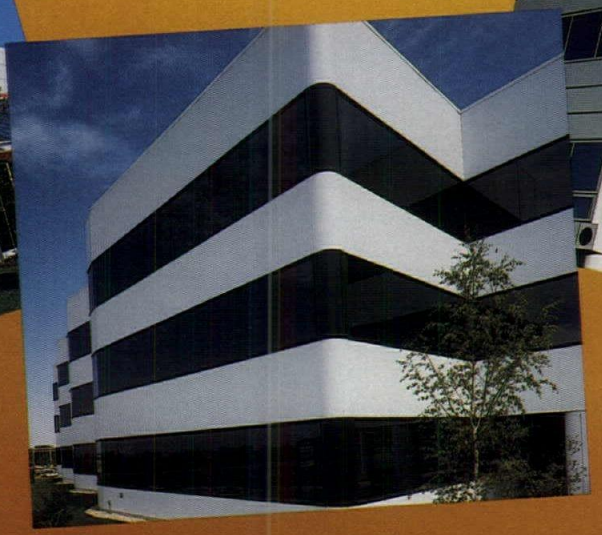

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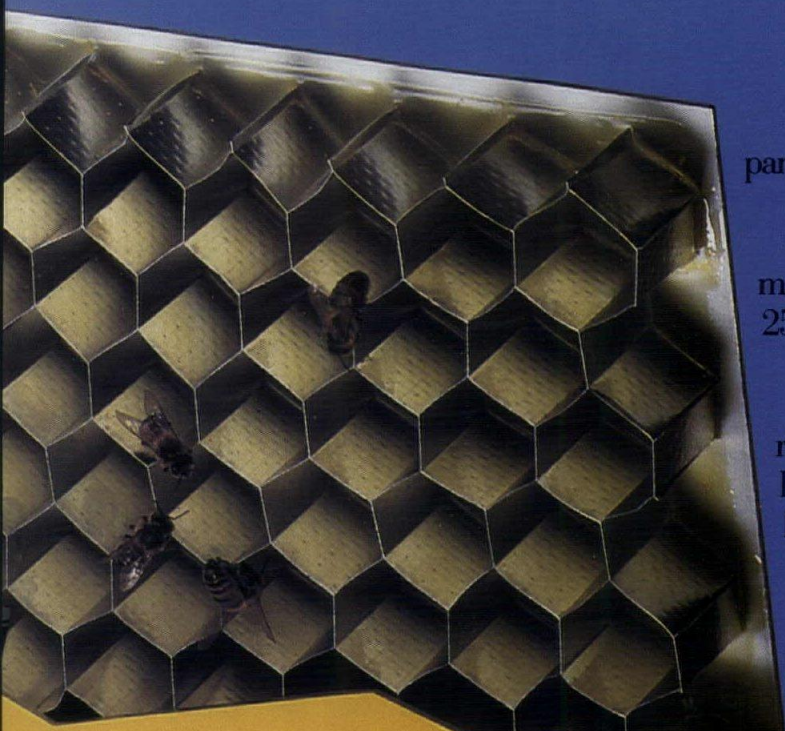

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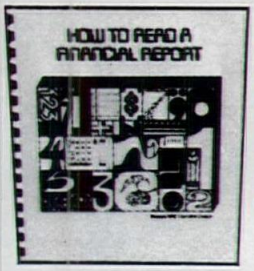

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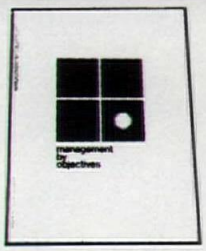

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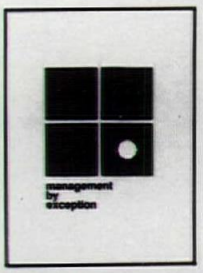

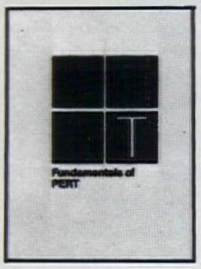

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Calendar

Exhibitions

New York Art Deco Theaters
Through September 13

New York. "Deco-Deco: New York Theaters of the Thirties," an exhibition of theaters from all five boroughs, "attempts to place theater architecture in the mainstream of architectural history and...accentuate its diversity and uniqueness as a building style." City Gallery, New York City Department of Cultural Affairs.

Austrian Architecture and Design
Through January 1, 1992

Chicago. Work by five architects and eight designers is included in "Austrian Architecture and Design: Beyond Tradition in the 1990s." Projects by Hans Hollein, Gustav Peichl, and Coop Himmelblau are among the works on view. Art Institute.

Domino's Wright: Part Two
August 11–October 20

Birmingham, Alabama. Hot on the heels of Domino Pizza's touring Wright decorative arts show (see below) comes "Frank Lloyd Wright: Facets of Design." In this go-round, guest curator David Hanks has selected pieces from Thomas Monaghan's collection to explore four themes: Influences and Early Designs, the Prairie Years, Expanding Horizons, and Usonian and Beyond. Museum of Art.

Domino's Wright: Part One
August 15–October 27

New York. "Frank Lloyd Wright: Preserving an Architectural Heritage" travels to the Big Apple. American Craft Museum.

Design Biennial: Weathervanes
August 18–September 15

Southampton, New York. Weathervanes designed by an invited group of architects, artists, designers, and craftspeople will be on view. New York architects Jaquelin Robertson, Margaret Helfand, Frederic Schwartz, and Malcolm Holzman are among the participants. Weathervanes will be auctioned on September 7 to benefit the museum. Parrish Art Museum.

Competitions

Monsanto Ultron 3D Challenge
Entry deadline August 31

Atlanta. Monsanto Contract Fibers has announced a call for entries in its annual interior design competition recognizing design excellence in contract projects using carpet made with Ultron 3D fiber. Projects completed after January 1987 are eligible. Contact Monsanto Contract Fibers, 320 Interstate North Parkway, Atlanta, GA 30339 (800) 543-5377.

Metropolitan Home Awards
Submission deadline September 3

New York. *Metropolitan Home* magazine has announced a call for entries in its annual residential design awards program. Design excellence is sought and entries need not conform to household "norms," that is, designs that are for nontraditional family types. Contact The Awards Committtee, Met Home, 750 Third Avenue, New York, NY 10017.

P/A Awards
Entry deadline September 6

Stamford, Connecticut. The 39th annual P/A Awards (see page 15) recognize unbuilt projects in the categories of architectural design, urban design, and architectural research. Projects must be scheduled for completion after January 1, 1992. Winning entries will be featured in the January P/A. Contact Awards Editor, Progressive Architecture, 600 Summer St., P.O. Box 1361, Stamford, CT 06904.

Urban Follies
Registration deadline September 16, submission deadline October 25

Denver. The Urban Follies Design Competition, sponsored by the Urban Design Forum and The Denver Partnership, has been organized to raise public awareness of urban art and architecture. The competition challenges entrants "to give form to emotion and whimsy." Denver's 16th Street Mall is

(continued on page 34)

Calendar *(continued from page 33)*

the site; one of the submitted follies will be built, though entries need not be buildable to win. Contact Urban Design Forum, 938 Bannock St., Suite 239, Denver, CO 80204.

APA Current Topic Awards
Entry deadline September 25

Washington, D.C. "Addressing Community Needs Through Effective Planning" is the title of the American Planning Association's 1992 Current Topic Award honoring a project or program that "demonstrates how planning effectively addresses specific community needs." The APA sponsors 15 other award categories recognizing a variety of planning issues. Contact Karen Finucan, or Dan Boston, APA's 1992 Awards Program, 1776 Massachusetts Ave., N.W., Washington, D.C. 20036 (202) 872-0611.

SARA Student Competition
Entry deadline September 26

Niagara Falls. The Society of American Registered Architects has announced a call for submissions in its 1991 Student Design Awards program. Entrants are asked to design a visitor's center/museum in a Minneapolis park. Contact Wallace V. Moll, SARA Student Design Program Chairman, 120 84th St., Niagara Falls, NY 14304 (716) 773-1733.

Conferences

SEGD National Conference
August 22–24

Pasadena, California. "Form, Function, Fantasy: Learning From Los Angeles" is the theme of this year's Society of Environmental Graphic Designers' national conference. Jon Jerde, Deborah Sussman and Paul Prejza, and John and Marilyn Neuhart are among the scheduled speakers. Contact SEGD/Pasadena, SEGD, 47 Third St., Cambridge, MA 02141 (617) 577-8225 or FAX (617) 577-1769.

Museums in Historic Buildings
September 22–25

New Orleans. This symposium, sponsored by the Association for Preservation Technology and the American Institute for Conservation of Historic and Artistic Works, will attempt to "develop a Philosophy of Intervention...to provide a practical decision-making tool in balancing the preservation needs of both [historic museum] structures and collections." Contact Dr. Thomas H. Taylor, Jr., Colonial Williamsburg Foundation, Box 148, Williamsburg, VA 23187 (804) 220-7432.

Capital Design Week
September 25–26

Washington, D.C. The eighth annual architecture and residential interior design symposium will be held at The Washington Design Center. Contact The Washington Design Center (202) 554-5053.

International Architecture Market
September 28–October 6

Milan. The fourth Salon International de l'Architecture (P/A, Feb. 1991, p. 21) will be held in Milan at the Palazzo dell'Arte. Appproximately 120 exhibitors from 15 countries are expected to participate. Contact Michael Rohleder, Salon International de l'Architecture, 77, rue du Cardinal-Lemoine 75005 Paris 1 46 33 05 62.

IFHP International Congress
October 14–18

Berlin. "Urban Regions in a New Social, Economic, and Political Context" is the theme of the International Federation for Housing and Planning's 1991 international congress. This gathering of architects and allied professionals will discuss the changing context of Berlin, new housing and planning solutions in Central and Eastern Europe, and other topics. Contact IFHP Congress Department, Wassenaarseweg 43, 2596 CG The Hague, The Netherlands 31.70.328 1504/324 4557 or FAX 31.70.328 2085. ■

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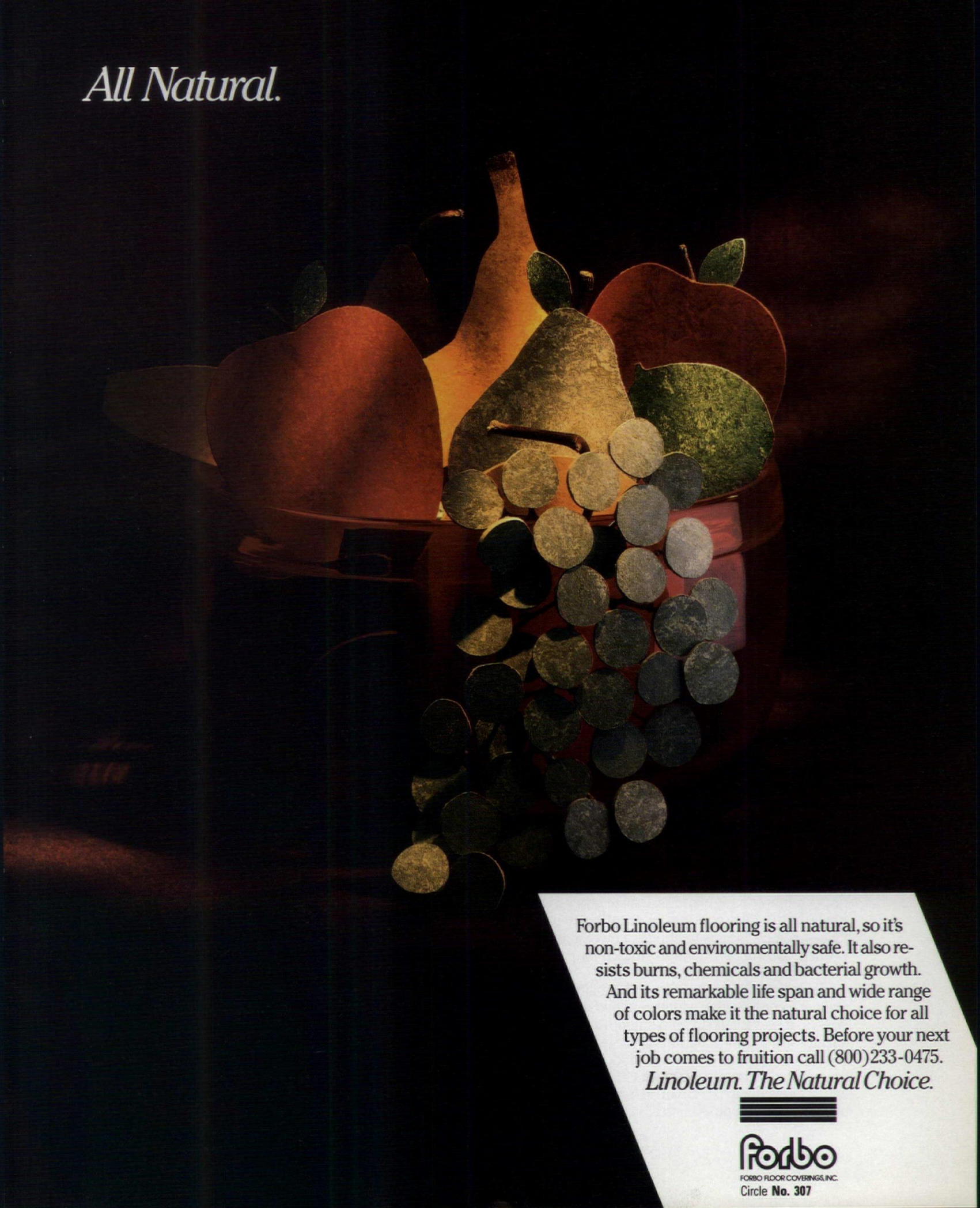

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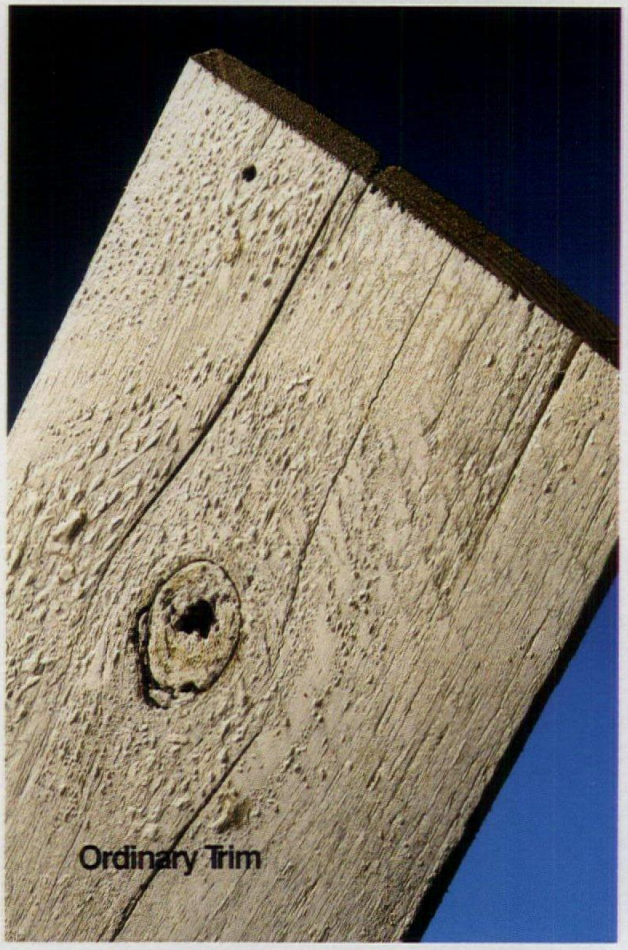

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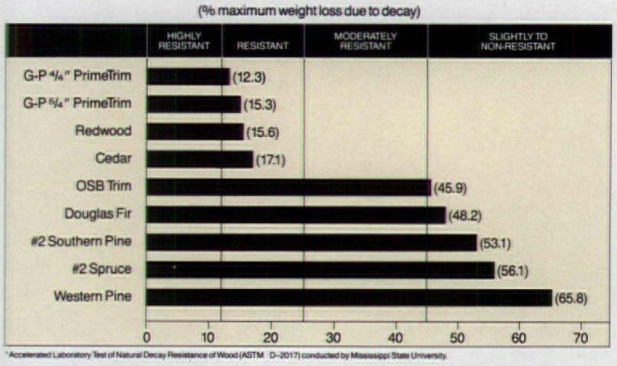

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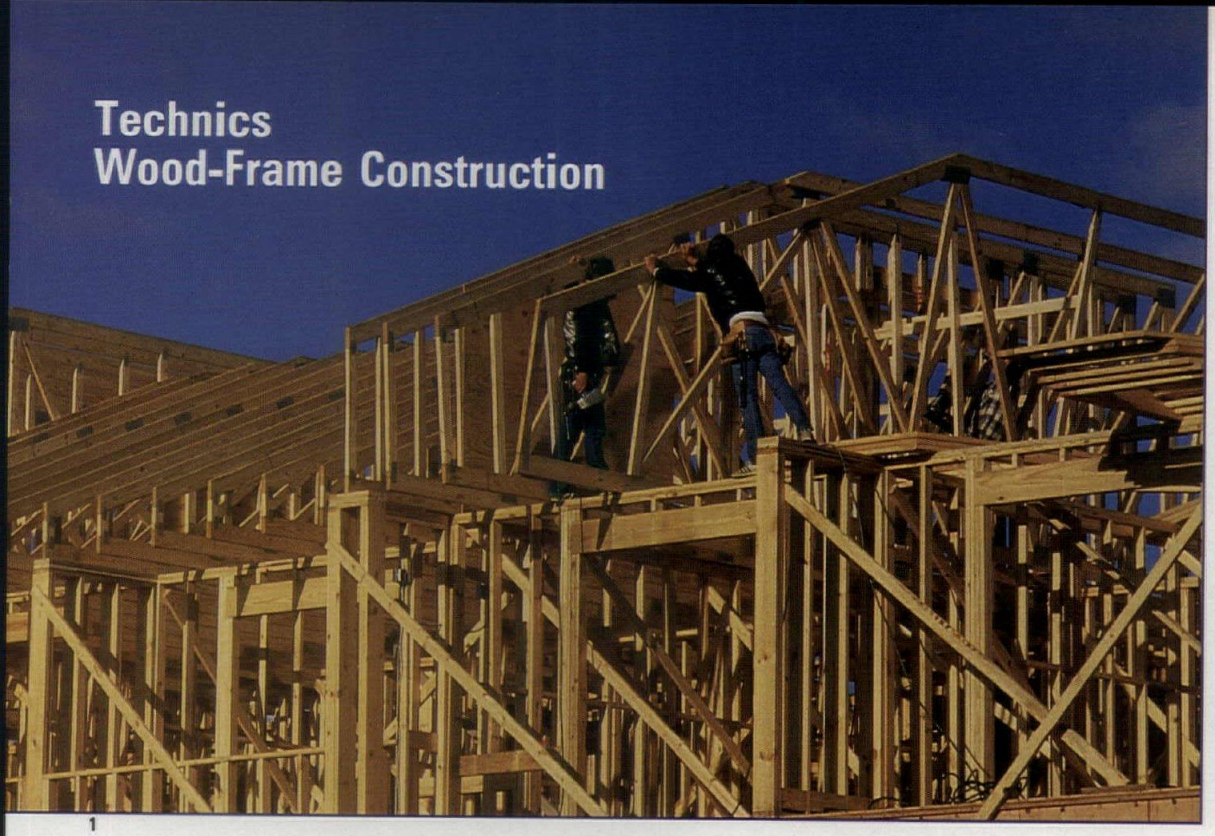
Technics
Wood-Frame Construction



1

Gunnar Brinck discusses various issues related to the design and construction of mid-rise wood-frame buildings.

Wood-framed buildings of four, five, and in some cases even six stories are pushing the height limit of wood-frame construction to enhance project feasibility. Developers are requiring a greater project density to offset rising land costs, and architects are turning to multistory wood-frame construction as a cost-effective solution. Driven by tight budgets and construction schedules, more and more architects are also facing the technical and structural challenges of designing wood-frame buildings that push the limits of the code and the material's strength in an effort to provide more affordable housing and profitable developments in urban areas around the country.

Building Code Provisions

Each of the model building codes – Uniform, Basic, and Standard – provides for multistory wood-frame construction of commercial and multifamily residential buildings. Many major urban areas also have their own versions of the regulations, some more conservative and strict in their interpretation than others. In most cases the basic allowable heights and areas of wood-frame structures can easily be increased by manipulating elements within the building system or by adding more layers of fire protection. The Uniform Building Code is generally the least restrictive, and its jurisdiction includes cities like Seattle that lead the way with innovative code variances and interpretations. Under all model codes, an unprotected wood-frame structure is permitted up to two stories. Then, by introducing a layer of gypsum to create a one-hour protected wood frame, a third story is allowed. Introduce a sprinkler system and four stories are permitted. In the Uniform Building Code region (primarily the western half of the U.S.), fire-retardant treated wood is permitted in lieu of required non-combustible materials for the framing of the exterior walls. This can result in a Type III building, permitting a fifth story of wood frame, if sprinklered. Fire-retardant treated wood must be pressure treated and dried after treatment in accordance with AWPA Standard C2O, and tested in accordance with ASTM Standard E-84. Where a load-bearing, fire-rated wood stud wall is specifically designed for structural capacity, the design values should be reduced in accordance with the recommendations of the company doing the treating.

Area separation walls are another design tool. These are permitted by all three model building codes, and are used to segment a structure into two or more separate buildings for determining allowable heights and areas. For example, a common solution to the problem of on-site parking is to incorporate a concrete garage into the base of the building so that it doubles as a foundation for the wood frame, while also serving as a parking garage. Because the concrete platform also serves as a horizontal four-hour separation, the two parts are considered separate buildings for maximum

1 *The limits on building wood-framed structures up to five stories in height have less to do with the strength of the material than with fire safety codes. The Uniform Building Code, for example, requires one-hour rated walls, sprinklers, and fire-retardant treated wood if a frame structure is to reach five stories.*

2

3 Average Shrinkage Values, Green to Oven Dry Moisture Content

Species	Width		Thickness	
	Percent*	Constant	Percent*	Constant
Douglas Fir-Larch	7.6	.00281	4.1	.00152
Hem-Fir	7.9	.00293	4.3	.00159
Western Cedars	5.0	.00185	2.4	.00089
Pine:				
Idaho White	7.3	.00299	5.0	.00205
Lodgepole	6.7	.00248	4.5	.00167
Ponderosa	6.2	.00231	4.8	.00180
Sugar	5.2	.00213	3.1	.00127
Spruce:				
Engelmann	6.6	.00244	3.4	.00126

*Percent values are for shrinkage from green to oven dry.

Typical Shrinkage Calculation (S = D x M x C)

S = Shrinkage in inches
D = Actual dressed dimension in inches
M = Percent of moisture change
C = Constant for species (from table)

Example

Floor joist, 2 x 10, Douglas Fir-Larch, Dry. Dressed width is 9¼ inches at time of manufacture (maximum 19 percent moisture content). EMC to be 8 percent in use.
D = 9.25 inches
M = 11(19%–8%)
C = .00281 (width)
S = 9.25 x 11 x .00281 = .2859 inches or 9/32 of an inch shrinkage per joist. Next compute wall plate shrinkages, adding to floor joist shrinkage, times the number of floors for the total building shrinkage factor.

2 *Another way of achieving greater height in wood-framed buildings is to set the framed section on a concrete podium whose deck provides a four-hour horizontal fire separation, or to change the grade so that some part of the building is a walkout basement.*

3 *The shrinkage of wood becomes a critical factor in the design of mid-rise wood-frame buildings. The formula for calculating shrinkage is straightforward. As the above example indicates, shrinkage equals the dressed dimension of the wood times the percent of moisture change times the average shrinkage values for various types of wood.*

4 *Details have been developed to minimize the effect of shrinkage. One such detail reduces the impact of the cross-grain shrinkage of joists by not setting the wall frame on top of the joists below, as is common in platform framing. Instead, the walls are framed up to the level of the floor above and the floor joists are hung from that framing with steel hangers.*

5, 6 *Taken from actual midrise, wood-framed buildings, these details show two ways in which the effect of joist shrinkage can been minimized. In the top detail, the top chord of the wood floor trusses are hung from the steel beam, while the framing of the walls above rests directly on the steel member. In the bottom detail, the wall framing rests on parallel 2x4s at the end of the floor trusses.*

height and area restrictions. The same strategy can be applied to mixed-use developments where retail space below is separated by a four-hour horizontal separation from the residential occupancy above, thus allowing an additional story.

Creative manipulation of the site around the building to establish a more favorable "grade" for the purpose of defining its height is another technique used to add a story or a walkout basement.

Shrinkage

When a wood-frame structure is pushed to four and five stories, a designer must understand wood's natural characteristics and take shrinkage into consideration.

Most building codes require a shrinkage analysis for any wood-frame building of more than three stories. Shrinkage is a result of wood's natural drying process and is most noticeable in horizontal members such as floor joists and wall plates. If not taken into consideration, shrinkage can affect plumbing, mechanical systems, siding, and interior finishes.

Softwood species used for structural framing have minimal longitudinal shrinkage characteristics, so the need to accommodate movement in that direction can be eliminated. However, design considerations for shrinkage should be applied to the thickness and width of wood structural members used horizontally. Shrinkage is normally uniform in structures using platform frame construction throughout, but special consideration must be given to designs that create differential shrinkage. For example, when a wood-frame structure is combined with a brick veneer, a steel-framed atrium space, a concrete block elevator shaft or stair tower, or even other wood-based systems installed at a different moisture content, the cumulative effects of differential movement in a multistory building must be accounted for in the detailing and specification.

Wood will shrink during the natural seasoning process, from the fiber saturation point (28 to 30 percent) until it reaches "equilibrium moisture content" (EMC) with local atmospheric conditions. Within most structures, EMC is in the 8 to 12 percent range. Factors such as climatic conditions or mechanical heating and air conditioning systems can cause variations in EMC. Consequently, the average EMC should be established for each building site.

Shrinkage occurs in unseasoned lumber when the moisture content falls below the fiber saturation point. The closer the moisture content is to the EMC predicted for the final in-place location, the less effect any shrinkage will have.

In most one- and two-story structures, the cumulative effect of shrinkage can be accommodated readily on the job site as the wood dries in place, even when unseasoned lumber is specified. However, for three-, four-, or five-story buildings, it is advisable to specify the lowest available moisture content for horizontal framing members.

The most readily available, seasoned, two-inch thick structural framing lumber is identified as "S-Dry," indicating it was seasoned to a maximum 19 percent moisture content at the time of surfacing. Actually, surveys reveal that the moisture content of S-Dry lumber at the time of surfacing averages 15 percent or less.

Other wood systems, manufactured to lower moisture content standards, are often used to reduce the possibility of differential shrinkage. Parallel chord trusses used for floor joists are usually made of kiln-dried lumber of less than 19 percent moisture content, but when hung from a

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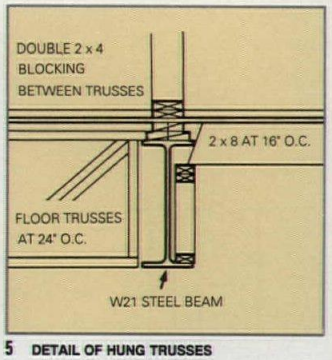
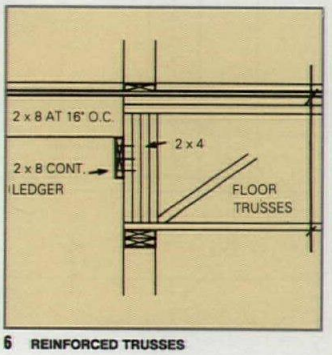


5 DETAIL OF HUNG TRUSSES



6 REINFORCED TRUSSES

top chord the relative shrinkage is greatly reduced. Glulam beams are manufactured to a 16 percent maximum standard and proprietary finger-jointed joists dried below 15 percent further reduce the likelihood of shrinkage when used for horizontal framing members.

Wood I-joists and laminated veneer lumber also are often used for the horizontal members of four- and five-story buildings to minimize shrinkage. These products are made of wood veneer dried down to a 3 to 6 percent moisture content, and are installed at moisture contents between 6 and 9 percent. They can be expected to swell somewhat rather than shrink as they reach equilibrium in a building with an 8 to 12 percent EMC.

As multistory wood-frame technology continues to evolve, details are being developed to minimize the effects of shrinkage and offer options to designers. Framing walls up to floor-level height and supporting the joists with steel hangers is a technique that can eliminate cross-grain joist shrinkage at the wall plane. To avoid any potential shrinkage-related plumbing problems, contractors should add flexible connectors and extra elbows for flexibility, and where possible maintain good clearance between pipes and framing. Differential shrinkage between wood floor trusses and steel beams can be eliminated by hanging the trusses by a doubled top chord and keeping the steel beam concealed within the depth of the wood truss.

Detailing of the exterior finish must also take into account differential movement. Finishes such as wood siding and stucco are commonly detailed to allow movement at each floor level. Band boards, slip joint flashing details, or stucco expansion joints are usually adequate so long as the finish material is not continuous across horizontal framing elements. The calculated differential movement of wood framing with brick veneer is more significant because brick will expand as the wood frame shrinks. Windows are usually isolated from the brick veneer or detailed to allow for up to one-half inch movement per floor. Flexible, stainless steel brick anchors should tie the veneer to the frame and allow for movement.

Post-occupancy evaluations of multistory wood-frame buildings with brick veneer show that the actual differential movement is usually considerably less than the calculated difference because the wood framing is left exposed during construction, allowing it to dry before and during the application of the brick exterior.

Wind and Seismic Loads

The taller a building becomes, the more vulnerable it is to the forces of wind and seismic activity. When a wood-frame design goes up to five stories, the structure may begin to influence the building footprint. Shear walls, for example, must be cleverly located at party walls, around stairwells and along corridors to provide structural integrity without obstructing openings or sacrificing light and views. Wood-frame construction generally, and plywood shear and diaphragm construction in particular, have long been recognized as providing efficient and inherent resistance to wind and seismic loads.

Wood can carry short-term stresses for above-normal working stress, giving it a high margin of reserve strength. Structural wood panel diaphragms maintain high stiffness and strength in the design range, and if pushed to their ultimate capacity, tend to yield only gradually while continuing to carry high loads. In terms of engineering dynamics, wood panel shear walls and diaphragms will absorb a lot of energy before failure.

Recommended Reading

Code Conforming Wood Design (loose-leaf binder), National Forest Products Assn., Washington, D.C. (202) 463-2700.

Wood Handbook: Wood as an Engineering Material, Agricultural Handbook 72, Government Printing Office, Washington, D.C. (202), 783-3238, 1987, 466 pp.

Simplified Building Design for Wood and Earthquakes, J. Ambrose and D. Vergun, Second Edition, John Wiley & Sons, Somerset, New Jersey (201) 469-4400, 1990.

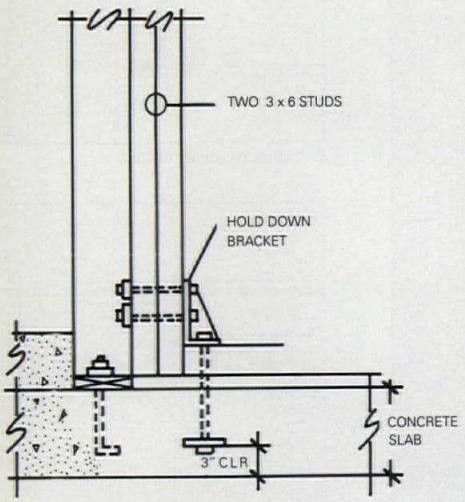
Fire Resistance Design Manual, Gypsum Association, Washington, D.C. (202) 289-5440, 1988, 76 pp.

Guide to the Characteristics, Use and Specification of Pressure-Treated Wood, Western Wood Preservers Institute, Vancouver, Washington (206) 696-4007.

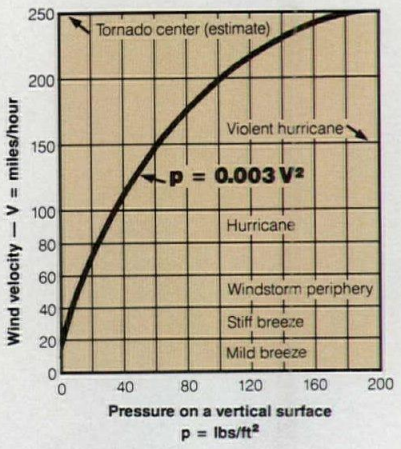
Multi-Story Woodframe Case Studies 1–3, Western Wood Products Association, Portland, Oregon (503) 224-3930.

Wood Frame Design for Commercial/Multifamily Construction, Western Wood Products Association, Portland, Oregon (503) 224-3930, 1985, 31 pp.

American Plywood Association, Tacoma, Washington (206) 565-6600. (Several publications describing fire, acoustical, and structural design of wood buildings.)



7 SHEAR WALL TIE-DOWN DETAIL



8 GRAPH OF WIND PRESSURES

9 Compressive Strength of Various Woods

Species	Compression Perpendicular to Grain (Fc.⊥)
Douglas Fir-Larch	625
Dense Douglas Fir-Larch	730
Douglas Fir South	520
Hem-Fir	405
Engelmann Spruce-Alpine Fir (Englemann Spruce-Lodgepole Pine)	320
Lodgepole Pine	400
Ponderosa Pine-Sugar Pine (Ponderosa Pine-Lodgepole Pine)	375
Idaho White Pine	315
Western Cedars	425
White Woods (Western Woods)	315

Design values for Fc.⊥ are not to be increased for duration of load adjustments.

7 The taller a wood-framed building, the more wind and seismic loads must be taken into account. The overturning moments of shear walls in such buildings, for example, may require the use of steel brackets bolted to the shear wall and to the concrete foundation. Such hold-down brackets also can be used to bolt together the wall framing on different floors.

8 Horizontal wind force on the vertical surface of a building can be calculated using the above chart. The pressure in pounds per square foot equals the square of the wind velocity in miles per hour times a factor of .003.

9 This table lists the compressive strength, perpendicular to the grain, of various woods. These numbers are based on a deformation factor of .04 inches. In mid-rise, wood-framed buildings, compression perpendicular to the grain may control the size of studs. To prevent excessive side grain crushing of a stud, either a higher compressive strength wood can be used or the bearing area of the stud can be increased.

Because of the relative light weight of wood-frame structures, design for wind loads will usually govern over seismic loads, except on the West Coast. In these higher seismic zones, high loads usually require additional blocking, closer nail spacing, and heavier hold-downs to transfer the forces acting on a building.

The shear walls in the lower stories of multistory buildings will commonly contain 3x4, 4x4, or doubled 2x6 framing to accommodate closer nailing without splitting the wood.

Compression perpendicular to the grain of the wood may also control stud sizes in multistory buildings because of the end-bearing requirements of studs on wall plates. Where joists, beams or studs bear on supports, some fiber deformation develops, requiring the bearing area to be of sufficient size to prevent side grain crushing. Increasing the stud size or number of studs is sometimes necessary if a higher design value species is not available.

The higher wind and seismic loads necessitated by multistory construction call for metal strap tie-downs, hold-down brackets bolted to studs at floor levels, or continuous multistory threaded rod systems to achieve load transfer from the roof to the foundation. The bolted hold-down brackets and continuous rod systems have the advantage of being able to be tightened down after the shrinkage has occurred and the wood frame has reached equilibrium. Proprietary self-tightening systems have also been developed.

Sound Transmission

As wood-frame buildings become higher and project densities increase, the importance of acoustical privacy also rises. Interior walls and floors of wood-frame buildings are designed to a sound transmission class rating of 55–60. Typical wall construction is either staggered stud or double stud wall construction with insulation, sound board, and Type-X gypsum. Floor and ceiling separations typically include insulation, resilient channels, and Type-X gypsum on the ceiling, with 1" to 1 ½" of lightweight concrete on the floor covered by carpet. Plumbing chases and mechanical systems should be lined with acoustic insulation, and all wall penetrations must be thoroughly caulked to ensure acoustical privacy.

Construction

The speed of construction and wide availability of skilled labor are recognized advantages of wood-frame construction. However, when the framing pushes to four or five stories, specialized equipment is usually required. Conventional lift trucks are unable to reach the fourth and fifth floors, and a crane is usually needed to move materials. The availability of a crane makes panelized walls and trusses an option worth considering, but the cost of increased crane time required to set heavy wall panels may outweigh the economies of a panelized system. Labor costs also are sometimes higher for buildings higher than three stories.

One thing is certain, however. As long as land costs continue to rise, wood-framed building will continue to push the limit. **Gunnar Brinck** ■

The author is the Assistant Director of Field Services with the Western Wood Products Association in Portland, Oregon.

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No electric door strike provides real security, no matter how good the intentions or how well it's designed. Even the best strike is only a traffic control device — because it mates with a short–throw latch bolt that any experienced intruder can jimmy in seconds. For *real* security, you want a deadlock. Check the ones the State Department installed to protect U.S. embassies around the world.

Misconception #3:

Electric strikes are just another kind of hardware.

They're a hybrid, actually — half hardware and half electrical appliance. As a result, it's important to work with an electrician whenever possible to ensure that the electric circuit is designed to meet the power needs of the strike.

Misconception #4:

One size fits all.

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Misconception # 5:

Fail safe means security.

"Fail safe" is often misunderstood. Most people think it means that a door with a fail safe device will remain locked when the power is off. Just the opposite is true. A fail safe electric strike will remain *unlocked* when the power is off. A fail *secure* electric strike, however, will keep the door locked during a power failure, or any other time there is a break in power.

Misconception #6:

The buzzing sound means you're safe.

The buzzing noise is simply the sound the AC current makes when the strike is actuated. As a happy coincidence, it also signals the person who wants in that the button is pushed. With DC current, there's no buzzing noise. (Another happy coincidence for continuous duty strikes that are "on" for 8 or 10 hours a day.)

Misconception #7:

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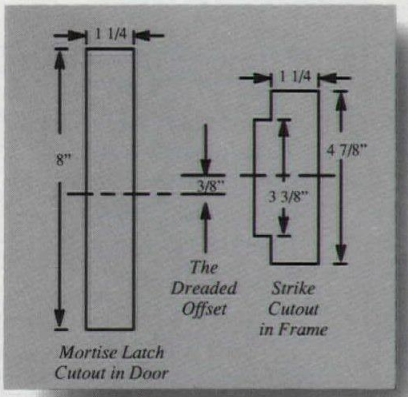

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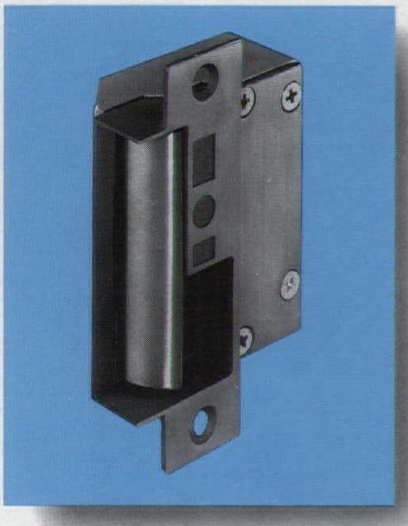

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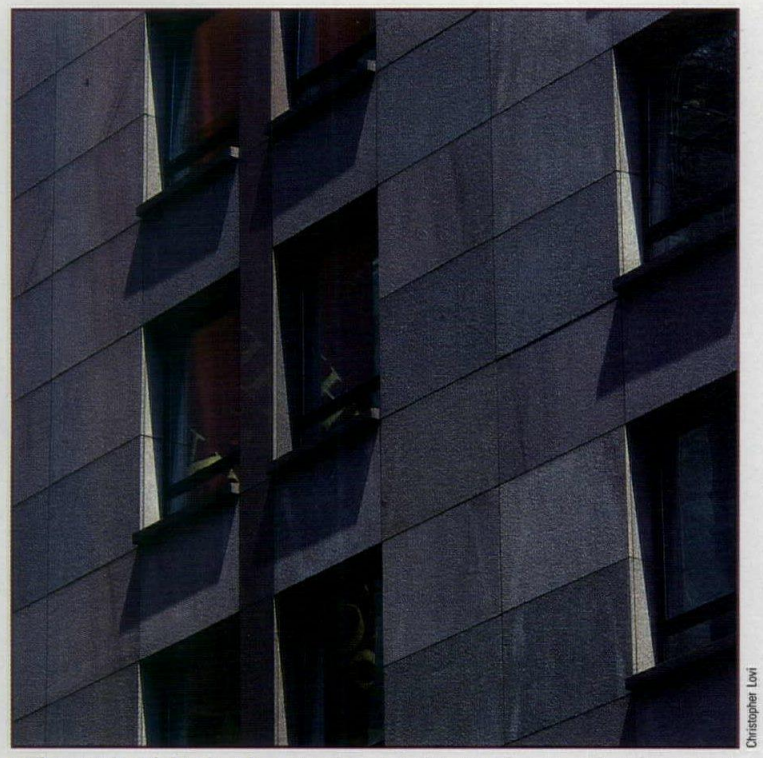
Technics Topics
Quality from the Quarry

Stone consultant **J. Malcolm Swenson** describes how successes and failures with natural stone finishes depend on the quarry.

All too often, we are disappointed with the natural stone finishes in buildings, inside and out – problems that our practices in architecture and construction and our contractual responsibilities have not prevented. The stone often does not appear as was intended in the design, and corrective measures can cause delays and cost overruns during construction. Examples of these design, delay, and cost problems abound: One need not look far to find buildings faced with a mixture of several granites where only one was intended.

One well-known building with slab-faced walls that cry out for uniformity contains at least three different Brazilian granites. There are even buildings faced in material very different from that selected and specified. For example, one major project was specified to have, and was contracted for, a limestone that later proved unavailable; it was faced in granite. These failures have occurred despite the involvement and efforts of some of the most respected architectural firms and large, highly experienced construction companies.



Christopher Lovi

1 *The granite of this façade varies from panel to panel, a sign that the quarry's yield was not as the architect anticipated.*

Problems at the Source

Why do problems with stone occur? There are, of course, many reasons – from the machinery employed in finishing to the drafting capability of the stone supplier. The many variables that exist with stone, as a natural material, allow for a comparable number of potential shortcomings. The greatest single cause of stone appearance problems and failures, however, is the lack of attention paid to the quarry and its contents during the design process.

Material selection is commonly made through a sampling and mock-up process that is the contractual responsibility of a setting or curtain wall company. This selection process has not escaped problems for several reasons, the first of which is the representation of the material. Samples and mock-ups do not tell much about a quarry's capability. They do indicate a stone salesperson's or fabricator's idea of what is available. In many cases, they may indicate what samples a sales office happened to have on hand, or what slabs a fabricator might have in his or her yard.

The color and texture of stone continually changes during the life of a quarry – particularly for strongly colored materials. This is normal and understandable, given the nature of the resource. In addition, quarry problems that affect availability may appear and disappear with time. We routinely experience such problems and their effect on material selection. For example, in 1987 we recommended a uniform red granite for a highly successful project of more than 300,000 square feet; today, stone from the same quarry is beset with silver veins. Another granite, not available in sufficient quantity for the same project in 1987, became available a year later for another large project after the quarry was developed further.

Tech Notes

The Lighting Research Institute will hold an *International Symposium on Glare* in Orlando, October 24–25. In a meeting aimed at practititoners and researchers, a panel of experts will review past and present knowledge, glare prediction, and its prevalence under different lighting systems. Preprints will be provided. LRI, New York (212) 705-7511.

ASTM Subcommittee E06.22 on Durability and Performance of Building Constructions invites participation in developing a performance standard on the durability of vapor and air barriers. The subcommittee will meet this October in San Diego. Contact William Brown, National Research Council Canada, Ottawa (613) 993-9673 or John Vowell, ASTM, Philadelphia (215) 299-5496

The *Low-E Glazing Design Guide* by T.E. Johnson describes advances in glass thermal and optical technologies, and provides data and guidelines for selecting U-values and shading coefficients for energy efficiency in a variety of climates. Butterworth Publishers, Stoneham, Massachusetts (800) 366-2665, 200 pp., $34.95.

The 5th Edition of the Portland Cement Association's *Concrete Masonry Handbook* by W.C. Panarese, S.H. Kosmatka, and F.A. Randal, Jr. now includes discussions of cleaning, maintenance, masonry veneers, and CMU pavers, among other new topics. PCA, Skokie, Illinois (708) 966-9559, 264 pp., $31.50.

"It's not what's out of a quarry, but what's left in a quarry, that counts."

Marbles are even more problematic than granites because of their geologic formation. Many marbles we used in the past are no longer available because their source has been exhausted. Even within operating quarries, it is common to have a number of distinct varieties in color and texture. When those different varieties are marketed under the same trade name – as is often the case – there is a real opportunity for confusion and disappointment.

Given the variables that exist in quarries, samples and mockups should be regarded as only vague indications of what might eventually be received at the job site. Thinking otherwise has, and will, contribute to appearance problems.

Contracting Complications

The contracting system itself not only contributes to problems, it may also give the architect a false sense of security through the stated contractual responsibilities. The construction manager and the stone subcontractor are legally bound to meet the specification under the supervision of the architect. This does not always work in practice, however.

Although it is easy to think of examples of stone appearance "failures," it is difficult to identify cases where those legally responsible for providing uniformly colored material were successfully pursued in court. Limited legal recourse is most notable in cases where imported stone has been unacceptable. Even if legal action is taken, buildings are not built in courtrooms: A constructed building that is the wrong color is likely to stay that way.

Architects often lose control over the quality of stone when contractors lack the skills and experience necessary to meet the design requirements. During their careers, even the most able construction managers may deal with only a few quarries and production situations.

Architects rely on, and hold responsible, the stone or curtain wall contractor. They trust that the contractor knows a great deal about stone site logistics, installation, and stones in general. However, contractors rarely have any quarry experience or the knowledge of particular quarries that allows them to identify quantity, color, texture, and related availability problems in advance. For that, they normally rely on their stone supplier, who may be either a broker or a fabricator. If the supplier is a broker, there is one more potentially weak link in the process. Neither the broker nor the fabricator is necessarily informed about the specifics of any given quarry.

The most reliable situation exists when the fabricator owns the quarry, has operated it for a long time, and knows that it contains relatively uniform material. In this case, the fabricator has enough experience with the quarry to determine if it can meet the architect's requirements. This ideal situation rarely occurs.

There are over 300 granites (and even more marbles) commercially available today, and the number is growing as new stone deposits are discovered. Many quarries have been open only a short time and little is known about them. Many fabricators, even some major ones, operate workshops with limited knowledge and experience in quarrying. Yet, the fabricator – not the quarrier – is usually the last link in the chain of information about the stone available to the architect. This means that when normal contracting procedures are followed, no one contractually involved may actually know if the selected quarry contains enough uniform material to meet the project's requirements. Stone problems that occur from this lack of knowledge illustrate weaknesses in the contractual process.

What the Architect Can Do

Some architects of the past and present have learned a great deal about the stones they have used. In such cases, they might understand a particular stone better than many in the industry. It is not realistic, however, to expect an architect to have an understanding of all, or even many, of the great number of quarries and quarry conditions available today.

How can an architect avoid stone problems, ensure that the stone fully carries out its role in the design, and retain as much control as possible over the stonework? The following five steps should be considered:

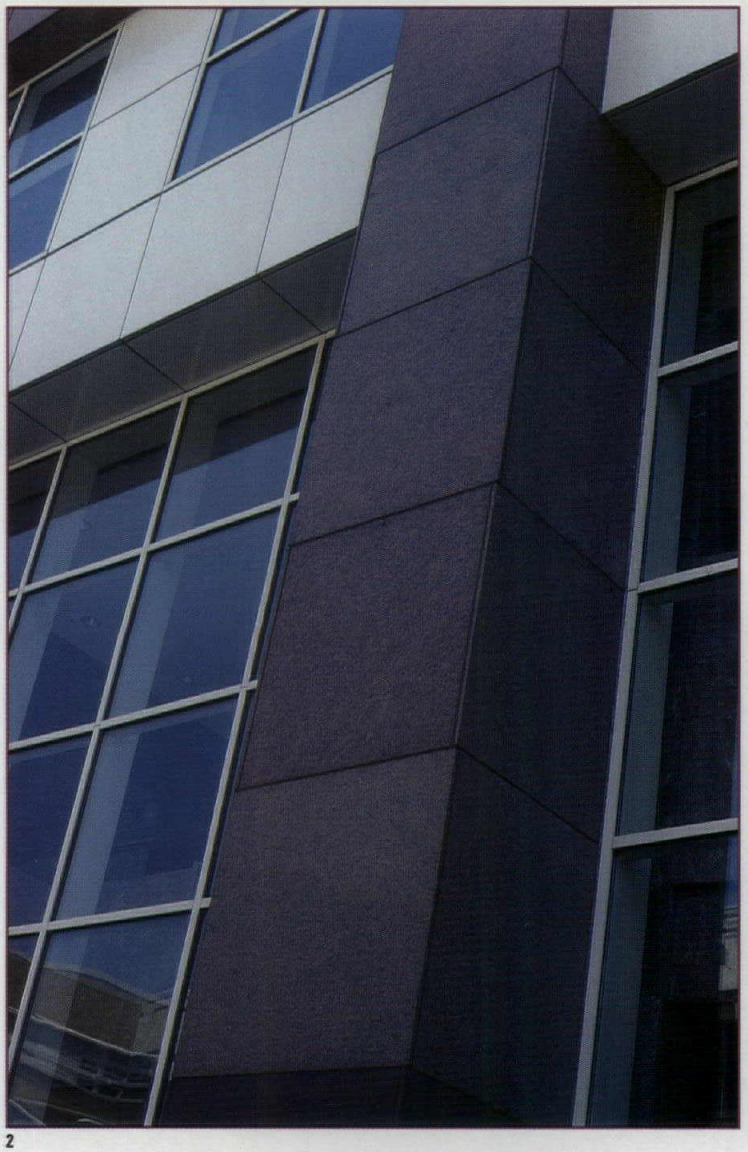
1 Be skeptical of samples, especially marble samples, even if they are one foot square. Samples indicate color, texture, and finish, but can mislead, for they do not show color and texture variations; nor do they show large-scale visual movement, like that found in highly figured granites.

