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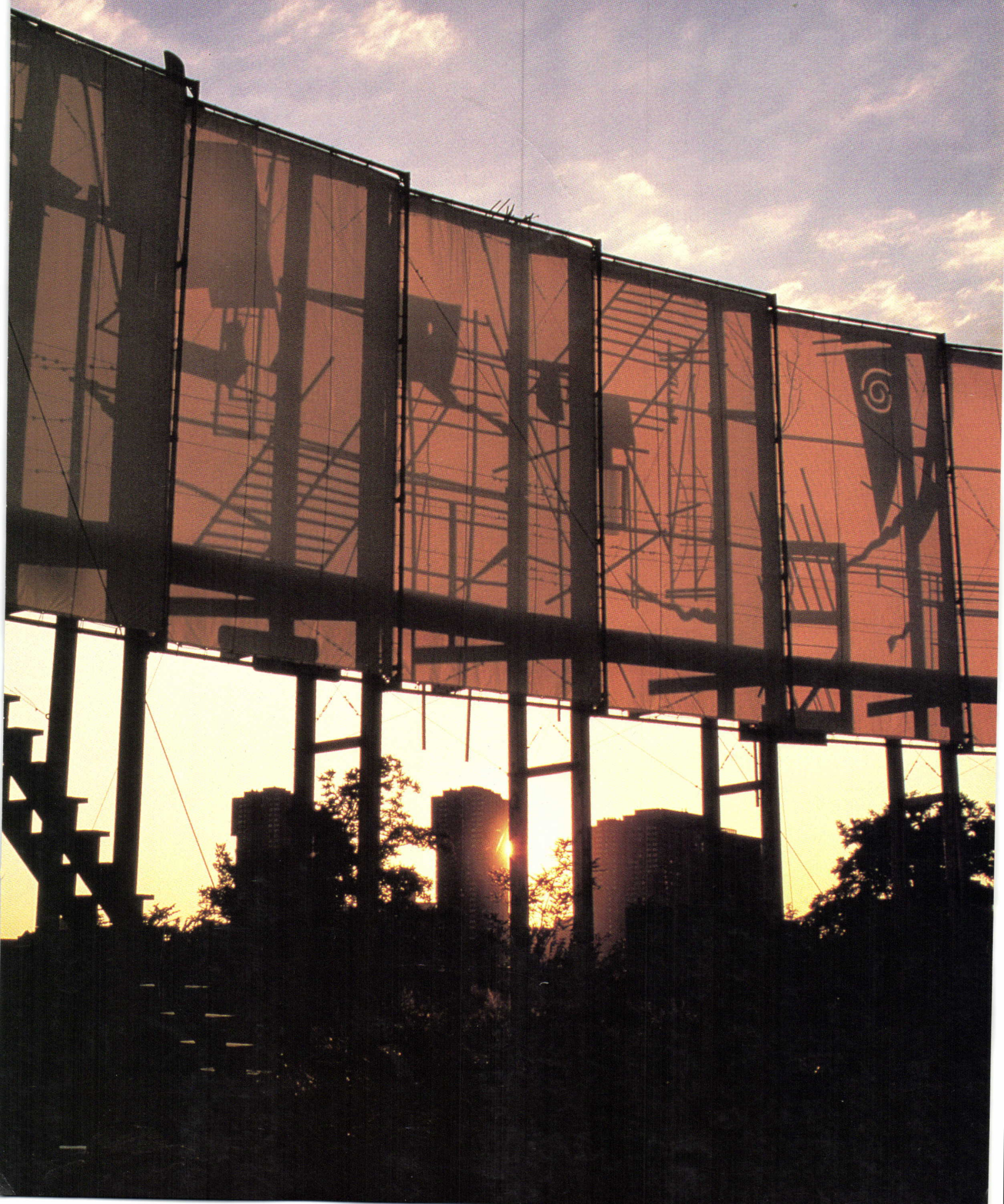