2 Look at buildings – particularly recent ones – surfaced with the materials in question. They are the best samples. But keep in mind the comment of the late Ralph Fletcher, who did much to develop modern quarrying in America: "It's not what's out of a quarry, but what's left in a quarry, that counts."

3 Visit the quarry sites. A stone consultant (who is normally retained by the building owner or developer) can help determine the quarry's condition. Since such a review is made to determine what is available from the quarry in the near term, an experienced expert is more helpful than extensive geologic testing. Geologic studies are effective in determining the long term resource (a 50-year life, for example), but may indicate nothing about the ability to meet the short-term design needs of a project.

4 If a quarry visit is not possible, at least see existing inventories of tiles or slabs.

5 Do not hesitate to break away from standard contractual procedures, if that is necessary, to control and protect your design. As mentioned, existing contractual procedures will not necessarily protect your design anyway. For example, if a stone consultant foresees difficulties in obtaining blocks from a given quarry (the purchase might be delayed until an order is passed to a fabricator) try buying the blocks directly. With knowledgeable advice, this can be done successfully. However, since people make and lose money trading in rough blocks as an occupation, block buying is not for the uninitiated.



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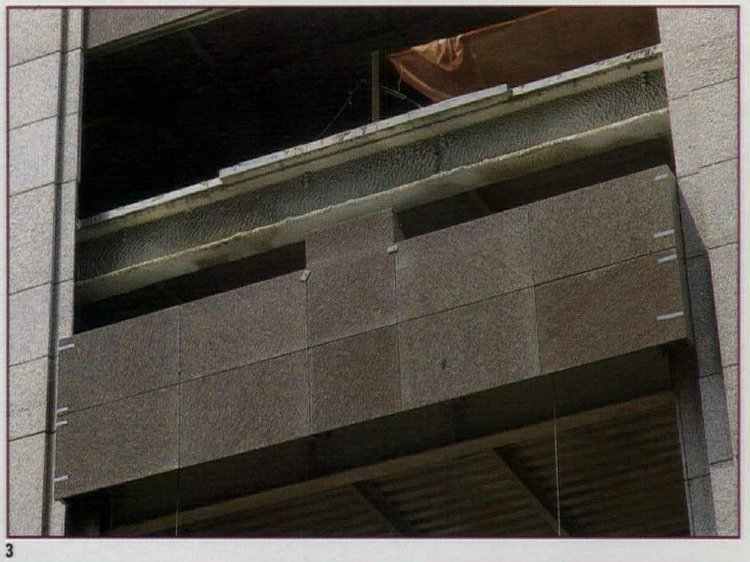

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Photos: Christopher Lovi

The design and the budget may both benefit when the stone is purchased directly from the fabricator. Such an arrangement allows the architect to discuss requirements directly with those fabricating the stone prior to its purchase. This minimizes misunderstandings and helps the architect obtain exactly what the design requires. From a contractual liability standpoint, the supply contract can be assumed by the setting or curtain wall contractor at a later date.

The above steps will help ensure that the completed stonework will look as it should. Because of their implicit controls, these steps will also help schedule performance and minimize costs.

Design problems, delays, and cost overruns have been all too common with stonework. Although such problems derive from the variations and irregularities inherent in stone, they can be avoided by asking the right questions well in advance. Following the above advice is a major step in problem avoidance. **J. Malcolm Swenson** ■

The author is president of Swenson Stone Consultants, Concord, New Hampshire. He was president of the John Swenson Granite Company, which developed flamed and jet-honed finishes for granite, and subsequently managed the Turner Corporation's Ameristone subsidiary, before opening the consultancy he now heads with his brother, David.

Recommended Reading

The Architect's Handbook of Marble, Granite, and Stone, Van Nostrand Reinhold, New York, (800) 926-2665, 1990, 3 vol.

Design Manual #4, Marble Institute of America, Farmington, Michigan, (313) 476-5558, 1991.

Dimension Stones of the World, vol. 1, Marble Institute of America, Farmington, Michigan, (313) 476-5558, 1990.

Marble from Italy, Italian Institute for Foreign Trade, New York, (212) 980-1500, 1990, 62 pp.

2 *The alternating bands of this granite-sheathed pier were not intentional; they suggest an oversight in the quarrying or stone contracting process.*

3 *The entrance to this highrise, now under construction, has a mismatched masonry veneer and a gouged panel – unacceptable irregularities in quarried stone.*

4 *The polished surface of this façade heightens the uneven tonality of the granite veneer.*

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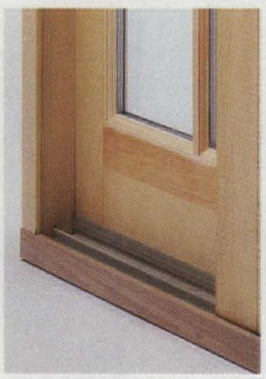

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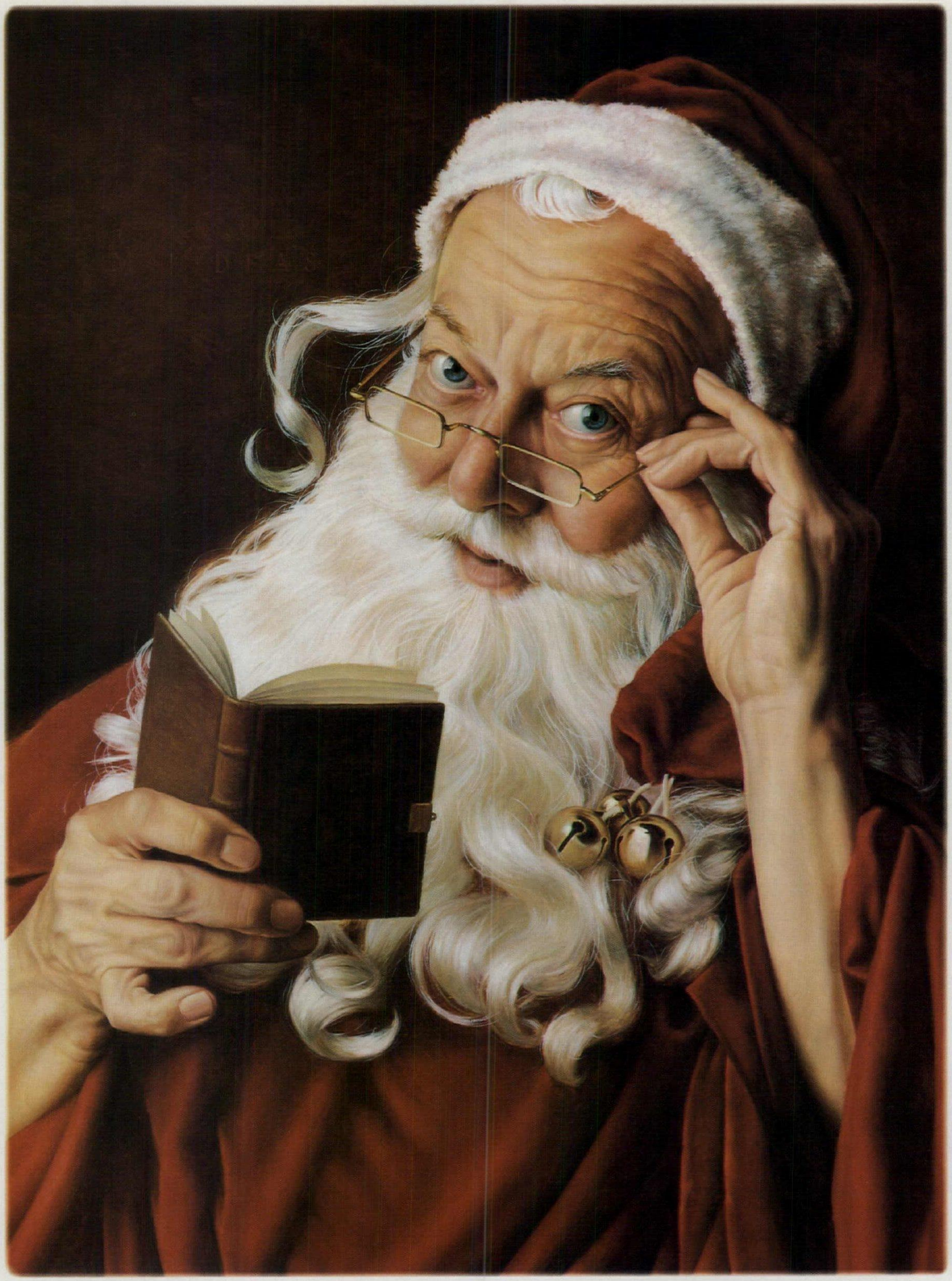

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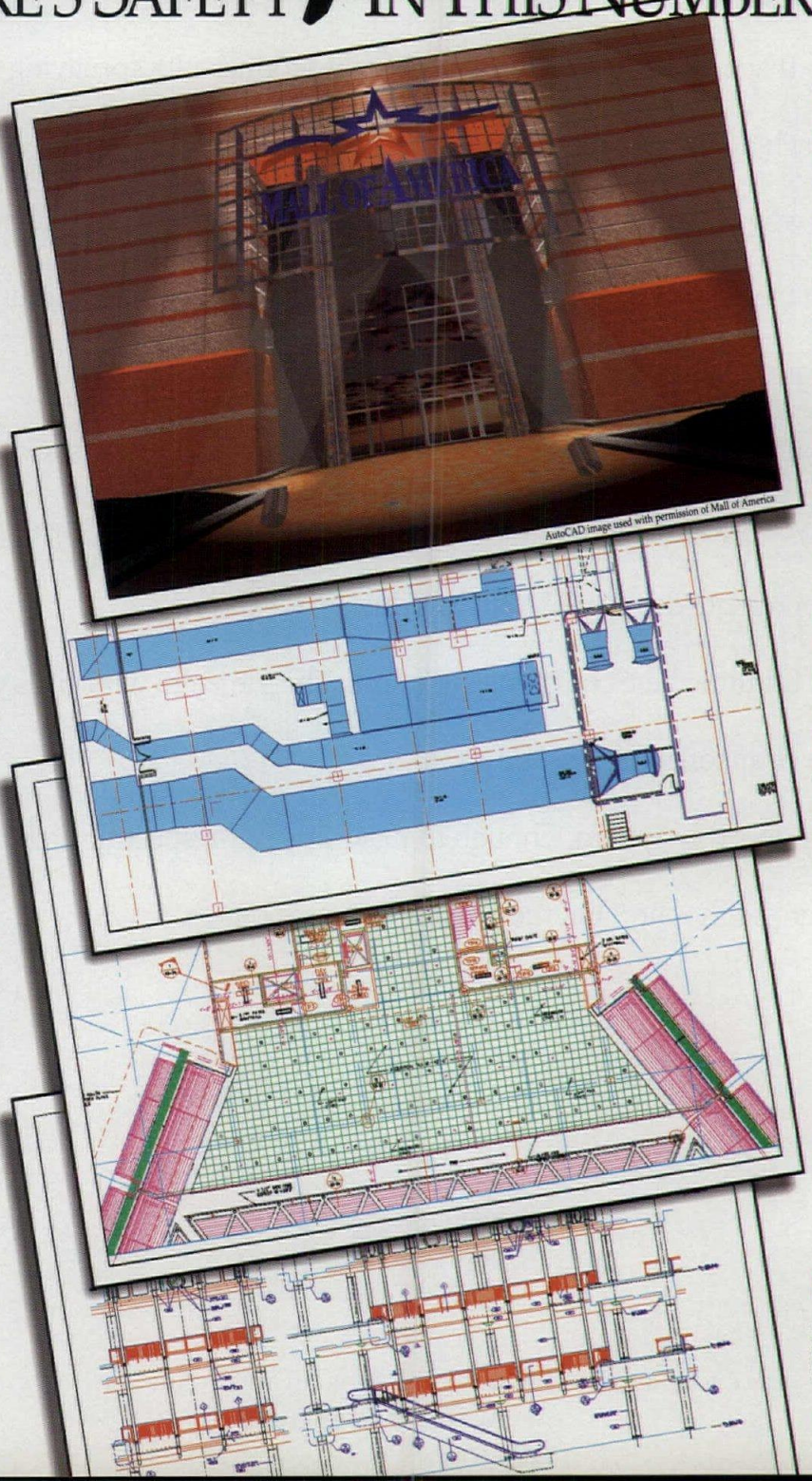

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Practice

William Lohmann discusses the various issues involved in implementing the AIA's new construction drawing format.

Drawings: Implementing Condoc

By now, most architects have heard about ConDoc, a new system for formatting construction drawings (P/A, Dec. 1989, p. 49). Since it was first introduced at AIA-sponsored workshops in 1987, a growing number of firms are using the system, and several government agencies are considering adopting it as a standard.

ConDoc affects several levels of document organization, starting with a proposed drawing sequence and an alpha-numeric numbering system. Drawings are assembled according to basic disciplines (Civil, Landscaping, Architectural, Structural, Plumbing, Fire Protection, Mechanical, and Electrical) and special elements such as Interior Design, Food Service, Signage/Graphics, and Furniture/Furnishings. The ConDoc numbering system proposes a discipline prefix, a single numeral for the drawing group designation, and two subsequent numerals for individual drawings (for example, A100, A101, etc.).

Another ConDoc level relates to sheet layout, with title block, keynote legend information, and general notes along the right margin. Within borders, the remaining space is subdivided into a modular grid for graphic information – plans, elevations and sections, and details.

A third level establishes a notation system for drawings. Material keynotes are based on familiar 5-digit CSI Masterformat numbers, at once creating a direct correlation between drawing notes and project specifications and a potential linking of CAD drawings and computerized specifications. They include a brief description of the material and are identified with the appropriate Masterformat prefix. Generic notations, like "Finish Floor Line" and "Future Work," are included with other general notes. Both keynote types utilize a sequential suffix series (such as A, B, C, etc.) for the project. Keynotes are accumulated in a project keynote legend and are used consistently throughout the documents. Applicable keynote text is listed only once on each sheet.

For production people the ConDoc workbook (currently available only through AIA-sponsored workshops) will be an essential reference. But it will require each office to modify its drawing guidelines. Previous standards for drawing sequence and numbering, sheet sizes, and typical layout must be revised to reflect the ConDoc recommendations. And firms using CAD programs will find that default formats, standard details, and layering protocols must be modified. New standards must be established for dimensioning, detail notation, and keynote legends; management responsibility for the master and project keynote systems must be defined; and guidelines for the review process must be developed.

Most important, perhaps, is the adaptation of standard details to the ConDoc notation system. CAD users have the benefit of at least two software programs based on ConDoc precepts and Masterformat – "Vertex Detailer" (Vertex Design Systems, Inc.) and "ConDoc for CADD" (AIA Professional Services Division).

A master keynote document can be developed concurrently with adaptation of the standard details. As with master specification text, master keynote text will provide a controlled source for project keynotes, will allow ready updating, and can be copied and edited for a specific project. An office master is easily assembled by extracting detail notes from several previous projects and assigning each to a Masterformat section number or the "general keynote" category. The Masterformat keynote numbers should be directly correlated with those used most frequently in the firm's project specifications, allowing space in the master for easy insertion of subscript letters or numbers for project keynotes. A column for editing comments is also helpful.

The master keynote text should be created and maintained by the office specifier and production management personnel. When drawings are started, a manager should be assigned responsibility for coordinating the project keynotes.

After copying the master text for project editing, the specifier or project keynote manager should first delete entire sections of keynotes that are not applicable to the project. Individual keynotes can be edited at the same time or retained for later decision. Suffix designations and new keynote text are added as the documents are developed. Edited project copy can be printed for the keynote legends on individual sheets or incorporated into CAD files.

The ConDoc discipline spawns enhanced quality control, faster document preparation, a means of achieving clear and consistent terminology, and integration of drawings and specifications. Like Masterformat, it may change the way you think. **William Lohmann** ■

The author is Vice President, Specifications, at Murphy/Jahn in Chicago.

Practice Points

Despite forecasts of a slow recovery, a new survey by Price Waterhouse indicates that the current supply of office space in southern California is expected to be absorbed in two years. Because this resurgence in the market is fueled by new job growth, similar office absorption rates are expected in Seattle and Atlanta where many new jobs are expected.

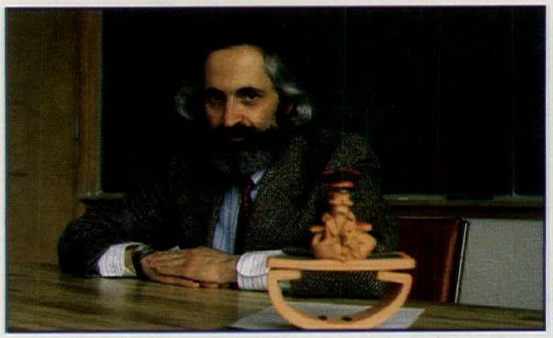
Staying Small Successfully **by Frank Stasiowski profiles the practices of 50 small design firms that serve as examples of business strategies, client relations, personnel policies, and growth management. The book is $49.95 from John Wiley & Sons, New York.**

Working on a marketing plan? ***Marketing for Design Firms in the 1990s*** **is a new book from the AIA that outlines how to research markets, create promotional and sales programs, and implement a marketing plan. The book is $19.75 for AIA members; order from the AIA Press at (800) 457-3239.**

Annual growth in new public construction is expected to rise from 5.5 percent this year to 8.2 percent by 1995 according to Leading Edge Reports' Data Composites, which has tracked historical construction data for the last 20 years

Offering facility management services to clients is a good way to keep a CAD system profitable when new construction is slow. A new newsletter, the ***GSI Report,*** **offers strategies for computer-aided facility management. An annual subscription costs $100 from Graphic Systems, Inc. (617) 492-1148.**

Richard Kronick profiles Alexander Tylevich, a Russian architect who faced institutionalized anti-Semitism in his homeland before emigrating to the U.S.



Richard Kronick

Alexander Tylevich

Management: Anti-Semitism and Practice in the USSR

On paper, it appears that Alexander V. Tylevich had a promising architectural career in the Soviet Union. His résumé lists numerous accomplishments: bachelor's degree with valedictory honors from the Minsk Architectural College, Minsk, Byelorussia; master's degree in architecture with valedictory honors from the Byelorussian Polytechnic Institute; elected a Fellow of the Architectural Association of the USSR at age 29; winner of the Soviet Architectural Association's First Prize for his design for the Minsk Historical Center; co-author of the Master Plan for the Center of Minsk; designer of numerous structures in Byelorussia including the administrative office complex of the Minsk Communist Party Committee and a station in the city's recently opened subway system. Tylevich's passport, however, tells a different story. "A Soviet passport," he says, "lists your name, your address, and – the most important – your ethnic group," which in his case is "Jewish." Because he is Jewish, he walked away in 1989 from his growing list of accomplishments and emigrated with his family to St. Paul, Minnesota.

Institutionalized anti-Semitism was a feature of everyday life for Tylevich. He pulls out the drawings for his 1983 design of an office tower and explains why the design was rejected. "This was part of a very prestigious project for the center of Minsk – a plaza, a tower containing editorial offices for all major Byelorussian newspapers, and a building for the Byelorussian Journalists' Society. The curator [that is, the Party's architectural arbiter] was a member of the Central Party Committee of Byelorussia. This meant that money would be available for good materials." His plan for a typical floor in the ll-story tower shows that the building was to be thin and curved like a piece of paper that has been gently rolled and then stood on end.

Tylevich explains the design review process that was followed. "First we presented two variants to the man who was going to be the director of the whole complex. My design was chosen. Then, the usual thing would be to present the plans to the Minsk curator. But he was unfriendly with the leaders of my design group. So it was decided to [go over the head of the local curator and] present the project directly to the central curators in Moscow. In Moscow, everything was great; they said it was one of the best things they had seen in a few years. 'Go right ahead – but you must, of course, get approval from the curator in Minsk.'" In other words, the "end run" maneuver had failed.

Back in Minsk, "the curator looked at this floor plan and asked, 'Who designed this?' My group leader said 'Why of course *we* designed this.' 'But who?' the curator asked again. 'We,' the leader repeated. The curator said, 'It's too circular. It looks like a menorah,' He told us to redesign the entire project."

All of this was a well-rehearsed dance. Among the duties of a Soviet architectural curator is the responsibility to identify and eradicate "concealed" Jewish symbolism in design projects submitted for acceptance by the State. The curator knew full well who the designer was. He also knew that both Tylevich and his immediate superior were Jewish. It was his business to know such things. Tylevich says that, "after 13 years in practice, I was ready for this response. It had happened many times before." In response to the curator's "design review," Tylevich prepared a variant for the complex that reduced the prominence of the curved shape. However, this also was rejected. The project was given back to Tylevich's group to be redesigned without his input. Ultimately, a plain, square tower was built.

The design group in which Tylevich worked during this incident is part of a "design institute" called Minsk Proekt. It employs approximately 1500 people. Minsk Proekt is responsible for city planning and architectural and landscape design within the purview of the government of Minsk, a city of 1.7 million people. Another institute in Minsk, called Byelgos (a contraction for Byelorussian state) Proekt, which employs about the same number of people, produces designs for Byelorussian state buildings. Other large institutes are responsible for designing particular building types such as factories, dwellings, and farms.

Typical of architectural design institutes throughout the Soviet Union, Minsk Proekt is composed of "workshops," each containing 50 to 100 people. (The name, "workshop," is intended to reflect the idea of a proletarian work force and is used for virtually all working groups in the Soviet Union, irrespective of function or managerial level.) The workshops in Minsk Proekt are roughly analogous to the departments in a large Western firm. Several of the workshops are design groups composed of architects, interior designers, and engineers. Other workshops specialize in city planning, electrical design, heating and ventilating systems, estimating, accounting, and so on.

As Tylevich explains, the institutes are not the only source of architectural commissions. "Within the architectural society, there was a department that handled special projects. Sometimes you could organize your own design group but only if you had the right friends. I worked as a team member on some projects in this way. You could work after hours in your office, sometimes even during work hours. But that depended on the office – how many rooms, how many guards." He says that, during the Andropov regime, guards were posted in the Minsk Proekt building "to make notes on when you came back."

The office tower episode is emblematic of architectural practice in the Soviet Union. The Party bureaucracy is simultaneously the client for virtually every structure in the USSR and the overseer of all design, contracting, and sub-contracting functions. Ideological baggage such as state mandated anti-Semitism adds to the inefficiency, but the sheer weight of organization is the major cause of the extravagant waste of creativity, time, and money. Tylevich says that it is common for projects to go through as many as ten complete sets of specifications before they are built. If his design for the office tower had been accepted, he adds, it would have taken about five years to build. All of this becomes comprehensible if one understands that, on one hand, there is precious little money available for building but, on

"In the USSR, most ideas are only partly realized."


Minsk Proekt

Government building in Minsk, 1979

the other hand, Party dogma requires full employment. It becomes useful to the Party's goals to look for reasons why everything should be designed, redesigned, and redesigned again. The AD work force is kept busy at paper architecture as an end in itself.

Battle of the Styles

From the late 1930s until the early 1960s, official Soviet architectural style had been a bombastic version of Beaux-Arts Classicism. Tylevich says, "They designed only façade architecture: the Classical orders – the whole arsenal of the old heritage. Design was a matter of typology; a theater should look like this, a cinema should look like that."

Under Stalin in the late 1920s and early 1930s, it was generally agreed that a new idea must be formulated to express the heroic nature of the Proletarian Revolution. The solution put forward was "Socialist Realism," first articulated as a guide to writers and then quickly adopted as a banner under which all artists were required to unite. Tylevich summarizes Socialist Realism by paraphrasing Lenin: "Every housewife will be able to understand the meaning of art." Accessibility became the watchword.

Charged with defining an architectural expression of Socialist Realism, however, Soviet theoreticians could agree only that it was essential to agree. As S. Frederick Starr explained in his excellent biography, *Melnikov, Solo Architect in a Mass Society*, "Constructivists fell on formalists, formalists fell on Constructivists; Classicists and eclectics attacked both and were attacked by both in return; and proletarian architects denounced everyone even as they were being denounced and despised." (p. 186) It was much easier for theoreticians to say what Socialist Realism was not than to say what it was.

As Starr makes clear, there were good reasons why the debate was inflammatory. Under the Cult of Personality, if an architect's stated theoretical or stylistic approach lost favor, he could lose his privilege to practice (as was the case with Konstantin Melnikov), his privilege to live in the Soviet Union, or to live.

When the smoke began to clear at the end of the 1930s, it was dangerous for anyone to espouse any idea that could be described by anyone else as abstruse. The safe course was to cleave to a conservative, bombastic Classicism – something everyone would understand because they had seen it before. Starr's quotation of a Soviet Commissar of Enlightenment writing in 1932 sums up the idea that emerged: "The proletariat has a right to colonnades." (Ibid, p. 201) The rules were simple: Socialist Realist architecture must be Greek, Roman, and huge.

The best example of the style was Boris Iofan's Palace of the Soviets. Though it was designed and redesigned over a period of decades, this crowning expression of Communism was never built. Alexander Tylevich jokes that, "You could easily construct the Palace of the Soviets by stacking up buildings that were constructed all over the Soviet Union." He suggests, for example, that the eight-story Minsk Opera and Ballet Theatre, designed by Josef Langbard, is essentially a copy of the Palace's plinth.

The Spring Thaw

By the time Tylevich began his architectural education in 1961, things had begun to change. This was during the period commonly referred to as "the spring thaw with no summer." When asked about his teachers, he says "Khrushchev was my most important teacher. He allowed the bookcases in the school library to be unlocked." This is both a literal and a metaphorical statement. He explains that, during his school years, many new publications became available, "mostly Czechoslovakian and Polish books and periodicals on the history of avant-garde Russian art but also some translations of Western books – for example *Modern Architecture* by Michel Ragon and Wright's *The Future of Architecture.*"

Since most of his professors were fully indoctrinated in Socialist Realism, they could not teach him and his classmates about the Modern idiom. "They taught us a strong formal system. But mostly we wanted information about Melnikov, Leonidov, Tatlin, and Lissitzky [Russian early Modernist pioneers]. When we would design projects in the Modern style, [our professors] had no feeling for it. They were Stalinists by memory. I turned in a large design project in the Modern style,and the professor commented only on my design for the toilet rooms! He was a good man whom I respected but he was disoriented by change."

Frustration and Emigration

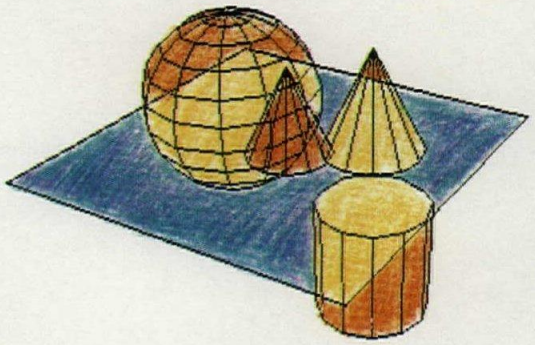
Alexander Tylevich left Minsk Proekt soon after the incident surrounding his design for the office tower. In 1984, his wife, Poline, convinced him to apply for a position where she worked, the Minsk Fine Arts Foundation. For five years there, he produced many architectural and interior design projects – some in collaboartion with his wife. But he was accused several times of including forbidden cultural messages in his work. In one case, his design for a restaurant complex was judged to be Nazi-influenced because the color scheme was brown. At the same time, Jewish symbols were "discovered" in some decorative details. "How they could imagine that Nazi and Jewish themes might be mixed, I don't know." Finally, frustration won out and the decision was made to emigrate. St. Paul was chosen because his wife's sister had moved there ten years earlier. "We paid 700 rubles per person to lose our Soviet citizenship."

In the U.S., the Tyleviches have been engaged in a variety of artistic projects. Currently, they are under commission to produce commemorative coins and bank notes to be sold to collectors. In 1990 Alexander Tylevich secured his first architectural commission from the St. Paul-based company The Barbers Hairstyling for Men and Women, Inc. Ironically, this was for a shop in Moscow – a 4000-square-foot beauty salon.

He has a letter from the Moscow group that is building the salon saying, "We will use as many of your ideas as we can." But, he says, "it is very difficult to build there. Designs and the buildings constructed from them are rarely twin brothers. In the USSR, most ideas are only partly realized." **Richard Kronick** ■

The author is a freelance writer and an architectural marketing consultant in Minneapolis.

Eric Teicholz reviews some of the trends apparent at this year's A/E/C SYSTEMS show.



Leslee Laddis

Computers: A/E/C SYSTEMS '91

The A/E/C SYSTEMS show always generates tremendous excitement; this year's event in Washington, D.C. was no exception. Two trends and several significant product releases are worth noting.

3D Everything

A large number of vendors at the show were displaying graphics software, especially for three-dimensional modeling and rendering. This software is finally becoming viable and cost-effective for design firms. Some software vendors have concentrated on the low end of the market that operates without expensive workstations and specialized graphic boards equipment. For instance, Alias Research's Upfront software can create 3D objects overlaid on color pictures on a Macintosh or IBM personal computer. It allows a quick estimation of how a proposed building will look on its site at various times of the day.

Other vendors have developed very complex programs that create near-photorealistic images and that not only track the sun and change daytime shadows, but also display the view of a structure from all directions with textured or reflective surfaces and multiple light sources. There is an increasing integration of these graphics applications, once used mainly by animation and graphic arts firms, with CAD programs. Autodesk, for example, offers AutoShade with an Autodesk Renderman module for modeling, rendering, and animation. Intergraph likewise has its own modeling and rendering modules as part of its Microstation software.

Some CAD vendors, such as Sigma Design with its ARRIS software, are developing translators to communicate CAD data with high-end graphics applications such as Wavefront Technology's Personal Visualizer. At the same time, graphics vendors are providing links to 3D CAD data like Modern Medium's RenderStar-2. Specialized graphics hardware, such as monitors and graphics controller boards, are facilitating this greater graphics power.

The result is a plethora of visually powerful software available on virtually all computers for a variety of uses. Design firms can now quickly generate models to create a 3D image of a new design. These models can be used for presentation purposes, either on a monitor or transferred to video using new devices that produce a montage of computer-generated images. Also available are real-time "walk-through" utilities, allowing you literally to walk through a computer model.

The Move to Windows

Another trend has been the move by many vendors to make their software compatible with that of Microsoft. Microsoft's release of Windows 3.0, a graphic user interface (GUI) for IBM and IBM-compatible personal computers has sparked the industry, in part because of the huge user base Microsoft has generated in a short time (nearly 3 million in less than a year). For instance, both Isicad's CADVANCE and Sigma Design's ARRIS are CAD systems that are now compatible with Windows. Autodesk will begin shipping Windows-compatible AutoCAD early next year.

The Macintosh

The two trends mentioned above, 3D graphics and a Graphics User Interface, immediately bring to mind Apple's Macintosh. At the show, there were more Macintosh 3D products than Windows 3D products. While this is to be expected, since Windows is less than a year old, the polished quality and speed of the Macintosh interface, combined with its ease of use, makes that system still attractive to the user with limited time for training.

AutoCAD

Autodesk's AutoCAD software, however, still dominates the PC CAD marketplace. Nearly everyone at the show, attendees and vendors alike, recognized the importance of their applications' capability of communicating, in some way, with AutoCAD. Autodesk itself, in addition to the imminent move to Windows, will also be moving AutoCAD release 11 to the Macintosh.

Workstations

Workstations, those computers just above PCs in power and price, are increasing in power with every release, while prices continue to drop. Hewlett Packard's Series 730 desktop workstation operates at about 75 times the speed of a PC-AT. On the other hand, Sun's SPARCstation 2 operates with maybe one-third of the Series 730's power, but sells for $15,000 – a price competitive with high-end personal computers.

Artificial Intelligence

Accugraph intends to add knowledge-based design systems to its MountainTop CAD and Graphic Information Management software. While still in a rough state, this artificial intelligence adds a new angle on CAD applications for design and layout. The "Expert Design Advisor," based on the Intelligent Computer-Aided Design System (ICADS) developed at Cal Poly San Luis Obispo under the direction of Professor Jens Pohl, emulates a human consultant by monitoring and evaluating evolving designs. Up to now, most AI software for CAD merely automated time-consuming and repetitive procedures without much "intelligence."

Input/Output

Large format scanners, able to handle E-size drawings, were demonstrated by SummaGraphics, Houston Instruments, and other vendors. One major hurdle to the implementation of CAD is the existence of hard-copy drawings and the time required to enter this data into a computer system. Scanners and software able to handle these drawings have become increasingly sophisticated as the problems associated with the early systems are ironed out. For most drawings, these scanners may now be the most cost-effective way of entering data. At the same time, large format plotters have evolved into refined output devices.

Both the hardware and the software at A/E/C SYSTEMS this year revealed a responsiveness to the end users. Applications were, in general, easier to learn and use, more integrated both horizontally and vertically, and more powerful and specific in function. This specificity suggests that the use of CAD and other automated systems in the A/E/C industry has indeed found a home.

Eric Teicholz ■

The author, an architect, is President of Graphics Systems, Inc. in Cambridge, Massachusetts.

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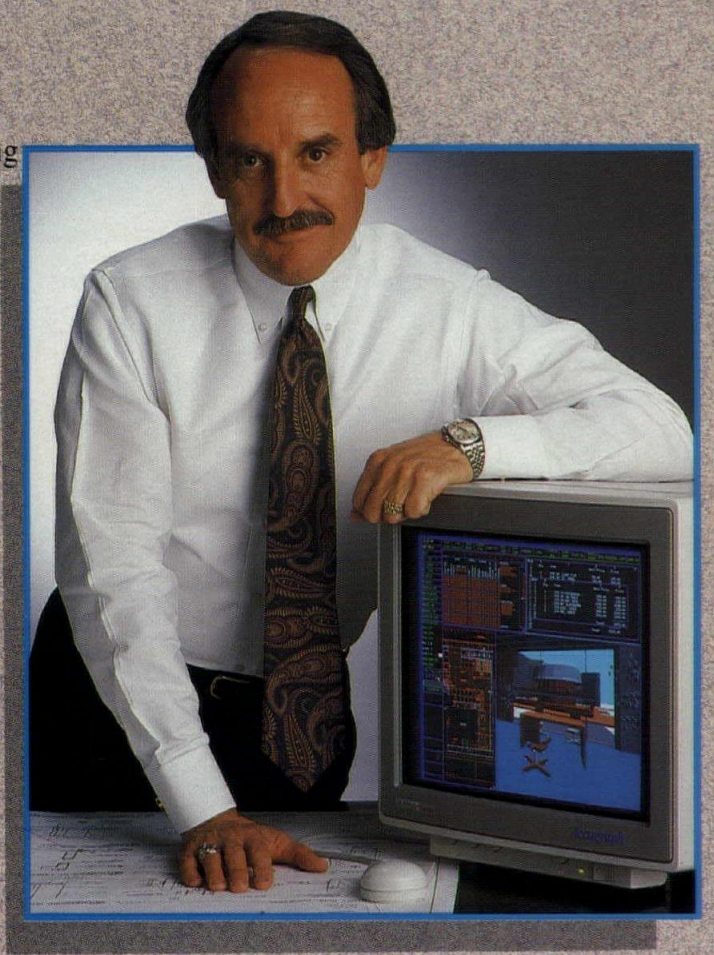

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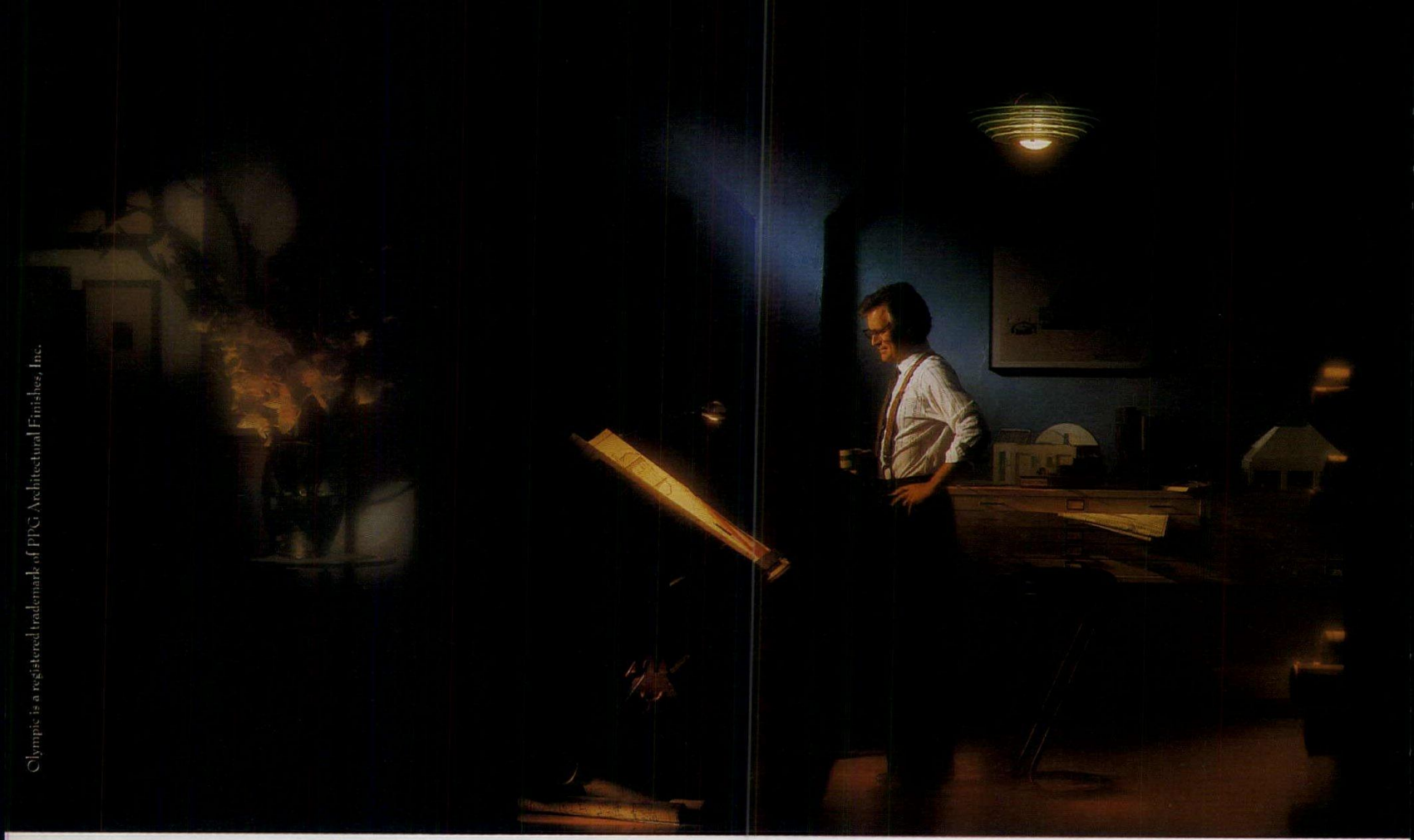

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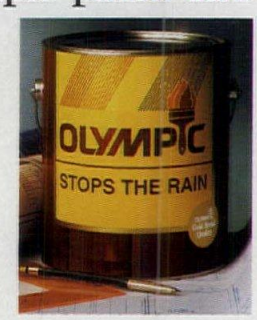

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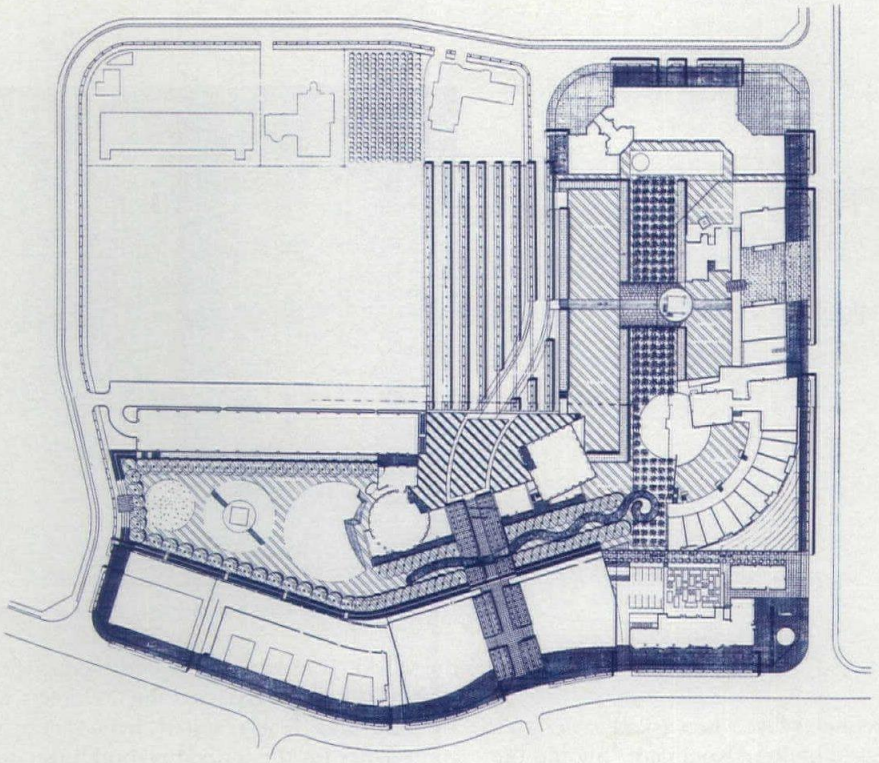


Landscape design by Martha Schwartz of Schwartz, Smith, Meyer will provide Nexus World Kashii in Fukuoka, Japan, coherent outdoor spaces to complement the heterogeneous architecture. Schwartz, who joined the design team after the building designs had been developed, sees her plan as "a tablecloth underlying the objects in a still-life painting."

Architects working abroad is a theme in this issue.

Featured on the following pages are: Steven Holl's and Mark Mack's housing in Fukuoka, Japan, both of which won P/A awards; other work at Fukuoka by Dutch architect Rem Koolhaas, Spanish architect Oscar Tusquets, and French architect Christian de Portzamparc; and Venturi Scott Brown & Associates' competition-winning addition to London's National Gallery, along with their newest building at Princeton University. Differing perspectives on landscape architecture by Anne Whiston Spirn, Diana Balmori, and Martha Schwartz and recent projects by Fernau & Hartman complete the feature section.

A Cross Cultural Concert in the Far East

Nexus World Kashii in Fukuoka, Japan,

offers avant-garde and traditional housing solutions –

a latter day *siedlung* on the Pacific Rim.

The low-rise apartments, now complete, will be complemented by Isozaki's twin towers.

Housing after the Machine Age

The dilemma that Western architects face when asked to design a building in Japan was well expressed by Rem Koolhaas: "Should the building be 'as Western as possible' – is it just another export – or should it reflect the fact that it is built in Japan?" The dilemma was intensified in the Nexus World project because, as Koolhaas observed, the context was not the expected chaotic jumble of buildings in an ill-defined pattern typical of most Japanese cities. Instead, the site was in an orderly new town still in the process of development on land reclaimed from Hakata Bay. Moreover, the master plan simply took a superblock and ran a street with a crank in the middle through it. Since the northwestern corner of the block had been reserved for other development, the available site was an L-shaped parcel with a slightly undulating southern edge. The perimeter was to be lined with low-rise housing blocks, a very Western idea. The "Japanese" part of it (that is, a dramatic contrast in scale) consists in plans for two 120-meter-high apartment towers in the center. These high-rises, designed by Arata Isozaki, are to be surrounded by low-rise condominiums designed by Steven Holl, Rem Koolhaas, Mark Mack, Osamu Ishiyama, Oscar Tusquets, and Christian de Portzamparc.

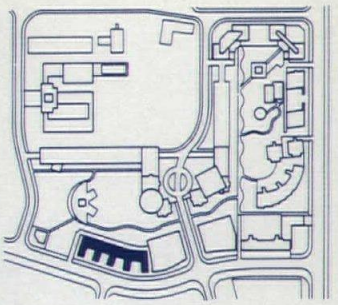
The mixed message of the site program is implicit in the project name, Nexus World. "Nexus" stands for the link between the present and the future, or next, world. The name cryptically expresses the intentions of Fukuoka Jisho, the developers of Nexus World. They see this community as a cultural link between rapidly Westernizing Japan and the Western world, which, at least in housing, seems to offer a good model for the future. The site itself is a nexus between the established town of Kashii and the new town on land to the west that is part of an ongoing Hakata Bay reclamation project. It comprises six condominium buildings, harbingers of the future, that contain 192 units. Constructed in ten months, the buildings are a dazzling display of handcrafted finishes and details, flawlessly executed. Is it any wonder that some of the architects featured here wish they could build all of their buildings in Japan?

Japanese contractors have a reputation for meeting standards of quality in construction that are far above what prevails in the rest of the world. If anything, the contractors' performance on the Nexus World buildings surpassed the architects' already high expectations. In part, this feat resulted from keen competition between the contractors for the individual buildings, but much of it was also due to the willingness of the contractors to work with the architects in creating finishes and details that neither had executed before. Thus, the architects' direct experience of craftsmanship broadened the scope for their talents and raised the overall quality of the project. Too bad this situation is so unusual.

Another much discussed aspect of Nexus World is its contribution to the tradition of the building exhibition. Publicizing new architectural ideas by inviting the public to see innovative buildings originated in Europe in the 19th Century. Most relevant to Nexus World Kashii are the exhibitions of the 1920s and early 1930s in Central Europe, where a new rationalist order augured a wholesale reform of architecture by applying industrial principles to the construction and equipment of housing. The most spectacular such exhibition was the 1927 Weissenhofsiedlung in Stuttgart. Planned by Mies van der Rohe, it featured buildings by him and his avant-garde colleagues as a built manifesto of "Enlightenment in the Machine Age." Now, after more than half a century, the Machine Age no longer seems so enlightening, and the dogmatic severity of straightforward Modernism does not manifest domestic innovation. Still, in Japan, the need for innovation in housing for the mass market has reached a crisis point. As Osamu Ishiyama put it, the Japanese live in "rabbit hutches" and "match boxes" because the public and private production processes for housing are exceptionally rigid. It is this deprivation in the midst of plenty that motivated Fukuoka Jisho to sponsor a building exhibition with housing units for Japan's middle class. The innovations explored there have nothing to do with the kind of industrial technology that informed the Weissenhofsiedlung – the Japanese already have "smart houses" that all but think for their occupants. Instead, these innovations are about comfort and delight, urbanity, and connections between the public and private realms. **Sally B. Woodbridge** ■

The author, P/A's correspondent in San Francisco, has visited Japan several times; she writes about its architecture for Japanese and American publications.

1



A convex curve distinguishes Holl's minimalist building; it aligns with that of the street it occupies (1). Holl describes the multistory covered voids that modulate the concave façade (2) as covered play areas for children; they are lined with stairs that lead to the apartments' second entrances.

2

Steven Holl Architects

In a statement about his approach to the Nexus World project, Steven Holl wrote: "The problem of proposing urban space for a metropolitan sector whose program elements, architectural parts, and social aspects are as yet unknown (and may always be in some state of flux) leads us to propose beginning from a perspectival experience of bounded space. Instead of prior plans projected later into perspective drawings, perspective views are made and cast backwards into plan fragments." As realized, this perspectival experience is one of the most successful aspects of Holl's Void Space/Hinged Space Housing, a winner in the P/A Awards Program (P/A, Jan. 1991, p. 114). The building form echoes the subtle, complex curve of the street, both in the ground-floor shops and in the spine of its key-shaped plan. The courts between the transverse wings offer people moving along the walkways of the spine a constantly changing perspective. This cinematic experience is particularly strong on the second floor where the corridor alternately tunnels through the building and flanks courts with shallow reflecting pools.

The elevations on the ends of the transverse blocks are also key-like: Notches of different sizes offer clues to the spatial composition and the oblique views up and down the street. More clues to the complex spatial arrangements within appear in the pattern of expansion joints in the concrete on the courts' walls. On the east-facing walls panels of finely corrugated aluminum – more like washboards than familiar wall sheeting – are set flush with the concrete in a sectional composition that expresses the interlocking nature of the interior spaces. The panels also catch the light reflected

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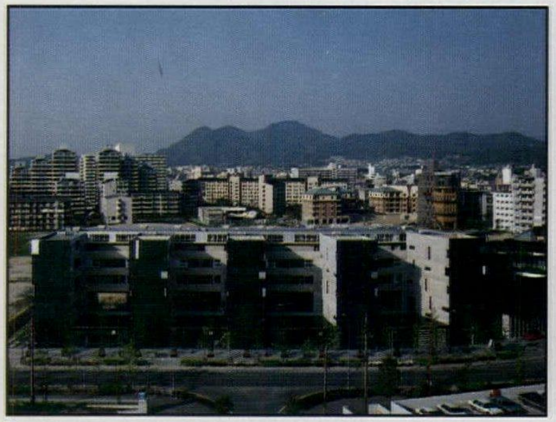
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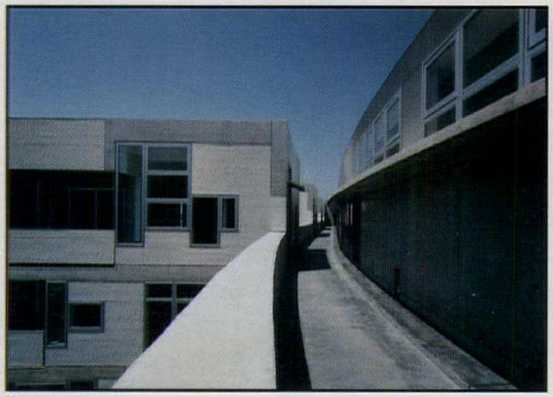
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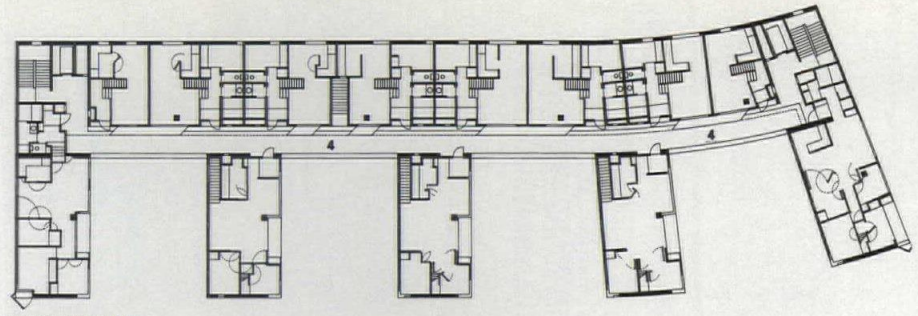
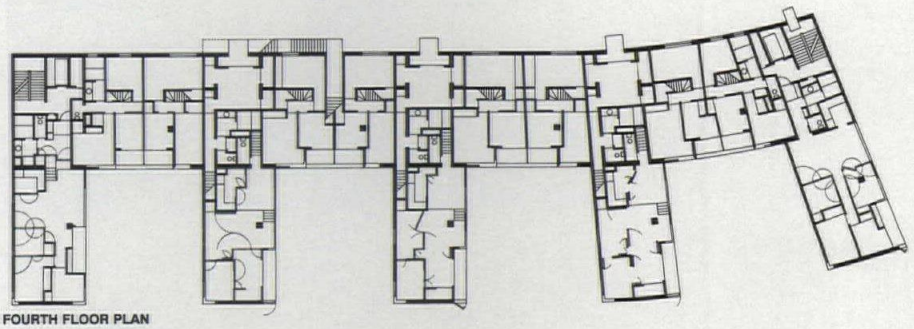
Photos 3–6: Shimizu Corp.

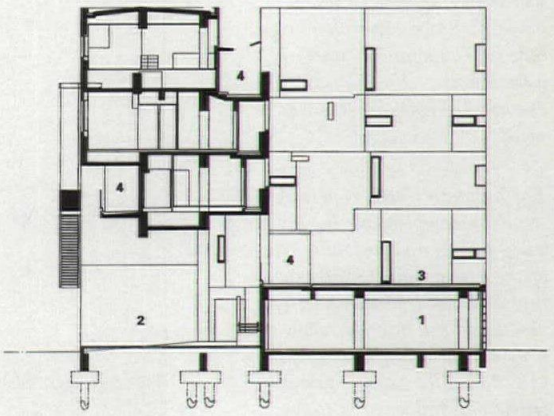


FIFTH FLOOR PLAN



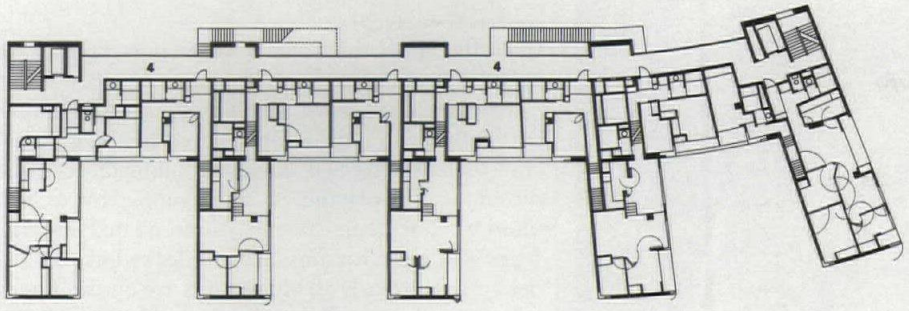
FOURTH FLOOR PLAN

Holl's stark volumes are relieved by the windows, whose patterns are as diverse as the spaces within (3). On the fifth level, the spine that runs between the aqueous and covered courts is open to the sky (4). At the end walls of Holl's structure, mesh-lined balconies lead to entrances on the second floor (5). The reflective pools that fill each open courtyard enhance the monastic quality of the building (6, 7).

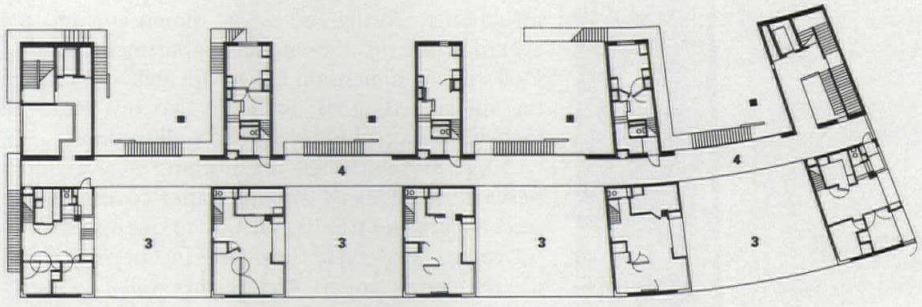


SECTION AA

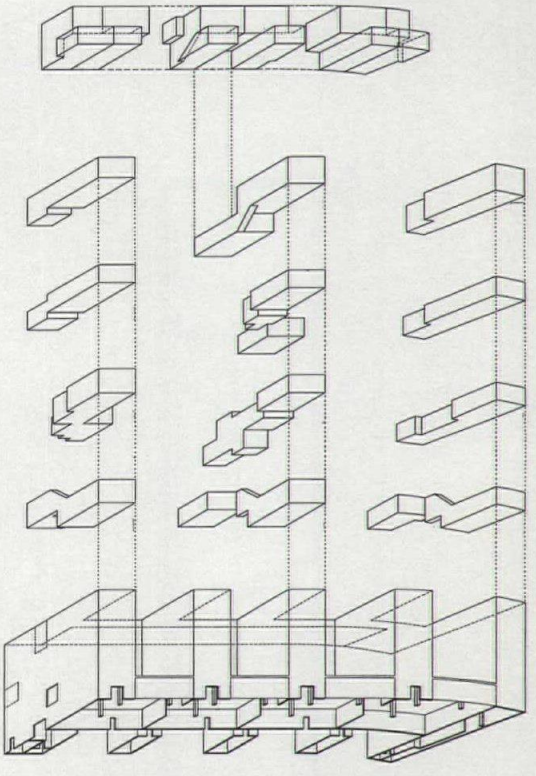
20'/6m



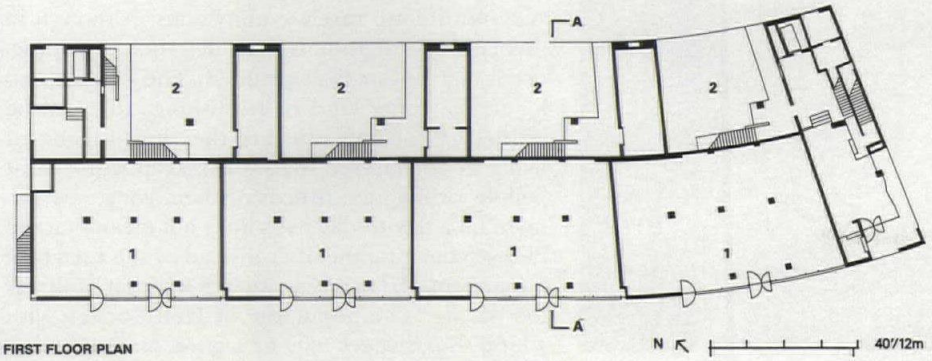
THIRD FLOOR PLAN



SECOND FLOOR PLAN



WORM'S EYE AXONOMETRIC SHOWING VARIATIONS OF THREE BASIC APARTMENT TYPES



FIRST FLOOR PLAN

1 RETAIL
2 COVERED VOID SPACE
3 REFLECTING POOL
4 WALKWAY

Project: *Void Space/Hinged Space Housing, Fukuoka, Japan.*
Architects: *Steven Holl Architects, New York (Steven Holl, principal; Hideaki Ariizumi, project architect; Peter Lynch, Thomas Jenkinson, Pier Copat, project team).*
Program: *28 condominium units and shops.*
Consultants: *Martha Schwartz of Schwartz Smith Meyer, landscape; Shimizu Corporation, structural, mechanical.*
Photos: *Richard Barnes, except as noted.*

The building's hefty concrete structure complements the pivoting wood panels and unfolding spaces of the living units (8). By swinging the hinged panel-walls, one can transform discrete rooms into a volume of contiguous zones. (10, 11). Elongated windows frame meditative views to the reflecting pools and dramatize the play of light (9).

8

9

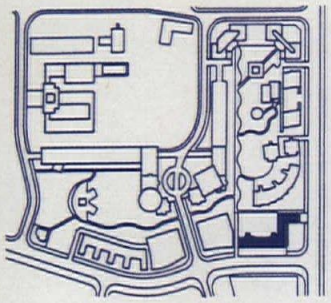
(continued from page 61)

from the sheets of water on the court floors and help track the course of the sun.

Seen from the street, Holl's building looks simple and austere, an impression relieved by the idiosyncratic details described above and ultimately contradicted by the playfulness and complexity of the interiors. The 28 apartments, differentiated into five types with eight variants, are interlocked like a Chinese puzzle. Nearly all of the units are on two floors and many have different levels within their main floor. Holl took the developer's desire to introduce Japanese home-buyers to new living patterns as an invitation to "bring the poetic dimension into the everyday life of the modern apartment house." Holl's poetic dimension lies in the ability to change the spatial setting of one's life: To this end, the architect designed hinged wood wall sections.

Now, movable walls are nothing new in Japanese culture. *Fusuma* (sliding, paper-covered wood screens) are the traditional way to open and close off rooms. However, they slide in one plane and do not swing in an arc as the walls do here. Children visiting model units with their parents immediately caught on and kept moving the colorful partitions to open up or segregate spaces. Art and life are rarely synonymous: Although in theory Holl's artfulness provides choice, in practice it may not work as planned. The Japanese no longer have the kind of furnishings that can be stashed in cabinets, nor are they in the habit of living in uncluttered spaces. But skepticism about people's willingness to activate their living environment on a day-to-day basis does not mean that the idea of changing the walls instead of the furniture has no appeal. Only time will tell whether Holl was too daring. The popularity of Holl's design with young sophisticates may be a good omen.

10, 11



Mack created a public corner with a sculptural mound at the most visible corner of the Nexus World site (1). Residents and guests can pass through a covered passageway (2) that leads to a garden designed by the architect. Like Le Corbusier's Unité d'Habitation in Marseille, Mack's structure features living units with varied sections, enclosed in a simple building envelope.

1

Mark Mack

Mark Mack's double building, a winner in the P/A Awards Program, (P/A, Jan. 1990, p. 89) is an essay in joinery on several levels. The site is at the intersection of a residential street on the east side and a more commercial street on the south side. This situation suggested two buildings, one facing south, open to the sun, and incorporating commercial space, and a less public east-facing one. Reinforcing the expression of the building as two distinctive elements are the two predominant colors, an intense orange-red used on the lower building block and a strong yellow used on the sunny side, framed by gray end walls, building frame, and top floor. The southwest corner of the lower block fits into a notch cut into the northeast corner of the higher block, a joint suggestive of cabinetry. The south façade carries on the image of a giant cabinet, with the duplexes set into the frame like large drawers. The other duality of the site is the front/back opposition of the public side on the street and the private side on the interior of the block. Mack favored interrelating the public and private spaces. This desire to interrupt the street wall and enrich the spatial pattern led him to create a corner plaza from which a covered passageway leads to the garden side of the buildings.

Mack describes the plaza as an "urban eddy," a place where public life will be activated by the crosscurrents of pedestrian circulation. Designed by landscape architect Martha Schwartz, a mound provides a hub for the plaza; next to it is a yellow trough in the paving that emits a spray of fog instead of water. Street-level shops sheltered by an arcade on the south side have a undulating glazed wall enlivened by yellow-painted wood mullions that change in pattern from bay to bay. On the duplex floors, the non-repetitive composition of squares and rectangles within the bays makes use of color, shape, and the opposition of solids and voids to keep the eye moving. The building is capped by a more simply fenestrated story of gray courtyard houses.

The overall composition is both Classical in its tripartite horizontal division and Modern in its use of cubistic elements and asymmetric regularity. The colors are strong but not primary. Mack has infused the abstract geometry of Modernism with the richness of Barragán. The same subtlety used in the composition of the slab building façade appears in the fenestration of the lower block. Here the walls have fewer recessed areas and, instead, are accented with projecting yellow sunshades and balconies.

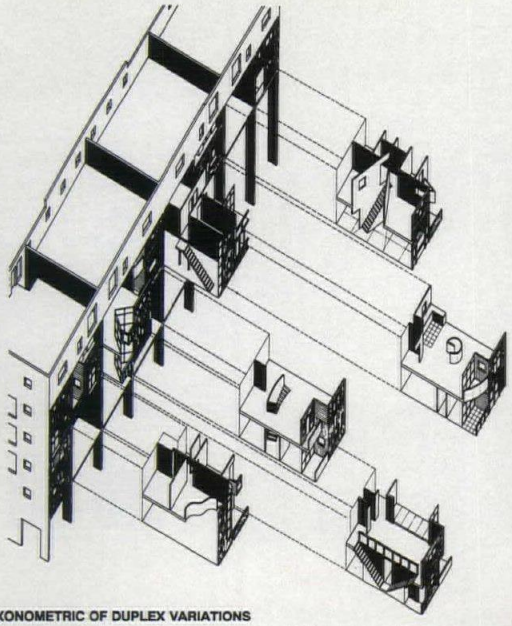
On the inside of the block both elevations are more closed; here the largely gray façade of the slab building has exterior stairways enclosed in bright yellow wooden cages with movable wood flaps that add to their sculptural quality. Above them, elevated sections of the roof form shelters for the upper terrace entrances to the courtyard houses. A plaza atop the ground-level parking has allotted gardens in raised beds, intended to give residents a sense of belonging. A well-proportioned and commodious solarium facing the garden terrace serves as the residents' entrance and elevator lobby.

The 29 units are divided into 14 duplexes and 4 courtyard houses in the slab building and 11 flats in the red building. Within these types the plans vary so that no two units are exactly alike. Although there is a great range of choice in living spaces, in Mack's view, the developers' emphasis on three- and four-bedroom units resulted in

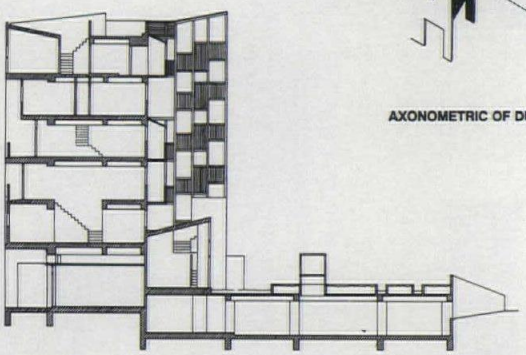
(continued on page 70)

2

Following the conventions of Western cities, Mack rendered the back of his building more casual, with stairways open to the subtropical weather (3). A vocabulary of stick construction recurs throughout the exterior and helps organize the façades (4). Fog rises from grates in the pavement of the public corner (5). This "fountain" designed by Martha Schwartz, has a primordial quality at once Japanese and Surrealisitic. The lobby that opens to the public corner (6) is paneled to suggest the character of the living units.

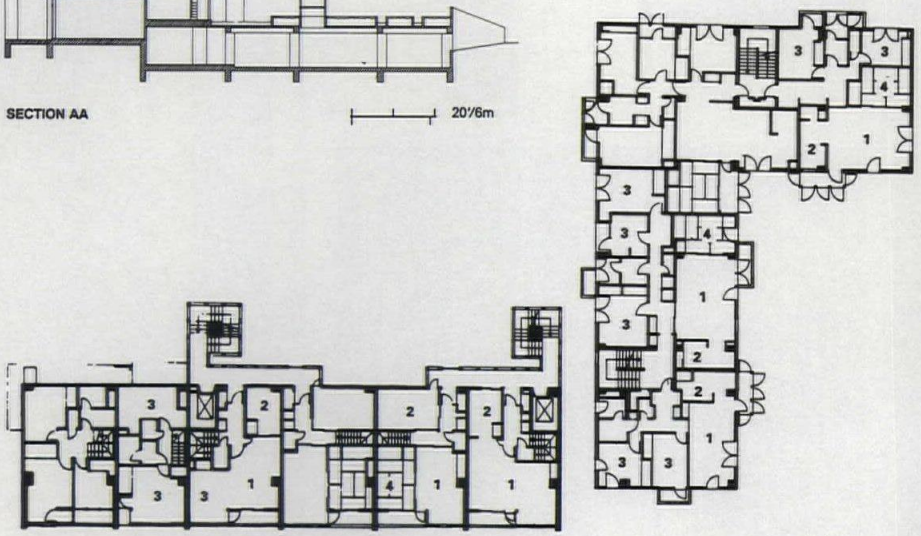


AXONOMETRIC OF DUPLEX VARIATIONS

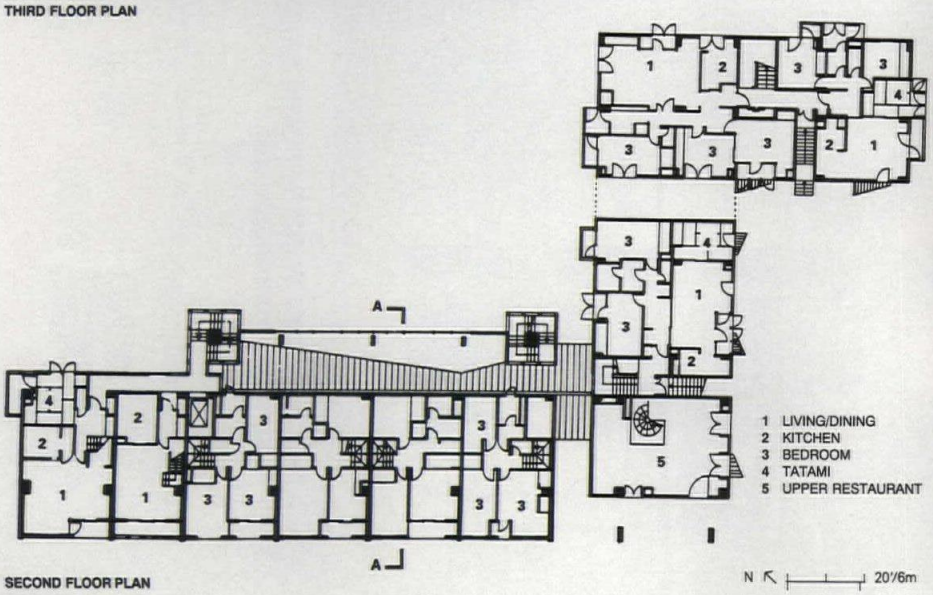


SECTION AA

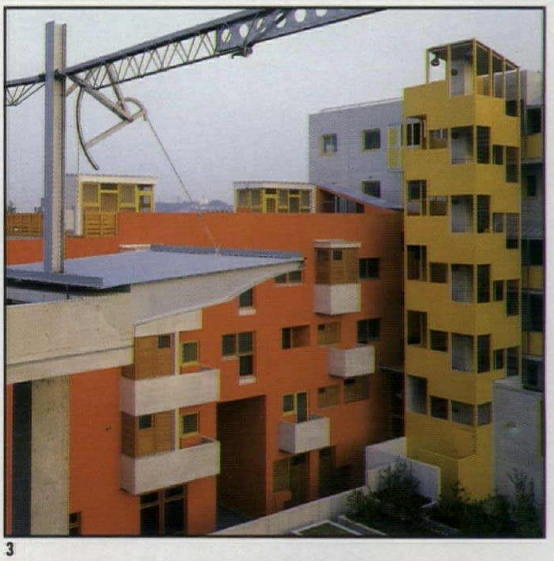
20'/6m



THIRD FLOOR PLAN



SECOND FLOOR PLAN



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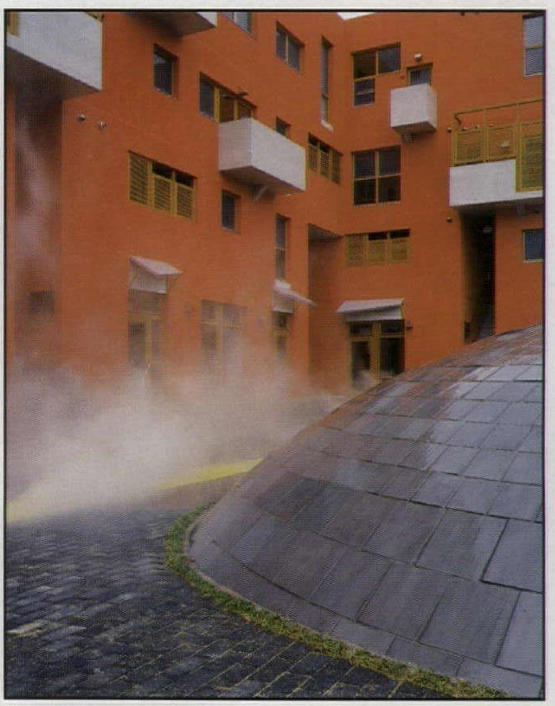
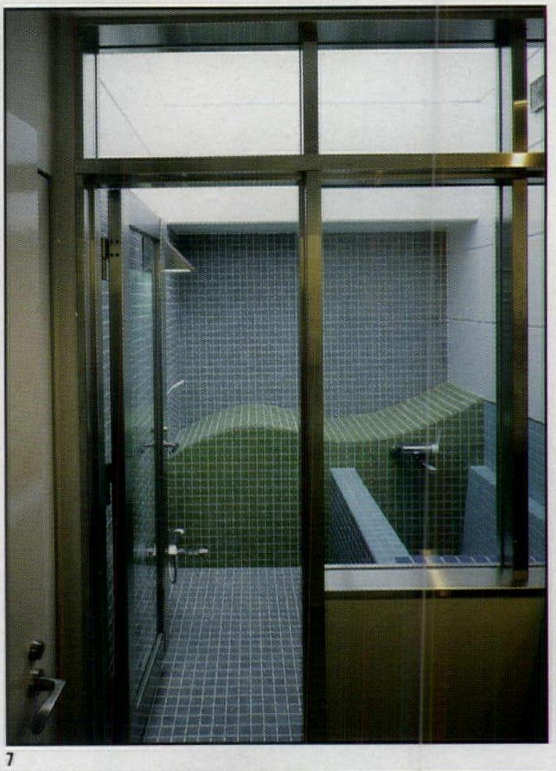


5

6

Project: *Nexus World Housing, Fukuoka, Japan.*
Architects: *MACK Architects, San Francisco (Mark Mack, principal; Eric Carlson, Mark Jensen, project architects; Christine Macy, Charles Ehrlich, Kelly Ishida, Choong Wooi-Cheng, Elizabeth Martin, Michael Tavel, project team).*
Associated Architects: *Masumi Yanase, coordinating architect.*
Program: *29 condominium units and shops.*
Consultants: *Martha Schwartz of Schwartz Smith Meyer, landscape; Ando Construction, mechanical and electrical engineering.*
Photos: *Richard Barnes.*



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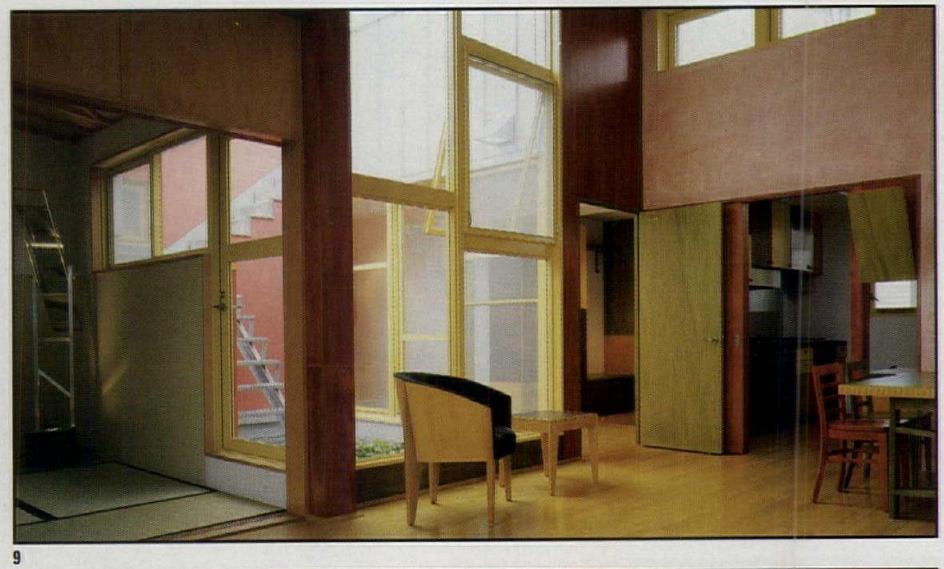

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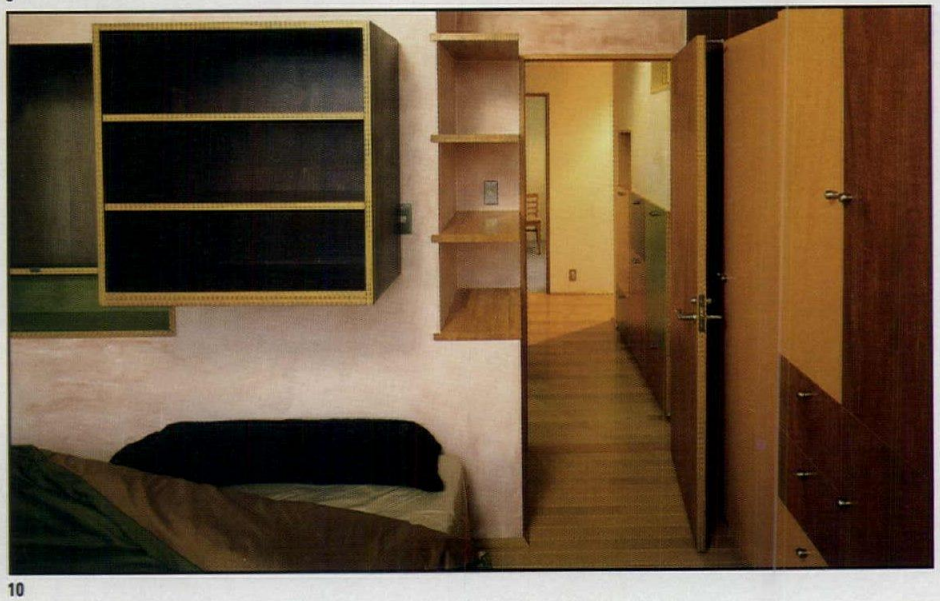
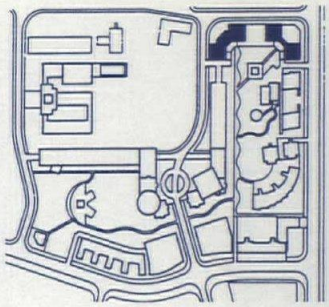


10

(continued from page 66)

some cramped spaces. The interior colors correlate exterior and interior by continuing the use of red and yellow and extending their tonal range. Black and green are introduced as accents in furniture, cabinets, and doors. One plaster wall in each unit has a sponged red wash, a painterly surface that complements the stained cabinets. The effect of this colorfulness is particularly vibrant when sunlight streams into the space, as it does in the rooftop units with courtyards open to the sky. The units are also more airy and open because the architects worked to get light and air into kitchens and bathrooms. Since highly colorful interiors are foreign to Japanese taste, Mack's apartments tend to attract the younger, and to intimidate the older generation of buyers. Although these are not neutral settings, their appeal for families indicates that the architects understood the segment of the public they wanted to please and that design can cross cultural boundaries. ■

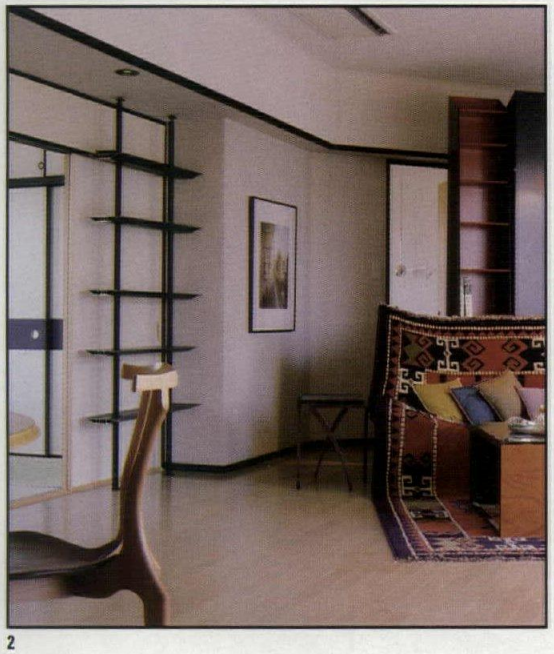
Mack's apartment bathroom has a lounge with a Corbusian profile and strong colors that bespeak an interest in Barragán's architecture (7). A stepped cabinet is Mack's interpretation of a tansu, a traditional Japanese chest of drawers (8). The living room (9) is lighted by a glazed court. The adjacent tatami room and bedroom (10) provide two different retreats from household activity.



Tusquets's corner is a traditional counterpart to Mack's, with a more formal passage to the back of the building (1). The Continental references of Tusquets's four palazzos harmonize with the conventional plan of their living units (2).

1

Project: *Nexus World Housing, Fukuoka, Japan.*
Architects: *Tusquets, Diaz & Associates, Barcelona (Oscar Tusquets, Carles Diaz, Elisenda Tortajada, project team).*
Program: *36 condominium units.*
Consultants: *Bet Figueras, landscape; Hazama Gumi Co., structural & mechanical; Pere Valldeperez, stained glass.*
Photos: *Richard Barnes.*



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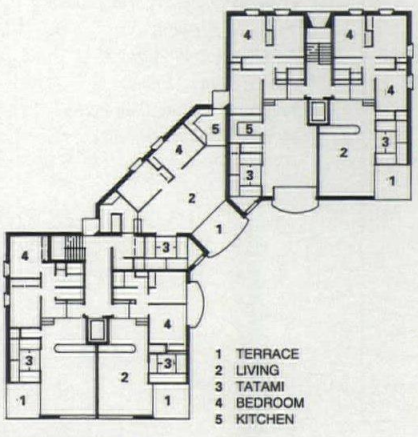
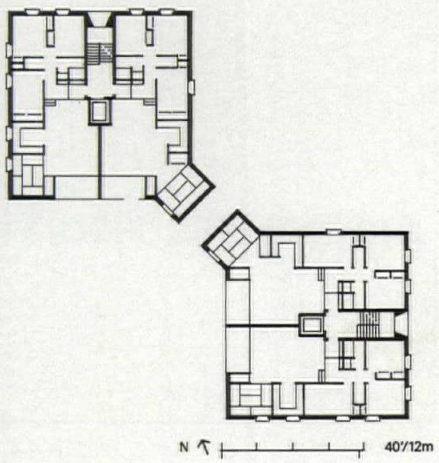


TYPICAL FLOOR PLAN

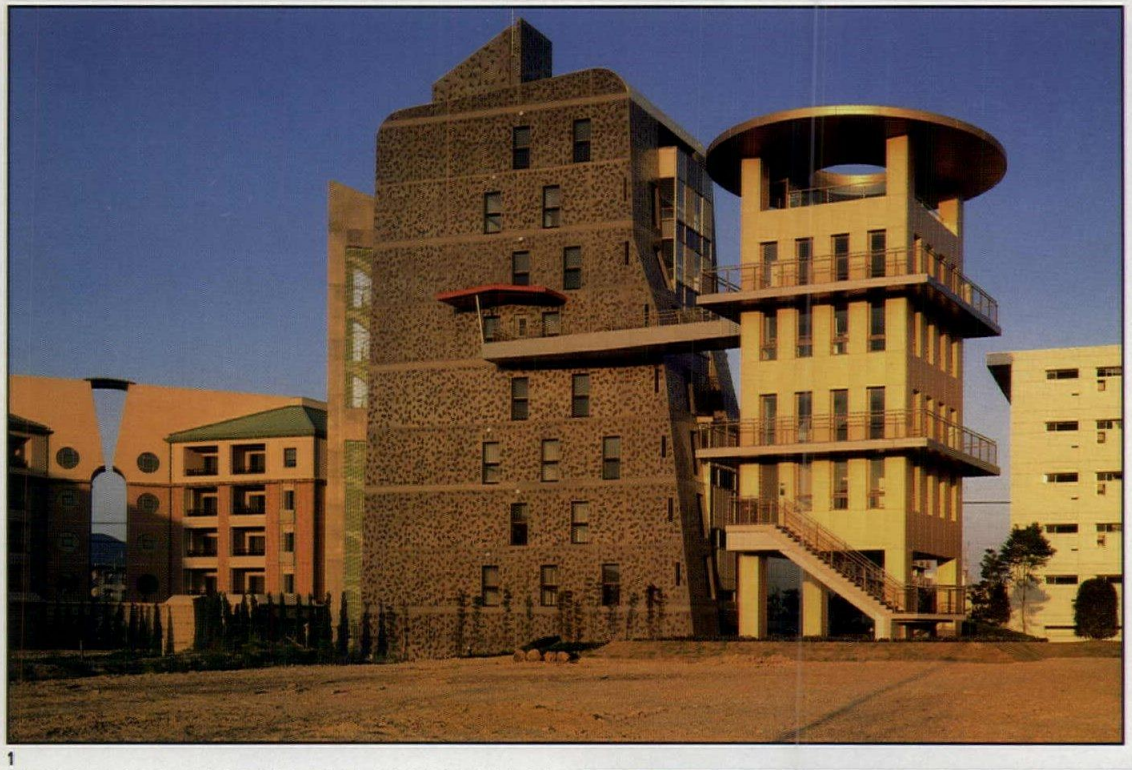


Oscar Tusquets

Oscar Tusquets made the most of his two-cornered site by breaking up the building mass to gain more southern exposure for the apartments and to create public plazas on the street corners. Two square residential blocks set in diagonal opposition to each other are joined at their inner corners by a spine that rises above the roofs. The four-story blocks ascend from a podium that contains parking and commercial space and connects the two buildings at street level.

Although Tusquets took some teasing about his conservative approach – an English critic said that the building looked like a Spanish *palazzo* – he defended himself saying that, "following the style of architecture we are familiar with and that we know how to do well, we have managed to make a dream come true for housewives on the other side of the world. Not bad. It could go to show that architecture that is suitable for the climate, is well built, and fits in with the user's customs is understood and appreciated all over the world." He refers here to the popularity of his apartment designs with the general public. To Westerners, the floor plans and the proportions of the spaces have a comfortable quality and a logic that Westward-looking Japanese have long admired.

Exterior details, particularly those framing the windows, are interesting, but one senses that they would be more so if one had the advantage of comparing them with similar details on buildings in Tusquets's hometown, Barcelona. The entrance lobby has an old-world elegance heightened by finely crafted materials such as stucco troweled to a marblelike finish and a color scheme that features a range of warm tones accented by bright blue moldings.



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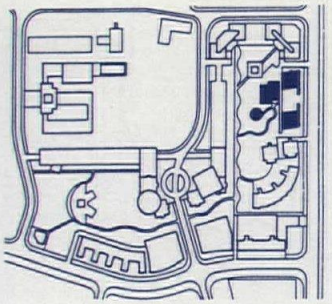


The figurative buildings on Portzamparc's site, a "mountain" and its counterpart, a "tempietto," (1) invite passersby to suspend reality. The plans, however, are more conventional, with discrete rooms, like traditional Western apartments (2). They are a prudent offering to the Japanese, who have long emulated Continental culture.

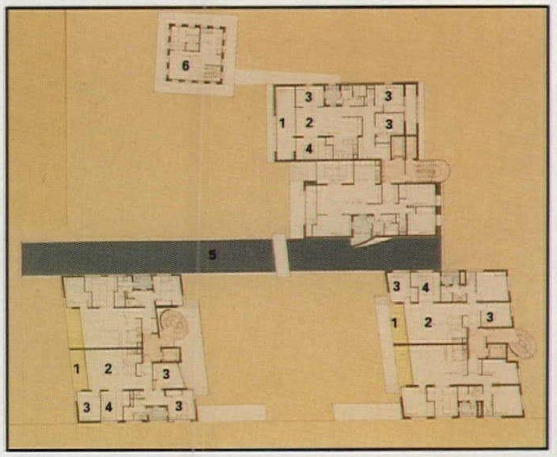
Christian de Portzamparc

Portzamparc describes lively urban space as having defined but open forms with connections to other spaces. This has led him to carve open urban blocks and "to maintain major freedom in architectural shapes." Here, he solved the problem of getting sunlight into the units on his east-facing site by dividing them up into several buildings disposed scenographically around a park. On the street, two identical buildings clad in milk-white glass panels frame an arresting scene featuring a gray concrete mountain flecked with black standing on the edge of a canal "stage center," and a bronze-colored tempietto gleaming in the distance. For Portzamparc, these are characters in a scenario about urban living.

According to Portzamparc, today's city is not "grounded on Classical harmony which attempts to achieve an even combination of things. . . Today's cities are made of tension. However, a punch is often needed so that these tensions become strong and beautiful." To Westerners, this poetic twist on the generally homogeneous themes of housing would seem more plausible if Nexus World were a resort. But is it reasonable to inhabit a mountain, even if the units are not caves?

If the outsides are fanciful, the more conventional apartment interiors have won approval from the public. But these buildings display their finery on the exteriors. The white glass panels mentioned above are as suave and luminous as the concrete mountain walls are primitive and grim. The metallic sheen of the tempietto dispels the mountain gloom and enables the small building to hold its own against its larger neighbors.

2

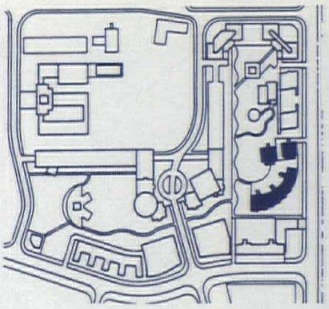


GROUND FLOOR PLAN

N ↗ 40'/12m

Project: *Nexus World Housing, Fukuoka, Japan.*
Architects: *Christian de Portzamparc, Paris.*
Program: *37 condominiums.*
Photos: *Richard Barnes.*

1 TERRACE
2 LIVING/DINING
3 BEDROOM
4 TATAMI
5 CANAL
6 TOWER UNIT

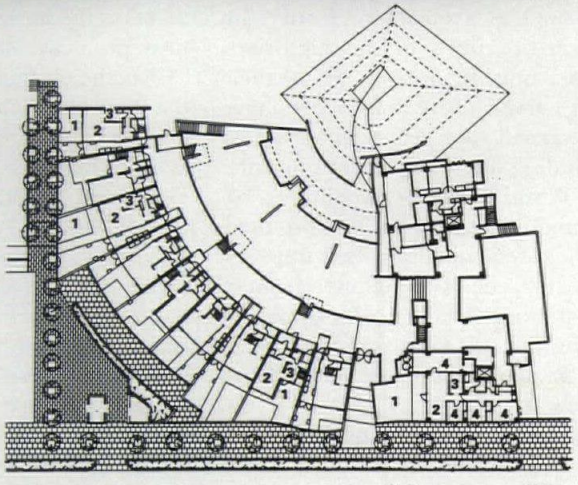


The mechanistic character of Osamu Ishiyama's three apartment buildings (1) bespeaks his fascination with industrial forms. The silhouette of each building is animated with flared walls and roof canopies (2), stylized versions of common railway structures.

1

2

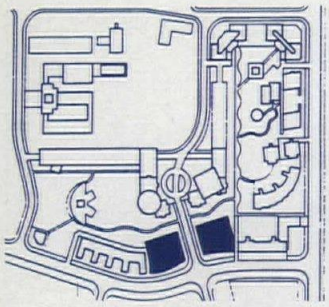
Project: *Nexus World Housing, Fukuoka, Japan.*
Architects: *Osamu Ishiyama Laboratory, Waseda University, Tokyo (Osamu Ishiyama, principal; Ritsu Shimomura, project architect).*
Program: *40 condominiums.*
Consultants: *Moritani Structural Engineers Inc.*
Photos: *Richard Barnes.*



Osamu Ishiyama

Ishiyama speaks of Japanese housing in unflattering terms: "In the 1990s, all varieties of architectural expression have been produced, reproduced, and abolished, one after another. The speed and energy of this movement has been remarkable." Ishiyama was severely disillusioned by the prospects for housing in the 1980s. He found private construction companies "engrossed in promoting the sale of kitsch lacking any real architectural expression." So he welcomed the opportunity to design this project, and was pleased to be asked to provide "a touch of Japanese style" because "Japanese style is a sort of hot potato for modern architectural design in Japan." The results, it seemed to this writer, reveal the differences between the poetic sensibilities of the Japanese and of Western architects. Ishiyama's buildings are unmistakably Japanese in their manipulation of forms and are identifiable as Ishiyama's design because of the idiosyncratic use of industrial artifacts.

Ishiyama's solution to the sunlight access code was to spread out one of his buildings like a fan across the southeast corner of the site. The other buildings are also angled and faceted to increase their southern exposure. The most disconcerting aspect of the complex is the way the tall building swells out as it ascends. This building is on axis from the formal park framed by Portzamparc's buildings. Indeed, the canal and strips of planted beds that give direction to Portzamparc's plaza end abruptly – screech to a halt, as it were – at this daunting structure. Similarly, Ishiyama's building appears about to invade Mark Mack's backyard, which abuts its southern flank. An embattled samurai, bristling with newfangled weaponry, bursting out of his lair to vanquish the Western upstarts?



The glazed upper walls of Koolhaas's twin buildings seem to float from their masonry base (1). The transparent walls, not visible from the street, open to private courtyards; living spaces occupy the topmost level (2). The undulating metal roofs, a spirited evocation of midcentury Modernism (3), will be a contoured sculpture when seen from the apartments in Isozaki's neighboring high-rises.

Courtesy of Office for Metropolitan Architecture

1

Rem Koolhaas

"For our first project in Japan," Rem Koolhaas stated, "we wanted to introduce a new type of housing – not a conventional apartment building, not a freestanding house (that we had experimented with in Europe) but [a type] that could now be realized in the economic conditions of Japan. The project consists of 24 individual houses – each three stories high – packed together to form 2 blocks. . . each house is penetrated by a private vertical courtyard that introduces light and space into the center. . . "

It sounds matter-of-fact, but in reality, the logic of these two buildings is enveloped in a surreal quality that makes them a fitting gateway into the Nexus World site. They have "cyclopic walls," Koolhaas's term for the girdles of licorice-colored concrete with a *faux* masonry surface. A caricature of the foundation walls of Japanese castles, they are intended as a figurative base for Isozaki's future towers as well as a means to fortify the privacy of the low-rise units in the high-rises' embrace. Koolhaas's units figuratively escape their confinement with curved roofs that billow above the walls: Three warped roof planes ripple across the top of the building like waves frozen in time. Of all the Nexus World buildings, Koolhaas's are the most self-contained, the least tied to their surroundings. Their lyric quality is best appreciated when they are seen as a totality from a distance or from the upper floors of neighboring buildings. At night, the soft glow from the interiors suffuses the air above the black walls with a fairytale enchantment.

The interior of each three-story house progresses from a ground-floor entrance court with white walls and a white gravel floor to a *genkan*, the place where shoes are removed and stored for future use. From here a long flight of steps ascends to the second-floor bedrooms and finally to the third, or living, floor, which Koolhaas describes as "a single extroverted space." The overall tonality is cool; the character is intensely private. Hiroshi Watanabe observed that Koolhaas has captured the Japanese taste for privacy within walls. On the sleeping floor, the bedrooms are discrete spaces entered from a minimal hallway. Although each one faces the open court, the windows are above solid wall sections that screen the occupants. Even the extroverted top floor is oriented to the out-of-doors and the sky and is less amenable to sociability within the household. There is a monastic serenity to these houses that keeps the hectic outside world at bay. There is also whimsy in the garden, a patch of green groundcover that crowns the dome of the top floor "extra" room. From the roof deck on the opposite side of the court this sprouted dome is an amusing element on the horizon; from the main living space it presents a coy, sidelong image.

Koolhaas's buildings have the largest units and the least varied floor plans at Nexus World. They are also the most expensive, a secondary issue except that their steep stairways discourage the older and wealthier generation of buyers. Although not so suitable for families with young children – too many stairs, too many places to hide – they would seem ideal for the household with teenagers, which is also the one with the most claims on its income. If we posit an American market for these units, we could predict that few people would see themselves living in a surrealistic bastion. But Koolhaas has not designed these buildings for the faint-hearted, and the Japanese

(continued on page 76)

2, 3

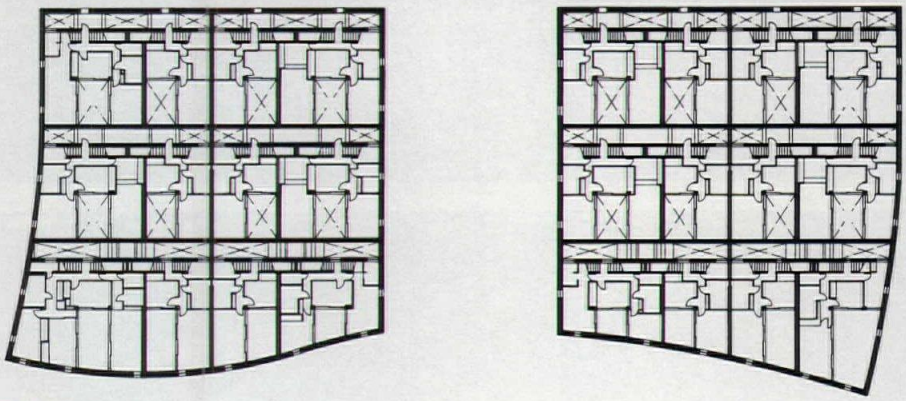
The façades lining the cross street (4) have a passageway that leads to the courtyard entries of each 3-story apartment. The rubble-faced concrete walls that wrap around the buildings (5) are cantilevered over retail space on the first floor. Glass and steel storefronts modulate the façade and offer a textural contrast to the bulky walls above.

Courtesy of Office for Metropolitan Architecture

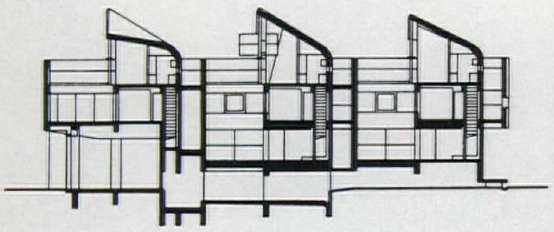
4

(continued from page 74)

seem more open-minded than any other nationality about accepting new and unusual images in architecture. Still, the developers were stunned when Koolhaas chose to ignore his choice location on the south side of the site by giving the buildings blank walls. Yet, they agreed to his scheme with astonishing magnanimity, saying that since everyone has a different lifestyle and sensibility, a generally marketable space fits nobody's lifestyle. This is the kind of statement that developers of market-rate housing in the United States use to hype their standardized plans. Maybe Japan represents the next world.