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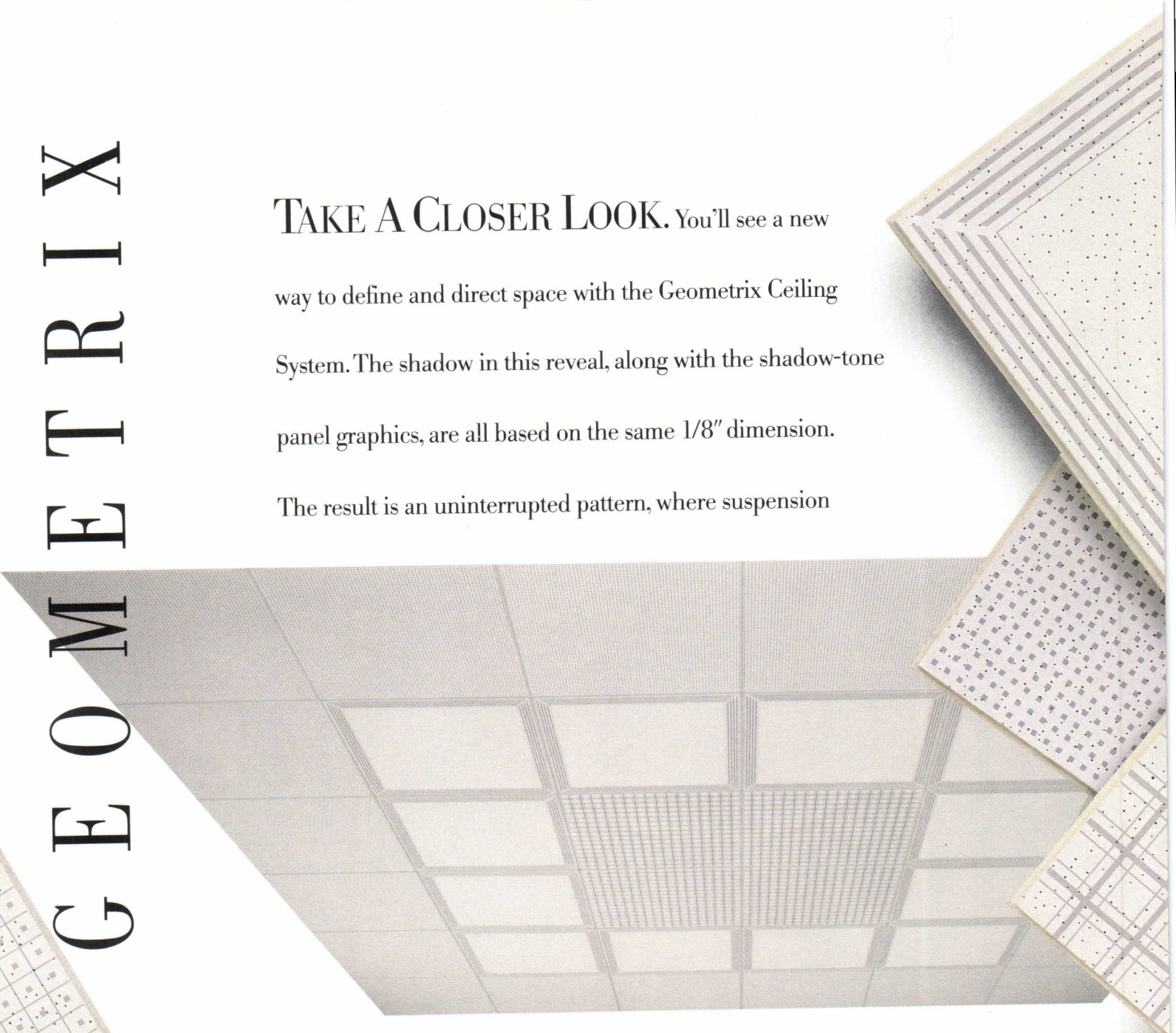