SECOND FLOOR PLAN



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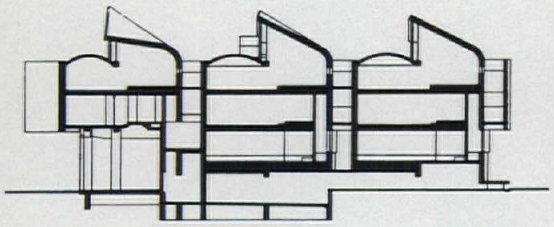
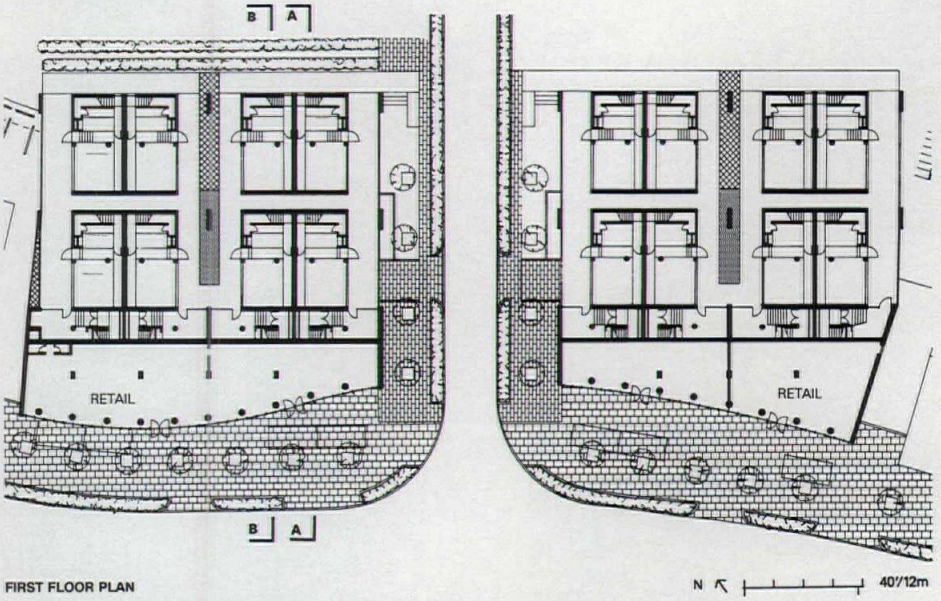


SECTION AA

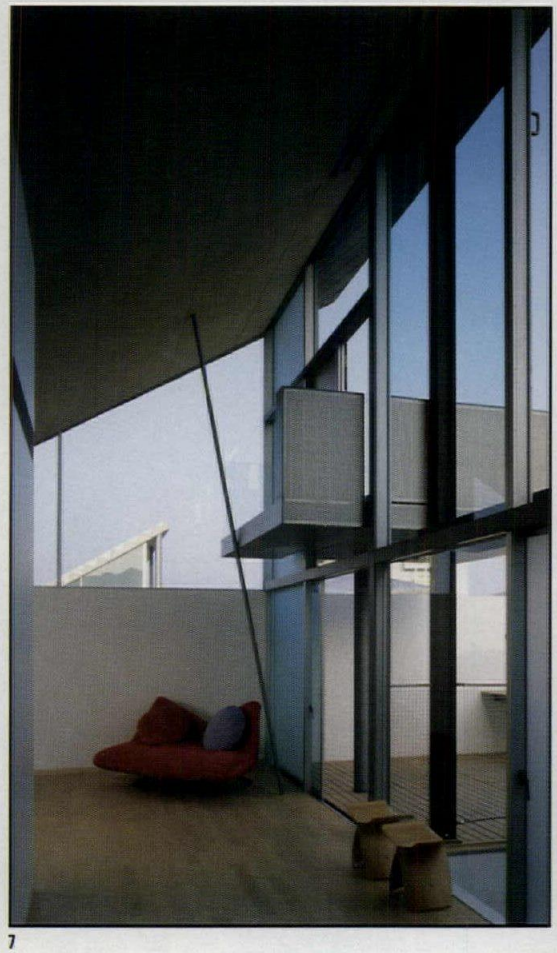


FIRST FLOOR PLAN

Project: *Nexus World Housing, Fukuoka, Japan.*
Architects: *Rem Koolhaas, Rotterdam, the Netherlands, with Fuminori Hoshino (Ron Steiner, Maartje Lammers, Mark Peeters, Ramon Klein, Leo van Immerzeel, Jaap van Heest, Shinichi Kanetugi, project team; Kyoko Ohashi, Petra Blaisse, interiors).*
Associated Architects: *Yoshikazu Kawamura. Program: 24 condominiums, 4 shops.*
Consultants: *Maeda Corporation, structural.*
Photos: *Richard Barnes, except as noted.*

A grassy mound surmounts a tatami room (6) whose low height contrasts with the soaring living/dining space (7). The balcony, reached with a ladder, overlooks the deck and three-story courtyard outside. The slope of the roof creates a shed-like housing for the kitchen, a white object in the airy living space (8).

6



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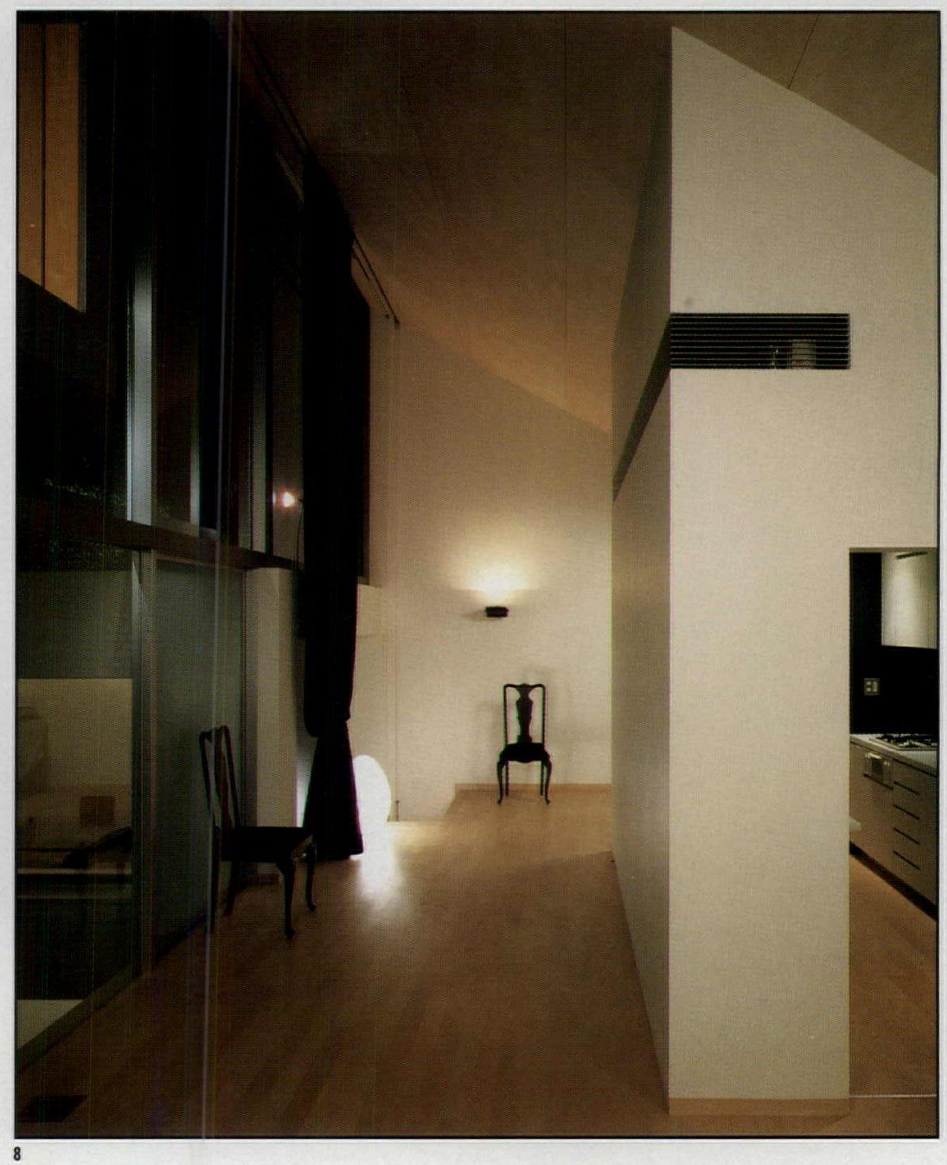


8

Nexus World Kashii bespeaks an exceptional rapport among its architects and patron,

according to P/A's Japan correspondent, Hiroshi Watanabe.

Radical Breakthroughs, Well Received

Nexus World Kashii is undoubtedly the most ambitious and arguably the most successful of the many projects completed by foreign architects since Japanese developers began to import Western design in earnest about three years ago. Here, five Western and two Japanese architects are creating an exceptionally large development, a sizable jump in scale from the interiors commissions once typical of Japanese opportunities for Westerners. However, the true boldness of the enterprise is the virtually free rein granted to the architects by their patron, Fukuoka Jisho: Housing innovations are hard-won in Japan, where private sector multi-unit housing has been subject to rigid conventions for decades.

Reactions among Japanese architects to the project have been generally favorable. Too often, well-known architects from abroad, commissioned by developers eager to capitalize on international reputations and content with anything that might garner publicity, have produced mediocre works that suggest only half-hearted involvement. However, even skeptics seem disarmed by the commitment shown by the designers at Nexus World Kashii. The architects' enthusiasm extended to details commonly bypassed, such as interphones and garbage bins. Ishiyama, himself a hands-on architect, thinks the involvement of his Western colleagues came as a surprise to the client. "The initial idea was probably to have us determine the overall character of each building, and for each architect to do maybe just one model room, with the rest being done by the developer. Then before anyone knew what was happening, the architects decided to do everything." As anybody familiar with the Japanese brand of baseball will point out, in this country demonstrating that one is making an all-out effort is every bit as important as the outcome of an endeavor. Thus, quite apart from the quality of the finished designs, the architects' zeal at Kashii earned the good will of many Japanese.

Arata Isozaki is widely credited with having energized the group. As producer, he created a challenge to which the younger architects responded. "The sense of competition made for excellent results," he remarked. "This would not have happened had there been a hundred architects, or just two. With hindsight I see that six or seven was just the right number." In the assignment of sites, Isozaki gave first choice to Koolhaas, who selected the lot bisected by the road running through the project and expressed a wish to be next to Holl. Isozaki says, "Since I knew them all personally, I tried to arrange [the rest of the assignments] so that no one would be at odds with whomever was next door. If there had been a quarrel [between architects] or if there had been trouble between the client and an architect, I would have been ready to step in and arbitrate, but as it turned out, few such problems arose."

The initial idea to build low-rise perimeter blocks had to be revised when it became clear that structures on the street to the east would not have sufficient exposure to meet sunlight standards set by the Housing Loan Corporation. (Only Koolhaas was exempted from those standards.) Ishiyama and Portzamparc proceeded to dismember their buildings and to stray beyond the borders that had been originally set for them. A dynamic interaction began to develop between their structures, as well as between Ishiyama's and Mack's. The result is an interesting contrast between the Holl/Koolhaas schemes and those of Ishiyama/Portzamparc: The first pair is inward-oriented and contemplative, while the other is more aggressive and freewheeling. The building by Mack shares some of the qualities of both; it mediates between the two pairs but has its own distinctive presence.

When discussing the quality of the individual units, comparisons are inevitably made to Nexus Momochi, an earlier project by the same developer where Michael Graves and Stanley Tigerman produced rather orthodox designs. Nearly everyone seems to agree that Nexus World Kashii is a great improvement. Here "many experiments were tried," says Isozaki. "Each architect sought a unique solution."

There are interesting things to be discovered in all the buildings at Kashii; however, the work that has most intrigued the Japanese is clearly that of Rem Koolhaas. The vertical deployment of rooms around a courtyard and the airy quality of the spaces are a revelation to many. One Japanese architect goes so far as to say that it "represents an important discovery in the history of multi-unit housing." However, many of the same people who praise Koolhaas's clear spatial arrangement are puzzled by his use of materials. What is one to make of the slick black concrete on the exterior, which the architect declares will provide plinths for the forthcoming towers by Isozaki? Is irony intended? Are the white pebbles and bamboo on the first floor a parody of contemporary interpretations of traditional Japanese architecture? To the Japanese, this work is a fascinating combination of lucidity and ambiguity.

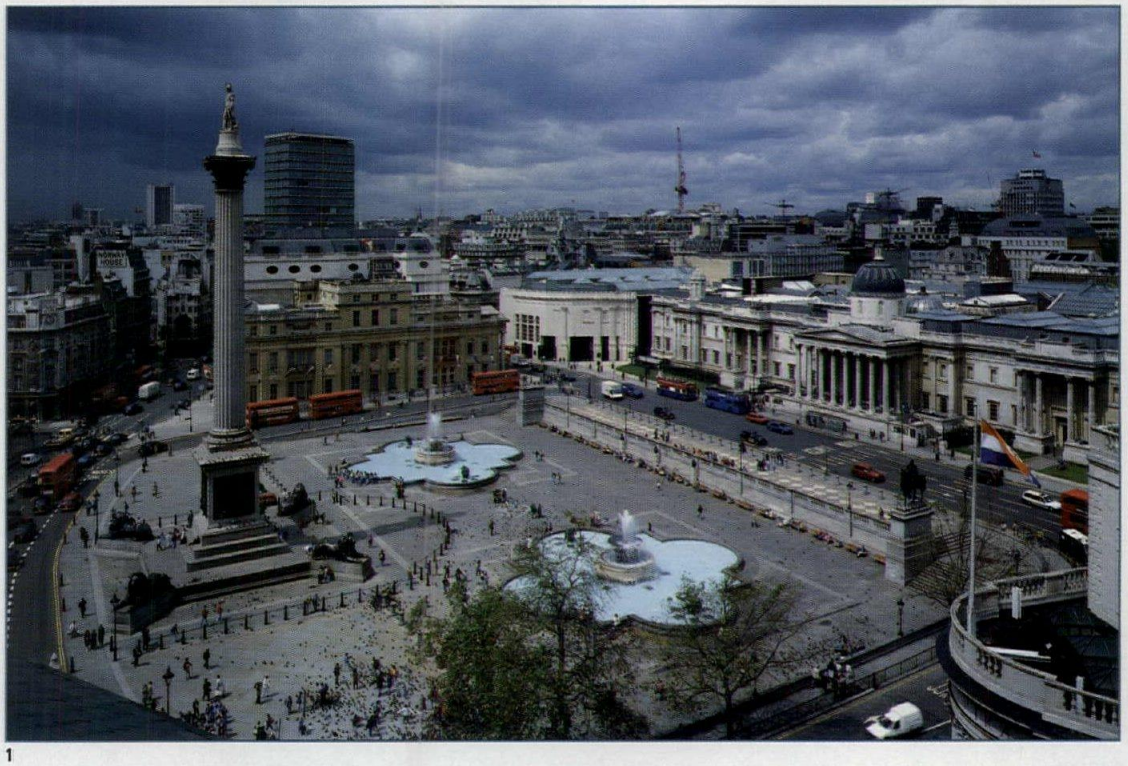
Holl's scheme has also been of special interest to the Japanese. The variety of experiences he made possible in the semi-public spaces is a welcome change from the abrupt transitions from the street to individual units typical of Japanese condominiums. The idea of hinged partitions is also an attractive one, though some feel such features need larger residential spaces to work effectively.

Can Nexus World Kashii serve as a model for the participation of Western architects in future Japanese projects? Isozaki cautions that it is a special case that owes its success to unique circumstances. "First of all it was possible because of Fukuoka," explains Isozaki. "The suburbs are expanding. The freeway was built with the exit. . . right there, suddenly making this land that had been useless quite attractive. Then there was the economic 'bubble' at the time. The company was trying to enhance its image and expand the scope of its activities." That window of opportunity may be closing; since last summer the "bubble" has been contracting. The character of the client was at least as important. "If Fukuoka Jisho had been a large corporation, there would have been experts to carry out market research and make calculations, and patterns would have been

(continued on page 152)

Learning from London

The new wing for London's National Gallery gave Venturi Scott Brown & Associates an ideal opportunity to apply their design principles, but they had to accept a pre-assigned role in an ongoing British design debate.



1

Holding down one corner of vast Trafalgar Square, the new museum wing (1, center of photo) is an extension in scale and materials of the National Gallery's sprawling 1838 façade by William Wilkins. A closer view of the Portland stone façade (2) shows the Mannerist handling of pilasters, cornices, and blind window niches on the new structure.

Long before Robert Venturi and Denise Scott Brown got the National Gallery job, the site had become a design battleground. A prior proposal for this wing had been rejected after Prince Charles denounced it in his first critical attack on British architecture, back in 1984. (See critique, p. 86.) The rejection led to a new program for the wing and to the second competition, among a stellar group of U.S. and British firms.

Winning this commission gave Venturi Scott Brown & Associates an uprecedented challenge: the most prominent commission the firm had ever handled and a highly visible position for American architecture on Trafalgar Square. In many ways, the job was ideally suited to the firm's design principles and proven skills: There were knotty contextual problems to be resolved and an opportunity for subtle orchestration of symbolic references. Their competition design – now faithfully executed – is by no means the historicist homage that the prince would probably have preferred, but a complex whole embodying contradictory impulses from both Classicism and Modernism.

The exterior of this new wing is an essay in contextualism: Every contour of its irregular front wall inflects to site conditions; every Classical detail of its façade is derived from the main building next door – and executed in the same stone. No wonder the building is accused of attempting invisibility. On closer inspection, however, one sees some fascinating Post-Modern games being played with these Classical elements – blind windows and moldings fading into the wall mass, syncopated pilasters with a single column in the round that mimics Nelson's Monument in the square. What's more, the actual openings in this façade slice right through the Classical overlay like a knife through a cake frosting.

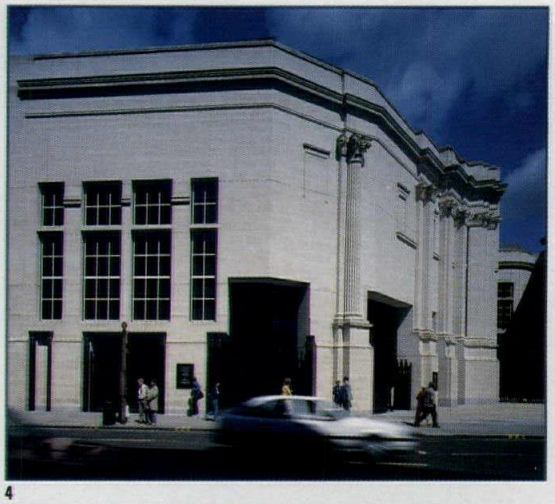
On the sides and back, the new wing has a bricky, functional-looking envelope. The big Modernist gesture is the vast glazed wall of the grand stairwell that runs up the east side of the wing, affording a view across the pedestrian passage to the exterior of the old gallery.

The commanding advantage of this design, in the eyes of the competition judges, was reportedly the design of the top-floor galleries – a sequence of elegantly scaled, top-lighted rooms laid out around an axis that extends across a bridge from the original building. These new rooms will well

Matt Wargo 2

Matt Wargo

3



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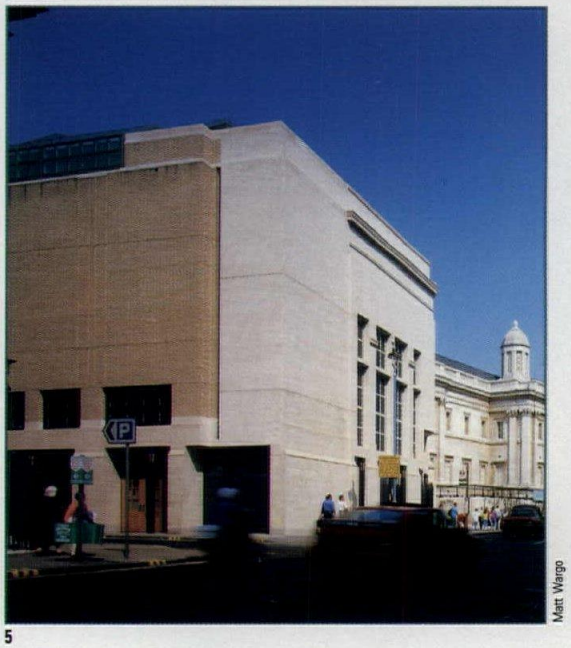


Matt Wargo

5

Old and new buildings are separated by a pedestrian passage (3) known as Jubilee Walk, which leads toward Leicester Square (site plan). A bridge developed as a circular rest area links the top-floor galleries on both sides to form a single permanent exhibition sequence. An all-glazed wall on the wing affords a wide-screen view of the old building's Classical flank. Entrances to the new wing from Pall Mall East (4) cut into the building volume with no regard for datum lines of the Corinthian order; the windowed face of the gallery restaurant bites just as casually into the entry loggia. A view of the southwest corner (5) shows the relatively pragmatic treatment of sidestreet walls, with brick walls – minus a parapet – above a stone street-level arcade.

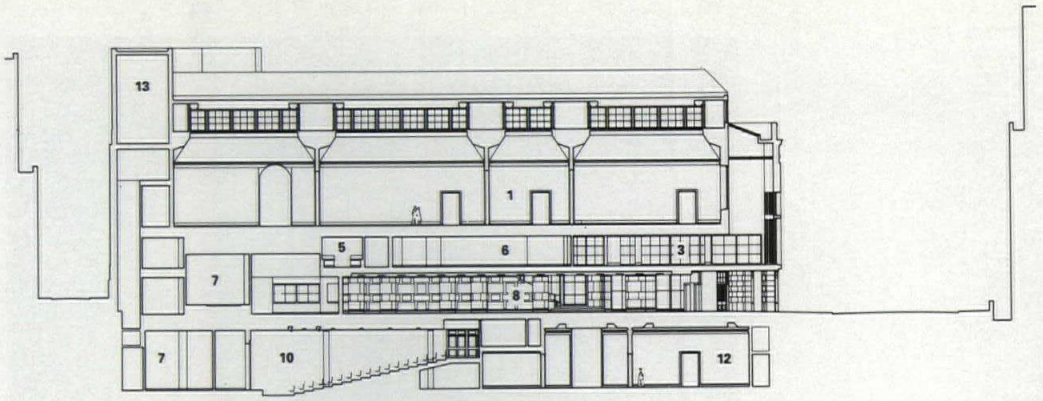
fill their role as part of a single permanent exhibition sequence occupying the top levels of both buildings. The slightly skewed relation of the galleries' axial layout to the wing's boundaries is plainly acknowledged in some off-square spaces, where concept visibly bends to circumstances.

These galleries are not only deferential to the old galleries next door, but are very well attuned to the art being shown in them. Their neutral colored walls will be washed with meticulously controlled light from roof monitors. In these well-tempered rooms, there is no place for design idiosyncrasy except in the frames of openings, and the architects have seized this opportunity eagerly. The series of archways that confront the visitor entering these galleries are flanked by columns whose exaggerated entasis and distorted capitals suggest over-inflated inflatables; their ironic Tuscan order is intriguing, but not necessarily the best complement to Piero della Francesca.

Below this main gallery floor, the architects have been able to tuck in a restaurant/conference level above the street-level foyer, then an auditorium and temporary exhibition floors below grade (see plans). The layouts of these levels respond frankly to differing functional demands, maintaining no formal relationship to each other. The street-floor foyer sustains the pointedly anti-Classical attitude of the cut-out entrance portals, but lacks their clarity; the boundaries of the space are vague, and large columns casually interrupt it.

Connecting the foyer to the main galleries is the grand stairwell – a buoyant, light-filled space rising between splayed walls. Satisfying as this space is, as a whole, it has some distracting details. The cast aluminum arch shapes at the top of the space, which recall Victorian iron framing, are visibly isolated from bearing elements, so that their purely scenographic role is emphasized; the black-painted aluminum framing of the glazed wall is too heavy and too prosaically laid out to sustain the effect of transparency suggested in renderings.

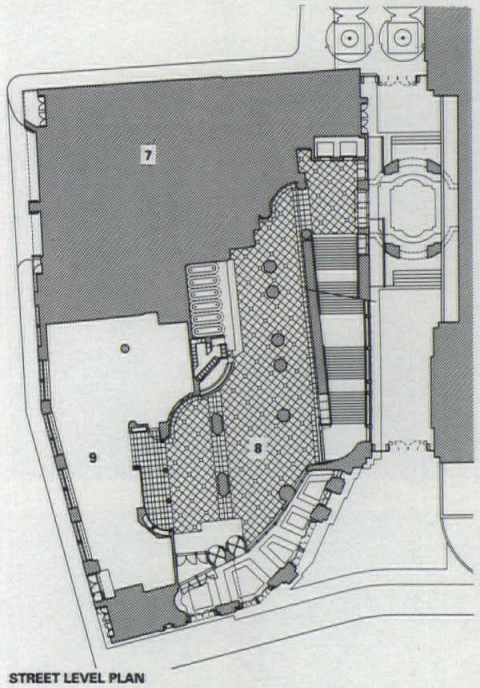
On this exceptionally sensitive commission, the architects have applied their characteristically painstaking design process to yield a combination of humility on the urban scale, common sense in building plans, and puckish idiosyncrasy in details. While a few elements may be disconcerting to the eye, there is plenty in this building to gratify the intellect. **John Morris Dixon** ■



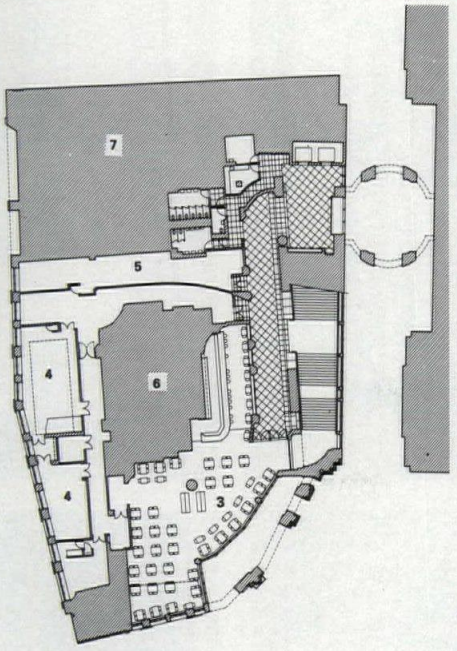
SECTION LOOKING EAST

40'/12m

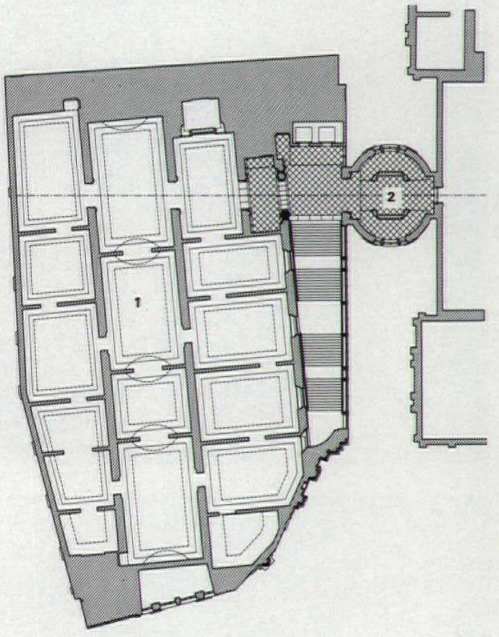
1 PERMANENT EXHIBITION GALLERIES
2 BRIDGE
3 RESTAURANT
4 CONFERENCE/RECEPTION
5 INFORMATION ROOM
6 KITCHEN
7 LOADING/STORAGE
8 ENTRY FOYER
9 GALLERY SHOP
10 AUDITORIUM
11 OPEN TO BELOW
12 TEMPORARY EXHIBITION GALLERIES
13 MECHANICAL



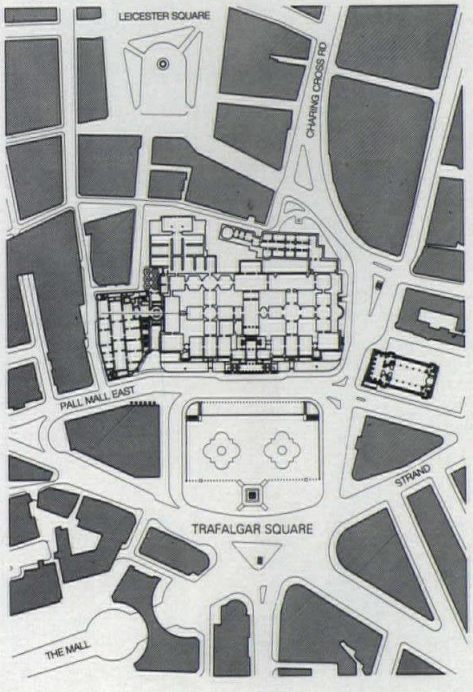
STREET LEVEL PLAN



MEZZANINE PLAN



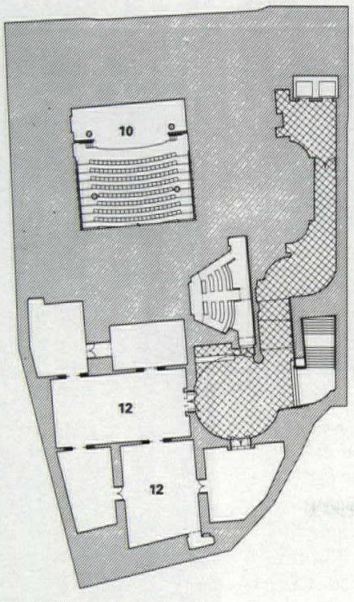
GALLERY LEVEL PLAN



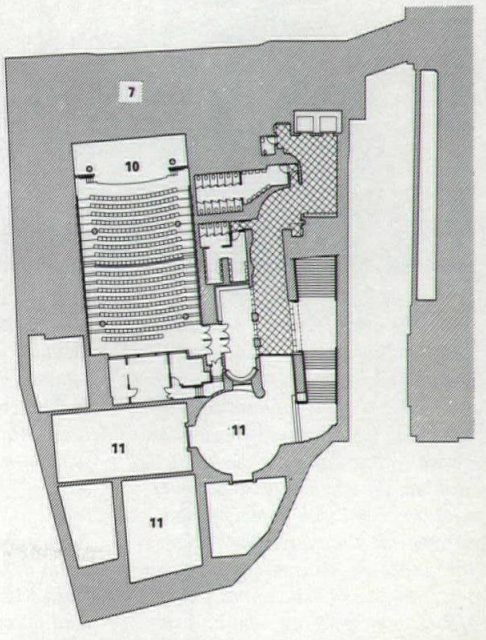
SITE PLAN

N

200'/60m



BASEMENT LEVEL PLAN



BASEMENT MEZZANINE PLAN

N

40'/12m

Phil Starling: The National Gallery

6

7

8

9

10

From the entry foyer (8), with its round columns and acoustically treated ceiling coffers, the grand stair (9) leads up to the restaurant level and on to the top-floor galleries; the glazed wall overlooking the original building illuminates the stone inner wall, inscribed with names of great artists; cast aluminum "arch" shapes are suspended above the stair. At the top of the stair (7) one finds the entrance to the galleries – on an axis extended from the old building by way of the bridge lounge (6); along the extended axis, plump Pietra Serena columns flank arched openings – some of them truncated by intruding volumes. Along the opposing axis (10) stone moldings frame cleanly arched openings; tall monitors flood these rooms with almost glare-free light. Among the superb Early Renaissance works displayed in these galleries are Cima's Incredulity of St. Thomas *(end of axis, 7) and Raphael's* Christ Crucified *(end of axis, 10).*

English critic Rowan Moore examines the new National Gallery wing from the viewpoint of the British public and profession.

Project: *The National Gallery Sainsbury Wing, London.*
Architects: *Venturi, Scott Brown & Associates, Philadelphia.*
Client: *NG Services Ltd.*
Site: *west of existing National Gallery, at northwest corner of Trafalgar Square, fronting on Pall Mall East; Jubilee Walk, pedestrian passage, separates old and new buildings.*
Program: *permanent galleries for Renaissance paintings, temporary exhibition galleries, 350-seat lecture theater, restaurant, bookshop, conference rooms and information center; 105,372 sq ft (9793 sq m), excluding mechanical spaces.*
Structural system: *cast-in-place concrete up to main gallery level; steel-framed roof.*
Major materials: *Portland stone, gray granite, and brick exterior walls; extruded aluminum windows and curtain wall; yorkstone and granite exterior paving; Chamessan stone interior walls; slate floors; granite stairs; American oak gallery floors; plaster and metal acoustic panel ceilings; fibrous plaster ornamental moldings and special plaster details.*
Mechanical systems: *air conditioning throughout;exhibition spaces controlled by computerized system to maintain 20C and 50 percent Rh.*
Consultants: *Armstrong Bell Landscape Design, landscape; Ove Arup & Partners, structural; Ove Arup & Partners with Jaros Baum & Bolles, mechanical; Jules Fisher and Paul Marantz, lighting; Arup Acoustics, acoustics; Gardiner & Theobald, Mott Green, costs; Technical Planning International, audio/visual; Cladtech Associates, glazing. Construction management: Sir Robert McAlpine Construction Management, Ltd.*
Costs: *not available.*
Photos: *Richard Davies, except as noted.*

Critique

It all depends whether you can take a joke. Recently *The Times* gave most of a page to the National Gallery extension, and to the opinions of the paper's editor, Simon Jenkins, and the critic Gavin Stamp – both of whom, in the tribal politics of British architectural criticism, are on the "traditionalist" side. Both picked up on the same aspects of Venturi Scott Brown & Associates' work – their liberties with the Corinthian order, the references to Soane, Lutyens and the English Baroque, even the same Tom Wolfe quote about Venturi skipping along the wall of the Modernist compound – but they drew opposite conclusions. For Jenkins, the Venturi firm has "transformed London with a gust of wit." For Stamp, the extension is "a huge joke at the expense of the Sainsbury family – and the country."

It is doubtful if a joke, good or bad, was what the gallery's trustees had in mind when they embarked on this adventure ten years ago, even though their original idea, of perching the new galleries on a speculative office block, now seems a little comic. But in 1981 Thatcherism was new, and it seemed like a good idea that the National Gallery should pay its way and respond to the disciplines of the market.

The developer/architect competition that followed was won by Ahrends Burton & Koralek. This turned out to be a poisoned chalice, for ABK found their design dismembered by the demands of the bizarre brief, and then by public criticism. In a classic case of shooting the messenger, both the scheme and the firm were dropped, and ABK's reputation suffered a jolt from which it has never fully recovered.

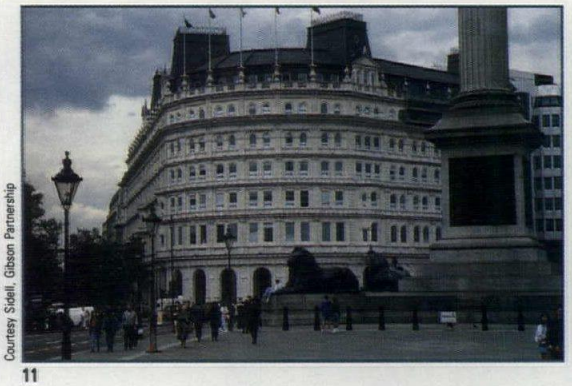
The Trustees, and everybody else, could have saved themselves a lot of trouble had they been able to read the mind of a diffident but opinionated man who, also in 1981, passed by the National Gallery in an open-topped carriage, attached to a 20-year-old in a puff-sleeved, sweetheart-necklined wedding dress. In the design of wedding dresses, and in other aspects of British life, the marriage of the Prince and Princess of Wales released a surge of sentimental traditionalism that has not abated, but how much Prince Charles's urbanism is informed by his wedding we can only conjecture. It is, however, noticeable that the sites of his three most significant interventions line the processional route he took from Buckingham Palace to St. Paul's.

All three are currently in the news. At Paternoster Square, by St. Paul's, a project composed of Neo-Classical rent slabs has been unveiled in place of the Modernist rent slabs which upset the prince three and a half years ago. Grand Buildings, an office block dressed in a replica Victorian façade, has just been completed on the opposite corner of Trafalgar Square from the Venturi extension. Both projects featured in Prince Charles's 1984 speech, which launched his career as an architectural critic. Famously, he referred to the ABK scheme as a "monstrous carbuncle," although there is a persistent but unconfirmable rumor that he was thinking of Richard Rogers's design, an unsuccessful finalist in the competition. Once ABK were sunk, the Sainsburys (a family of supermarket magnates) donated the funds necessary to excise the office element from the brief, and Venturi's prince-friendly design was eventually chosen from a limited competition.

As the conclusion to the great debate the prince is supposed to have launched, the three projects are disappointing. The disappointment is shared by supporters as well as opponents of the prince and, in general, critical reaction ranges from condemnation to tepid apology. Although Prince Charles has always insisted that he is not obsessed by style, the debate turns out to have been just that, and the dominant feature of Paternoster Square, Grand Buildings, and the Sainsbury Wing is the Classical style of their façades, which in all three cases bears no particular relation to the (modern) constructions behind.

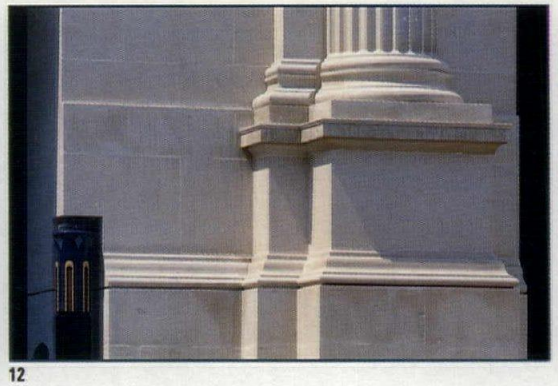
That said, the Sainsbury Wing is distinguished from other works of the Caroline Renaissance by virtue of Venturi & Scott Brown's knowingness. They use wit to circumvent the simple stupidity with which stone pilasters meet concrete frame in a structure like Grand Buildings, and disarm accusations of illiteracy with the pre-emptive misuse of the Corinthian order on the front façade. The mismatch of old and new, which in other Caroline-Classical buildings is the result of oversight and the source of pain, here constitutes the joke observed by Stamp and Jenkins in *The Times*.

It is the element of parody – whether of the farcical politics of the site, or of contemporary attitudes to the past, or even self-parody by the architects – that makes reactions to the building



Courtesy Sidell, Gibson Partnership

11



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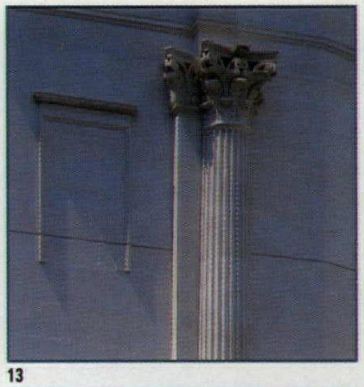

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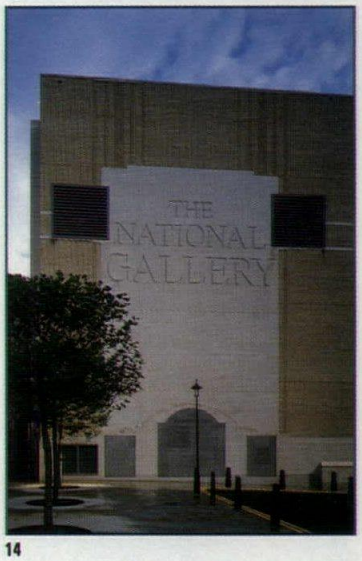


14

At the opposite corner of Trafalgar Square (11), the 1879 Grand Buildings have been replaced by a new structure by the Sidell Gibson Partnership that meticulously duplicates its curving envelope. The façade of the new gallery wing includes, at lower levels around entrances, some polychromed cast iron columns (12) that recall, says Robert Venturi, the early 19th-Century work of Glasgow architect "Greek" Thomson. Among the tall pilasters derived from the original National Gallery front, Venturi Scott Brown & Associates have placed a fully rounded Corinthian column (13) that echoes the Nelson Monument in the center of the square (1, 11). On the little-seen north wall of the new wing (14), the architects have placed a large-scale inscription between big mechanical grilles.

unpredictable. Many traditionalists, like Stamp, hate it, but at least one Modernist critic, Martin Pawley, likes it, on the grounds that the Venturis have grasped that "all buildings are as alike as T-shirts. The only interesting thing about them is the message on the front." Feelings are heightened by the fact that Venturi is American: While Stamp senses that his patriotism is being mocked, Pawley is reacting against the small-minded resentment with which much of the British profession has greeted the influx (and embarrassing success) of the SOMs, KPFs, SHCs and HOKs of this world.

For all the passion they generate, however, these arcana will be a matter of indifference to that intangible entity, the general public, in whose name the prince first raised his banner. Indeed, I

"It is the element of parody – whether of the farcical politics of the site, or of contemporary attitudes to the past, or even self-parody by the architects – that makes reactions to the building unpredictable."

suspect that popular interest in a stylistic battle on the northwest corner of Trafalgar Square was always overrated. Trafalgar Square, like many of London's most famous public places, is where Londoners never go except to drive round it in their cars. It inspires less the affection due (in Prince Charles's words) to a "much loved friend," than the duty owed to a dull old relative.

Given this, and given that most people are not much concerned with the niceties of the Corinthian order, both Stamp and Jenkins overrate the power of the joke. Good jokes are usually about something serious, like death. The man in the street, and his self-appointed representative, the prince, will not get the joke, but will like the extension for negative reasons, for its invisibilism, for the way it slips unnoticed into the square.

If this article is more about politics than about architecture, it is because the politics of the Sainsbury Wing are more extraordinary than the building. The latter is at once palliative and obscure, relying too much on mirthless academic wit. Venturi has always been too much tortured by architectural history to be the populist he would sometimes like to be, and in this the Sainsbury Wing runs true to form.

The other flaw in his approach has been the ease with which complexity is confused with expediency, a problem which afflicts the interior of the Sainsbury Wing. The main reason for building the extension, the new exhibition space, has been the least controversial part of the design: With reason, since it is well-proportioned and well-lighted, although it is disappointing that we can find no better way to hang paintings than against a neutral, "objective" background of nothingness. The wing's other success is the staircase, which relieves the claustrophobic *fug* of museums with light and air and the sense of being outside. Unfortunately the rest of the interior sacrifices its shape to the demands of the brief, and Venturi's attempts to control its billowing spaces with the odd column, or sinuous wall, or false perspective serve only to heighten the discordance.

There is no sense that the basement, the foyers, the cafe and the galleries belong to the same building, other than through a shared quirkiness. It appears that Venturi is trying to establish a metaphoric structure (the actual structure is, of course, concrete frame), with big stone columns and arches, but the idea is too erratically applied to convince. One's memory is not so short as to forget that the Tuscan columns on the top floor rest on absolutely nothing. If this is Mannerist wit it is, as on the exterior, too aimless and abstract to be funny.

Given the emotional load laid on the site by a decade of controversy, Venturi's suave evasions were perhaps the best one could hope for, but the dominant feeling the building inspires is a sense of waste. The extension is a good mimic and has successful moments of improvisation, but not much direction of its own. In its deference to Wilkins's original design, both inside and out, it serves mainly to sustain the (tepid) status quo. One might have hoped that the potency of the brief and of the building's contents, the munificence of its benefactors, the skill of the architects, and the passion invested in the project would result in a building that does more than just tread water.

Rowan Moore ■

The author is a principal of the architecture firm of Zombory-Moldovan Moore Ng, London. He writes for British architecture magazines and is a frequent contributor to the London newspaper, The Independent.

Three for One

At Princeton, Venturi Scott Brown & Associates add to an existing building, creating three "halls."

1

The narrow street frontage of Fisher Hall marks the beginning of the institutionally scaled campus buildings and the end of the residentially scaled eating clubs on Prospect Avenue (1). The architects chose not to respond to Minoru Yamasaki's aloof Robertson Hall (1964) except in trying to make a good space between the buildings (2). At the urging of the departments housed in the building, separate entrances were provided: Bendheim Hall is entered from the level of Robertson Hall's podium under a marble façade that mimics an engaged pediment (3), while the Fisher Hall entrance is at street level, tucked under the bow window (4).

It is surely no accident that Venturi Scott Brown & Associates have designed a number of buildings on college campuses – especially Princeton's – in recent years. The central authority of the university allows the firm the opportunity to address its most important ideas – the adjustment to and exploitation of existing conditions – without regard to property lines. In the case of Fisher and Bendheim Halls, VSBA's third new building at Princeton, that opportunity was not wasted.

The program for the building sounds vexing: 54,000 square feet (including the renovated Corwin Hall) on a sloping sliver of land with a 52-foot height limit; three university departments who each want their own identities preserved with separate entrances; a row of old residentially scaled eating clubs on one side and an aloof 1964 building by Minoru Yamasaki (Robertson Hall) close by on the other. But VSBA's solution produced a building that seems like an essential part of Princeton's campus plan. The building's street face, with a bow window that recalls that of the firm's Gordon Wu Hall (1980), mediates between the eating clubs and the institutionally scaled campus Robertson Hall with grace. A monumental set of stairs separates Fisher and Bendheim from Robertson Hall, strengthening an existing circulation route to Scudder Plaza, a popular gathering space. And by placing the two new entrances on different levels – the economics department's Fisher Hall at the street, and the Center for International Studies's Bendheim Hall at the level of Robertson Hall's podium – barrier-free access is provided at each level.

Aside from these planning successes and a couple of pleasant interiors, Fisher/Bendheim is a rather conventional building dominated by offices – without question, a "decorated shed." (There are classrooms and computer rooms, unfortunately, in the windowless basement; VSBA wisely decided to give the daylight to the office workers, who spend eight hours a day in the building.) Inside its corridors, it is not unlike Corwin Hall, the spare Gothic building to which it connects. One strange sight is the abrupt change of floor tile and wall color in the corridors where you pass from one department to another. The architects had planned to put doors between the departments, but fire laws prohibited this; still, the departments insisted on some sort of visual separation.

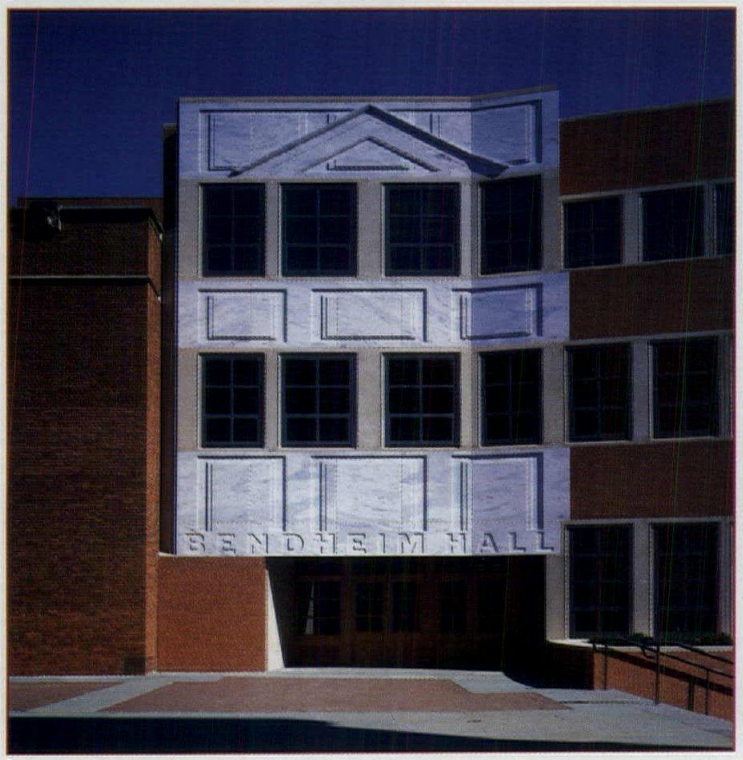
As for the shed's decoration, it is as clever and self-conscious as one expects from VSBA: The brick bow hangs above the Fisher Hall entrance, vehemently denying that it is a bearing wall. A shallow shed-roofed volume is "added" to the street face. Detailing is clean and modern, with flush connections throughout, reminding us that VSBA does not subscribe to the argument that moldings and trim can hide a multitude of sins.

Some of the building's façade games are willful, and, like past Venturi works, are hard to criticize – either you like them or you don't. The building turns from the axis of Corwin Hall to that of Prospect Avenue just off the center of the marble entrance to Bendheim Hall – in mid-pediment – a classic Venturi subversion of formality. But the further pun, on the "bend" in "Bendheim," was unintentional, according to project architect Edward Chuchla. He explains that while the building was in design and construction, the university had not yet revealed the name of the halls; the name Bendheim was a surprise to them – and arguably a pleasant one, depending on your sense of humor.

Mark Alden Branch ■

2

Cervin Robinson



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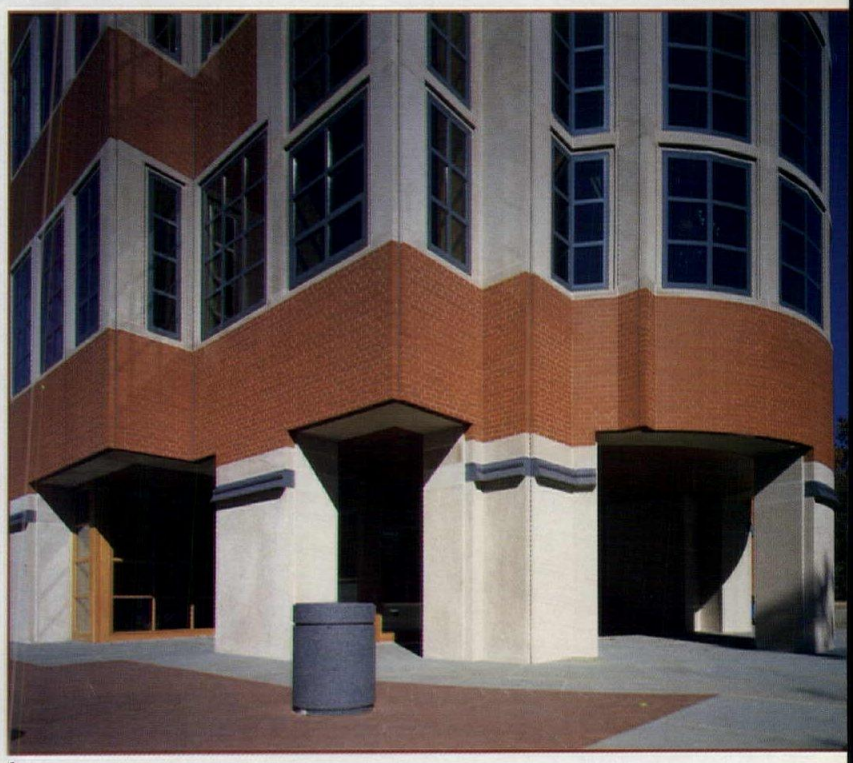
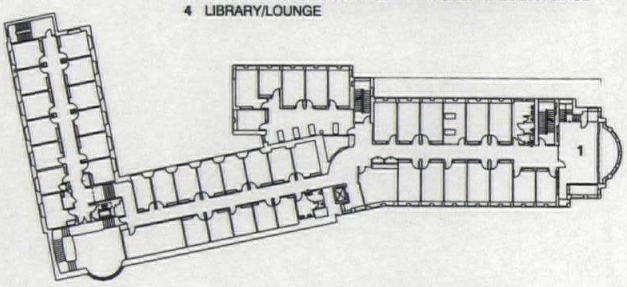
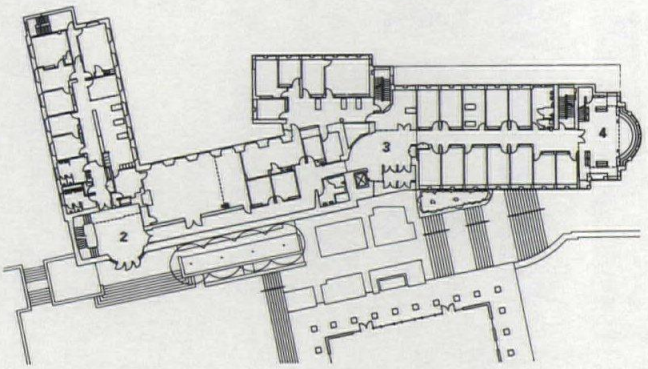


4

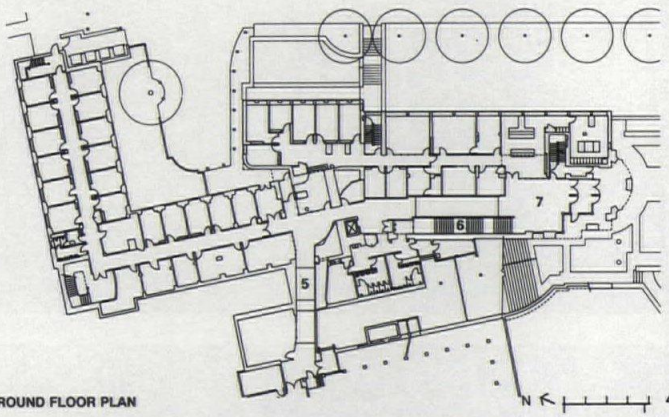
1 UPPER LIBRARY/LOUNGE
2 CORWIN HALL ENTRANCE
3 BENDHEIM HALL ENTRANCE
4 LIBRARY/LOUNGE
5 TUNNEL TO ROBERTSON HALL
6 STAIRS TO BASEMENT
7 FISHER HALL ENTRANCE



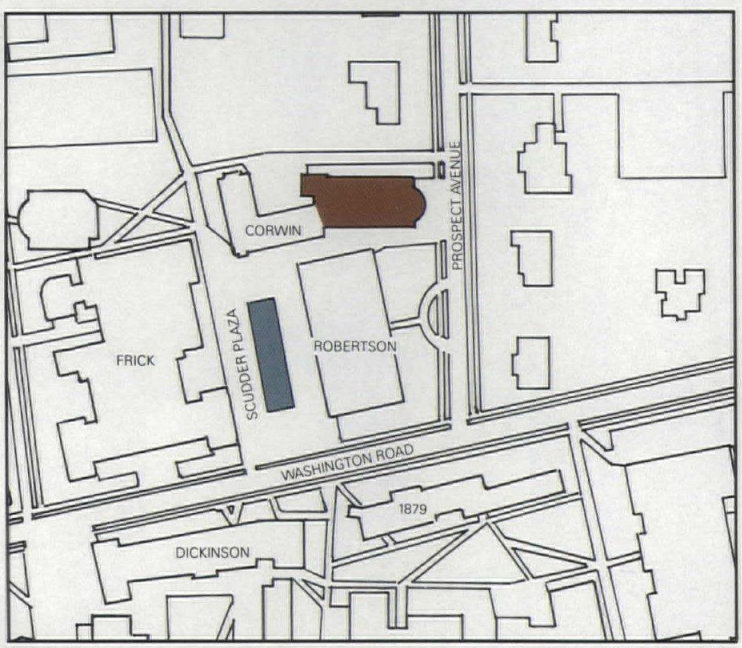
SECOND FLOOR PLAN



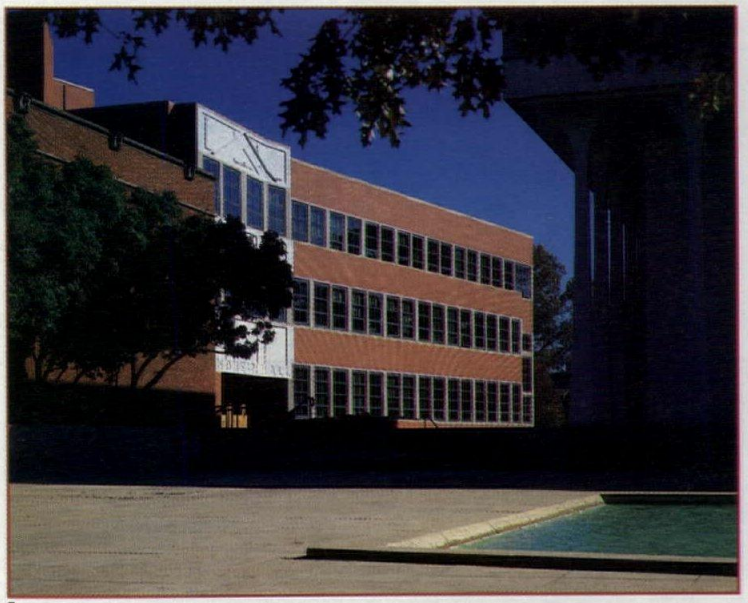
PODIUM FLOOR PLAN



GROUND FLOOR PLAN



SITE PLAN



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6

7

Project: *Fisher and Bendheim Halls, E.S. Corwin Hall (improvements), Princeton University, Princeton, New Jersey.*
Architects: *Venturi Scott Brown & Associates, Philadelphia (Robert Venturi, principal-in-charge; R. David Schaaf, Venita Van Hamme Brown, project managers; Edward Chuchla, project architect).*
Client: *The Trustees of Princeton University.*
Site: *a small lot on Prospect Avenue between Minoru Yamasaki's Robertson Hall (1964) and Princeton's row of residentially scaled eating clubs.*
Program: *new building to provide, with the existing E.S. Corwin Hall, 54,000 sq ft of offices, classrooms, library/lounge, seminar rooms, conference rooms, and computer rooms for three Princeton departments (Economics, Politics, and the Center for International Studies), each with its own entrance.*
Structural system: *concrete foundation walls; steel columns and beams with metal and concrete decks.*
Major materials: *brick, limestone, marble, and granite skin;, built-up and standing seam roofing; gypsum board interior walls; oak doors and woodwork; quarry tile, vinyl tile, and carpet flooring; acoustical tile ceiling.* *(See Building Materials, p. 147.)*
Mechanical systems: *fan coil and VAV HVAC system; steam and chilled water from university plant.*
Consultants: *Robert Fleming & Associates, landscape; Blackburn Engineering, structural; The Sigel Group, mechanical; Van Wote/Harvey, Inc., civil engineering; Associated Construction Consultants, waterproofing; Kenney/Williams/Williams, building technolgies.*
General contractor: *Barr & Barr, Inc., New York.*
Costs: *withheld at owner's request.*
Photos: *Matt Wargo, except as noted.*

The stairs between Fisher/Bendheim Halls and Robertson Hall preserve an existing pedestrian path between Prospect Avenue and Scudder Plaza (5), a popular gathering place with a much-used shallow pool. Inside, oak doors and trim were used in more public areas like the Fisher Hall entrance (6) and the basement classrooms (7), while less expensive finishes were used in the office areas. The library/lounge (8) overlooks Prospect Avenue through the great bow window one level above the street.

Perspectives

Three essays address **the state of landscape** architecture. In the first, **Anne Whiston Spirn** agitates for greater integration of design fields and a broader vision of the turf.

Seeing and Making the Landscape Whole

Architects have "rediscovered" the landscape. For decades, they have used figure-ground diagrams – with buildings black and all the rest blank – to depict urban districts. Now trees, earth, and sky have reappeared on drawings, and some architects have added gardens and parks to their repertoire. Architects are not alone in their renewed attention to the landscape. This is part of a larger, growing interest on the part of society. Why, until so recently, was the landscape invisible? Why, now, has it become an object of concern? And why, despite this interest, is the discipline of landscape architecture so poorly understood?

These are questions landscape architects are asking themselves. The answers are not simple; they lie both in the values of society and in the nature of our discipline itself. To complicate matters further, the renewed visibility of the landscape is only partial. This situation resembles the proverbial story of the blind men and the elephant, where each man feels a different part of the beast and, as a result, arrives at a very different definition of an elephant. So it is with the landscape. Much recent interest has focused on private gardens, public places as art, wilderness preservation, and global landscape change. Each "interest" group defines the landscape differently. Meanwhile, most of the everyday landscape of city, suburb, and region within which we live receives little or no attention.

Our society promotes the individual, the immediate, the material, and the straightforward, and it is suspicious of the communal, the long-term, the intellectual or spiritual, and the complex. It is therefore no surprise that the landscape, particularly the public landscape, is undervalued in the United States. Landscapes are not readily perceived as objects; they may take years to mature, requiring careful attention and ample resources. Buildings, by contrast, provide immediate gratification upon completion and are monuments to the institution, corporation, or family who finances them and to the architects who design them.

Landscape architecture consists of the artful shaping of the landscape to serve human purposes. Landscape architects work at many scales, from the garden to the region. Most people, including architects, have little understanding of the scope and complexity of landscape architecture and little knowledge of its history. With the exception of gardens, historians have largely neglected the field. Several years ago, for example, landscape architects listened with amazement at a conference on the landscape at the Museum of Modern Art where architects and architectural historians pondered such questions as why there was no modern movement in landscape architecture. Why and how could they have overlooked Tunnard, Church, Halprin, Eckbo, Kiley, and Burle Marx, not to mention truly "lost" figures such as Sørensen?

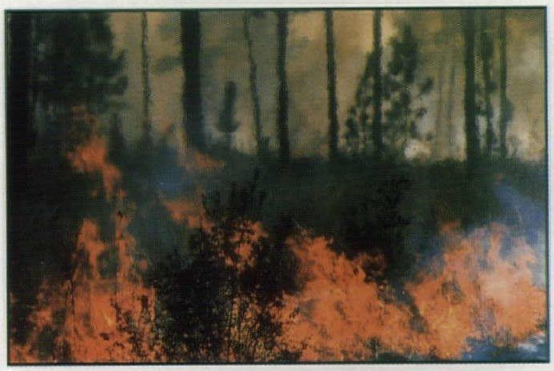
Exploring the temporal aspects of landscape architecture: "Path of Decomposition," a study by Tarna Agranat, from a first-year graduate student project at the University of Pennsylvania.

"Much recent interest has focused on private gardens, public places as art, wilderness preservation, and global landscape change... Meanwhile, most of the everyday landscape of city, suburb, and region within which we live receives little or no attention."

Despite an enormous body of work over the past century, much good work of landscape architects is not "seen"; that is, it is not understood as something that has been designed and deliberately constructed, even when the landscape has been radically reshaped. Many landmarks of landscape architecture are assumed to be works of nature or serendipitous products of culture. This presents a real dilemma for a profession that is fundamentally about shaping. It has led some landscape architects, particularly recently, to avoid all projects except those that are immediately recognizable as "designed." By and large, it is this work alone that is published in architectural journals such as this one; and thus are the preconceptions perpetuated.

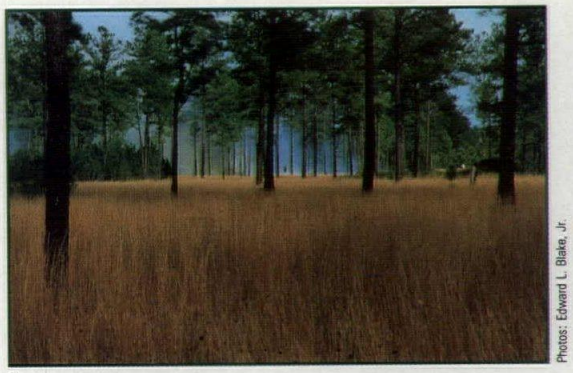
Landscape architecture shares with architecture many of the same skills and concerns for shaping spaces and making places. There are, of course, differences of medium, methods, and emphasis. The really profound differences, however, are not so much in the disciplines themselves as in the way the two professions are taught and practiced.

The fundamental challenges of the discipline of landscape architecture are the complexity of the medium itself and the fact of its abiding change. The landscape is at once a natural phenomenon and a cultural artifact, a dynamic entity shaped by the processes of both nature and culture. The landscape is composed of air, earth, water, and living organisms (and recently of plastic, glass, and metal as well). Some of these elements are invisible or ephemeral; most are dynamic and interacting. Plants grow, reproduce, and shape the landscape over time, as do people and other animals who inhabit the landscape.



1

Design with fire: Crosby Arboretum, Picayune, Mississippi, by Andropogon Associates. The "Monet" meadow (2) of andropogon grass (wildflowers also at another season) forged by controlled burn (1).



Photos: Edward L. Blake, Jr.

2

The landscape architect structures the landscape's future form not only through direct shaping of particular elements, but also, indirectly, through the anticipation of how natural and cultural processes will continue to mold the landscape, and by devising a plan for management over time. The smaller the scale of the project, the greater the role of "direct" shaping through working drawings and on-site adjustments; the larger the scale, the greater the role of more indirect shaping through the design of guidelines and policies.

As design through time, landscape architecture may entail a succession of designs, sometimes requiring the alteration or even the deliberate destruction of early phases through growth, succession, or thinning, for example. These issues are often poorly understood by clients, who, unwittingly or knowingly, may undermine or destroy the designer's original intention. For a growing number of firms like Andropogon Associates, who employ natural processes of fire, water, and plant succession to shape their designs, a long-term relationship with the client is essential. Andropogon's clients routinely engage the firm in six-year contracts for training maintenance staff and fine-tuning the design.

Landscape architecture entails both the creation of new spaces and the "re-vision" of existing places. In the latter, the design may insert a human presence – a path, highway, or powerline – into a pre-existing landscape in a way that reshapes the experience of that landscape. Sometimes, landscape design is used to disguise certain human activities, such as mining, logging, and waste disposal operations, which our society prefers not to confront. Conversely, design may be employed to reshape and restore a degraded landscape. These activities are often controversial. Such aesthetic decisions can have ethical, as well as ecological, consequences.

Landscape architects must confront nature as observable phenomena and Nature as an idea. We extract natural features from their context and reorder them to serve our own purposes. Sometimes we imitate or reproduce those processes and forms, sometimes we echo or abstract them, and sometimes we juxtapose or superimpose a sharply contrasting order. Versailles, Stourhead, Ryoan-ji, and Portland Auditorium Forecourt are not just masterfully shaped; they embody quite different ideas about the nature of nature and the relation of humans to nature. They are also political statements, for definitions of nature lead inevitably to politics and religion.

Alan Ward

The Splice Garden at the Whitehead Institute by Martha Schwartz.

Today, we are struggling to redefine Nature, and the landscape reflects this struggle. There is no consensus. Is Nature a machine commanded by man? Is it a sacred entity where humans are one with all living creatures? Is Nature synonymous with wilderness – a refuge from man? Is it a web of processes that link garden, city, and globe? These competing ideas and others all coexist in our society. They underlie whether and how we value and shape the landscape.

Some of the best recent work grapples with these issues. Richard Haag's series of gardens at the Bloedel Reserve near Seattle comprises an essay on ideas of nature and their expression in landscape form. This is a landmark of 20th-Century landscape architecture. (But see it soon; one section has already been destroyed and replaced by a trite version of a Japanese garden.) Martha Schwartz's Splice Garden at the Whitehead Institute for Biomedical Research in Cambridge, Massachusetts (P/A July 1989, p. 62) confronts us with a landscape version of gene-splicing. This rooftop garden of plastic plants and green gravel is simultaneously light-hearted and serious, witty and chilling.

"There are those who would drive a wedge between ecology and art, process and form, and the scales of garden and region. This at a time when we, as a society, desperately need to see and make the landscape whole."

It is currently fashionable to use historic "models" as a point of departure for landscape design. In the hands of designers like Haag and Schwartz, such an approach illuminates our cultural identity and the conditions of our own time. When designers merely borrow the forms, however, without bringing into play the ideas that underlie them, such a practice is just a superficial shortcut to design.

Ultimately, landscape architecture is what landscape architects do. Taken together, the works of Lawrence Halprin and Ian McHarg have spanned the scope of the discipline for over three decades: gardens, plazas, parks, freeways, transitways, new communities, and plans for regional landscapes and national ecological inventories. Halprin is often perceived as the designer and McHarg as the planner, but there is overlap; Halprin has shaped the landscape of communities and regions, and McHarg has designed parks and plazas. There are those today who feel that landscape design and landscape planning

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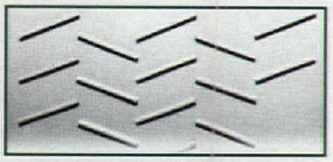
Diana Balmori positions current issues of art, nature, and technology in a historical context.

have no business in the same profession. Halprin and McHarg, however, are friends and colleagues; they regard their work as complementary, not antithetical. The scope of the profession, as practised by these two giants, is not new or singular. The works of the Olmsteds and their associates Charles Eliot, Warren Manning, and John Nolen also encompassed a similar range of projects; this tradition continues today.

Many of us who chose landscape architecture as a profession did so for its peculiar combination of qualities – the elemental nature of the medium, the qualities of change, the fusion of art and science, nature and culture, and the challenge of its scope. To many of us, the polarities that have recently plagued the field seem bizarre. There are those who would drive a wedge between ecology and art, process and form, and the scales of garden and region. This at a time when we, as a society, desperately need to see and make the landscape whole. What is the use of beautiful gardens if the larger landscape is degraded and the planet is dying? Of what benefit to humans is the health of the planet if our everyday world is barren?

The future lies in the schools, and there is reason for both despair and hope. There has been a polarization in many departments of landscape architecture between "design" and "ecology." At many schools, architects and landscape architects glare and snipe at one another over well-defended boundaries. At the University of Pennsylvania, we are seeking a fresh synthesis that avoids these polarities. Our ambition is to educate a new generation of landscape architects, architects, planners, and artists who have a mutual respect and intelligent appreciation for each other's disciplines. One-quarter of our students in the Department of Landscape Architecture and Regional Planning hold the B.Arch. degree, and each year a growing number pursue joint M.L.A./M.Arch. degrees.

I welcome architects' rediscovery of the landscape. Our spheres of activity necessarily overlap, and the problems of our landscape call for solutions that transcend professional boundaries. Let us proceed, however, with mutual respect and deeper understanding. **Anne Whiston Spirn** ■



Concrete form for fountain rill bed, Tokyo: an attempt to express the natural movement of water via latter-day materials and forms. Balmori Associates.

"I would argue that the real question for landscape design is not what style or language to adopt, but rather how to resolve its own relation to the other arts."

Redefining the Boundary, Defining the Modern

As landscape as a conceptual art takes center stage, it offers a new place for sculpture, architecture, and landscape to interact; a place where all three arts, divided over the last two centuries, might wrestle with each other. That is the opportunity – which raises two questions: Why did landscape get separated from the other arts in the first place? Why is there no modern landscape?

First question first. Although landscape now is drawing ideas from the other arts and vice versa, there are time lags. While landscapers have of late sought models in the Minimalist Art of the 1960s, artists have long since absorbed those lessons and moved on. Architecture, in turn, has rediscovered landscape, and has ironically become particularly interested in the Picturesque, just as landscape design is trying to free itself from the dominance of that so-called "natural" aesthetic, which is now seen within the discipline as both deceptive and stultifying.

One could take the position that each discipline answers only to itself and that these time lags between fields are irrelevant. Yet I would argue that the real question for landscape design is not what style or language to adopt, but rather how to resolve its own relation to the other arts. The current interest in defining the demarcation line between a building – or a sculpture – and the landscape that surrounds it proves that the transition point is fertile, yet fundamentally problematic.

William Irwin, the painter and environmental artist, has expressed the problem in terms of "frame": Where does a painting end? At the painting's edge? At the frame's? At the wall on which the painting hangs? In the room of which the wall is a part? One can ask the same question about a building: Does it end at its exterior walls? Five feet outside the exterior walls, the typical contractual ending point? Or about a sculpture: Is the base a part of the sculpture? How much of the ground around the base? Where does the landscape end? The point of transition is the hot spot now, and brings me to what I call the "intermediate" design forms of the inventors of the Picturesque landscape, forms that I have found address similar concerns.

Until the early 1700s, the design of a landscape and its building was guided by the same

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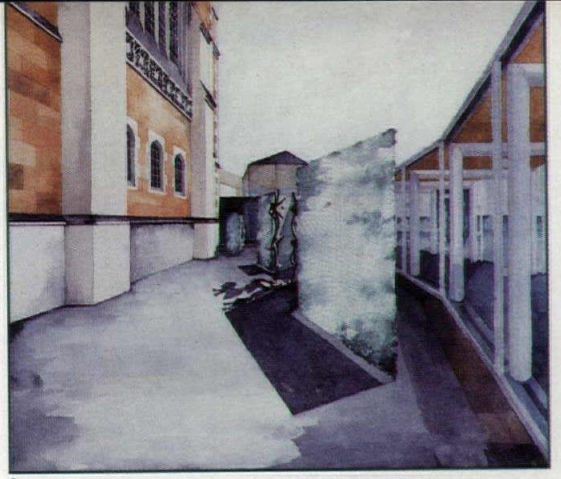


2

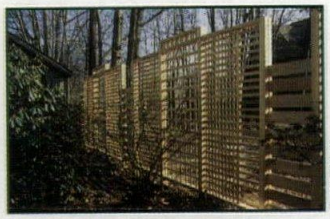
The historical intermediate piece: Thomas Wright's "arbour of the Hut or Hovel kind chiefly designed for a sheltered solitude," 1755 (1). Work in progress: Sculpture Courtyard, Vassar College, (2). Small sculptures are backed by curved metal screens, which are lacy scrims in winter. Balmori Associates.

set of aesthetic rules: if Classical for the building, then Classical for the landscape. In the early 18th Century, a new form of Classicism – Palladian – was imported to England and was accompanied by a shift in the definition of the word nature. The old Classical landscapes of French and Dutch origin that were then in vogue in England were suddenly questioned. Landscape, these new landscape artists argued, should express nature. But the depiction of nature they had in mind was one that sought to erase the marks of human intervention. Nature was now contrasted with artifice: Landscape became nature, building artifice. But if the two were no longer to be guided by the same principles, how was architecture to be related to landscape?

In response, Alexander Pope and William Kent, the avant-garde if you wish, developed "intermediate pieces" as a way to set up a new connection between landscape and architecture. These took four distinct forms: grottoes, arbors, hermitages, and ruins. In each, artifice and nature, building and landscape, met and fought it out; artifice (the building) altered by the process of nature, and nature (the landscape) modified by artifice. These intermediate pieces allowed a landscape design to emerge that followed different rules from those of the architecture.

After 1750, the "bridge" became so much less important than the landscape it led to, that apologists for the new landscape began to see bridging structures as intrusions into nature and banished them. The early experiments were thus forgotten, the connection between the two disciplines severed. Today those experiments don't speak to us, being so deeply buried in their 18th Century forms, but if we view them as responses to a specific aesthetic problem – that of the boundaries between building and landscape – they appear as great experiments in resolving the very issue we wrestle with now.

In my own work, I see the transition occurring where the static, permanent elements mix with the living materials of landscape which change in color, size, texture, transparency. Screens – combining the fixed imperturbability of steel or wood with climbing vines or espaliered trees – become the new fluid boundary where living elements transform fixed ones. The screens play the role of intermediate pieces.



Diana Balmori

Contemporary intermediate piece: Fence for Klein garden, New Haven. Balmori Associates.

"Landscape is seen as a field that saved itself from the worst excesses of an industrialization gone wild. Now it must acquire a richer vocabulary... reinterpret [its] 'naturalness'."

The author is a principal of Balmori Associates, Inc., Landscape and Urban Design, New Haven, Connecticut, and a professor at Yale's School of Architecture and School of Forestry .

Defining the Modern

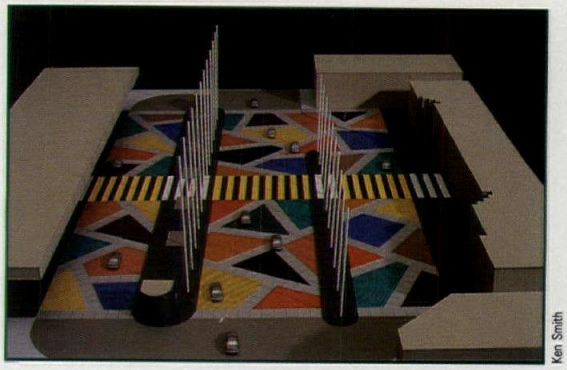
In addressing the question of why there has been no modern landscape, one should first note that there have been individual Modern landscapes, such as Thomas Church's O'Donnell garden of 1948, in Sonoma, California, which mixed Modern architectural forms with California pool landscaping. But there has not been a Modern movement in landscape per se. And yet there are three widespread modern landscapes of enormous importance that did not emerge from the professional field as such for a curious reason: They are truly industrial. One, the American Lawn, is the absolute central landscape of the nation, partly because its industrialization allowed millions to embrace it as a pastime that provided entertainment with machines. The second, the California swimming pool-cum-barbecue patio, is the result of the invention of cheap industrial pool construction methods and plastic shells, which made pools available to a large middle class in the late 1940s and early 1950s. The third is the acreage landscaped by industrial agriculture which has transformed the look of the land.

Ironically, the turn against industrialization in the landscape field was prompted by the Arts & Crafts movement, which ushered in the Modern movement in most of the other arts. In landscape, where its rustic "natural" style and emphasis on handmade products brought about a conflict between machine and handcraft.

By siding with handcraft, and by clinging to a woodsy-natural material view for its hardscape and wild, simple, and nonhybridized plantings for its softscape, landscape lost the infusion of ideas from other arts and became impoverished in its vocabulary.

Yet, given the present discontent with the effects of industrialization on the environment and the pollution hazards and short life of modern materials, landscape is seen as a field that saved itself from the worst excesses of an industrialization gone wild. Now it must acquire a richer vocabulary, explore materials and most crucial, reinterpret its so called "naturalness," or definition of nature. Through the attempt to do so we may find our way to a modern landscape that is of our time. **Diana Balmori** ■

Martha Schwartz decries the myopia and inaction that lay waste to our cities and suburbs.



Ken Smith

Urban alternative: Model of plaza that links San Francisco's existing Moscone Center to the new Yerba Buena Center. Schwartz Smith Meyer.

The Landscapes of Neglect

As a culture we care little about the visual quality of the environment in which we live. Our cities, and to an even greater degree, our suburbs, are not only environmentally degraded, they are also visually and spiritually degraded. It is most apparent in our public open spaces: our streets, vast parking lots, fringes of "landscape" around suburban homes and office buildings, rooftops, shopping centers, and commercial strips. These neglected landscapes add up, piece by piece, to the ubiquitous ugly environment so identifiably "American."

I have witnessed the attitudes that continue our environment's devaluation. The allocation of funds clearly reflects priorities. While a lot of lip service is given to "landscape" and "environment," when push comes to shove, they are never as important as interior (or exterior) decoration. The landscape budget consistently serves as the slush fund for building overruns. As a result, the landscape is almost always left impoverished, if not eviscerated.

Our society believes that nature is a God-given commodity, like fresh air, and resents having to pay for it. As we must commit money and effort to cleaning our air, we must commit money and effort to forming a new attitude about the built landscape that embraces development, and recognizes that "landscape" is not interchangeable with "nature," which in turn is not synonymous with "wilderness." However much we romanticize the wilderness, the urban/suburban landscape cannot evolve "naturally" as a field might evolve into a forest. Its evolution must be designed.

In my experience, I have found that Modernist dogma continues to dominate landscape architecture in the minds of architects, even though most architects have moved beyond it in their own realm. Consistent with Modernist design tenets, the acceptable role of "landscapers" is to provide the passive, sylvan setting for the building – a pleasant background that "doesn't compete" sculpturally with the architecture. In this view, the landscape must provide environmental "white noise," subliminally read at best, shorn of visibility, narrative, and, God forbid, any physical or intellectual hard edges. The picturesque landscape paintings of Nicholas Poussin and Claude Lorrain illustrate the ideals of a "proper" landscape where the natural landscape and the man-made object inform each other but never touch. In Modernist terms this becomes Corbusier's vision of high-rise buildings nestled into unmanipulated landscapes.

"However much we romanticize the wilderness, the urban/suburban landscape cannot evolve 'naturally' as a field might evolve into a forest. Its evolution must be designed."

David Meyer

Central axis at the Citadel, City of Commerce, California: the economical makings of a public space. Schwartz Smith Meyer.

The author is a principal of the San Francisco firm, Martha Schwartz, Ken Smith, David Meyer, Landscape Architects, Inc., and is an adjunct professor of landscape architecture at Harvard's Graduate School of Design.

Fortunately for our firm, not many architects call us for this kind of servicing. Those who insist on this vision as the only model for landscape tend to stay away (hence we have a very small practice). On the bright side, we've had the great pleasure of working with many forward-thinking architects such as Bernardo Fort-Brescia, Stanley Saitowitz, Mark Mack, Arata Isozaki, and Philip Johnson, who are curious about the landscape as a related art form. I believe the Post-Modern movement helped to revive architects' interest in the garden as artifact, and in its intrinsic ability to extend and amplify architecture.

In this regard I view the status of our profession vis-à-vis architects positively. Because architects are trained to understand architecture's relationship to art, they are more disposed than many landscape architects to see the artistic potential inherent in the landscape. Many can see the utility in defining a new vocabulary that can deal with our built environment in an honest, non-romantic way. Such architects have a clear understanding that their project will be truly enhanced by interesting site design and are willing to relinquish control over this area with which they are less familiar.

Developers have become increasingly aware of the landscape, especially as it has become another item of conspicuous consumption and prestige. For whatever reasons, there are indeed cracks in our culture's glaciated ideas of what constitutes a landscape, ideas which still roam around in the romantic English countryside of the 1800s.

Sadly, these advances notwithstanding, the status of the urban/suburban landscape in our culture is almost non-existent. It is an unloved wasteland, largely ignored by architects, reviled by most landscape architects, and invisible to the development industry. In order to develop a visual language that can shape our growth and bring order and beauty to our cities and suburbs, we must face our collective neglect of our man-made environments. **Martha Schwartz** ■

Books

Urban design, according to **Denise Scott Brown**, is a series of rich, yet delicate relationships. Thomas Colbert discusses her account of three decades in the field.

William J. Mitchell presents computer logic as a framework for the entire design process. Juan Pablo Bonta describes the challenges in such a broad schema.

Negotiating the American City

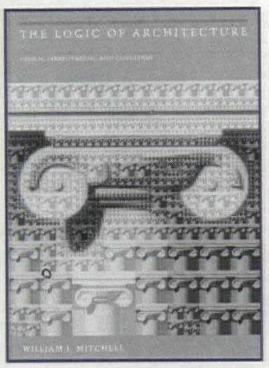
Denise Scott Brown came to the United States from South Africa in 1958. The world was then rushing headlong to fulfill new urban visions even as existing neighborhoods and streets were being written off as old-fashioned or blighted. Today, the urban design commmunity has enshrined a new movement – by now widespread enough to appear in *Time* magazine, where Kurt Andersen recently derided the "thoughtless and ugly way suburbs have developed" and looked forward to neotraditional neighborhoods and "deeply old-fashioned" new towns "repairing and redeeming the American landscape" – presumably by replacing yesterday's mistakes with today's urban ideals (*Time*, May 20, 1991, pages 52–55).

While Andersen described a new model of perfection, the tendency of planners and architects to remake our cities from scratch remains unchanged. Their design process has been consistent (and limited) as well: They tend to turn away from many difficult social and cultural issues. Fortunately, a growing number of theorists and designers are promoting urban design and planning that is responsive to existing conditions, including the messy side of the way we live. This refreshing trend is substantially attributable to the efforts of Scott Brown over the last 33 years.

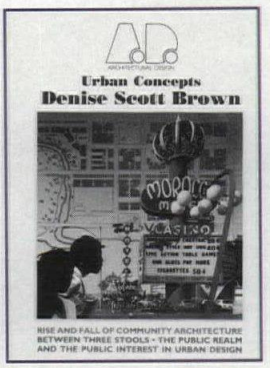
For those who have followed Scott Brown's career from a distance, *Urban Concepts* provides a welcome glimpse into the intellectual and professional life of someone whose designs, writings, and teaching have inspired a generation of architects and urbanists. In ten essays she wrote in the 1980s, Scott Brown emphasizes social, political, economic, and cultural issues, which she considers fundamental for urban designers, planners, and architects. To suggest ways to integrate these and other considerations, she describes courses she has taught at half a dozen universities, and seven of her urban design proposals, ranging from large- and small-scale revitalization and historic preservation plans to proposals for new construction in urban areas.

Urban Concepts is eminently readable and would be a welcome addition to the libraries of students and practitioners alike. But if you are already familiar with the urban work of the firm Venturi Scott Brown & Associates this profile will not contain a great many surprises. It does, however, clearly present the concepts of architecture and planning that define Scott

(continued on page 152)



Urban Concepts by Denise Scott Brown, an Architectural Design Profile, St. Martin's Press, New York, 1990, 96 pp., illus., $19.95 paper.



The Logic of Architecture: Design, Computation, and Cognition by William J. Mitchell, MIT Press, Cambridge, Mass., 1990, 292 pp., illus., $35.00 cloth, $19.95 paper.

Digitizing Architectural Thought

Typically, literature for architects about computer-aided design (CAD) promises a quick payoff for little or no intellectual effort: Break the seal, insert the diskette in the disk drive, type "There We Go," and start counting your savings. Not so with *The Logic of Architecture:* no diskette, no savings, only lots of thinking.

Digital technology is primarily used in the middle and final stages of architectural work – for drafting, engineering, quantity surveying, and management. William J. Mitchell's view is much more ambitious: He proposes an integrated approach to the entire architectural design process, from the early steps of programming and conceptual design to the final stages of criticism and feedback. Although it is based on what architects have been doing for centuries – working on paper or models – his approach is intended to facilitate interactive processing on machines. Mitchell's quest for an electronic architectural machine has yielded a book on architectural principles that (perhaps perplexingly) joins the humanistic scholarly tradition spanning from Vitruvius to Le Corbusier. This is as it should be, for automation requires not only better machines but also a finer understanding of what the machine is expected to do.

In his book , Mitchell draws analogies between

(continued on page 152)

Books of Note

Sightlines: Looking at architecture and design in Canada *by Adele Freedman, Oxford University Press, Toronto, 1990, 222 pp., illus., $18.95 paper.*
Freedman's succinct prose and critical insights are assets to Canada's design community; this book is a durable summary of a decade of work.

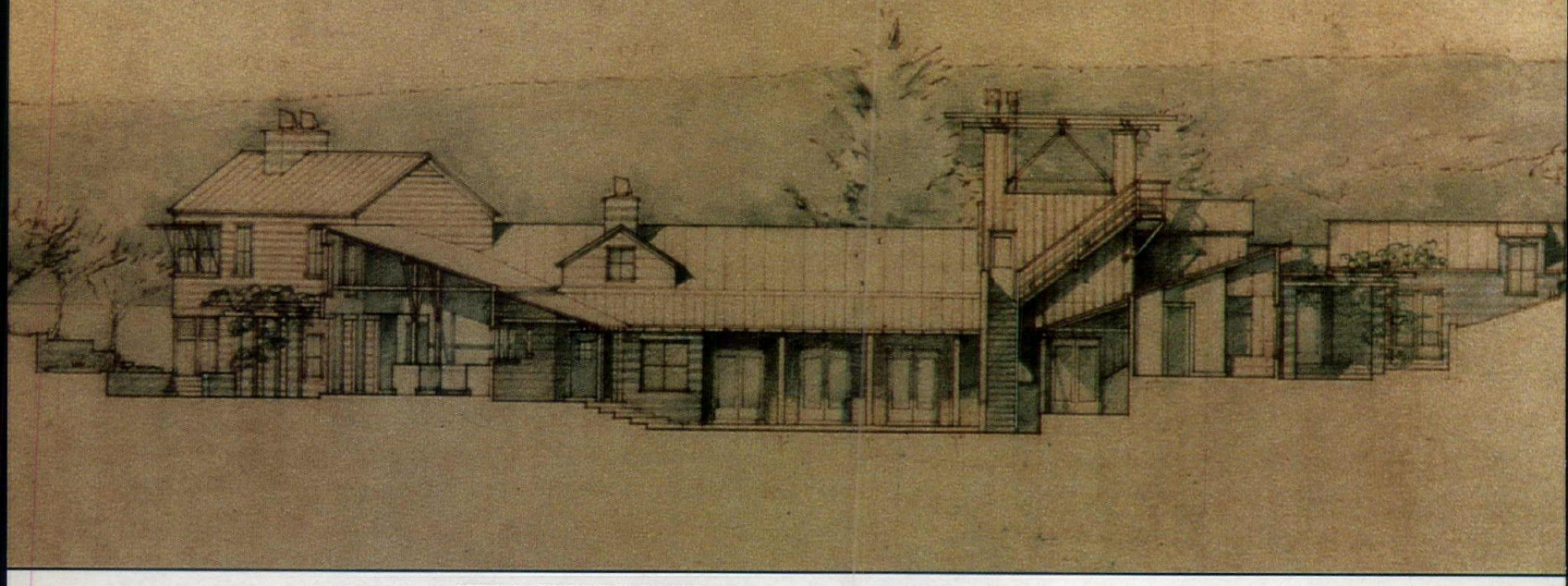
Mound Stand, Lord's Cricket Ground: Michael Hopkins and Partners *by David Jenkins, Van Nostrand Reinhold, New York, 1991, 55 pp., illus., $39.95 paper.*
This first volume in an ongoing series of monographs titled *Architecture in Detail* holds extensive written and visual documentation on Hopkins's cricket pavilion.

Frank Lloyd Wright: A Primer on Architectural Principles *edited by Robert McCarter, Princeton Architectural Press, New York, 1991, 308 pp., illus., $39.95 cloth, $29.95 paper.*
Essays by eight architects and historians analyze Wright's design process, attempting to go beyond now familiar historiographic approaches.

Intercultural Architecture: The Philosophy of Symbiosis *by Kisho Kurokawa, foreword by Charles Jencks, AIA Press, Washington, D.C., 1991, 208 pp., illus., $60.*
Kurokawa's discourse on an intercultural, interdisciplinary architecture is, says Jencks, "one of the most essential statements of Post-Modern culture to date."

Projects Fernau & Hartman

Four projects by **Fernau & Hartman** employ the strategies of vernacular architecture to create work of great richness.

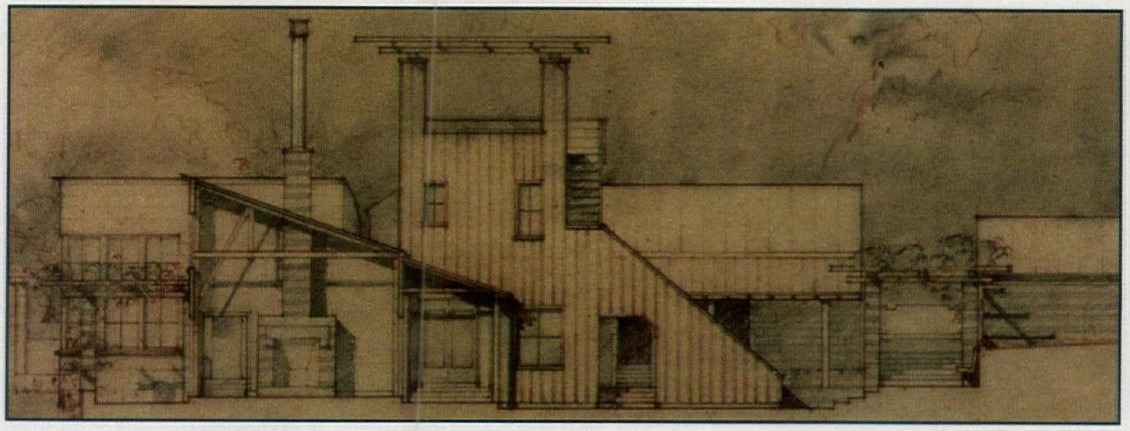


It is tempting to turn vernacular architecture into an aesthetic. Modernist and Post-Modernist architects have both done so, with one emphasizing the plain forms and surfaces of vernacular work and the other playing up its ornamented, picturesque quality. The Berkeley, California firm of Fernau & Hartman has wisely resisted that temptation, viewing vernacular building not as an aesthetic or set of images, but as a strategy for making architecture.

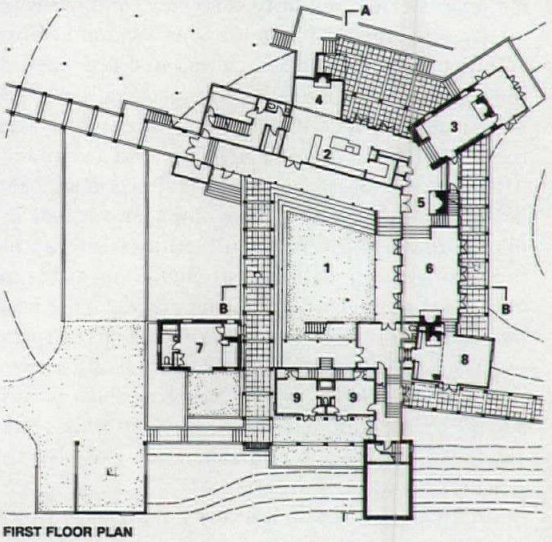
Richard Fernau and Laura Hartman liken their strategy to that of jazz musicians: "You start with an idea," says Fernau. "and then begin to improvise, recognizing inadequacies in each move and repairing it as you go on to the next." He sees this approach as particularly relevant today. "Architecture is such a contingent, circumstantial art, and vernacular work shows how that fact can be interesting rather than frustrating."

Having majored in philosophy as an undergraduate, Fernau also sees connections between vernacular building and modern thought. "It is rooted in empiricism," a frame of mind "moved by facts, by real stuff." And he views vernacular archi-

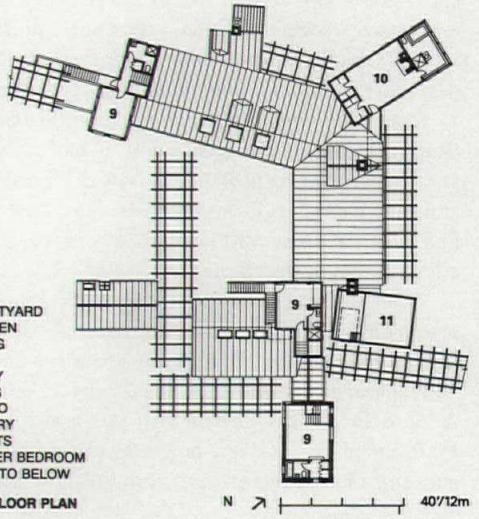
SECTION AA, TOMPKINS/MILLER HOUSE



SECTION BB



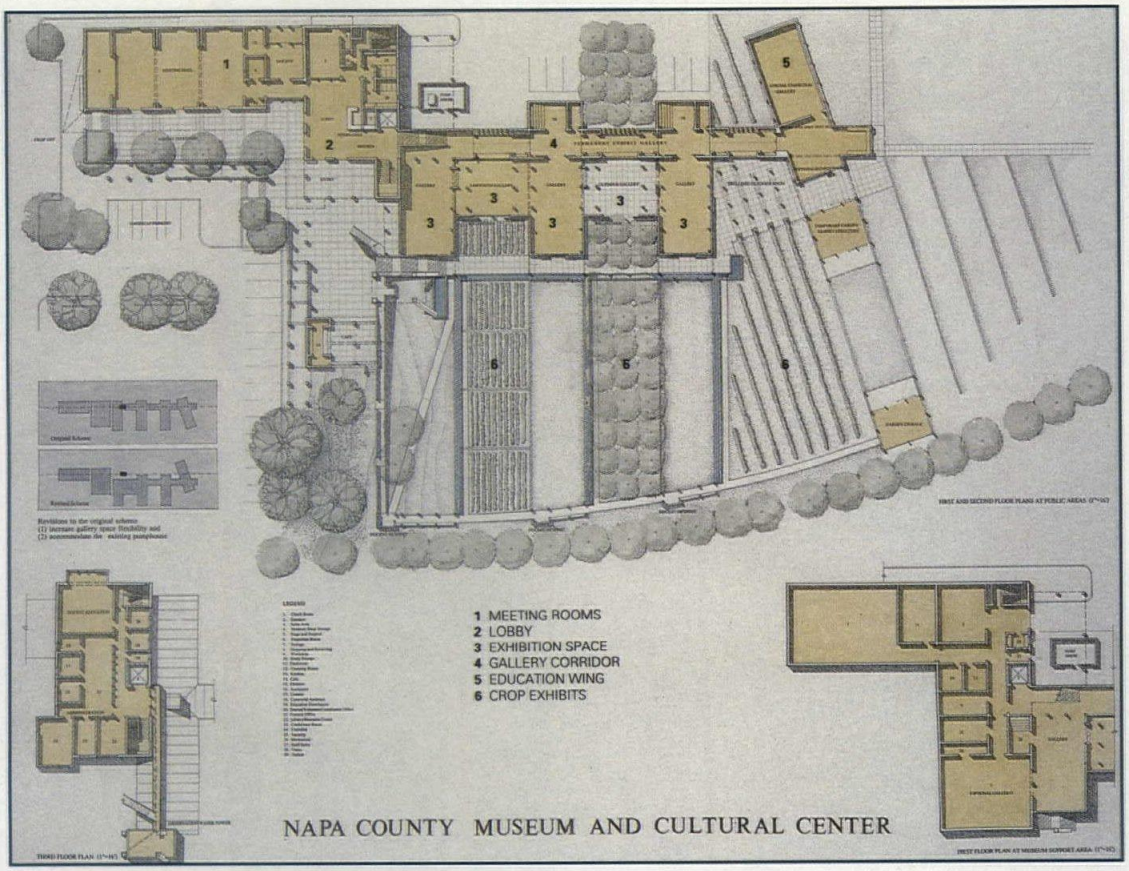
FIRST FLOOR PLAN



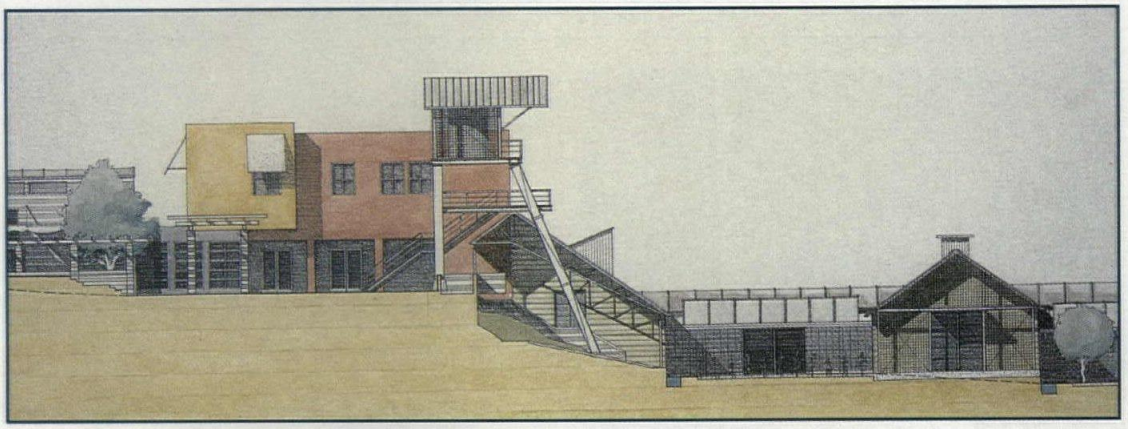
1 COURTYARD
2 KITCHEN
3 DINING
4 DEN
5 ENTRY
6 LIVING
7 STUDIO
8 LIBRARY
9 GUESTS
10 MASTER BEDROOM
11 OPEN TO BELOW

SECOND FLOOR PLAN

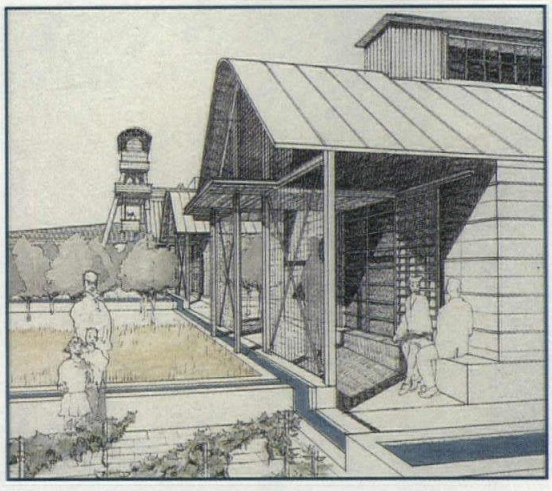
N ↗ 40'/12m



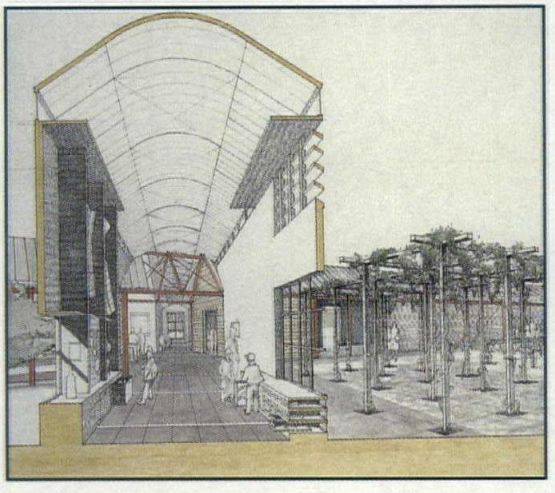
FLOOR PLAN OF NAPA VALLEY MUSEUM/CULTURAL CENTER



ELEVATION OF CENTRAL SECTION, LOOKING NORTH



PERSPECTIVE OF EXHIBIT BUILDINGS



SECTION THROUGH EXHIBIT GALLERY

tecture as a form of "situational ethics," where every act – be it a moral act or an act of building – "is judged in its context, according to its situation." What distinguishes the vernacular from Modernist thought, claims Fernau, is not the approach, but the degree of abstractness. Vernacular architecture, he says, "is a modern sensibility applied to figurative pieces."