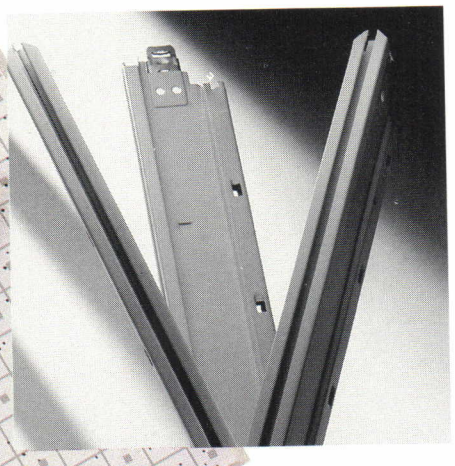

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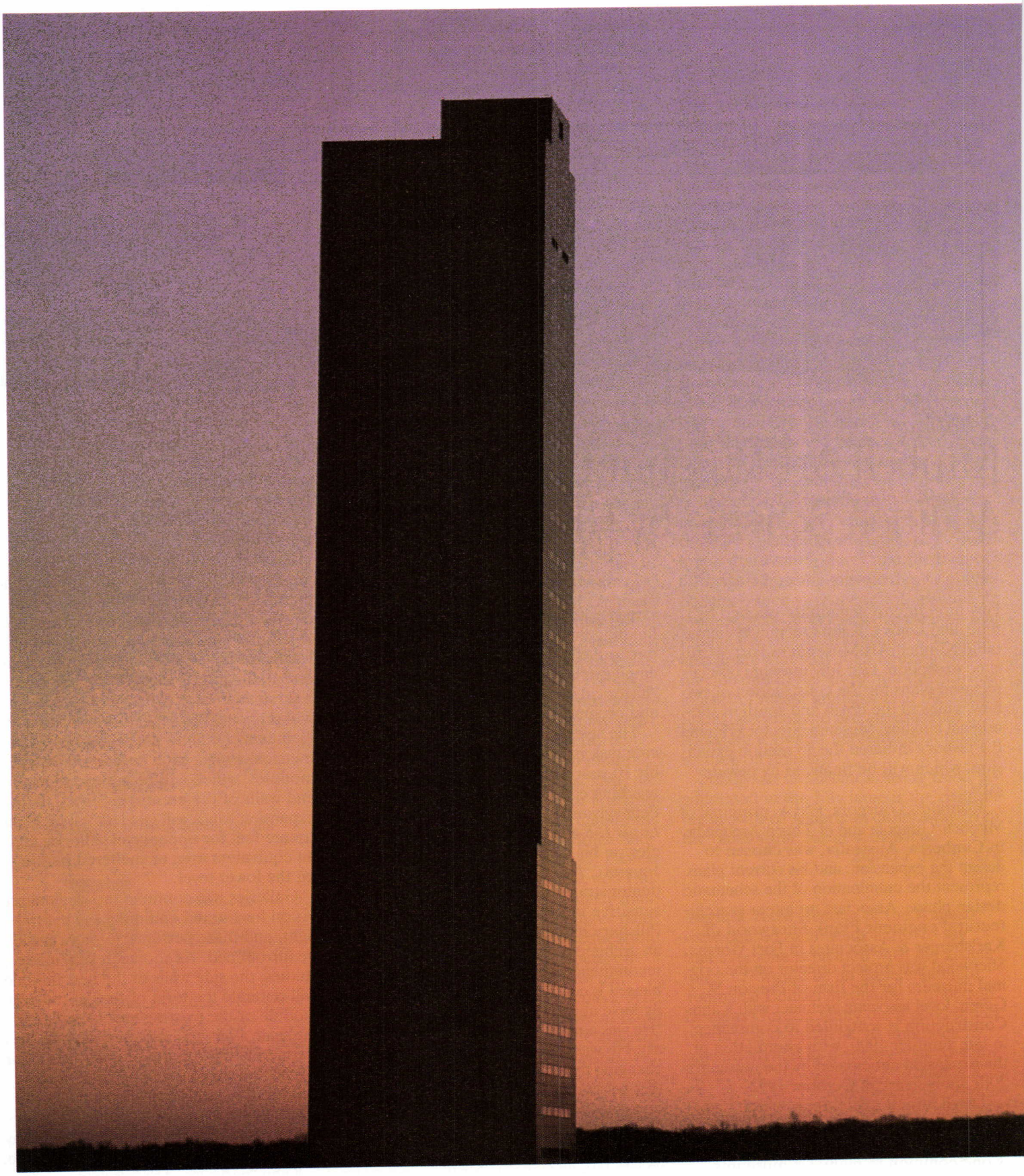