Tompkins/Miller House

This house for Susie Tompkins, the owner of Esprit, explores the idea of architecture as an evolutionary process. Wanting it to be simple, unassuming, and appropriate to its rural setting at the edge of a bird sanctuary, Fernau & Hartman arranged the house around two courtyards in a saddle on a mesa, reducing the house's visibility from the road while taking advantage of views and winds. Around one court are a series of shed- and gable-roofed wings, with a trellised tower at one corner. Light-colored clapboarded extensions contrast with the dark-shingled courtyard walls, and the whole recalls an old farmstead that each generation has remodeled. One of the most appealing aspects of this project – and the vernacular architecture it draws from – is its lack of pretension. As Fernau puts it, "Architecture is too important to be solipsistic."

Napa County Museum/Cultural Center

Winner of a limited competition, this museum for an agricultural county treats the land as its primary exhibit. Located on a sloping site, the building has parking and meeting space at the top of the slope, an entry block at mid-level, and a series of exhibition buildings along a flat area. An education wing terminates the gallery corridor. Crops from various periods in the history of the Napa Valley alternate in plan with the exhibit spaces, integrating indoors and out. Water circulates through the site, ending in a meadow planted with low-water crops, acknowledging California's drought-ridden future. For all of its apparently ad hoc mix of elements, this museum, like many vernacular buildings, has a clear formal order derived from the cultivated landscape.

von Stein House

The owners of this house wanted to live outside as much as possible, so Fernau & Hartman used a form similar to that of the Napa museum, with parallel wings defining three outdoor rooms – one of which is sloped and sunny, one urban and paved, and one cool and shady. The central paved court has its own fireplace and outside stair. A wall along one side of the house screens these outdoor spaces from the neighbors and increases the structure's apparent size. The main living areas occupy a butterfly-roofed space, with bedrooms in two trellised towers, one of which stands at the top of the hill, the other acting as a gateway to the house. This is a house completely attuned to the mild climate of the Bay Area, and, like most vernacular buildings, it is inseparable from its location.

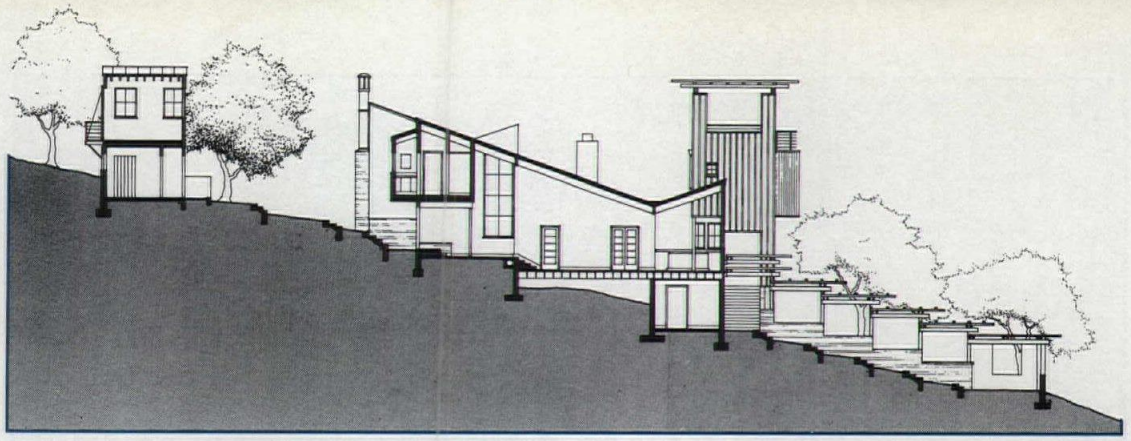
Routh House

Located in Sea Ranch, this house questions that development's Modernist interpretation of the local vernacular architecture. "While I have great respect for what was accomplished at Sea Ranch," says Fernau, "its interpretation of the vernacular was too reductivist." Accordingly, Fernau & Hartman have, in this house, expanded Sea Ranch's vocabulary of shed roofs and board siding, adding to the central "iconic" shape a number of elements: chimneys, porches, bays, and wings of various sorts. Each piece has its own function, form, and material. This articulation of the program – a Modernist idea – dovetails nicely with the notion of improvisation that Fernau & Hartman see as the essential part of vernacular architecture.

"The measure of any idea," says Fernau, "is what you do with it, what beauty you can create out of it." If the work on these pages is any measure, Fernau & Hartman's idea of the vernacular holds great promise.

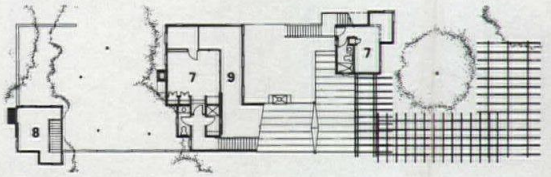
Thomas Fisher ■

The following people with Fernau & Hartman Architects worked on various aspects of these projects: Richard Fernau, Laura Hartman, Geoff Holton, Turk Kauffman, Beth Piatnitza, Emily Stussi, David Kau, Anni Tilt, Timothy Gray, Ed Gaudreau, Sarah deVito.

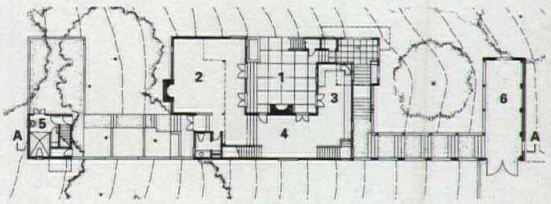


SECTION AA, VON STEIN HOUSE

20'/6m



SECOND FLOOR PLAN

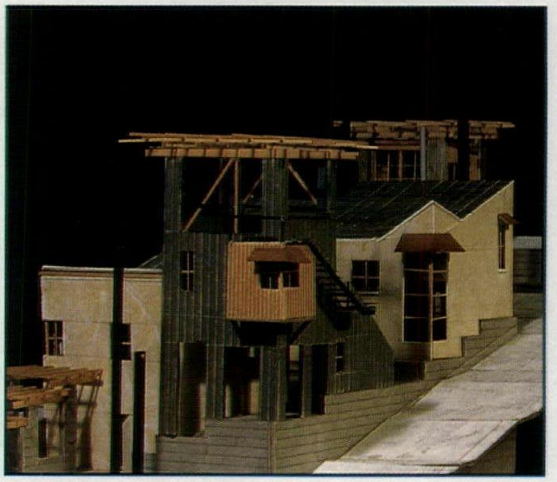


FIRST FLOOR PLAN

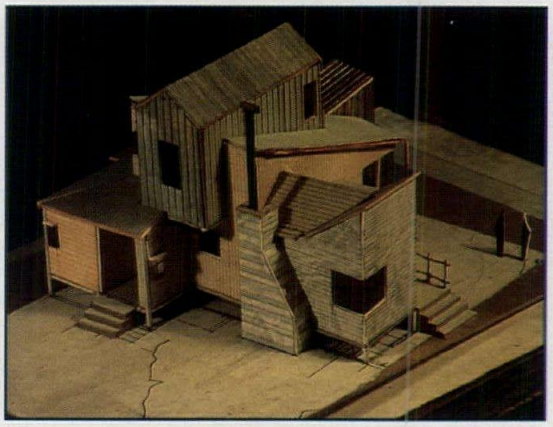
N

40'/12m

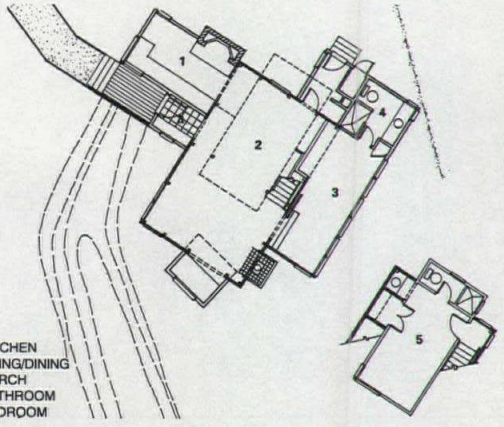
1 INNENHOF
2 LIVING
3 KITCHEN
4 DINING
5 BATH
6 CARPORT
7 BEDROOM
8 GUEST
9 OPEN TO BELOW



MODEL OF VON STEIN HOUSE



MODEL OF ROUTH HOUSE

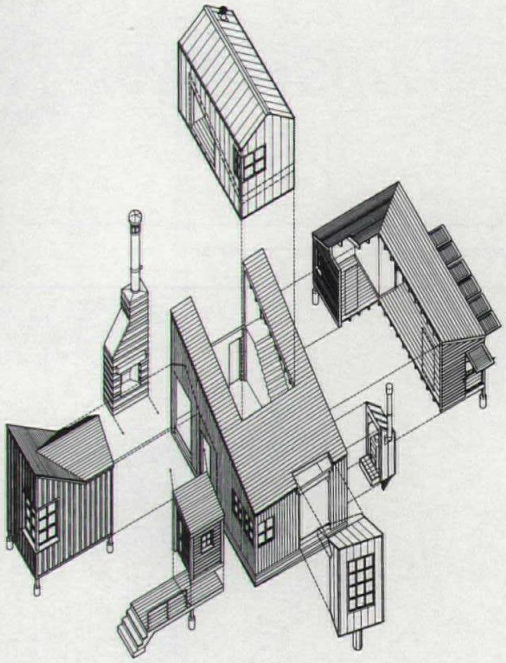


1 KITCHEN
2 LIVING/DINING
3 PORCH
4 BATHROOM
5 BEDROOM

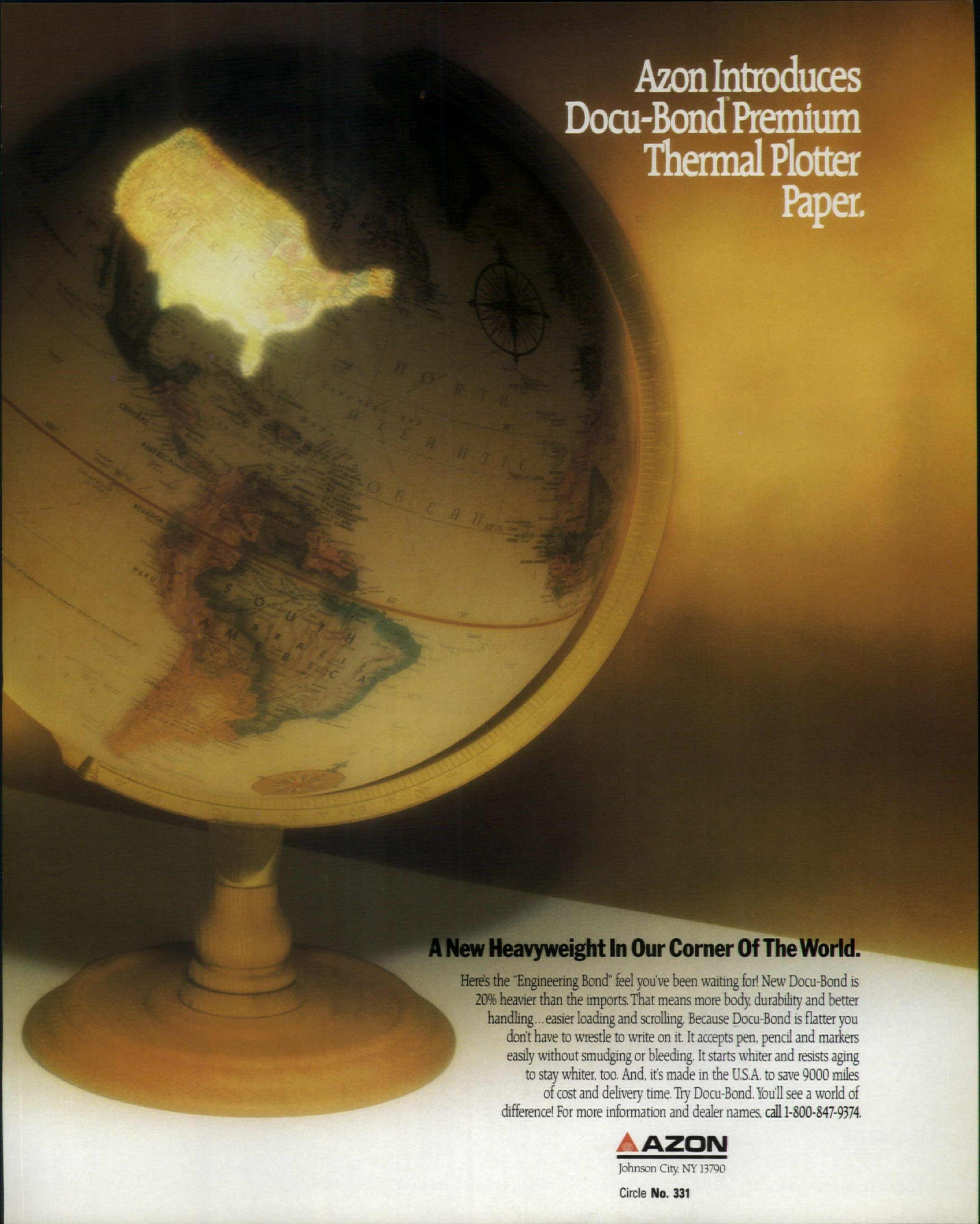
FIRST AND SECOND FLOOR PLANS

N

20'/6m



EXPLODED AXONOMETRIC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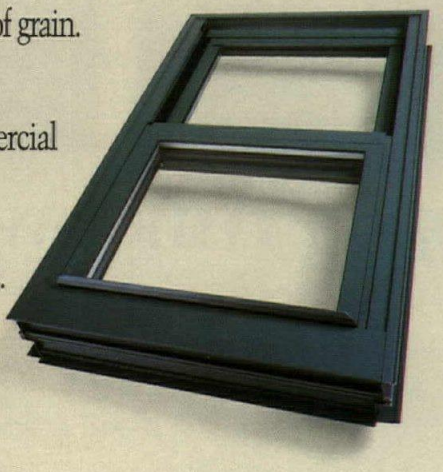

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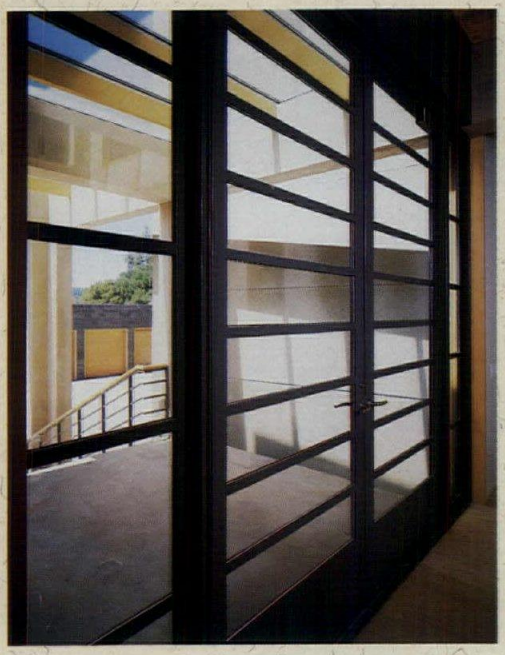

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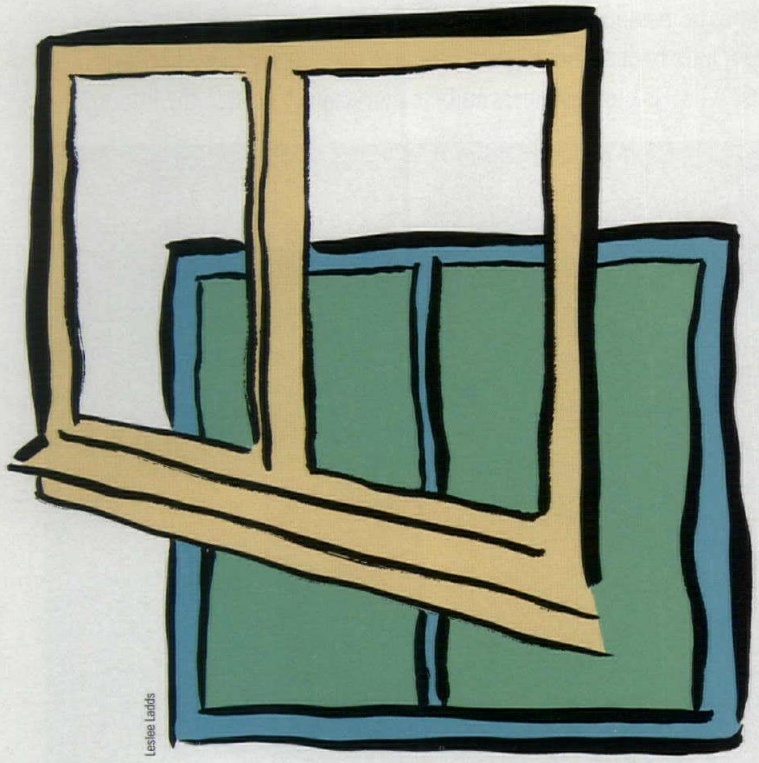
Technics Focus
Windows and Doors

Contents



Leslee Ladds

Windows and doors are arguably the most sophisticated components of the building envelope.

They are also among the most vulnerable – in failing to meet expectations

and specified performance.

This month's Focus emphasizes leakage of water and noise

both in the laboratory and in the field.

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Window Energy Standards Take a Step Forward

Stephen Carpenter of Enermodal Engineering describes recent advances toward rating and labeling windows and doors.

In the past, window thermal performance was determined by counting the number of glazings. Today, however, low-e coatings, argon gas fills, low-conductivity spacers, and new framing materials and designs mean that a window cannot be judged by just looking at it. To address the increasingly complex problem of describing performance, committees in the U.S. and Canada are working together to develop standards for rating energy efficiency. The National Fenestration Rating Council (NFRC), an umbrella organization of window and glass manufacturers, specifiers, utility companies, state energy offices, builders, and code officials, is developing standards for determining window heat loss, solar heat gain properties, condensation resistance, and energy performance. Spurred by pending maximum U-value legislation in several states, the NFRC has first accepted a procedure for determining U-values.

State energy codes usually require a test report of U-values, but testing all possible window sizes and designs is very expensive. Manufacturers now tend to quote center-of-glazing U-values calculated by the WINDOW computer program from Lawrence Berkeley Laboratory or from the ASHRAE *Handbook of Fundamentals* (P/A, June 1990, pp. 47–51). Unfortunately, these values ignore the frame and edge-of-glass effects. The NFRC procedure uses a combination of these techniques.

NFRC U-values are determined for window sizes typical of residential (size A) and commercial (size B) construction. For each product line (casement, double-hung, horizontal slider, etc.), the two windows with the highest and lowest U-values are tested at an accredited testing laboratory and simulated at an accredited computer simulation laboratory. The simulations use the computer program WINDOW for the center-of-glass calculation, and FRAME for the frame and edge-of-glass calculation. If the test and simulated values are within 10 percent of each other, the simulation can be used to rate all windows in the product line.

The NFRC U-value procedure is being referenced in state energy codes in California, Oregon, and Alaska, and others will doubtlessly follow. Effective January 1, 1993, windows in California must have a U-value below 0.60 to 0.75, depending on climatic region. With these values, most aluminum windows without a thermal break will probably be unacceptable in any but the warmest regions of the state. In the Northwest, windows in electrically heated homes will need to have U-values below 0.40.

Meanwhile, the Canadian Standards Association is completing standard CSA-A440.2, *Energy Performance Evaluation of Windows*. It describes the procedure for determining U-value, solar heat gain (or shading) coefficient, and annual energy rating. The U-value procedure is essentially the same as that of NFRC, except that U-values can be determined by testing or simulation, with no requirement for cross-checking. The window solar heat gain coefficient (SHGC) can also be evaluated by either test or computer simulation. The test is performed using the indoor solar simulator at Ortech International in Mississauga, Ontario. VISION, a computer program similar to WINDOW and available from the University of Waterloo, is used to simulate SHGC.

In the CSA standard, the SHGC, U-value, and air infiltration are combined with average Canadian climatic conditions to produce an Energy Rating (ER). The ER represents an average energy impact of the window over the heating season, and is intended to be used as a simple purchasing guide.[The ER is similar in concept to the Thermal Performance Factor described in P/A's Building Science Brief 6/90, June 1990, page 45; the Thermal Performance Factor does not, however, account for air infiltration heat loss.] A negative number means that the window yields a net heat loss if installed on all sides of the house. A positive value means that it is a net gainer. A perfectly insulated wall would have a value of zero. A typical double-glazed window has an ER of -25 to -30. Ontario Hydro (an electric utility company) is offering a financial incentive of $5 per square foot towards the cost of installing high-performance windows in electrically heated houses. They have defined "high performance" windows as having an energy rating greater than -13 for operable units and +2 for fixed units.

A number of important window energy issues that are being researched will undoubtedly lead to future standards. Lawrence Berkeley Laboratory is investigating a method of rating energy efficiency for U.S. climates. The durability of high performance windows is being studied to ensure that low-emissivity coatings and argon gas fills remain effective for the life of the window. A method of evaluating the air infiltration characteristics of windows under typical field conditions is being examined. All these efforts will help architects make better informed design and specifying decisions. **Stephen Carpenter, PE** ■

Recommended Reading

P/A's Technics Focus on windows and doors emphasizes performance, which is controlled largely through specifications, testing, and reference standards. The following industry publications, selected by P/A, explain criteria used to measure, specify, and evaluate window and door performance.

"Fenestration," Chapter 27, *ASHRAE Handbook*, 1989 Fundamentals volume, ASHRAE, Atlanta (404) 636-8400, 38 pp.

Door and Hardware Institute Handbooks (binder), Door and Hardware Institute, McLean, Virginia (703) 556-3990.

Specifiers Guide to Wood Windows and Doors (binder), National Wood Window and Door Association, Des Plaines, Illinois (708) 299-5200.

The Specifier's Guide to Steel Windows, Steel Window Institute, Cleveland (216) 241-7333, 16 pp.

Steel Door Institute Fact File, SDI, Cleveland (216) 899-0010.

Window Performance and New Technology, National Research Council Canada, Ottawa (613) 993-2463, 1988, 72 pp.

Window Selection Guide, American Architectural Manufacturers Association, Palatine, Illinois (708) 202-1350, 1988, 60 pp.

The author is president of the energy consulting firm of Enermodal Engineering Limited of Waterloo, Ontario. Enermodal developed the computer program FRAME, and Carpenter is a member of committees developing window energy standards of both the U.S. National Fenestration Rating Council and the Canadian Standards Association.

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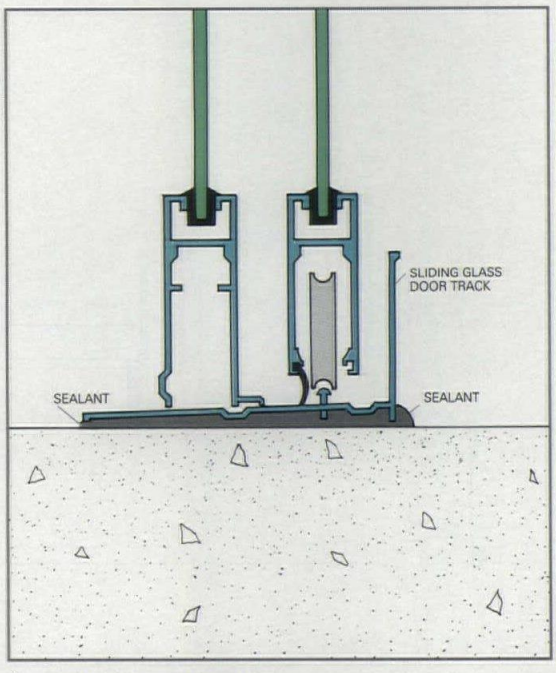
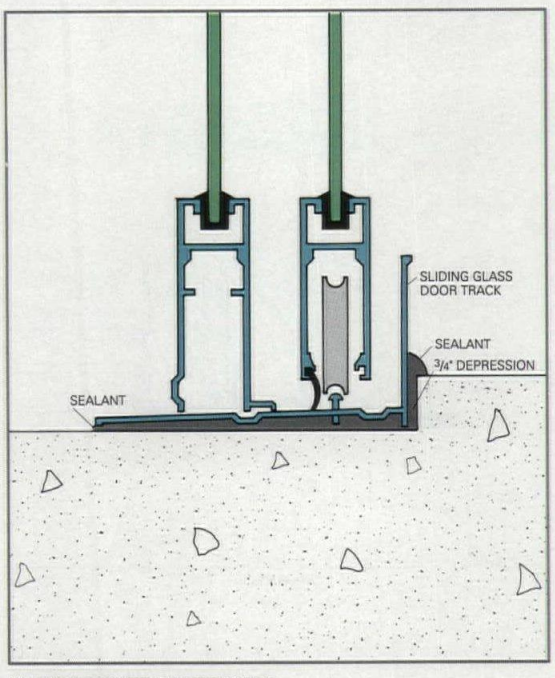
Door Sill Detailing

Glazing consultant **Paul E. Beers** recommends solutions to the common problem of leaky door sills.



1 DOOR TRACK ON WALK-OUT SLAB



2 DOOR TRACK WITH 3/4" STEP IN SLAB

1 *Door tracks anchored to walk-out slabs (same elevation at interior and exterior) rely on field-applied sealants to prevent leakage into the interior.*

2 *Stepping the slab and setting the door track at the lower level reduces the likelihood of leakage into the interior if sealants fail or are not properly applied.*

A good sill detail is critical to the water integrity of doors – especially sliding glass (patio) doors. Because of the nature of such doors, any water that comes into contact with them drains into the sill track. A properly functioning track will then permit the water to drain to the exterior. But designers and builders frequently don't pay enough attention to where the water goes once it drains out of the track.

There are several areas where water can penetrate the door sill. Sliding glass door frames are usually shipped to the job disassembled. When assembled in the field, the intersection of the jamb and the track must be sealed. Fasteners used to anchor the track should also be sealed. These sealants are supposed to be applied by the installer, but are often overlooked. Designers often don't think to inspect the track, and water penetration is a likely result. Architects can avoid the problem by detailing the sill in anticipation of a faulty sealant installation or longer-term sealant failure.

If the sliding glass door frame is attached directly to a slab floor (1), any water that penetrates or drains back under the track will leak into the building. Also, any water left standing on the balcony for an extended period of time will eventually seep inside.

By setting the sliding glass door track in a ¾"depression in the slab (2), the chance of water's leaking into the building is greatly reduced. With this detail, the bottom of the sliding glass door track is lower than the inside slab. This will provide a barrier before the water is able to migrate inside the building, greatly reducing the likelihood of leakage.

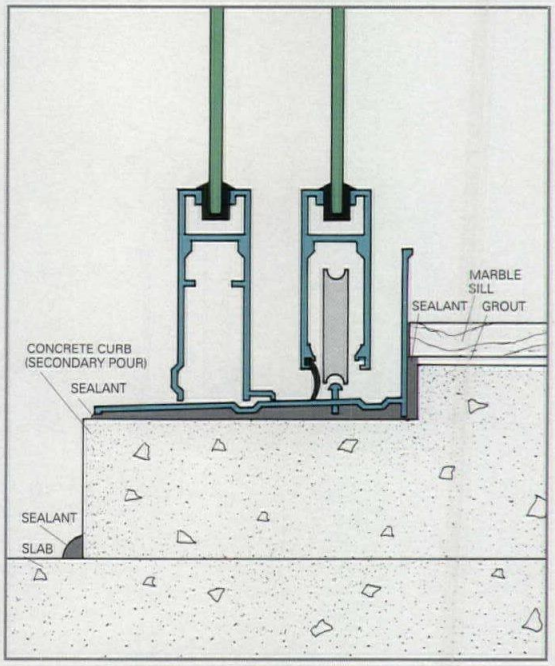
An alternate detail that completely eliminates any problems with standing water is a curb underneath the track. To achieve maximum performance, the curb should be constructed in an "h" configuration and set in a ¾" depression (3). It is important that the curb be completely sealed along its attachment to the floor.

For an added measure of protection, sill flashing can be installed beneath the track (4). The flashing should lie under the entire length of the track in one piece and the ends should be turned up and completely sealed. The underside of the flashing is sealed to the balcony or curb on the interior side of the line of fasteners, and the back leg of the flashing is sealed to the sliding glass door track. The exterior side of the flashing should not be sealed as this would impede water drainage.

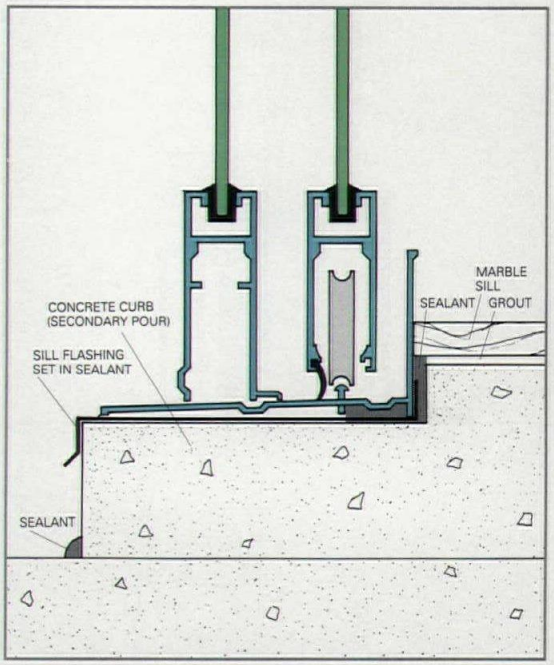
Exterior walls that are located on a balcony should also be set in a depression in the slab. As with the sliding glass door track, this will greatly reduce the chance of any water's entering the building if standing or wind-blown water is left against the wall

3 *Setting the door track on a raised curb greatly reduces leakage into the interior – provided that the joint between the curb and underlying slab is sealed.*

4 *Subsill flashing also defends against leakage. The flashing should be sealed to the substrate underneath. The back leg and underside of the interior portion of the door track should be sealed to the flashing, but the joint between the flashing and exterior portion of the door track should be left unsealed, to allow drainage.*



3 DOOR TRACK WITH STEP IN RAISED CURB



4 DOOR TRACK WITH SILL FLASHIING

for an extended period of time.

The concept of these details is to block all potential avenues of water intrusion into the living area. Depressions in the slab and secondary concrete pours create a barrier or "dam" through which water cannot pass. With this "dam," any water that does penetrate the sliding glass door sill will drain to the exterior, and will not be able to enter the living space. The ¾" slab depression does not create as much of a barrier as a poured concrete curb. When the slab is depressed, it is advisable to install flashing as an additional barrier against water intrusion. In order for water to be able to get inside, it would have to first penetrate the sliding glass door track, then penetrate the flashing, then flow over the slab depression.

For retrofit window and sliding glass door installations, sill flashings can compensate for existing inadequacies in the rough openings. This includes places that lack slab depressions or concrete curbs. In this case, the underside of the flashing should be set in a bed of mastic, completely sealing it to the slab; the flashing then serves as the secondary and final line of defense against water infiltration.

With any detail, it is very important that the balcony or porch slab have good water drainage away from the building. It is nearly impossible to prevent leakage if water is left standing on the balcony for an extended period of time. When designing balcony drains, consideration of tile or other deck toppings installed after construction should be taken into account, so proper drainage can still be achieved.

Paul E. Beers ■

The author is president of Glazing Consultants, Inc., in North Palm Beach, Florida, which specializes in windows, sliding glass doors, glass, curtain walls, and water leakage. Beers is a member of ASTM, the Architectural Manufacturers Association, and serves on the panel of arbitrators for the American Arbitration Association.

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Acoustical Performance of Windows

Acoustician **Gregory C. Tocci** tells how to strengthen the weak link in the sound isolation performance of exterior walls.

Windows are generally the weakest component in buildings in terms of isolating the interior space from noise produced by street, highway, aircraft, and rail traffic. The increasing use of land near transportation corridors and the increase in traffic on existing corridors require that architects pay more attention to the sound isolation performance of the building exterior – and of windows in particular. This article examines the features of windows that affect sound transmission and the latest sound isolation technologies, and gives the architect an overview of the industry and some practical points for designing and specifying windows.

Acoustical Analysis Procedures

There is no established procedure for analyzing sound transmission loss problems. But the following steps are generally part of the process:

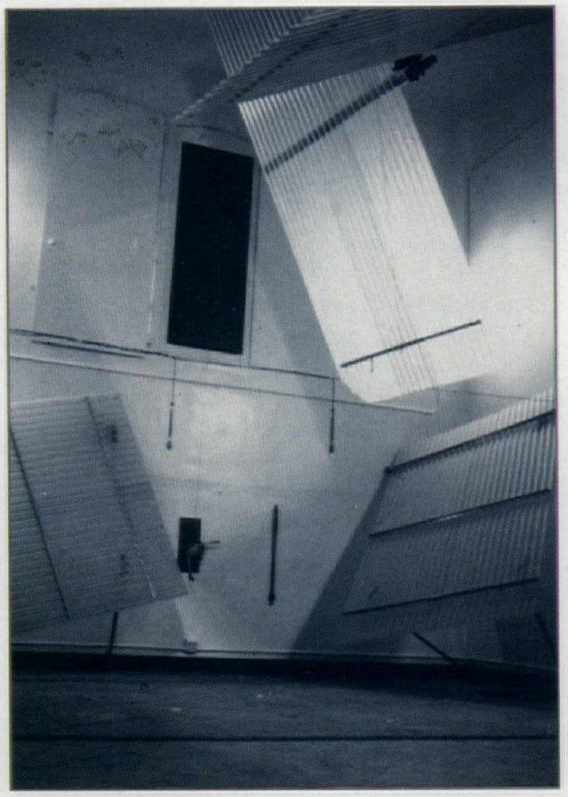
1 *Measure or estimate sound levels outside the proposed building.* Exterior sound level can be determined by means of actual measurements or estimation techniques. Various federal agencies have developed prediction techniques for transportation noise sources. While accurate, these are geared to engineers with expertise in acoustics. A simpler technique is described in the Monsanto Company's *Acoustical Glazing Design Guide.*[1] While Monsanto's interest in window acoustical performance centers on laminated glass, the *Guide* describes all aspects of window acoustical performance.

2 *Determine the appropriate noise criteria for interior spaces.* Many standards and guidelines govern acceptable sound levels in building spaces. Some are imposed by building codes, others by Federal standards (HUD site acceptability standards for projects they support, for example), and some are recommendations of technical organizations (ASHRAE standards for mechanical equipment noise, for example). These standards typically indicate a maximum acceptable interior sound level. The difference between the exterior sound level (as determined from measurements or some estimation process) and the maximum acceptable interior sound level is the *noise reduction* (NR).

3 *Determine the minimum required window noise reduction.* The NR of the exterior façade of a building is a composite value, comprising the sound isolation performances of walls, windows, doors, ventilation openings, and other components. The NR of a building façade is limited by its weakest component, which is usually the window. Determining the minimum required window NR involves extracting the window contribution to the composite noise reduction. This requires knowing, or estimating, the wall NR and the NR of other components.

4 *Determine the corresponding sound transmission class (STC) rating from the minimum window NR.* The NR of a window is related to the ratio of its size to the size of the exterior wall and the reverberant character of the room. As discussed later, the STC rating is related only to the sound isolation performance of the window and is not influenced by other factors affecting the NR.

Although this process is summarized in four apparently straightforward steps, each step of the



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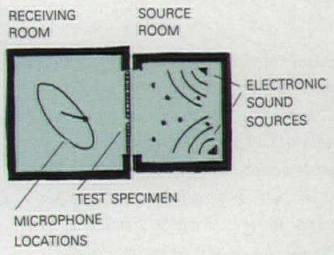
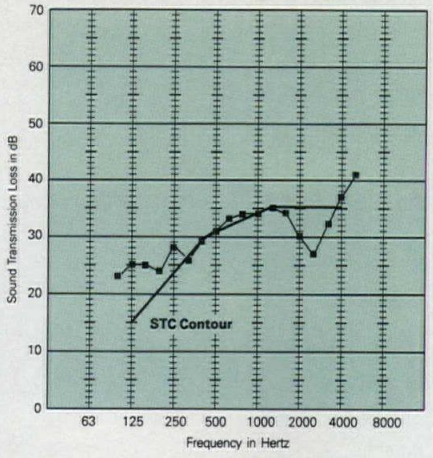


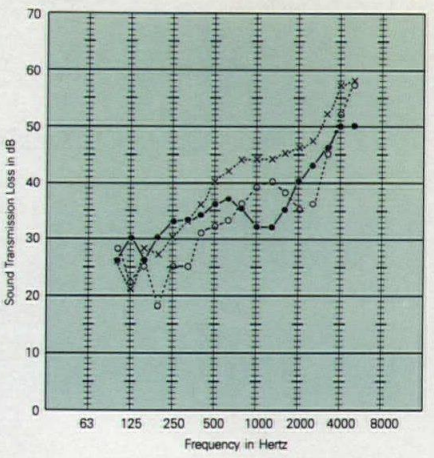
2 ACOUSTICAL LABORATORY TEST SUITE

1, 2 *The photo shows a typical receiving room at the Riverbank Acoustical Laboratory and the aperture into the source room. The corrugated panels are angled to help prevent establishment of standing waves between parallel wall and ceiling surfaces, and the room resonances they create [see "Acoustical Dimensions of Design," P/A, April 1990, pp. 44–48].*

The sketch shows a schematic arrangement of a sound transmission loss test suite. The room on the right, called the source room, has two or more electronic noise sources and several fixed microphone locations to measure average sound level. The room on the left, the receiving room, contains a microphone on a rotating boom. The demising partition between these two rooms contains an opening into which the window or other assembly to be tested is mounted.



3 SOUND TRANSMISSION LOSS FOR 1/4" MONOLITHIC GLASS



4 SOUND TRANSMISSION LOSS FOR INSULATED AND LAMINATED GLASS

KEY

× 1/4" LAMINATED* – 1/2" AIR SPACE – 1/4" LAMINATED*
○ 1/4" MONOLITHIC – 1/2" AIR SPACE – 1/4" MONOLITHIC
● 1/2" MONOLITHIC
■ 1/4" MONOLITHIC

* 1/8" GLASS – 0.030 SAFLEX® – 1/8" GLASS

3 *Sound transmission loss (TL) in dB for ¼" monolithic glass and corresponding STC contour (data are based on a limited number of samples). Higher TL values indicate better sound isolation than low ones; ¼" glass generally increases in performance with increase in frequency. The dip in the TL – here at about 2500 Hz – is called the coincident frequency. The single value STC rating is the TL value of the STC contour at 500 Hz.*

4 *Splitting ½" monolithic glass into insulating glass consisting of two ¼" monolithic lights decreases the TL at frequencies below 750 Hz and shifts the coincident frequency upward from about 1000 to 2000 Hz. Substituting laminated glass (two ⅛" lights bonded to a 0.030" polyvinyl butyrl interlayer) in the insulating unit increases the TL across nearly the entire frequency range above that of both ½" monolithic and ¼" insulating units – and eliminates the coincident frequency dip. Other tests show that laminated glazing increases the STC value of the insulated unit by 7 points.*

analysis can become intricate. Where sound isolation performance of building façades is important, an acoustical consultant can be retained to assist with the sound isolation analysis and specification of cost-effective window designs. Names of qualified acoustical consulting firms in your area can be obtained from the membership directory of the National Council of Acoustical Consultants.[2]

Fundamentals of Sound Transmission Loss

The ability of a material to limit the transmission of sound is quantified using the sound *transmission loss* (TL), expressed in decibels (dB). The higher the sound transmission loss, the better the material is in limiting the passage of sound. Sound transmission loss is measured in a laboratory in accordance with ASTM E 90 *Method for Laboratory Measurement of Airborne-Sound Transmission of Building Partitions.*[3] The test involves mounting a material or building wall system in an opening of a demising partition separating two very reverberant rooms (1, 2). The balance of the demising partition separating the two rooms is very massive, so that substantially all the sound transmitted between rooms is through the material mounted in the test opening.

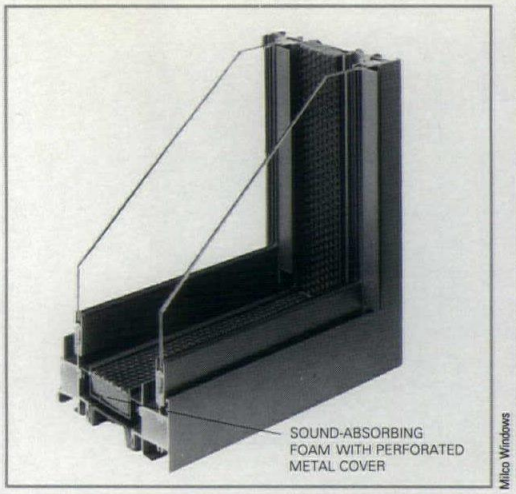
The test procedure involves playing electronic sound in one room (the source room) and measuring sound levels in both the source and receiving rooms. The difference in measured sound levels is related to the sound transmission loss. Because sound transmission loss is frequency dependent (the TL varies widely over the usual frequency range of interest), TL data is reported in one-third octave bands between 100 Hz and 5000 Hz (see P/A BSB 4/91).[4] The TL for ¼" monolithic glass is small at low frequencies, for example, and increases with frequency to about 500 Hz (3). Thereafter, it is level and then dips down at about 2500 Hz, and then continues to rise steeply with increasing frequency. This is typical of most monolithic materials – low TL in the low frequencies, increasing with increasing frequency, and a dip in TL at some intermediate frequency. The dip in TL, at about 2500 Hz for ¼" glass, is known as the *coincidence frequency*. Much attention is paid by window designers and engineers on ways to limit the loss in TL performance at coincidence.

The comparison of sound transmission loss spectra for two different materials can be complicated. This is especially true if, in a certain frequency range, one material has a higher TL than the other. To facilitate the comparison of TLs between materials and building wall systems, a single value descriptor called the sound transmission class rating is most widely used. The sound transmission class (STC) rating is defined in ASTM E 413 *Classification for Rating Sound Insulation*.[5] This standard describes a procedure for fitting a standard contour to the one-third octave band sound transmission loss data obtained using ASTM E 90. The STC rating is the sound transmission loss value at the point where the contour crosses the 500 Hz grid line (3). As with TL, the higher the STC rating, the better the sound isolation performance.

The STC contour was developed to rate the performance of materials and building partition systems with respect to "standard household noise," that is, speech and sound produced by household appliances. Originally, it was intended that the STC rating would be the basis of a procedure where the STC rating could be subtracted from a level of household sound in one residential unit to determine the characteristic of sound in an adjacent unit. This never became a workable scheme, however, so STC ratings have only become a means to compare the sound isolation performances of materials and building wall systems.

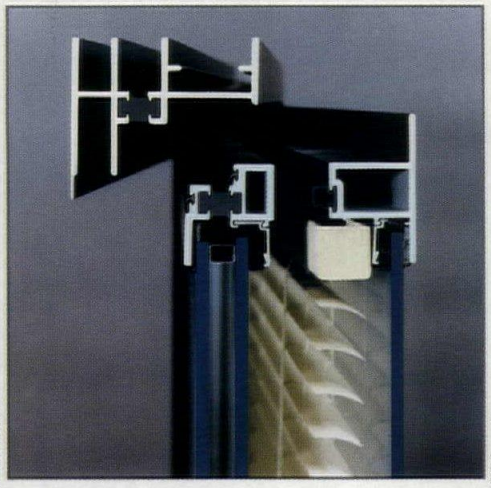
A long-cited drawback of the STC rating has been the fact that it was devised to assess a material's sound isolation performance with respect to household sound. Owing to the richness in low-frequency sound energy of environmental sound, especially as compared with household sound, a new descriptor called the outdoor-indoor sound transmission class (OITC) rating has been defined in ASTM E 1332 *Classification for Determination of Outdoor-Indoor Sound Transmission Class.*[6] As with the STC rating, the higher the OITC, the better the sound isolation performance. Also, both use ASTM E 90 sound transmission loss data for their evaluation.

Unlike the STC rating, the OITC rating does not use a contour fitting procedure, but rather a calculation procedure similar to A-weighting. In addition, as of this writing, the ASTM E 90 sound transmission



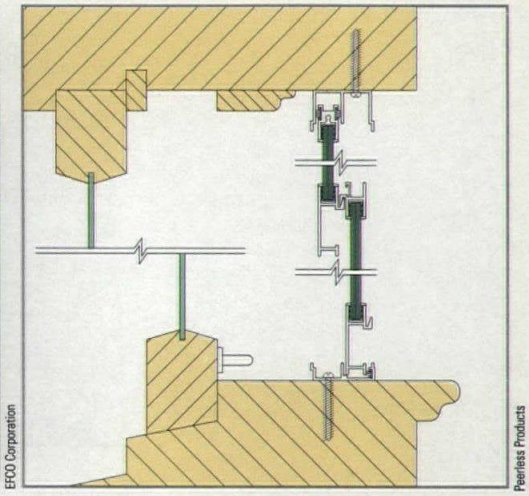
Milco Windows

5 SOUND ABSORBING WINDOW FRAME



EFCO Corporation

6 ACCESSORY STORM SASH



Peerless Products

7 RETROFIT STORM SASH

loss test procedure requires collecting TL data in one-third octave bands between 125 and 4000 Hz, the same frequency range used in the STC rating. OITC requires the measurement of TL data between 80 and 4000 Hz. Most TL data measured to date are over the range of 125 Hz to 4000 Hz, or 100 to 5000 Hz; this means, strictly speaking, that classification of OITC cannot be used unless low-frequency TL data are measured. Little product literature now reports the OITC, but this is likely to change over the next few years. For lack of OITC test rating data, sound isolation performance in this article generally refers to STC rating.

Glass Sound Isolation

Up to this point, we have reviewed methods for testing and quantifying sound isolation performance. Now we will consider the main properties of glass that govern sound transmission. These are mass, damping, and stiffness, which include the effects of the air space and the glass fastening system.

Mass. Increasing glass thickness increases both mass and stiffness. For example, doubling glass thickness from ⅛" to ¼" is usually practical and provides a 3 to 4 point increase in STC rating. But, an increase from a ⅜" to a ¾" thick glass panel, to obtain a further 3 to 4 point increase in STC rating, may not be practical. Hence, other techniques are needed for improving sound isolation performance. Also, note that the increase in STC produced by doubling glass mass does not hold for insulating glass, for which the increase in STC rating for a doubling in glass mass is usually only 1 to 2 STC rating points.

Stiffness. Increasing glass strength through tempering or chemical strengthening simply increases strength-to-breakage and does not affect bending stiffness. It does not affect sound transmission loss.