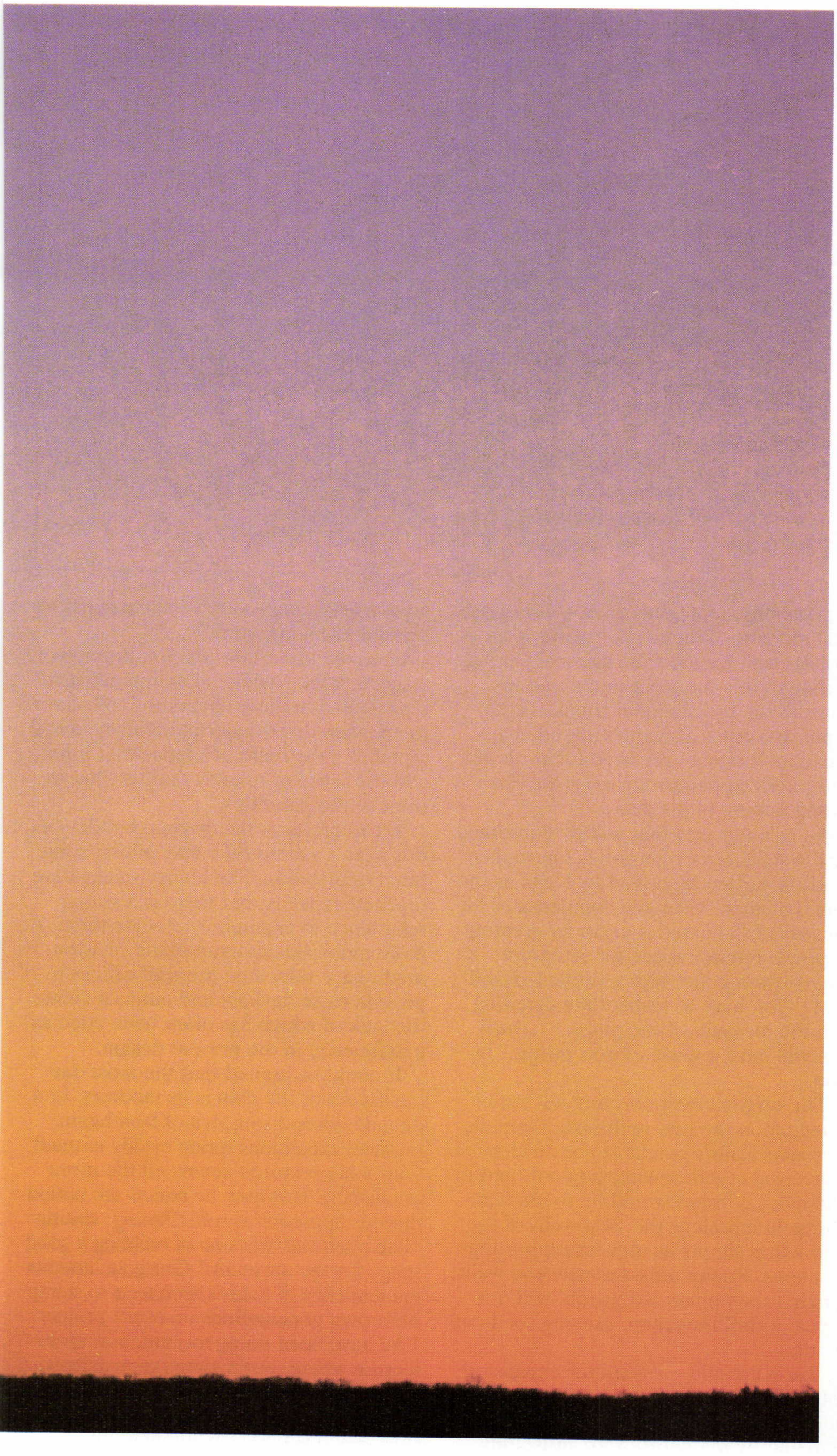

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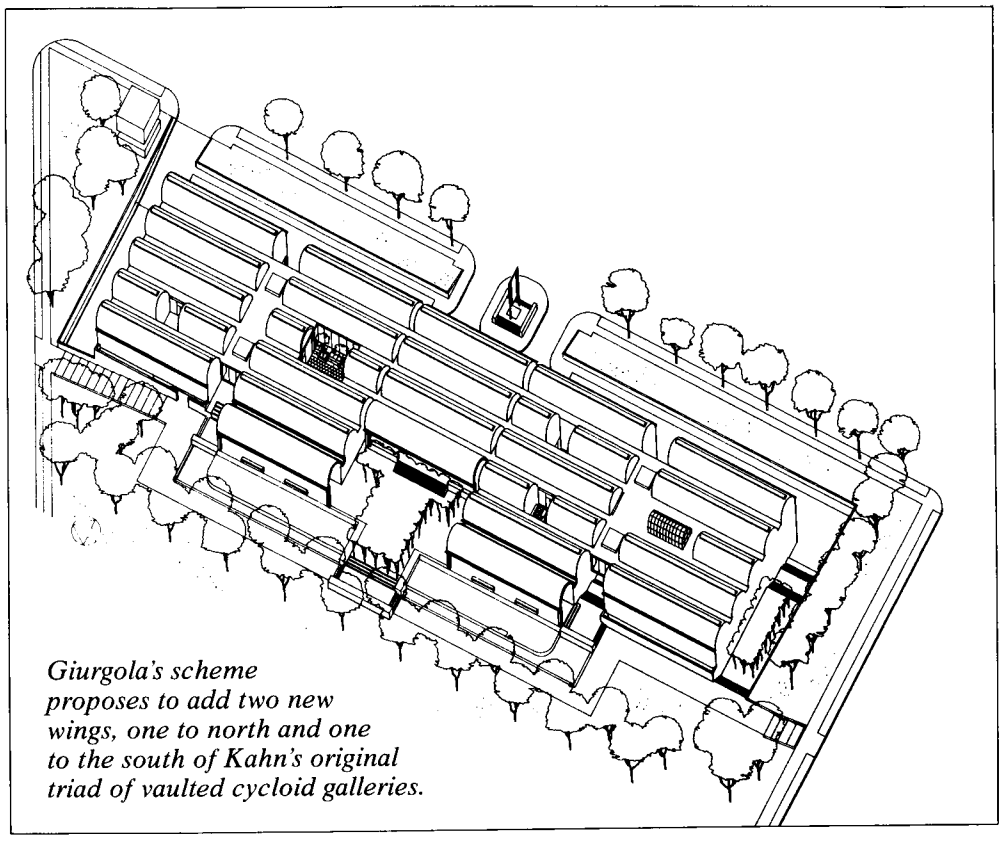
Additions *from page 19*
show a much larger museum extending deeply into the spacious lawn to the west. This option was rejected during the new round of site planning, as the park has taken on added significance in ongoing master planning for Fort Worth's cultural district. Giurgola also recalls, "We thought it was much more in keeping with the sense of purity in Louis Kahn's form to maintain the frontage intact."

Giurgola focused instead on Kahn's third model, similar in form and site orientation to the present building but composed of longer modules; he inferred that Kahn had envisioned cycloid galleries "extending throughout the areas of the proposed additions. . . . It was almost as if Kahn had left 'design intent' instructions for how the museum could be expanded at some later date." Even so, Giurgola's scheme does not attempt to duplicate Kahn's model. The model was wider than the present building, and Giurgola's plan will create an entity nearly 90 feet longer from north to south than Kahn's initial proposal for this scheme. The site drops off sharply on the north end; presumably for that reason the north end did not figure in Kahn's plans. The new building will venture farther north, as existing steps graduate the west facade of the north wing, introducing asymmetry and a degree of monumentality to the west elevation.

Giurgola considers the inclusion of "link" spaces to be one of the most important elements of the plan. These evoke Kahn's attention to such transitions in his "architecture of connections." Instead of repeating Kahn's three-foot connection between modules, Giurgola inserts a wider linkage at the meeting of the old and new to express a discrete separation. "It is enough," Giurgola comments, "a small gesture to convey the sense of difference." The two "links" each will span only three of the central cycloid vaults. Deriving the 20-foot width of the link from the width of the cycloid vaulted galleries, Giurgola unites the geometrical order of the original building and the form of the link.

An obvious need in the expanded facility was the creation of more flexible areas within the strict governing geometry of the repeated modules. The flat-roofed link spaces serve this role well. Illuminated by clerestory roof monitors, the links will provide connecting passages and the glazed end walls will permit new views of the park setting.

The south link is suspended above an open breezeway containing a broad staircase leading from the lower-level covered parking lot up to one end of the west entrance's portico. This subterranean progression will add a new twist to Kahn's famed ritualistic procession to the museum's west entrance through his "entrance of the trees." Giurgola hopes that daylight flooding down his "generous" staircase will draw visitors up to the west terrace instead of the frequently used lower level entrance.



Giurgola's scheme proposes to add two new wings, one to north and one to the south of Kahn's original triad of vaulted cycloid galleries.

The staircase represents an ironic yet practical merging of the secular world of automobiles with Kahn's more spiritual journey. Although this short cut into a midway point of the processional truncates the expansive vistas of Kahn's intended approach, Guirgula's renewed focus on the underutilized pedestrain entrance is a strong feature of his plan.

An existing area that will be consumed by the southern expansion is the sunken outdoor garden described by Kahn as the "grass theater." Giurgola compensates for the loss of the exterior court by creating a special interior space for sculpture—a large atrium court with a vaulted glazed roof. "You have to respect the detailing and the measure of the place, . . . [but] you will have a sense of new things," he says.

The original west porches will not be extended in the new additions. Giurgola considers Kahn's porches to be an element conceived together with the pools and to add more porches would be redundant. Giurgola envisions the west walls of the new wings simply as modest supporting elements. Regrettably, the new end walls, lacking the connected porch, will not repeat in full the iconic existing sectional motif.

The Kimbell's program for expansion follows a policy of containment in strong contrast to the unbridled expansionism pursued by many other art museums. Unlike many museums in recent years, the Kimbell has not found it necessary to add substantially to storage or office space. While this can be attributed in part to Kahn's sound initial design, the limited expansion of support space also represents a considered decision to restrain growth. As Pillsbury explains, "the Kimbell will grow from being a very small museum to being a small museum."

Giurgola underlines the importance of respecting the "quiet and mature attitude" represented in the architecture. "We have to maintain this wonderful intimacy of the [Kimbell], the sense of silence that it has, and the sense of privacy that one has in front of the paintings."

Yet to preserve the original building as if it were a sacred relic may inhibit some functional needs. The library stacks have reached capacity, but there is a strong reluctance to expand or relocate them. A more ambitious programmatic revision might have relocated the staff offices to provide more daylight and outdoor views, the lack of which has often been cited as a deficiency in the present design.

It could be argued that the most daring aspect of the plan is its modesty. In a decade when examples of bombastic musuem expansions spring readily to mind, Giurgola's restraint seems all the more astonishing. However, he rejects the notion that his approach is self-effacing, stating: "The main task was one of building a good space for the museum." Giurgola laments the tendency of today's architects to stamp their own personalities on every project. "We have been doing too much in architecture where, every time [an architect] has the opportunity, he starts to make fireworks. . . . There is wonderful architecture which is perfectly anonymous."

Keeping faith with Kahn, Giurgola has drawn the Kimbell's future from a spirit of continuity with its past.

—Barbara L. Koerble

Ms. Koerble is a freelance writer in Fort Worth who specializes in museum design.