Air Space (Insulating Glass). The air space between two lights of glass can improve sound isolation performance. For example, ¼" monolithic glass has an STC rating of 31. Two lights of ⅛" monolithic glass separated by a ⅜" air space will also have an STC rating of 31. An air space thickness greater than ⅜" will result in a higher STC rating and an air space thickness smaller than ⅜" will result in a lower STC rating. Increasing the air space thickness to ¾" increases the STC rating to approximately 34 and decreasing it to ¼" decreases the STC rating to 28. A ¾" air space allows a higher STC rating to be achieved with the same total surface mass as ¼" thick monolithic glass.

Damping. Plate damping can be used to increase glass sound transmission loss. Damping is the mechanical transfer of vibratory energy into heat energy. In glass, damping reduces the transmission of sound through a window by transforming resonant vibratory motion in the glass (excited by sound on the incident side of the window) into heat energy. In windows, plate damping is provided by laminated glass ("safety glass"). Laminated glass is produced by bonding two lights of glass together with a special, clear viscoelastic material having high damping characteristics. Shear strain produced in the damping interlayer transforms vibratory bending energy in the glass into heat. The addition of damping to a single panel of glass using an interlayer increases TL at the coincidence frequency, often increasing the STC rating by as much as 4 points (when compared with an equal total thickness of monolithic glass).

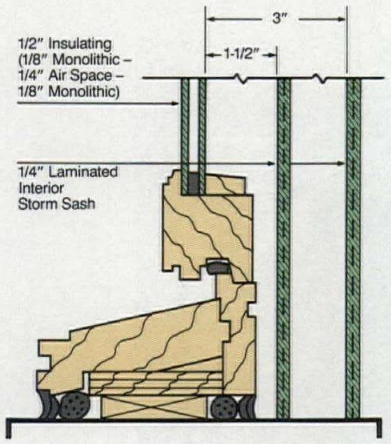
When laminated glass is used in an insulating glass unit, a synergetic effect occurs where the plate damping and air space together increase sound isolation performance drastically.[1] Substituting laminated glass for monolithic glass in insulating units can increase the STC rating by as much as 7 points (5).

Edge damping. Some improvement in sound isolation can also be obtained through edge damping, that is, damping resulting from the transfer of vibratory energy into the window frame or frame gasket. A window composed of many individual panes and muntins tends to have a somewhat higher sound transmission loss (especially at coincidence frequency) than a single light of equal size because of the mechanical interaction between the glass panels and muntins. Manufacturers have capitalized on this by producing glass gasket systems using viscoelastic materials that have high damping. One such system is manufactured by Stanlock. The increase in STC rating produced by edge damping is usually smaller than that for plate damping. For example, mounting a standard 1" thick insulating glass configuration into a Stanlock gasket system increases the STC rat-

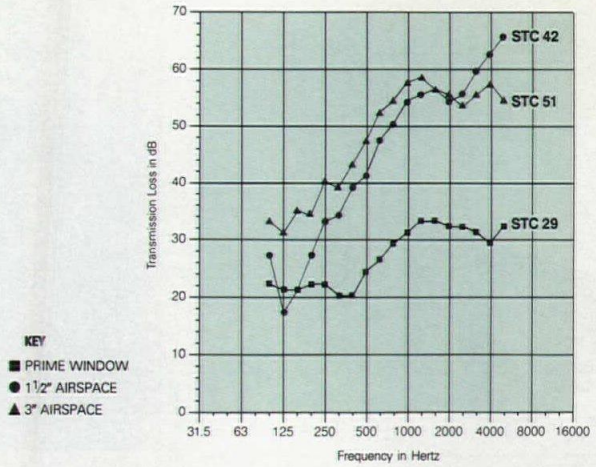
5 *This commercially available double-glazed window with a sound absorbing periphery, when glazed with ¼" monolithic glass, achieves an STC rating of 48. Removing the sound absorptive periphery from the frame reduces the STC rating to approximately 43. Glazing the frame outfitted with the sound absorptive periphery with ¼" laminated glass increases the STC rating to 50.*

6 *Storm sash is available as an accessory for many window types and from many window manufacturers. In this double glazed casement window, a single glazing of storm sash can be fitted on the interior side of the blinds. The exterior appearance of the window is the same with and without the storm sash, so some sections of the façade can be glazed to a higher acoustical standard than others, using the same prime window.*

7 *Existing windows can be retrofitted with acoustical storm sash using standard frame sections sized for individual windows. Interior placement simplifies installation, preserves exterior appearance, and allows deeper air spaces, compared to exterior mounting.*



8a STORM SASH INDEPENDENT OF PRIME WINDOW



8b FREQUENCY RESPONSE OF STORM SASH INDEPENDENTOF PRIIME WINDOW

8, 9 *Existing and conventional windows can be acoustically upgraded with storm sash at either the exterior or interior. Interior placement is usually favored because performance increases with thickness of air space, and sill depth is normally greater at the interior. The window frame itself conducts vibration, and glazing the storm sash independently of the prime window also usually outperforms an integrally-glazed assembly.*

ing by approximately 2 points. Using one light of monolithic glass and one light of laminated glass in a 1" insulating configuration increases the STC rating by approximately 4 points. Using laminated glass in both lights increases the STC rating by approximately 7 points. Combining both plate and edge damping will probably give only a 1 point increase in STC rating over that obtained with plate damping alone.

Sound Absorptive Periphery, Gas Filling

The plate vibration of glass is not the only place that mechanical energy can be stored. The air space within an insulating unit also stores energy, and the sound isolation performance can be improved by absorbing it with a special material installed around the inside perimeter. This can increase the STC rating by 5 points in a typical case (5). Many manufacturers make such units.

Recent work shows that substituting a gas fill for air in insulating units has acoustical, as well as thermal, benefits. Argon (Ar), sulfur hexafluoride (SF_6), and Xenon (Xe) can be used. These gas fills provide significant increases in sound transmission loss at mid frequencies, between 250 and 1000 Hz. But below 250 Hz, they can produce equally significant decreases in TL. This is especially significant with respect to building exterior window glazing, because transportation-related noise typically has most of its energy concentrated at low frequencies. The deficiency of gas fills at low frequency usually outweighs the benefits at higher frequencies, so gas-filled windows are generally not suitable for controlling exterior sound transmission. Some manufacturers are researching the subject, so that in the future workable combinations of gas filling and other window design parameters may be developed.

Interior Storm Sash

Interior storm sash has been widely used to retrofit existing windows to improve sound isolation. This practice preserves the existing exterior appearance, so it is especially useful in historic restorations when it is necessary to maintain the existing windows. Interior storm sash is also useful in situations where an improvement in sound isolation is necessary only in a portion of a building. This is true even in new buildings where a basic prime sash can be improved as needed through the installation of interior storm sash (6, 7).

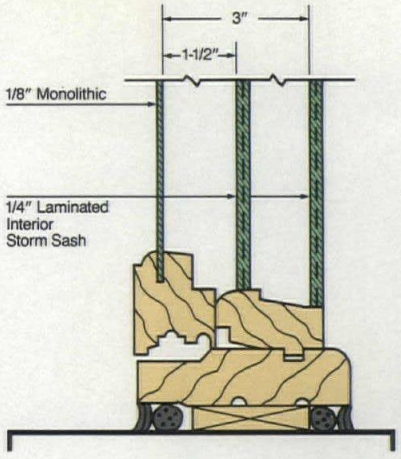
Interior storm sash used for sound isolation differs from conventional exterior storm windows by using heavier (preferably laminated) glass in a fully gasketed frame. It can be used on either the inside or the outside of a window, but interior installation is usually favored, since greater air space between the prime and storm glazing can be achieved on the inside.

Interior storm sash is usually mounted separately from the prime sash. Sometimes, however, interior storm sash must have contact with, or actually be attached to, the prime window. Direct physical contact, or structural coupling between prime and storm glazing, can reduce storm sash sound isolation performance (8, 9). In addition to transmitting vibration, the attachment of interior storm sash panels to a prime sash often leaves cracks uncovered and does not always fully attenuate sound transmitted through frame openings. In spite of its limitations, attachment of interior storm sash directly to prime sash can offer advantages that sometimes outweigh possible losses in sound isolation performance.

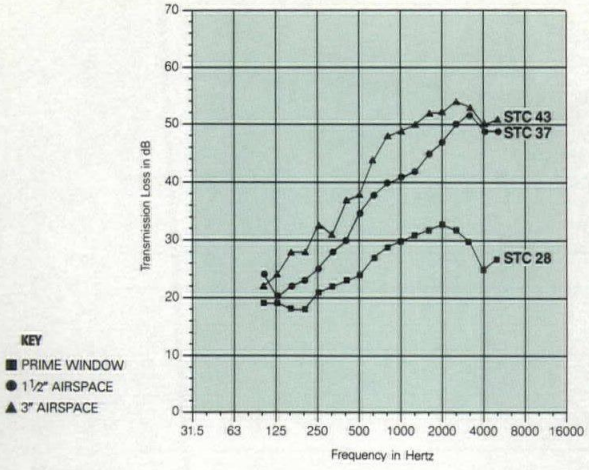
Insertion Loss of Storm Sash

Up until now, the acoustical benefit of interior storm sash has been referred to as "sound isolation performance." This will now be more specifically quantified and referred to as the *insertion loss* (IL). Insertion loss, as it is used here, is the arithmetic difference between the A-weighted sound pressure level in a room with and without storm sash installed on windows.

Windows most likely to require retrofitting with interior storm sash are those that are already acoustically deficient. A variety of combinations of spacing, frame type, and material (24 in all) were tested for sound transmission loss at Riverbank Acoustical Laboratories.[1] Using this base data, the insertion loss of ¼" laminated storm sash has been estimated for transportation noise sources (aircraft, traffic, and trains) for two types of prime window glazing – ⅛" monolithic and ½" insulating. The results show the large differences attributable to different air space thicknesses and the relationship between performance and the type of noise (10).



9a STORM SASH AFFIXED TO PRIME WINDOW



9b FREQUENCY RESPONSE OF STORM SASH AFFIXED TO PRIME WINDOW

Although ¼" laminated storm sash is often an ideal solution to sound isolation problems, its implementation can be challenging. When possible, the interior storm sash operable frame type is designed to closely match the corresponding prime sash operable frame type. For example, storm sash for a double-hung prime window is usually configured as a double-hung window as well. Correspondingly, storm sash for a sliding prime window is usually configured as a sliding window. For awning or casement windows, the best interior storm sash configuration needs to be determined on a case-by-case basis.

Practical Acoustical Window Design

Practical window design for buildings located near noisy areas need not be complicated. It does require attention to detail, not only to windows, but also to walls, ventilation openings, roofs, etc. For the architect, implementing sound isolation performance requirements into a project specification can be straightforward and involves the following steps:

1 *Estimate the required window sound isolation performance.* This involves retaining an acoustical consultant, using a methodology such as that in the *Acoustical Glazing Design Guide,*[1] or referring to local codes, which sometimes dictate a required standard. The sound isolation performance should be expressed as a sound transmission class rating or an outdoor-indoor transmission class rating (or both).

2 *Glazing configuration.* The specification must indicate whether single or insulating glazing should be used. This is necessary since, for transportation noise, a higher STC rating is needed for double glazing than for single glazing to obtain a required sound isolation performance.

3 *"Rules of Thumb" for Estimating STC Rating.* A large number of window TL data has been published in product literature, but the sound transmission class rating for any particular combination of window options often cannot be found. The following "rules-of-thumb" can be used to estimate the STC rating for an unknown window configuration from a known STC rating of a similar glass configuration.

- Replacing monolithic glass with laminated glass of the same thickness results in a 3 point increase in the STC rating.
- Changing from insulating to laminated insulating glass (one light laminated, one light monolithic) results in an approximate 4 point increase in the STC rating.
- Changing from insulating to double laminated insulating glass (both lights laminated) results in an approximate 7 point increase in STC rating.
- Doubling glass thickness in a laminated insulating glass configuration results in a 3 point increase in STC rating if the air space thickness is less than 1", and results in a 1 point increase in STC rating if the air space thickness is greater than 1".
- With present technologies, gas filling of insulating glass most often reduces sound transmission class rating as well as sound isolation performance for most transportation noise sources.
- Adding a sound absorptive periphery to an insulating glass configuration can increase the STC rating by 5 points. This is the case for insulating glass with large air spaces (above 3"). The benefit of sound absorptive peripheries in thin air space insulating glass is not known. Combining laminated glass with sound absorptive periphery results in a further small increase in STC rating of approximately 2 points.
- Laminated storm sash can reduce the transmission of transportation sound through windows by up to 20 dBA, depending on prime glass to storm sash spacing.
- For rehabilitation projects where occupants will experience transmitted exterior sound levels both before and after rehabilitation of windows, a 10 decibel decrease in transmitted sound levels is a good initial guideline for acceptable sound isolation performance for new windows. Generally, a 10 decibel improvement in sound isolation performance of windows is best provided by interior storm sash.

4 *Submittals.* The contractor should be required to submit a laboratory-certified sound transmission loss test report in accordance with ASTM E 90, E 413, and E 1332 for the window model and type being installed in a project. The laboratory should be certified by the National Voluntary Laboratory Accreditation Program (NVLAP).

5 *Field Testing.* In especially sensitive cases, such as in the many FAA-sponsored school and residential sound insulation programs around airports, field

10 Estimated 1/4" Laminated Glass Storm Sash Insertion Losses

	Single Glazing Prime to Storm Sash Air Space				Double Glazing Prime to Storm Sash Air Space			
	3/4"	1 1/2"	3"	6"	3/4"	1 1/2"	3"	6"
Aircraft	3	6	9	12	6	10	14	17
Traffic	5	9	12	16	9	12	16	20
Rail	6	9	13	17	9	13	16	20
Rail-Diesel	2	5	7	10	3	7	11	14

Note: Prime windows glazing was 1/8" glass; double glazing was a 1/2" unit (1/4" air space)
Source: *Monsanto Acoustical Glazing Design Guide*

10 *The left-hand table gives estimated insertion losses achieved by adding 1/4" laminated glass storm sash to 1/8" monolithic glazed prime windows, for four different types of transportation noise. Note that acoustical performance increases significantly with increasing thickness of air space between the existing and retrofit sash. The right hand table is for 1/2" insulating – instead of monolithic – prime window glass.*

Example: Suppose that a building exposed to traffic noise requires windows to have an STC rating of 40. Also suppose that other conditions require that windows be glazed with 1/2" insulating glass. Such glazing has an STC rating of only 28. The additional 12 STC rating points (40 minus 28) can be obtained by using 1/4" laminated storm sash with a spacing of 1 1/2", as found in the second column and second row of the right-hand table.

Additional Reading

Sound Control for Aluminum Curtain Walls, TIR-A1, American Architectural Manufacturers Association, Palatine, Illinois (708) 202-1350, 1975, 50 pp.

Technical Manual for Acoustical Glass, Sealed Insulating Glass Manufacturers Association, Chicago (312) 644-6610, 1986, 18 pp.

testing of windows before and after installation may be desirable or even required.

6 *Other Considerations.* As a precaution, windows used in sound isolation applications should be outfitted with high wind exposure gaskets. This is recommended because even small leaks can significantly degrade sound isolation performance.

High sound isolation performance windows generally require that glazing fill the wall opening. This is particularly necessary if window frames are lightweight, thereby offering little resistance to the transmission of sound through the annular area formed by the edge of the glass and the wall opening. In high sound isolation performance windows glazed with insulating glass, the inner and outer lights of glass should be independently supported, especially in light window frames, to avoid vibration transmission from the outer light to the inner light via the frame.

Precautions should be taken during design and installation to prevent sound leakage through the frames supporting window assemblies. This may require filling hollow frames with dense insulation or other solid materials. This can be important in window replacement programs where window counterweight pockets (which are usually not used with modern windows) must be packed during construction. It is necessary to pay particular attention to this during construction since such details can not be easily inspected or corrected after construction.

Conclusion

Many of the factors and details influencing the acoustical performance of windows should be familiar to architects, in that they also govern airtightness, water leakage, and thermal performance (other modes of energy transmission). Many other features important to acoustical isolation are unique to sound performance; these include mass (glazing weight per unit surface area), plate damping, and internal absorption. Regardless of commonality or uniqueness with respect to other window performance criteria, acoustical performance has its own vocabulary and units of measure. It is becoming increasingly important for architects to understand and know how to use these. **Gregory C. Tocci** ■

The author is president of Cavanaugh Tocci Associates, Inc., an acoustical consulting firm in Sudbury, Massachusetts. He has worked with numerous window manufacturers and architects on a variety of building and sound isolation problems. He is past president of the National Council of Acoustical Consultants, and is a Fellow of the Acoustical Society of America.

References

1 *Acoustical Glazing Design Guide,* Saflex Division, Monsanto Company, St. Louis (800) 325-4330, 1989; contains DOS software on 5¼" floppy disk.

2 *Membership Directory,* National Council of Acoustical Consultants, Springfield, New Jersey (203)379-1100.

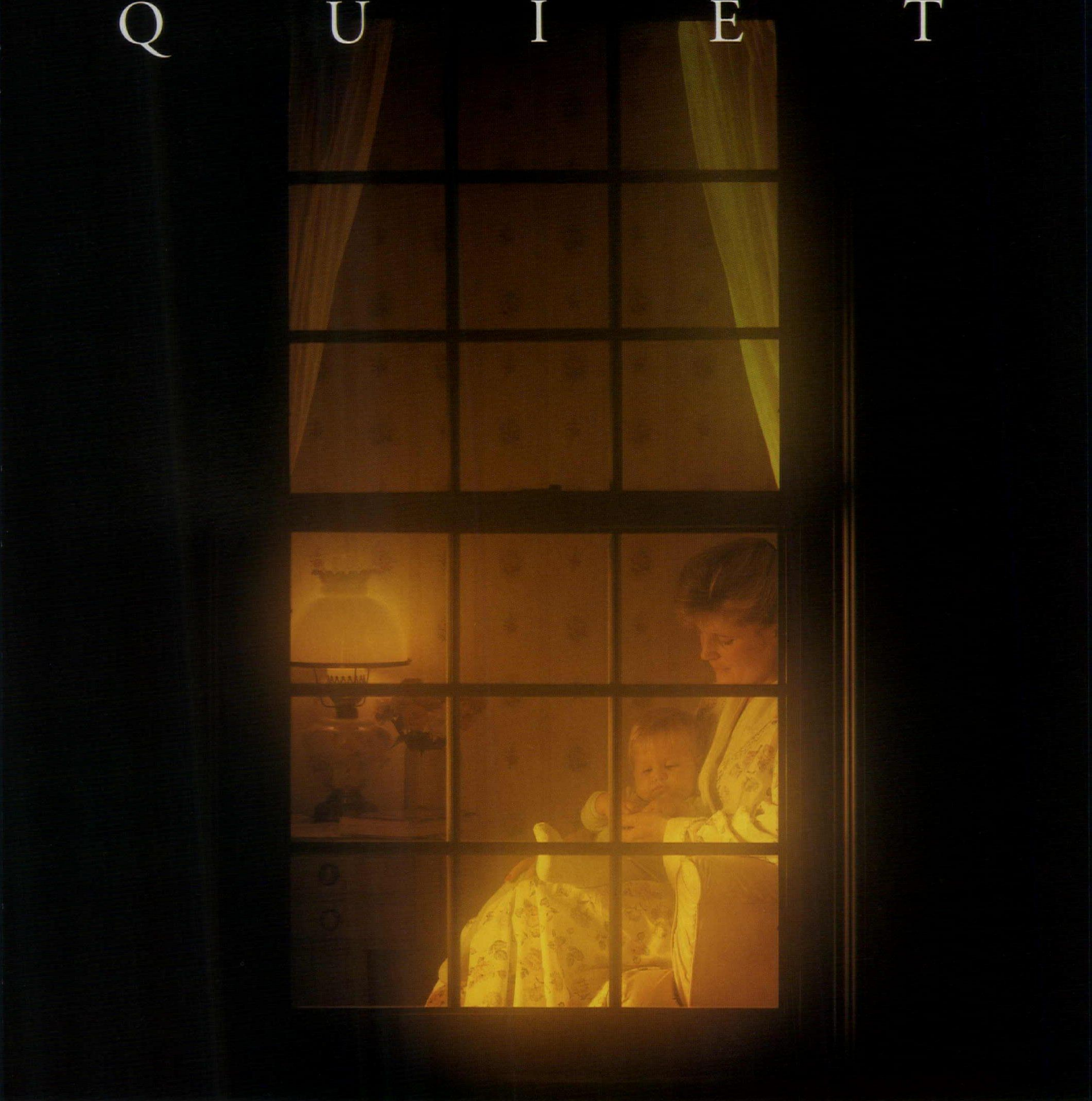
3 E 90 *Method for Laboratory Measurement of Airborne-Sound Transmission Loss of Building Partitions,* ASTM, Philadelphia (215) 299-5585.

4 "The Dimensions of Sound," Building Science Brief 4/91, P/A, K. Labs, April 1991, p. 43.

5 E 413 *Classification for Rating Sound Insulation,* ASTM, Philadelphia (215) 299-5585.

6 E 1332 *Classification for Determination of Outdoor-Indoor Sound Transmission Class,* ASTM, Philadelphia (215) 299-5585.

Q U I E T



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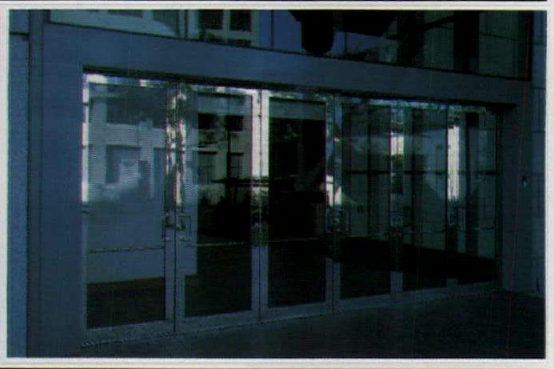

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Field versus Laboratory Performance Testing

Consultants **Dennis K. Johnson** and **Andrew S. Weber** of Wiss, Janney, Elstner Associates

explain differences in leakage performance of 40 window and curtain wall systems tested in the mock-up stage and in the field.

The use of particular window and curtain wall systems often depends on successfully completing tests that verify their design operational and performance capabilities. By complying with the performance requirements of the project specifications or industry standards during testing, wall systems are usually released for fabrication and installation. These tests often end any further review. Relying solely on tests to predict system performance in preventing water penetration after installation is risky. Failure to understand or properly use the test findings has also contributed to conditions that promote water leakage problems. The reasons for variations between lab results and field performance are extensive, but we have traced them to modeling discrepancies, improper material applications, poor workmanship and installation practices, and the inability to properly accommodate building construction tolerances.

Background

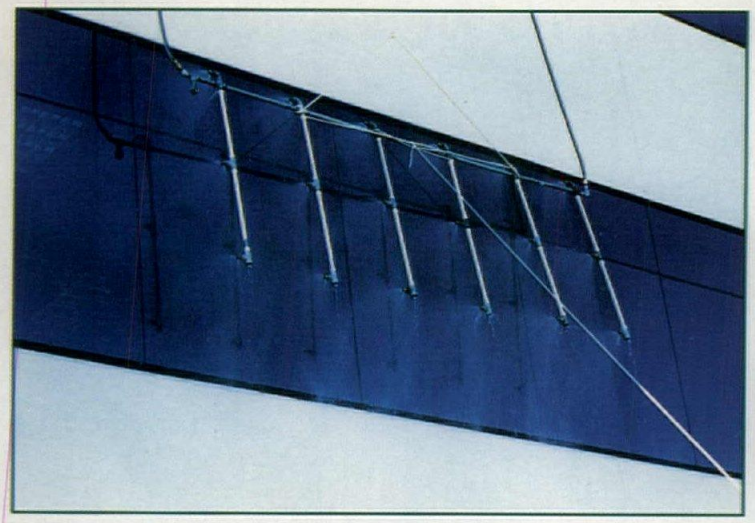
Design teams spend much time and effort developing performance requirements for windows and curtain walls. These criteria are developed after researching building code requirements, deriving design loads, determining expected environmental conditions, reviewing information from industry sources, evaluating material properties, and considering various model design guidelines. This preparation is used to define the boundaries of the exposure conditions expected during the service life of the system.

Accurate and comprehensive performance requirements alone, however, cannot provide adequate assurances that window and curtain wall systems will meet expectations. Specifiers typically require verification of performance capabilities by testing laboratory mock-ups. Mock-ups are fabricated by the manufacturer to determine rate of air leakage, resistance to water penetration, structural performance, and thermal properties using standard test methods developed by the American Society for Testing and Materials (ASTM). But, while these tests may provide hope of satisfactory future performance, even laboratory-tested wall systems may perform at levels far below those expected once installed in the field. This is especially true of resistance to water penetration. Results from field tests for water penetration of windows and curtain walls frequently yield values indicating operating levels much lower than those predicted by the results from laboratory tests.

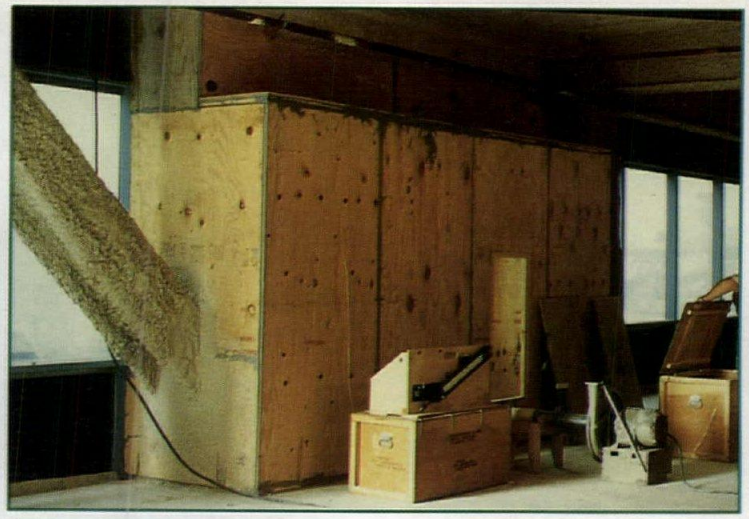
In order to determine how well field performance matches that of laboratory mock-ups, we reviewed our own records of projects in which systems were tested under both circumstances. We identified projects in which water penetration tests were conducted in the laboratory in accordance with ASTM E 331 *Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.* This set of projects was further reviewed and the study was restricted to those projects in which the field tests were conducted in accordance with ASTM E 1105 *Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls and Doors by Uniform Cyclic Static Air Pressure Difference.* Though other reliable methods of testing exist for checking wall systems for water penetration in the field besides ASTM E 1105, the intent was to minimize factors influencing the results by using test methods and equipment employed in ASTM E 331. This review identified 40 cases that met the above criteria.

"Even laboratory-tested wall systems may perform at levels far below those expected once installed in the field."

The window and curtain wall projects represented in this study were systems installed in buildings ranging in height from 3 to 38 stories. The windows were integrated into façades consisting of precast concrete wall systems, brick veneer walls, and wood panel systems. The curtain walls were primarily glass and metal, but four of the systems also contained stone panels. All of the windows except one had aluminum mullions and frames. The exception was aluminum-clad wood. Both operable and fixed windows were analyzed. The systems had been installed for less than one year at the time of field testing, except for five projects, where the systems had been installed from one to three years. The window projects outnumbered the curtain wall systems and comprised 30 of the 40 cases studied. Though tested separately, the perimeter sealant placed



1 CALIBRATED EXTERIOR SPRAY RACK



2 INTERIOR PRESSURIZATION TEST CHAMBER

1, 2, 3 *Windows and curtain walls are field-tested by building an air-tight chamber on the interior side of the window. These chambers can be constructed in plexiglass or plywood with 2 by 4 structural support members used as necessary. High volume blowers are used to pressurize the test chamber and manometers are hooked to the chamber to measure the pressure difference created by the blowers. Calibrated spray racks are suspended on the exterior of the window. The calibration ensures that water is applied to the facade in known quantities as specified in the test method. Once water and pressure are both being applied, observations are made of the interior of the test window to check for leakage to verify the system's capability to resist water penetration.*

between the window or curtain wall and adjoining construction was considered part of the system.

Only 10 percent of the specimens performed at the same level in the field tests as in the laboratory, or in other words, 90 percent of the cases performed at lower-than-expected levels. Surprisingly, 55 percent of the specimens performed at levels so much lower than those in the laboratory that they leaked without any uniform static pressure differential across the plane of the system. In 67 percent of the case studies, the water leakage was observed emanating from both the window or curtain wall and the perimeter sealant joint.

Causes of Deficiencies

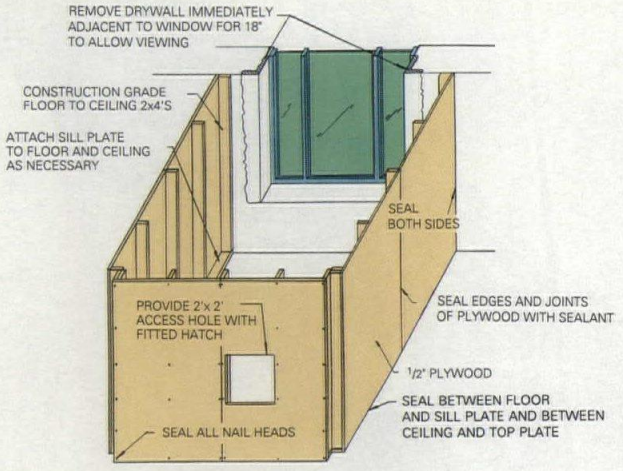
This subset of 36 cases – in which the specimens performed at lower-than-expected levels – was further evaluated to determine possible causes of the variations in performance and from these to develop general categories to classify them. Although there are many ways of grouping the cases, we decided to separate them into the categories of 1 modeling discrepancies, 2 improper material applications, 3 poor workmanship and installation practices, and 4 inability to properly accommodate construction tolerances.

By modeling discrepancies we mean that the as-built construction did not accurately replicate the laboratory mock-up, or that the tested condition or the laboratory model did not include the same components as the built work. For example, receptor systems used in the field may not have been included in the mock-up. Improper materials application includes cases where the materials used for fabrication differ from those recommended by the manufacturer, or materials were used in applications beyond their design limits or intentions. For example, sealant may be applied in profiles too thin to perform over time. Poor workmanship and installation practices include cases where the window or curtain wall was not fabricated or assembled according to the manufacturer's instructions. The category described as the inability to properly accommodate construction tolerance includes cases where the window or curtain wall could not be properly installed because of improperly sized products, improperly sized rough openings, or improperly installed back-up attachment for the window system. In several cases, multiple reasons for discrepancies allowed any one installation to be included in more than one category.

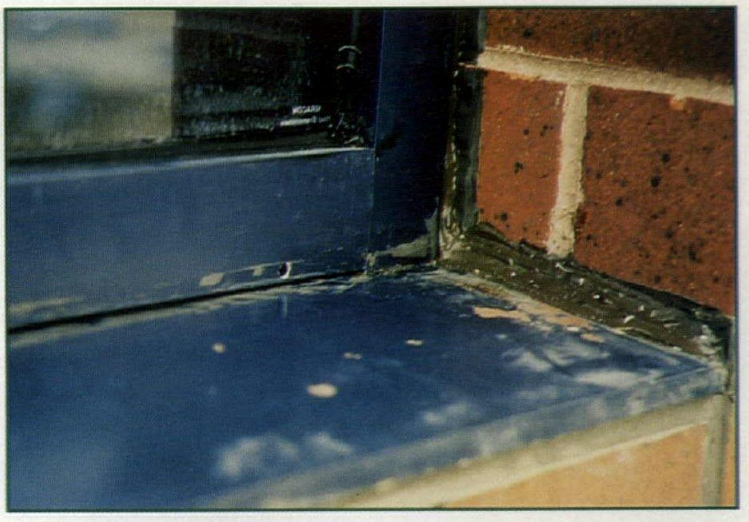
A majority of the specimens (58 percent) as tested in the field were not constructed in accordance with the shop drawings or installation instructions, and/or did not duplicate the laboratory model. In many cases, descriptions of the laboratory specimen were incomplete. Discussions with field personnel, when possible, also revealed that installation instructions at the field level were often unclear, unexplained, or not even provided. Quite often, sealants that had been applied to various framing and glazing joints within the window system when tested in the laboratory were never installed in the field. Two case studies also contained waterproofing details at the intersection of wall elements that varied from the details developed during the laboratory tests. Frequently, field units contained components that were not included in the laboratory mock-up. These substitute components – such as frame receptors, mullion connections, and corner conditions – can all adversely influence the system's field performance. Improper material applications occurred in approximately 8 percent of the cases. In one case, sealant was used instead of gaskets. Two cases involved sealants with properties different from those used on the laboratory mock-up, and this substitution affected performance in the field.

Poor workmanship and installation practices occurred in 44 percent of the cases. Faulty sealant application was frequently encountered. Because window and curtain wall systems rely so heavily on sealants to provide a watertight assembly, this is a common cause of leakage. Gasket installation also significantly affected performance. Large gaps at gasket corners occurred in the field specimens that did not occur during laboratory testing.

Finally, in 19 percent of the cases, window frames were improperly installed because the rough openings varied from the dimensions shown on the shop drawings. Where rough openings are smaller



3 DIAGRAM OF CHAMBER CONSTRUCTION



4 LACK OF ACCOMMODATION FOR CONSTRUCTION TOLERANCES (INADEQUATE SEALANT JOINT WIDTH)

4 *When the rough opening that a window must fit into is either too large or too small, the window system's ability to keep water out can be compromised. In the situation shown, the rough opening was left too small. Consequently, the space between the bottom of the window frame and the flashing was reduced to nothing. The situation precluded the proper installation of the perimeter sealant, which was one of the many reasons why this window failed to pass field testing for water penetration.*

than expected by the manufacturer, the original design of the joint may no longer be suitable, and perimeter sealant installed according to specification may not perform as intended. Construction tolerances also affect the placement of the frame within the rough opening. Small variations can influence both the shape of the sealant profile and its ease of application.

Recommendations

Laboratory performance testing for water penetration has been developed by ASTM and industry trade associations to provide the architect with some means for evaluating the capabilities of window and curtain wall systems and to compare different systems to one another. This has, unfortunately, led to a "numbers game" by manufacturers to achieve maximum effectiveness during laboratory testing, and this maximization further obscures a realistic appraisal of field performance and the factors that affect it. The designer can also be drawn into the numbers game in response to the large number of litigation cases involving water leakage problems. As a result, even more pressure is applied to designers to reduce risk of failure. Unfortunately, coupled with this pressure is a greater emphasis by the owner or developer to reduce the project time frame as well as the project costs. These conflicting needs must be understood and balanced by the design professional. Though laboratory or mock-up tests are a vital element of the review process, these results should not be reviewed as the final proof of system performance. Instead, the results of this study suggest that field testing is necessary to more accurately predict future in-service performance and product reliability.

In specifying field testing, the design professional must recognize that these tests are not meant to complete a "paper trail," but are indicators of probable in-service problems of the window and curtain wall system. Unsuccessful test results in the field should be anticipated, and the results of field tests carefully analyzed to determine an appropriate course of action. In addition, in order to be most useful, these tests must be performed early in the project. By uncovering problems early, appropriate action can be taken before costs become prohibitive.

The designer should involve the entire project team in an attempt to resolve any problems that may occur. This includes the window or curtain wall manufacturer, the installer at the site, the sealant subcontractor, the sealant manufacturer, the general contractor, and the owner's representatives. With cooperation of all parties and identification of the problem(s), an appropriate repair can be devised. We recommend the following measures to reduce system problems:

1 Accurate and complete installation information should be supplied to field personnel. Especially important are written installation instructions. Training of field personnel is also critical.

2 Changes implemented during laboratory testing should be documented. A review of these changes should also be made prior to release of the system for fabrication to determine the long-term effectiveness of the changes. Changes should not be made to the system during laboratory testing that are not intended to be made during final installation into the building. All components tested in the laboratory mock-up should be included in the field installation.

3 Materials used in the window or curtain wall system should be clearly identified on those documents intended for use during construction. These substrate materials should be tested by the sealant manufacturer to determine appropriate application techniques.

4 Shop drawings or installation instructions should illustrate sealant profiles and installation. Because proper sealant profiles must be obtained in order to accommodate movement, the window framing system should be designed to accommodate adequate sealant profiles. The application of more sealant to the test window is seldom an appropriate repair.

5 Field conditions should be reviewed with the contracting authorities to accurately determine the range of dimensions permitted in the openings and actual window or curtain wall systems should be adjusted to accommodate the expected tolerances. While some of the items listed may appear to be

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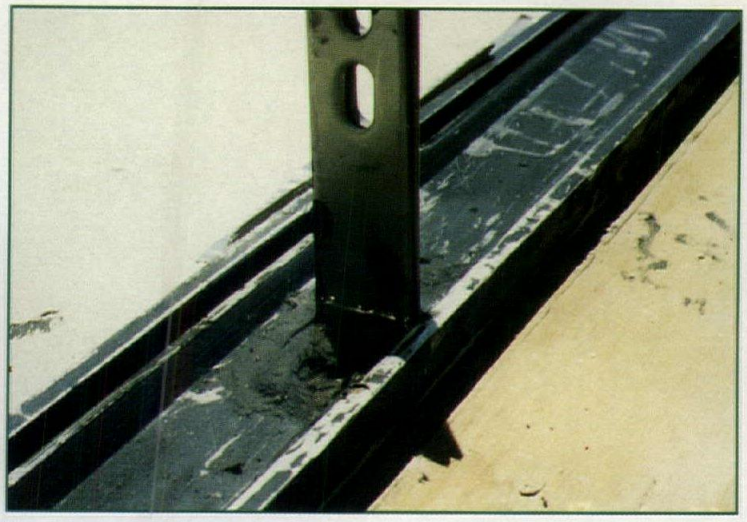
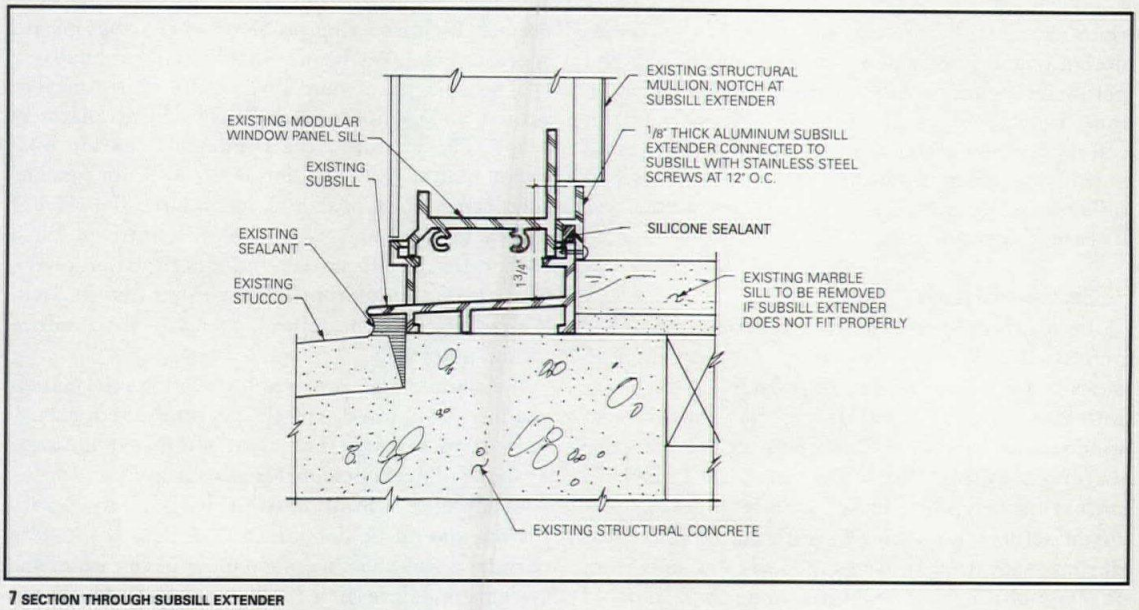


6

5, 6 *This window sub-sill was part of a system that was experiencing severe leakage. The window frame was removed and poor workmanship during original installation was clearly seen to be the cause of the leakage. Anchor penetrations through the sub-sill were not sealed, sealant was applied over sandy, oily surfaces that precluded adhesion, joints were not sealed, and the anchorage hardware was improperly installed. The remedial design included water testing all repaired sub-sills. The sub-sill's weep holes were temporarily covered with tape and the sill was filled with water. After 15 minutes, if no leaks were observed, the sub-sill was marked off as watertight. The tape was removed from the weep holes and the water allowed to drain. The previously repaired window frames could then be reinstalled.*



7 SECTION THROUGH SUBSILL EXTENDER

7 *The height of the inner leg on a window sill is directly related to the ability of the window to resist the penetration of pressure driven water. The taller the sill leg, the greater the pressure (as from wind) needed to drive water over the sill leg. If a window fails during testing the field, one method to upgrade its performance is to increase sill height by the addition of an extended piece. While this may not be applicable in all cases, it is a straightforward way to improve an important feature of the window system.*

beyond the control of the design professional, a conscientious initial emphasis on quality control and a clear statement of expected construction tolerances can do much to set the tone for the project.

6 Field testing should be performed to verify system effectiveness. These tests should be carefully monitored not only to determine the outcome, but also to evaluate the long-term effectiveness of any repairs. **Dennis Johnson and Andrew Weber** ■

Dennis Johnson is a consultant with Wiss, Janney, Elstner Associates, Inc. in Northbrook, Illinois, with whom he has investigated many air and water leakage problems in wall and glazing systems. Prior to joining WJE in 1984, Johnson was manager of the Physical Laboratory Division of the Robert W. Hunt Co. He is a member of ASTM. Andrew Weber is an Architect with the Emeryville, California office of WJE, where he specializes in renovation of historically significant structures and in investigation of glazing system problems. Weber is a member of the AIA, the Association for Preservation Technology, and the National Trust for Historic Preservation.

Related Reading

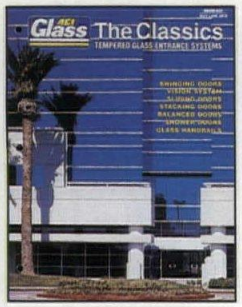
E 331-86 *Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference* and E 1105-90 *Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls, and Doors by Uniform Cyclic Static Air Pressure Difference,* ASTM, Philadelphia (215) 299-5585.

"Full Scale Performance Testing of Curtain Walls," A.A. Sakhnovsky, *Exterior Wall Systems,* STP 1034, ASTM, Philadelphia (215) 299-5585, 1991, pp. 47-58.

Methods of Test for Metal Curtain Walls, 501-83, and *Voluntary Specification for Field Testing of Windows and Sliding Glass Doors,* 502-90, American Architectural Manufacturers Association, Palatine, Illinois (708) 202-1350.

Wood Windows, ANSI/NWWDA I.S. 2-87, National Wood Window and Door Association, Des Plaines, Illinois (708) 299-5200.

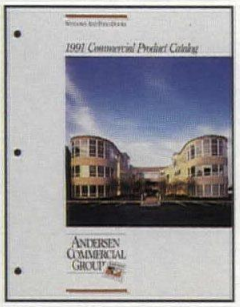
Windows/Doors & Related Products Digest



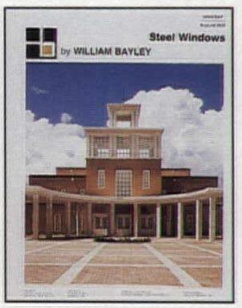
The complete selection of ACI Classic Glass Doors, Glass Vision Systems, and Glass Handrails is shown in this new eight-page brochure. Detailed product information, including specifications and applications, is shown. The brochure includes Classic's Swinging Doors as well as the Vision Systems, Handrails, and Hardware.
ACI Glass Products. Circle No. 350

A new 32-page catalog from Adams Rite describes exit devices and exterior trim accessories. Rim, mortise, concealed, and surface rod devices are shown in 10 finishes using brass, bronze, stainless, and aluminum. Entry trim includes a unique new lever, called a Pullever, that pulls straight out to operate.
Adams Rite. Circle No. 351

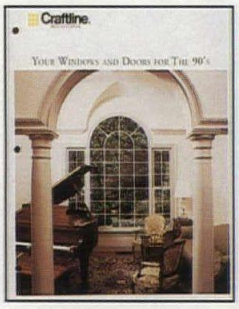
Concealed vertical rod devices are now available in 90 minute pair installations of beautiful architectural fire doors manufactured by Algoma Hardwoods, Inc. The doors are functional, yet aesthetically pleasing, meet handicapped codes, and are UL listed. The concealed hardware also eliminates impact damage and reduces operational noise.
Algoma Hardwoods, Inc. Circle No. 352



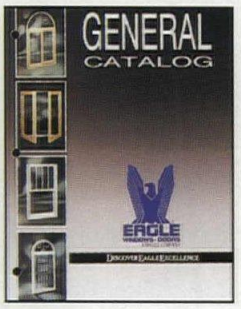
The 1991 Andersen Commercial Products Catalog includes a combination of installation and product photos designed to show specifiers, architects, and contractors the versatility of Andersen products for commercial use. Detailed drawings, size table specifications, and performance ratings are added to make the 96-page catalog a complete source for those specializing in commercial renovation or new construction.
Andersen Windows. Circle No. 306



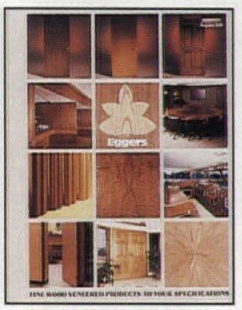
Standard and custom designed windows, projected and casement, are available in many colors. Windows feature BAYSEAL™ integral weatherstrips and BAYCO™ finishes for endurance and color retention. Services include custom engineering, specifications, proposal drawings, and job site supervision or installation. Architectural and security window catalogs are available.
The William Bayley Company. Circle No. 373



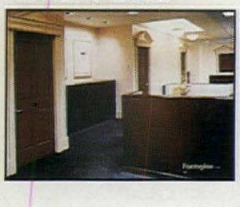
Craftline's "HANDCRAFTED FOR YOU" quality products are illustrated in the catalog "Your Windows And Doors For The 90s." Craftline manufactures windows in a multitude of shapes and sizes; we love specials. Designed for architects and builders, the Craftline catalog will offer extensive information concerning our products. Circle the reader service number below for a copy of the catalog.
Craftline®. Circle No. 353



EAGLE Window & Door, Inc., Dubuque, Iowa, announces a new General Catalog complete with full color photography, up-to-date specifications, sizes, and detail drawings. New products include the Decorelle Glass Series, Modern Divided Lights, Sliding French Doors, Eagle Trim, the Eagle Bow/Bay Roof, and Custom Colors.
Eagle Windows & Doors. Circle No. 354

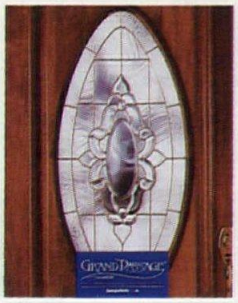


This Eggers 16-page, full-color catalog lists technical data relating to Eggers' full line of Architectural Wood Doors. Specifications on Eggers Stile and Rail Doors, Flush Doors, and Fire Label Doors, in both Stile and Rail and Flush Doors are included along with specifications on matching wood veneered jambs.
Eggers Industries. Circle No. 355

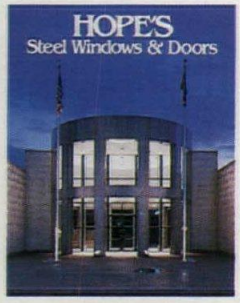


Quarrycast® is a lightweight "faux stone" material manufactured by Formglas in custom and six standard colors. Available in custom shapes and a wide range of standard components, it has been used to create stone-like doors and window surrounds, in traditional and contemporary styles. Material is for interior use only with zero fire and smoke ratings.
Formglas. Circle No. 356

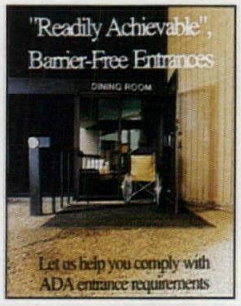
Contura, G-U's sleek new turn and tilt hardware system, is totally concealed with a flush interior design, tilts-in for ventilation, features multiple locking, and turns inward for easy cleaning. Large sash sizes are possible, with sash weights up to 286 pounds. Using the hinge system from Contura, inward and outward multiple lock "jumbo" casements are possible.
G-U Hardware. Circle No. 358



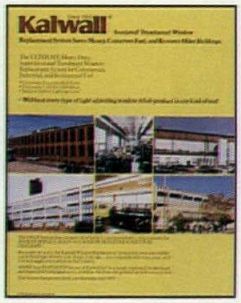
Grand Classic Hardwood Entrances from Georgia-Pacific. Eight-page brochure shows rich mahogany and oak entrances in solid panel or lighted doorway styles with optional sidelights. Decorative zinc-camed, brass-camed, or engraved glass inserts are available. Door and sidelight sizes, rough opening requirements, and pre-hung frame choices are reviewed.
Georgia-Pacific Corporation. Circle No. 357



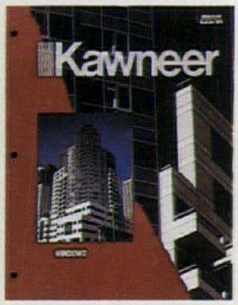
The oldest and the largest domestic manufacturer of steel windows, Hope's produces two window versions (The Jamestown Series and The Landmark Series) and three steel door models. This brochure describes design features and product fabrication process, and includes a portfolio of residential, institutional, commercial projects using Hope's products.
Hope's Steel Windows & Doors. Circle No. 359



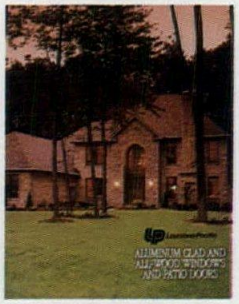
The EasyAccess™ swing door operator makes complying with the ADA 1990 mandate – "readily achievable." ADA defines this as "easily accomplishable. . . without much difficulty or expense." The EasyAccess™ operator installed without structural modifications, creates an affordably priced, barrier-free entrance for the physically disabled. Automatic operation with the push of a button.
Horton Automatics. Circle No. 360



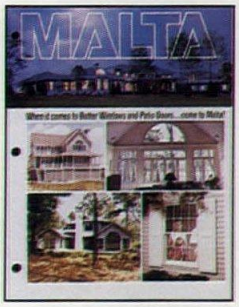
The Kalwall® System, the most highly insulating, light transmitting, light diffusing building system available, consists of a structural aluminum grid core that has two fiberglass reinforced face sheets permanently bonded under conditions of heat and pressure to both sides. There is a dead space between panel faces, providing insulation. The exterior face sheet has super-weathering Erosion Barrier System.
Kalwall Corporation. Circle No. 361



Kawneer Company, Inc., offers a comprehensive line of commercial grade windows in a variety of operable and fixed types, in thermal and nonthermal versions including: projected, casement, vertically/horizontally pivoted, top-hinged inswing, single and double-hung windows. Ventilation, window washing, emergency exit or provision of fixed lites functions, aesthetic, and performance objectives are easily achieved.
Kawneer Company Inc. Circle No. 362

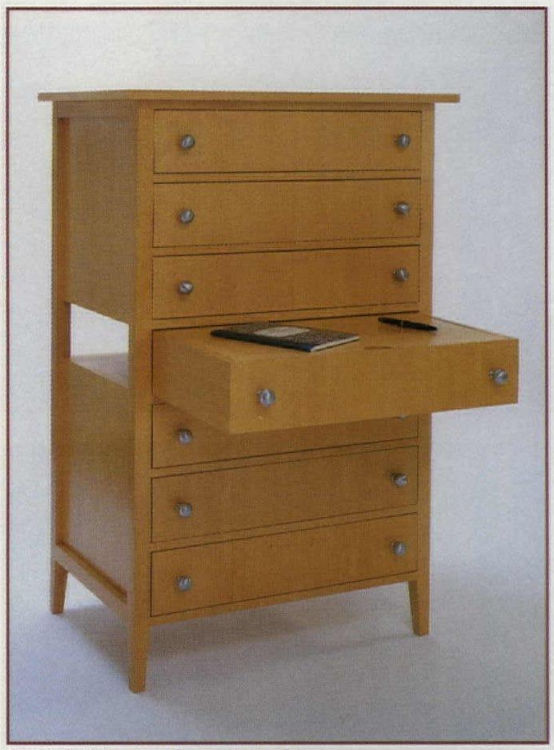


Louisiana-Pacific offers a full line of all-wood, aluminum-clad, and vinyl windows and patio doors. We combine top-quality materials and craftsmanship to create products you'll be proud to include in your projects. And we have options that will meet any design. Simulated divided lites, dust-free muntin bars, snap-in wood grilles, Low-E high-performance glass and matching custom windows.
Louisiana-Pacific. Circle No. 363



New Architectural Wood and Clad Windows. Malta has introduced a complete line of architectural wood and clad wood windows. The new architectural products complement Malta's product line featuring a wide range of vinyl- and aluminum-clad windows and patio doors. Catalog illustrates half-round top windows, palladiums, specialty configurations, and decorative glass.
Malta Wood Windows & Doors. Circle No. 364

New Products and Literature



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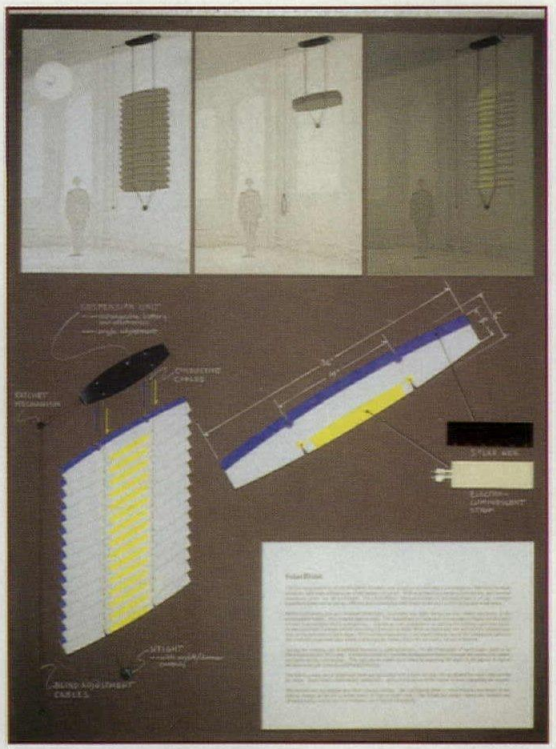

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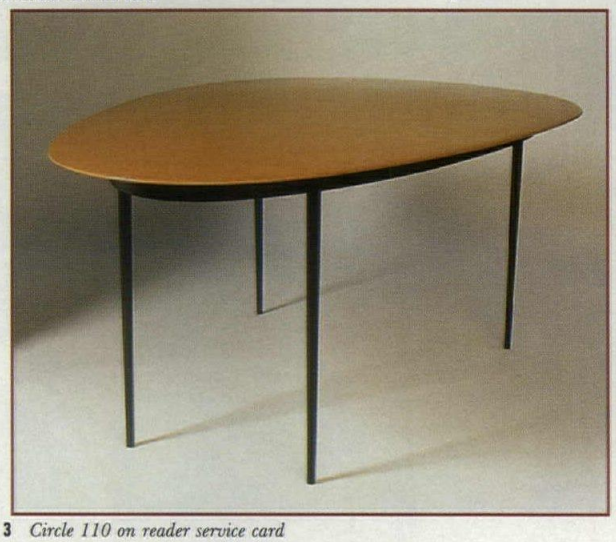

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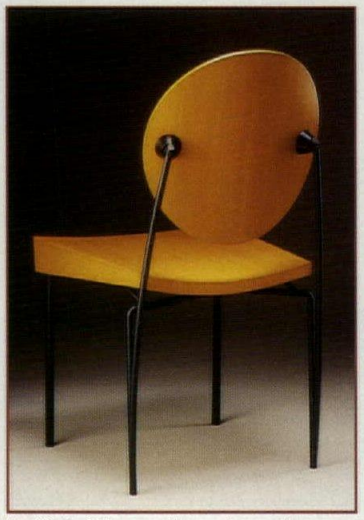

4 *Circle 111 on reader service card*

Marco Pasanella's "Dresser/Desk" (1); Eric P. Chan and Jeff Miller's "Solarblind" (2) window blind that becomes a lighting fixture at night, one of eight winners to be phototyped and exhibited this fall in "Design Explorations: 2001"; Chris Lehrecke's "Egg Table" (3); and Dakota Jackson's "'vik-ter" chair (4).

Report from New York

This year's International Contemporary Furniture Fair, held in New York in May, embodied all that is 1991 – its social, political, and economic concerns and contradictions manifested in furniture design. At the ICFF, 1980s extravagance and 1990s environmentalism and economic restraint shared the floor, looking as uncomfortable together as Donald Trump and Mother Theresa at a square dance.

In such an environment, one found solace in designs that attempted to balance the incongruities of our time, rather than in those that merely jumped on bandwagons old or new. Marco Pasanella sought to reduce cost and save space with his amusing and exceedingly practical collection of dual-purpose furniture. Chris Lehrecke's wood and metal tables, with their subtly tapered concave or convex tops were inspired by a time (the 1950s) when aesthetics, function, and craftsmanship were conscientiously synthesized. And Dakota Jackson's wood and steel "'vik-ter" chair possessed unusual poise for an articulating stacker.

Metropolis magazine (one of the fair's sponsors, along with George Little Management Company) and the Parsons School of Design tackled issues shaping the new decade with their competition and exhibition "Design Explorations: 2001." Entries on view at the ICFF came in the form of both realistic alternatives (2) and disconcerting follies, ironically analogous to the three-dimensional works at the fair. **Abby Bussel** ■

P/A introduces a monthly review of new software and hardware releases of interest to architects.

Computer Products: New Software Releases

1 PC Rendering
Photorealistic models can be created with "Big D 6.0" and a PC using 3D models made in AutoCAD or any other DXF-compatible CAD system. Graphics Software.
Circle 104 on reader service card

2 3D Sketching
"Upfront™" for Microsoft Windows™ 3.0 is a modeling tool that allows a designer to scan in an image as a background for 3D computer models that can be manipulated. Alias.
Circle 105 on reader service card

3 Macintosh Modeling
"WalkThrough" allows a designer to move through 2D and 3D images during the design phase of a project. The software uses "object-modeling" tools rather than lines. Virtus.
Circle 106 on reader service card

4 2D CAD
"GenCADD™" is a new 2D CAD package that runs on all levels of IBM compatible computers. Add-on modules provide sets of specialized symbols. Generic Software.
Circle 107 on reader service card

5 3D Form Synthesizer
"Form·Z"generates objects from geometrical shapes with Boolean operations: union, intersection, and difference. The software, which generates up to four simultaneous 2D, axonometric, or perspective views, requires a Macintosh. Autodessys.
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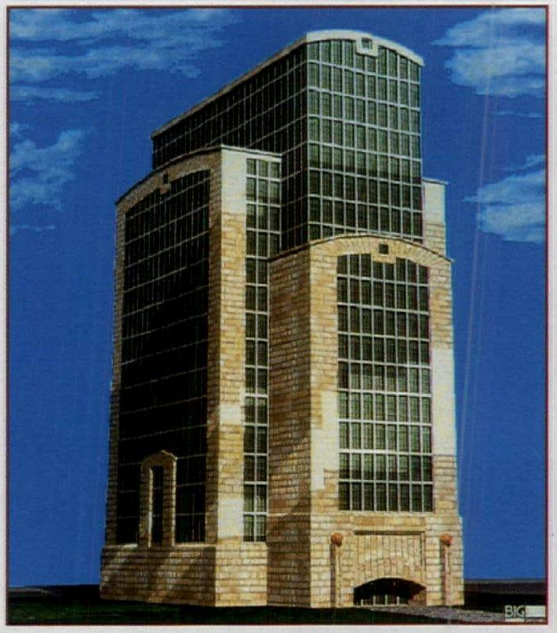
(continued on page 136)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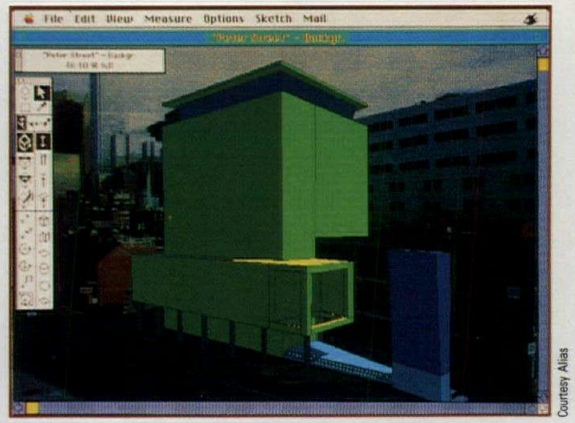
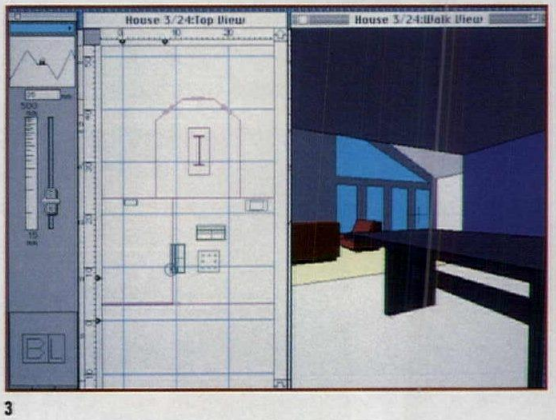


Courtesy Alias
2



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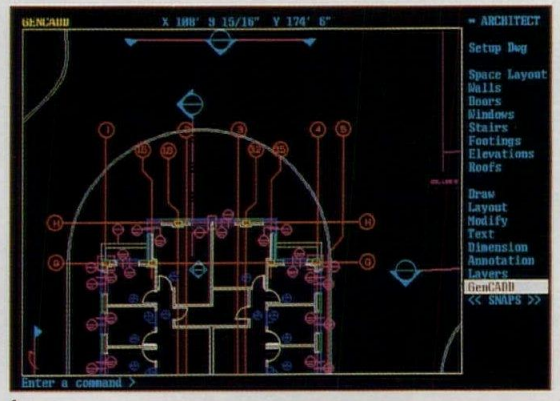

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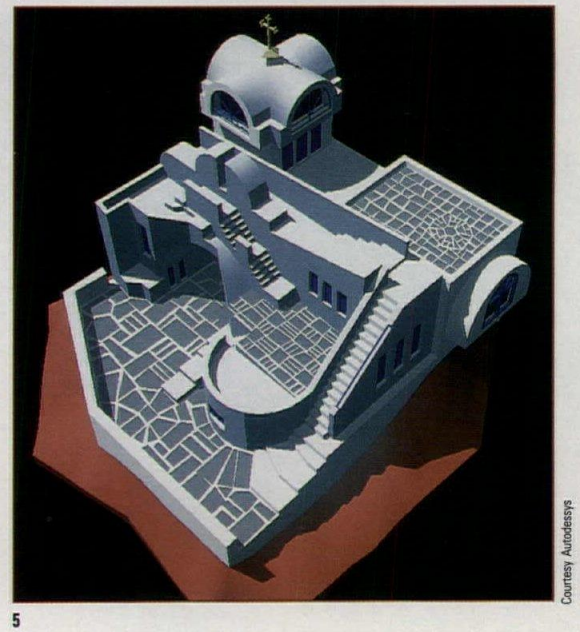
Courtesy Autodessys
5

OCTOBER 17-19, 1991

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AND MORE NEW YORK SHOWROOMS

Designer's Saturday: "All Paths Lead to New York"

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relevant and productive programs in years • IDCNY's

Building with industry leaders such as Butler, Fowle, Hayden, and Phillips discussing how to profit during tough economic times. Designer's Saturday

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and New York City as backdrop and design resource

year New York is especially affordable—you'll find air fares up to 45% off and top hotel rooms from $99. Contact the Designer's Saturday travel

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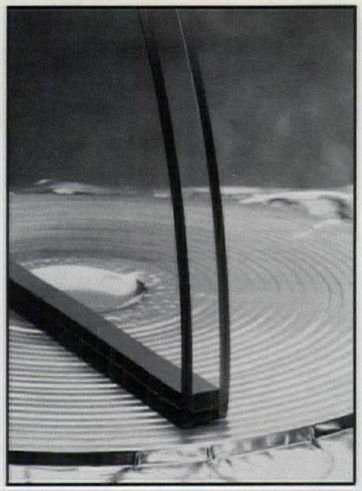
Circle **No. 324**

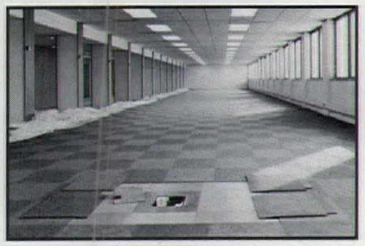
(continued from page 134)

Structural Glazing Sealant
"Rhodorsil® 70" is a rapid-curing, single-component structural glazing sealant designed to speed up completion of factory-fabricated unitized systems. It adheres to laminated or coated glass; anodized aluminum; silicone-polyester or fluoropolymer-coated metal; PVC; fiberglass; polyester; acrylic and polycarbonate. It is available in black, architectural bronze, and custom colors. Rhône-Poulenc.
Circle 112 on reader service card

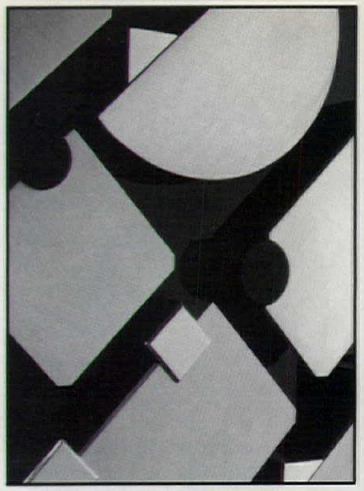


Window Insulator Strip
"Super Spacer"™, produced from UV-resistant silicone foam, was designed to further enhance the energy-saving potential of low-E window technology by reducing window perimeter condensation and heat loss. A pre-applied, pressure-sensitive adhesive is used to bond the spacer to glazing. Lauren Edgetech Division.
Circle 113 on reader service card

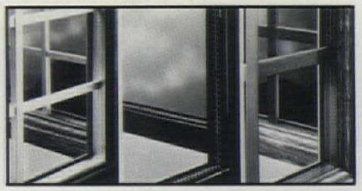
Single-ply Roofing Manual
A new manual describes proper application of this company's single-ply mechanically-fastened roofing systems. The systems are available in 50, 60, and 80 millimeter thicknesses. Trocal® Roofing Systems.
Circle 200 on reader service card



Floor Wiring System
Free access "Network Floors," developed by Servoplan in France, is an electrified floor system in which cables run through rows of studs that rest upon the concrete slab and support ½-inch-thick galvanized steel floor panels. French Technology Press Office.
Circle 114 on reader service card



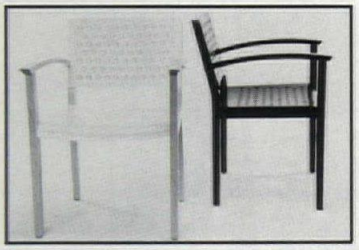
Modular Doorpulls
The "DP6700 Series" of doorpulls, designed by Michael Jennings, includes 36 different plate and standoff combinations. They are available in abraded, satin, or polished stainless steel, brass, and aluminum; and are appropriate for commercial interior or exterior glass, metal, or wood doors. Forms + Surfaces.
Circle 115 on reader service card



Color Coordinated Windows
Colored aluminum air spacer and muntin bars are now available to coordinate with or "accent" insulating glass units and frames. Anodized black, light and dark bronze, and gold spacers and white, tan, and beige painted muntin bars are standard; other colors and finishes may also be specified. Allmetal.
Circle 116 on reader service card

New Stair Tread Pattern
A chip-patterned rubber stair tread called "Aria" is available in 10 color schemes, square or round nose profiles, and with or without safety strips. Burke Flooring Products.
Circle 117 on reader service card

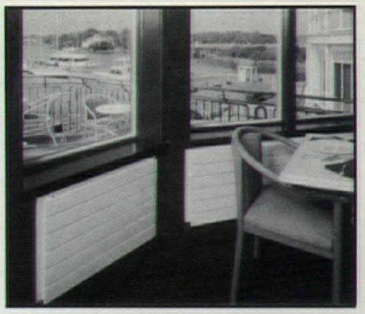
Solar-powered Security Light
"Sensor Light"™ is a solar-powered light with a built-in sensor. Triggered by heat and motion, the fixture illuminates automatically when a person enters an area and shuts off when the person leaves. Siemens.
Circle 118 on reader service card



Maplewood Pull-up Chairs
Timothy de Fiebre's "Golf Ball Chair" has a solid maple frame and molded maple plywood seat and back. It may be ordered with or without the "dimple" pattern. It is 24 inches wide, 24 inches deep, and 32 inches high. Brickel.
Circle 119 on reader service card

Energy-Efficient Windows/Doors
"InSol-8"® aluminum-clad windows and patio doors incorporate Southwall Technologies' "Superglass"™ glazing system with two Heat Mirror™ clear insulating sheets suspended between two panes of glass, three gas-filled insulating chambers, and a nonconductive spacer and gas retention system. This system has an R-8 rating, "the highest insulating value ever achieved in a one-inch glazed window or door." "InSol-8" products are said to block 99.5 percent of the sun's ultraviolet rays and to reduce street noise by 95 percent. Hurd.
Circle 120 on reader service card

Fiberglass Flooring
Fiberglass grating and "FiberPlate"™ panels can be used in many industrial flooring applications. They are said to be slip-resistant, fire-retardant, nonconductive, and durable. Fibergrate.
Circle 121 on reader service card



Individually Piped Radiators
The flat tube design of "Runtal® Radiators" permits lower flow rates than round tube products. It provides "higher delta T's, lower average water temperatures. . . allowing the use of smaller pumps for better system efficiency." Radiant heat perimeter, wall panel, convective, and vertical and ceiling models and a convective heat model are available in a variety of colors.
Runtal North America.
Circle 122 on reader service card

(continued on next page)

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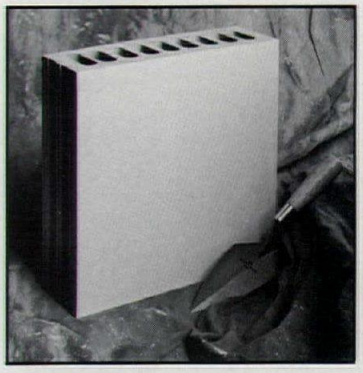
Built-up Roof Restoration
The Cold-Applied Polyester Built-up Roof Restoration System "seals, weatherproofs, preserves, and protects properly prepared existing smooth or gravel-surfaced built-up roofs." The system complies with V.O.C. requirements and it contains no asbestos. GMX.
Circle 123 on reader service card

Clay Roof Tiles
"Williamsburg" clay roof tiles were originally designed to replace wood shake roofs at Colonial Williamsburg. These tiles are handcrafted and constructed as flat, interlocking pieces with the appearance and texture of wood shakes. Ludowici-Celadon.
Circle 124 on reader service card

Elastomeric Coatings Literature
"Enviro-Crete" line of water-based, decorative elastomeric coatings bridge minor cracks in surfaces and offer protection against harsh weather conditions. It may be used over interior or exterior concrete, plaster, brick, masonry block, and stucco. Tnemec.
Circle 201 on reader service card

Exterior Retrofit Brochure
This new "Outsulation"® retrofit brochure includes a cutaway plan of the exterior insulation system, a summary of retrofit applications, and a list of finishes. "Outsulation" can be field-applied or panelized to accommodate existing substrates. Dryvit Systems.
Circle 202 on reader service card

Barrier Free Bath Products
A collection of grab bars and bath seats designed for barrier free environments are constructed of nylon with corrosion-resistant steel inserts. They are bacteria-resistant and come in 13 colors. Hewi.
Circle 125 on reader service card



Structural Ceramic Tile
"Millenium" is a 12″ × 12″ structural glazed ceramic tile that can be used on exterior walls. It is "unaffected by sun, resistant to acid rain, completely fire-safe, and uniformly sized." Stark Ceramics.
Circle 126 on reader service card

"Architect Series" Expanded
"The Architect Series," introduced in 1990, is now available in an aluminum-clad model. The cladding is mechanically "locked" onto the wood exterior; exterior muntins are extruded aluminum, matching the 7/8-inch interior wood muntins. Windows may be specified with "Integral Light Technology" (a spacer between panes is now available with a polymer that eliminates glare) or with single glazing. Pella/Rolscreen Company.
Circle 127 on reader service card

Commercial Door Catalog
Rolling service doors, rolling fire doors, rolling/sliding grilles, rolling counter doors, rolling curtain doors, and electric operators/accessories are described in manufacturers literature. Specifications, materials, and finishes are included. Overhead Door Corporation.
Circle 203 on reader service card

Window and Door Catalog
This 208-page catalog holds specifications, installation drawings, and product descriptions on an extensive line of wood windows and doors. Weather Shield Windows & Doors.
Circle 204 on reader service card

Computer Products: CAD Accessories

Display Enhancement
"Superstation 3D" is a new PC display system that combines the "Intel i860" 64-bit RISC processor and a 32-bit color graphics processor to provide real-time 3D rendered animation and smooth pan and zoom. Hercules.
Circle 128 on reader service card

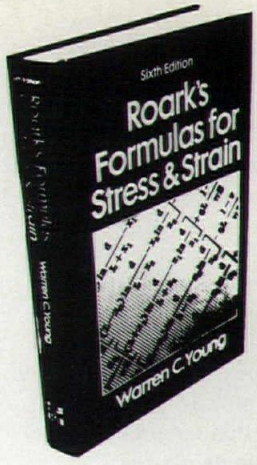
Display Controller
The "Nth Engine/124™" display controller board works with AutoCAD to smooth out wire-frame lines, zoom and pan, and drive the 24-bit color needed for 3D renderings. Nth Graphics.
Circle 129 on reader service card

Standards Management
The "Total Architectural/Engineering System" for AutoCAD release 10 and 11 automatically implements the AIA CAD layer Guidelines by sending items to the correct layer. Standard multi-disciplinary government details and symbols are also included with the package. CadPLUS.
Circle 130 on reader service card

MicroStation Editor
"Ed-it™" for MS-DOS or UNIX allows MicroStation users to set levels, colors, weights, fonts, and styles in a program that runs outside of CAD. Universal changes can be made in multiple files. Decision Graphics.
Circle 131 on reader service card

(continued on page 145)

STRESS ANALYSIS ON YOUR PC USING ROARK & YOUNG'S *FORMULAS FOR STRESS & STRAIN*



Since 1938 Roark's *Formulas for Stress & Strain* has maintained its position as one of the most widely used engineering reference works in the world. Now 37 tables, over 1,400 cases and more than 5,000 formulas from the new 6th Edition of this book are combined for the first time with the power of **TK Solver Plus** software.

The program covers thc entire 6th Edition of the book • Provides stress and strain solutions for beams, plates, columns, and pressure vessels • Handles superposition of loads • A set of unit conversions and an expandable materials librarary are included • Program menuing system helps you select the particular chapter, table, and case from the book • Results include plots of cross section (to scale), bending moment, shear, stress, slope, and deflection • Outputs to screen, printer or plotter.

Most importantly —you can solve problems **forward or backward**. For example: if the calculated deflection of a plate is too large, specify the maximum deflection you can tolerate. Then let the dimension of plate thickness become the unknown, and solve again. This backsolving feature is a designer's dream.

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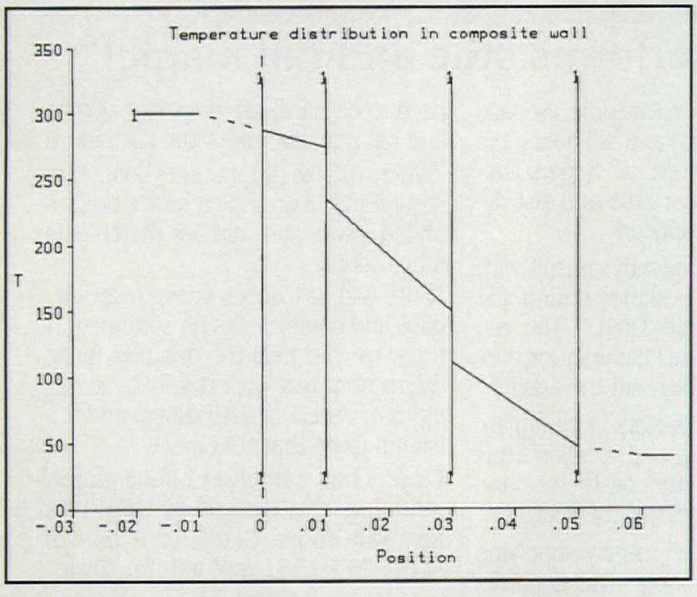

HEAT TRANSFER ON TK

Based on the widely used text *Fundamentals of Heat Transfer,* 3rd Ed. by Frank Incropera and David DeWitt (Wiley & Sons).

Solves over 200 heat and mass transfer problems including Steady-state and transient conduction; internal, external, and free flow convection; boiling and condensation; heat exchangers; and radiation. Program includes automatic unit conversion; an expandable table of gas, fluid, and material properties; and automatic plotting for design analysis.

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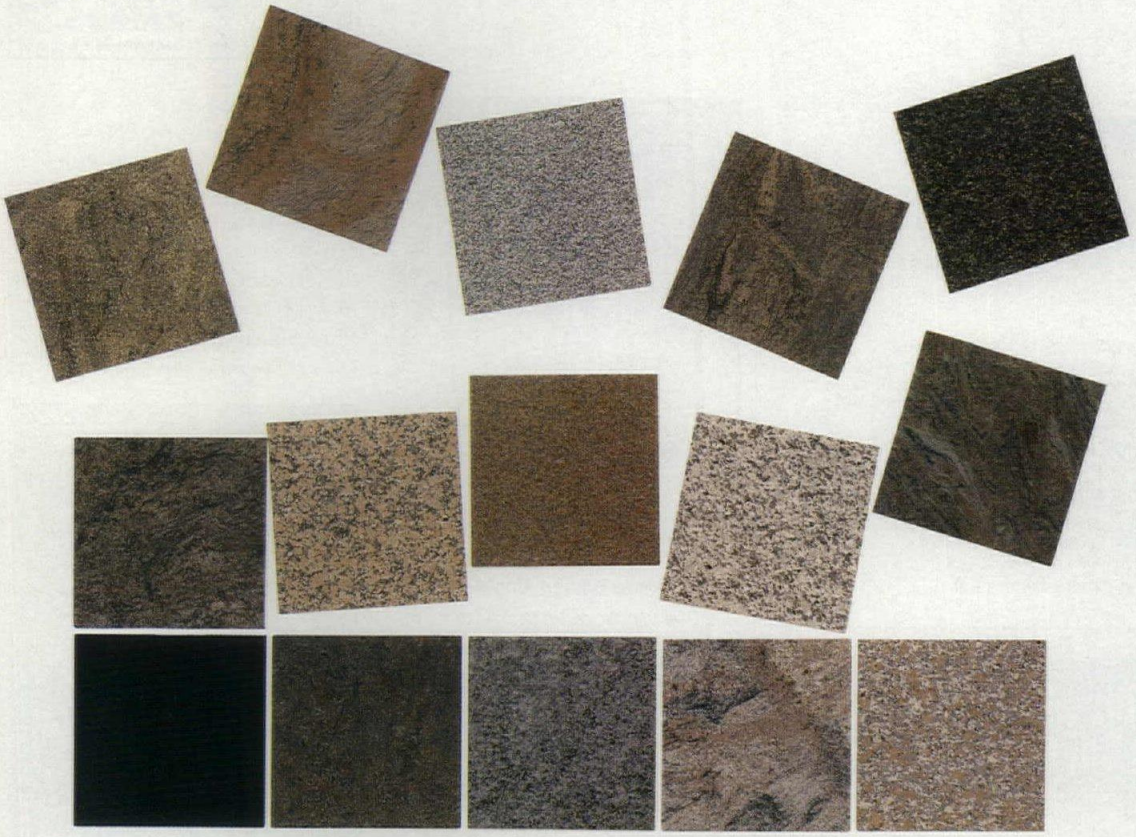
Technics-Related Products



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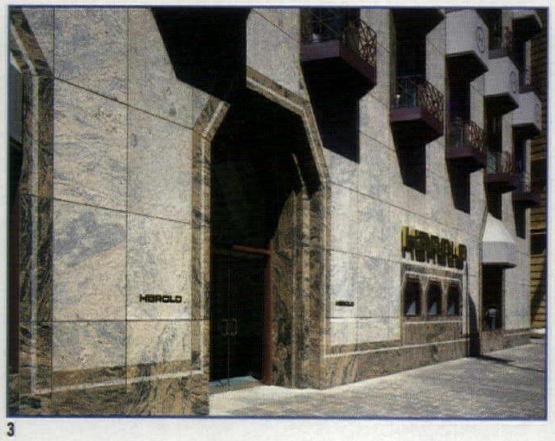

3

4

Exterior Stone

1 Marble and Granite
A selection of natural marble, granite, travertine, onyx, and slate slabs and tiles from international quarries is available through six distribution centers in the United States. International Marble & Granite.
Circle 100 on reader service card

2 Stone plus Steel
The "Reinforced Stone" series of panels are a composite of limestone, marble, or granite sheets laminated with thin steel mesh and epoxy. Three varieties of panels, which are all ¾" or thinner, offer different strengths and can be connected to the structure with a patented clip for exterior applications or applied with adhesives for interiors. Marble Technics.
Circle 101 on reader service card

3 Granite Supply
Granites taken from 29 North American quarries are available in 26 colors and seven finishes as standard or custom exterior and interior products. A four-color brochure shows color and installation samples. Cold Spring Granite.
Circle 102 on reader service card

4 Wall Panels
Thin marble or granite stone bonded to a 4 by 8 panel of ½" honeycomb material comprise "Marblelight™" wall panels. The material weighs 3 pounds per square foot and is primarily for interior applications, although these panels can be used for exterior entranceways. Global Specialty Products.
Circle 103 on reader service card
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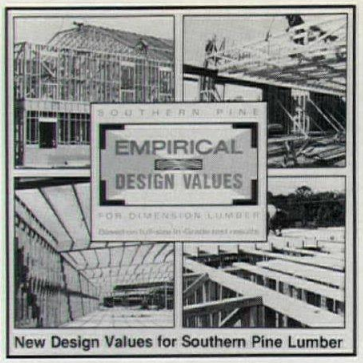
Technics-Related Products: Wood-Frame Construction

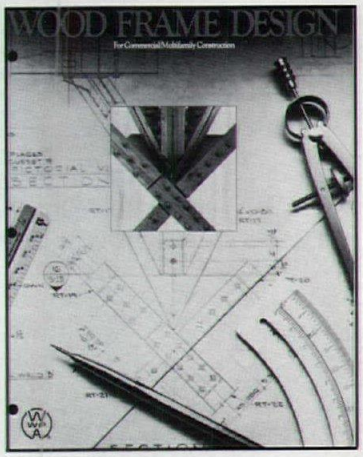


New Design Values for Southern Pine Lumber

Pine Reference

A 4-page brochure, "New D-Values for Southern Pine Lumber" reports on new empirical design values for Southern, Western, and Canadian dimensioned lumber, the result of a 13-year study. Southern Pine Marketing Council.

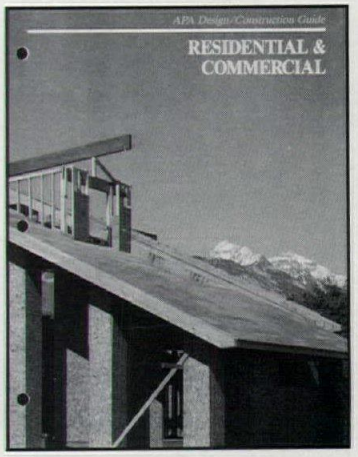
Circle 207 on reader service card



Wood-Frame Design Booklet

A 30-page booklet provides details and technical information for designing multi-family and commercial buildings in wood, including: shrinkage and compression, timber connections, wood foundations, model building codes, fire- and draft-stopping, sound control, and exterior siding. Western Wood Products Association.

Circle 205 on reader service card



Plywood Resources

The "APA Design/Construction Guide: Residential and Commercial" provides information on specifying plywood panels for floors, walls, and roofs. The booklet contains color details and load-span tables. A full catalog of publications is available. American Plywood Association.

Circle 208 on reader service card

Fire-Rated Sheathing

"Blazeguard™" panels release water when heated to 425 F. The panels, which are made of an inorganic, crystalline fire shield and a structural wood panel, can be used for roof and wall sheathing, partitions, or panelling. Weyerhaeuser.

Circle 132 on reader service card

Wood Literature

A catalog lists an assortment of free or inexpensive technical literature, design manuals, and audiovisual materials on wood engineering for architects and consumers. Southern Forest Products Association.

Circle 206 on reader service card

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

Project: Fisher and Bendheim Halls, Princeton University, Princeton, New Jersey (p. 88). *Architects: Venturi Scott Brown & Associates, Philadelphia.* Concrete foundation: Riverside Portland Cement. Rebar: J.M. Ahle. Steel frame: S.S. Fisher Steel. Concrete masonry: Clayton Block Co. Concrete/metal deck floors, roof: Wheeling Corrugating Co. Brick: Yankee Hill. Limestone: Indiana Limestone. White Cherokee marble: Georgia Marble. Charcoal granite: Cold Spring Granite. Gypsum board: Gold Bond. Oak and maple doors and windows: Valley City Mfg. Co. Bluestone exterior paving: Johnston & Rhodes. Asphaltic paving: Hastings Pavers. Quarry tile: American Olean. Vinyl tile: Tarkett. Carpet: Karastan Bigelow. Acoustical ceiling tile: Armstrong. Roofing: Koppers. Waterproofing: Laurenco. Sealants: Tremco. Insulation: Dow. Roof drains: R.J. Smith Drains. Plaza drains: Zurn Drains. Paint and stain: Glidden. Door hinges: Stanley. Locksets: Best. Door closers: Yale. Panic exit: von Duprin. Fire alarms: Edwards Fire Alarm System. Plastic/vinyl signage: Frommeyer Sont & Associates. Hydraulic elevators: Dover. Handicap lift: Garaventa. Steel/concrete stairs: FMB Metal. Extruded aluminum handrails: Julius Blum. Compact fluorescent lighting: Prescolite. 2 x 4 ceiling mounted downlights: Elliptipar. Plumbing fixtures: American Standard. Toilet stalls: Knickerbocker. Washroom accessories: JM Accessories. Water fountains: Elkay. Sprinklers: Central Sprinkler Co. Heating/air-conditioning fan coil units: Trane Co./McQuay Co. Blinds: Levolor. Library/lounge upholstery: Brunschwig & Fils, Knoll, DesignTex, Yoma.

Books : The American City

(continued from page 97)

Brown's interest. She discusses her formative influences: The social sciences, New Brutalist architecture in England, and individuals such as David Crane, Herbert Gans, J.B. Jackson, and Louis Kahn. She briefly mentions the influence of Robert Venturi but, unfortunately, does not articulate the distinctions between their ideas or their impact on each other. Interestingly, the Pop Art movement is hardly discussed, even though Post-Modern theorists believe it was seminal to Scott Brown's understanding of the urban invironment.

Within her essays Scott Brown writes about drafting and the appropriate use of urban design guidelines, the development of participatory planning strategies, theories of urban design pedagogy, community architecture, and a host of other important subjects. While these discussions reveal the author's expertise and convictions, they are not pursued in enough depth to broaden our understanding of the issues.

Scott Brown laments that urban designers have little theory upon which to base their opinions: "They borrow theoretical hand-me-downs from architecture." For years she has tried to remedy this problem by engaging other disciplines in the subject. Scott Brown has succeeded in creating a network of urban concepts, but it is not homogeneous. It is a durable patchwork, like the contemporary city itself, one that draws strength from its open-endedness. She clearly believes that in the urban environment relations between objects, linkages, and contexts are more important than objects themselves or idealized images. This point of view, which resounds clearly in *Urban Concepts,* remains as relevant today as it was 33 years ago. **Thomas Colbert** ■

The author is an associate professor of architecture at the University of Houston.

Books : Architectural Thought

(continued from page 97)

computer logic and the design of buildings: Architects deal with descriptions of objects that can be conveyed in verbal languages, in symbolic logic, or in values assigned to data structures in computers. They also manipulate graphic tokens on a drawing board, a model, or a computer screen linked to a data base. Whatever the medium employed, the design process unfolds in a "design world" populated by descriptions and tokens. "Operators" are tools for manipulating tokens in the design world, from knives for cardboard shapes to computer programs for CAD. "Critical languages" – English, symbolic logic, or computer languages – are used to validate claims about states of the design world. The design world is a mapping of a "construction" world, which encompasses the traits of the "real" world that architects and critics deem pertinent to the design problem. Conventions of interpretation define the correspondences between these various worlds. As in language, there is a "grammar" to eliminate meaningless, irrelevant, or uninteresting design possibilities. The framework is universally applicable to architectural design, regardless of time or media.

Mitchell's abstraction and generalization can be justified as means toward a more incisive theory of architecture or as prerequisites for computerizing architectural tasks. Nowhere, however, does Mitchell argue that his goal is the computerization of architectural work. In fact, he often insists that his points are as applicable to the manipulation of drawings and models as they are to CAD, and that what is stated in symbolic logic and eventually in computer languages may just as well be said in plain English. In the end, though, this formalization seems to be a prerequisite for an electronic office, but is merely an intellectual curiosity in traditional teaching and practice. Furthermore, several of his points – like discussions about shape recognition, about the distinction between primitive and composite forms, or about the difference between parallel and sequential replacement processes – are only relevant in a computerized environment.

Being equally interested in architectural theory and in computation, Mitchell is forced to address two different audiences. Readers with a humanistic bent may become impatient with his increasingly complex examples of formalization; technically minded readers, in contrast, may resent his frequent admonitions about further implications not discussed in the text.

Part of the architectural evidence used in the book is derivative, as is some of its philosophical, linguistic, psychological, logical, and computer science material. But this is how architectural literature has always been. In the grand tradition of architectural theory of the past two millennia there are only two types of works: those that are based exclusively on other architectural books and those which bring new blood into the system by taking into account contemporary extra-architectural developments. *The Logic of Architecture* belongs to the latter group.

A general systemization of architectural design principles suitable for computer-aided design and criticism may not yet be fully operational, but Mitchell certainly helps bring it closer. If and when AUTOARCHITECT and AUTOCRITIC become available, I suspect the manufacturers will call themselves AutoChair, not AutoDesk, to signal that the primary thrust for the enterprise is intellectual, not technological, and that it came from academia. **Juan Pablo Bonta** ■

The author, a professor at the University-Maryland, College Park, wrote Architecture and Its Interpretation *(Rizzoli, 1979) and* American Architects and Texts *(MIT Press, forthcoming).*

Nexus World: Watanabe

(continued from page 79)

determined on the basis of those calculations." However, Fukuoka Jisho and its parent organization, Fukuoka City Bank, are more in the nature of a family enterprise.

Isozaki has had a close relationship with members of that family for 30 years. In the 1960s Tsukasa Shishima, the president of Fukuoka City Bank, entrusted the young and still largely untried Isozaki with the design of a branch in the city of Oita. In 1972 Isozaki designed the bank's headquarters in Fukuoka. Once it was built, the architect sought works of art to exhibit there. He looked through the client's collection but found nothing worth displaying. Isozaki then introduced Shishima to dealers and artists. The banker became engrossed in contemporary art and went on to create one of Japan's best collections in that field. Kazuhiko Enomoto, the president of Fukuoka Jisho, is Shishima's nephew and likewise someone Isozaki has known for decades. "He is very much like his uncle in character," says the architect.

In introducing to Enomoto to the six architects featured here, Isozaki was, in a sense, repeating a role he had once played for Shishima. Isozaki seems to have fired an ardor for "collecting" contemporary architecture just as he did for the collecting of art. At Nexus World Kashii, the bottom line was not upermost in the client's mind. "He got carried away," says Isozaki. The architect, however, is far from sorry. "I have learned that things never happen unless there is someone who allows himself to get carried away." **Hiroshi Watanabe** ■

The author, an architect and critic, is P/A's correspondent in Japan. His book, Amazing Architecture in Japan *(with an introduction by Sally B. Woodbridge) will be published in the United States this fall.*

P/A Classified

Situations Open

MANUFACTURER'S REPS

USA subsidiary of Italian manufacturer of proprietary advanced technology thin stone products in natural marble and granite is seeking reps with technical expertise capable of developing architectural specifications for all or part of our product line:

- Ultra-thin large dimension floor and wall tiles
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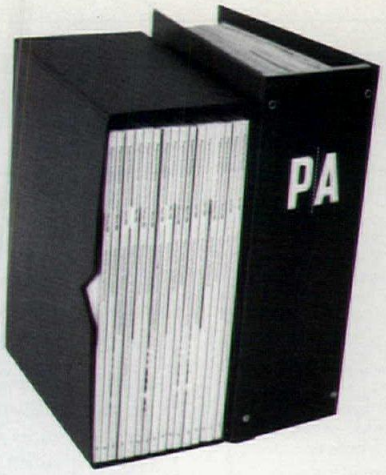

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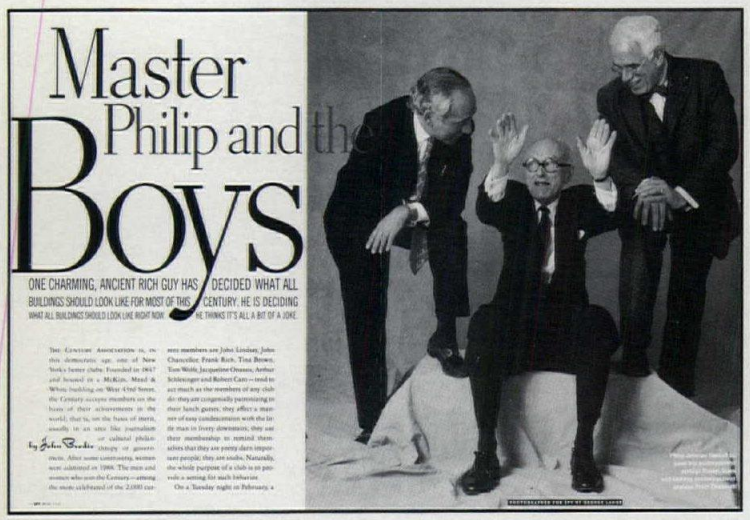
Keeping Up with Philip

The editors of *Spy* magazine – the New-York-based monthly that delights in dishing dirt on high-end public figures – must have thought they'd died and gone to heaven when they received John Brodie's hyperbolic article on Philip Johnson and his power to make or break American architects (May 1991). Unlike most of the magazine's targets, Johnson spoke freely to the magazine, referring to himself as a "chameleon at heart" and passing judgment on some of his "kids." Johnson even posed for a portrait for the article, flanked by "good guy" Robert A.M. Stern and "bad guy "Peter Eisenman (above).

If you believe *Spy's* assertion that Johnson, from his table at New York's Century Association, "decide[s] what American cities will look like for decades," you may be interested to know who "Master Philip" is talking about these days. At a rare lecture this spring at Yale, Johnson described his new interest in architects who focus on details, using Los Angeles architect Eric Owen Moss (whom he called "the jeweler of junk") as his only example. This change of direction, coming only three years after he orchestrated the packaging of "Deconstructivism" in the now-infamous MoMA exhibition (P/A, Aug. 1988, p. 25), indicates that Johnson, who stuck with Post-Modernism for at least ten years and Modernism before that for over forty, has less patience with standing still as he gets older.


Master Philip and the Boys

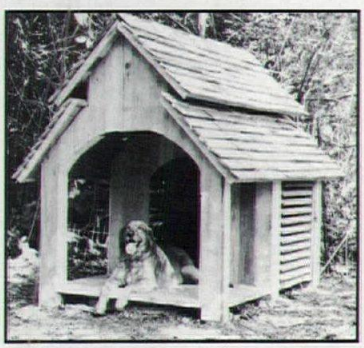
ONE CHARMING, ANCIENT RICH GUY HAS DECIDED WHAT ALL BUILDINGS SHOULD LOOK LIKE FOR MOST OF THIS CENTURY. HE IS DECIDING WHAT ALL BUILDINGS SHOULD LOOK LIKE RIGHT NOW. HE THINKS IT'S ALL A BIT OF A JOKE.

The opening spread from the Spy magazine article, "Master Philip and the Boys."

Making Fido Ecologically Correct

For several years, P/A Technics Editor Kenneth Labs taught a class in climate-responsive design at the Yale School of Architecture, so it was a special pleasure for him to serve on the jury of an ACSA student competition titled "'House' Your Dog's Comfort?" The program called for an "environmentally and ecologically sensitive doghouse" constructed from recycled materials and costing no more than $6.00.

Submissions made use of recycled tires, shipping pallets, and pizza boxes with foam packing peanuts; strategies included Trombe wall, cross ventilation, earth sheltering, and adobe construction. Trying to ignore the comeliness of the clients installed in their domiciles, jurors Harry Gordon of Burt Hill Kosar Rittelmann Architects, Harold Hay of the University of Miami, and Labs favored two-zone plans for seasonal flexibility. They awarded first place to Thomas Decker and Ben Fehl of Miami Dade Community College, second place to Shane Braddock of the University of Western Australia, and third place to Jo Laney, also of the University of Western Australia. Honorable Mentions went to Geoffrey Thun of the University of Waterloo and to Christina Hagis of the University of Maryland. Two other students from Western Australia received citations in the competition; there may be a canine design mecca developing Down Under. ■



The winning doghouse by Thomas Decker and Ben Fehl.

P/A in September...

Must interior design be seen as a dichotomy between the mainstream and the avant-garde? Our annual interiors issue includes some examples of each, and some that transcend such labels. Among the featured projects will be:

... two Barcelona nightspots – a bar and a restaurant – with elaborate mechanical devices and frenetic décor.

... two London apartments that represent two divergent strands of Modernism: Minimalism and High-Tech.

... office interiors in New York, San Francisco, Los Angeles, and Toronto.

... two residential projects in Manhattan – a renovated brownstone and an apartment.

Also in September there will be a Technics article on air and vapor barriers, a Reader Poll report on office politics, and a new feature called P/A Prospects, which profiles major client groups in particular industries. The September Prospects will focus on continuing care communities.