News continued on page 24

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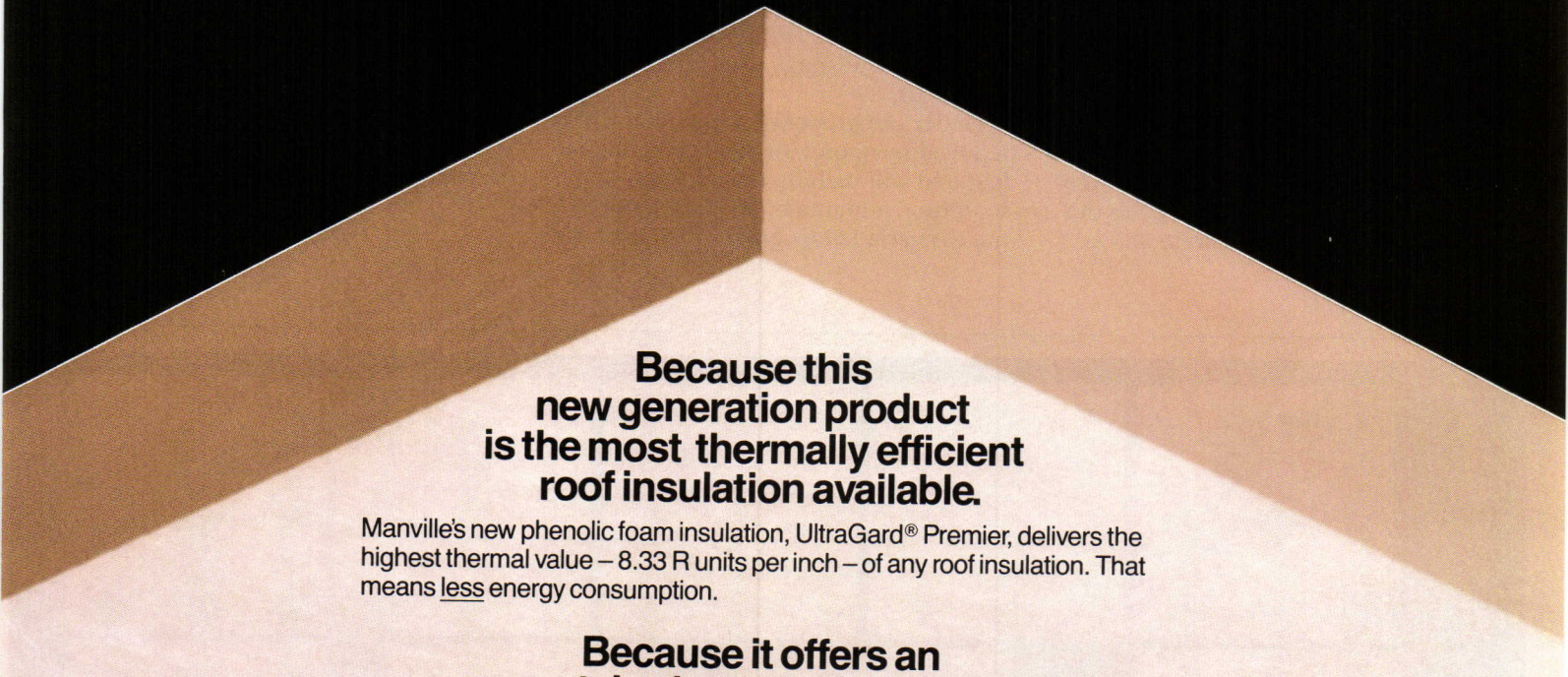

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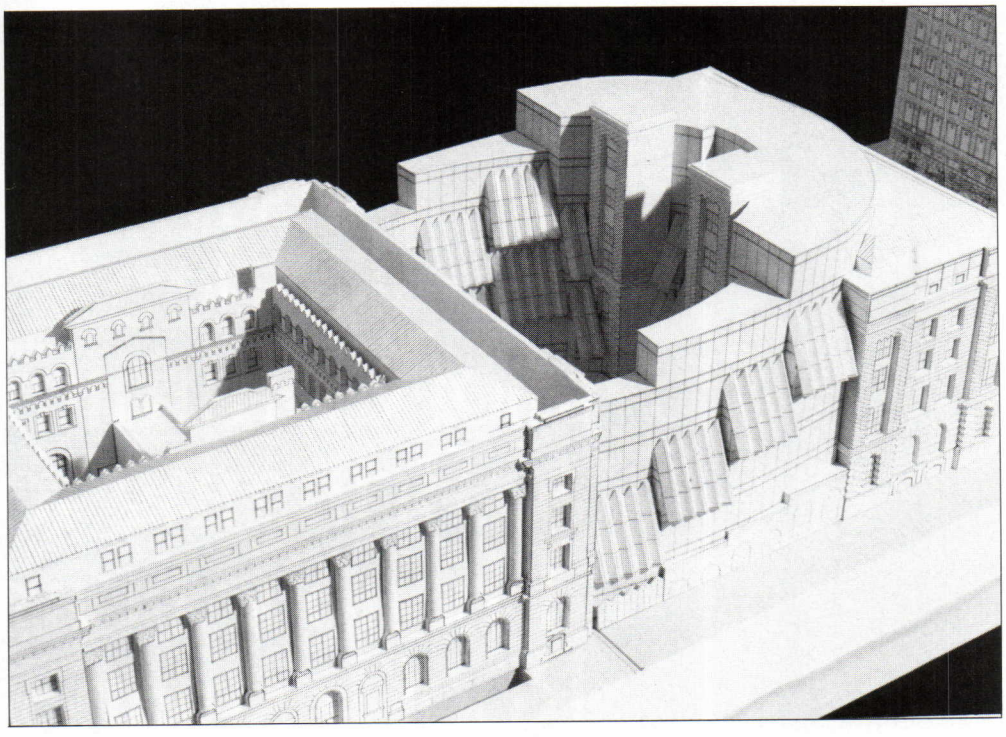
HHPA Wins Competition for Cleveland Library Expansion



Hardy Holzman Pfeiffer Associates of New York City in association with URS Consultants of San Mateo, Calif., has won a limited design competition to restore and expand the Cleveland Public Library. The winning scheme was selected over proposals by Davis, Brody & Associates with Richard Fleischman Architects and Hammond Beebe Babka in association with van Dijk-Johnson & Partners. In making the announcement, Library Board President Michael V. Kelly said, "HHPA's bold concept and sensitivity to the library's need captures the spirit and enthusiasm of our initiative."

HHPA's winning scheme (model looking north, shown at right) incorporates a glass-and-metal addition that would wrap around the popular existing Eastman Reading Garden and link the 1925 Walker & Weeks original library to a new, classically inspired building. This new annex with arched windows and detailed stonework will be located on the site of the library's Business and Science wing, which is slated for demolition. The library's main entrance will be moved from Superior Avenue to this new wing, fronting East Sixth Street. HHPA's neoclassical wing will echo the proportions of the main library and is intended to respond to the formal esthetics of Cleveland's 1903 Group Plan and the public buildings it originally generated.

Under the proposal, the garden will be reduced by approximately 1,000 square feet and will include the addition of a sculpture, a fountain, and a skylight to the cafeteria below grade. The $67.5 million project will double the size of the library, allow for an expanded circulation network, upgrade mechanical systems, and provide space for exhibitions. In addition, the restored original library and the new buildings will be connected on all levels to provide large open floor spaces.

—Lynn Nesmith

News continued on page 26

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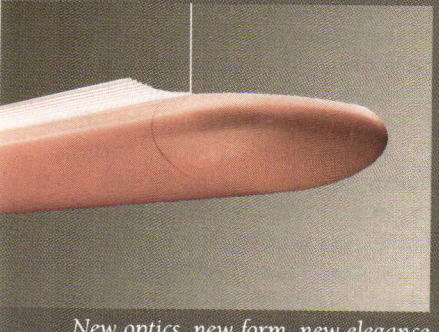

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Technology

Amoco's Carrara Skin To Be Replaced with Granite

Only 15 years after construction was completed, Amoco Corp. now is facing the monumental task of totally recladding its headquarters building in downtown Chicago. Originally known as the Standard Oil building, the 80-story office tower rising to 1,136 feet was the fourth tallest building in the world when it was completed.

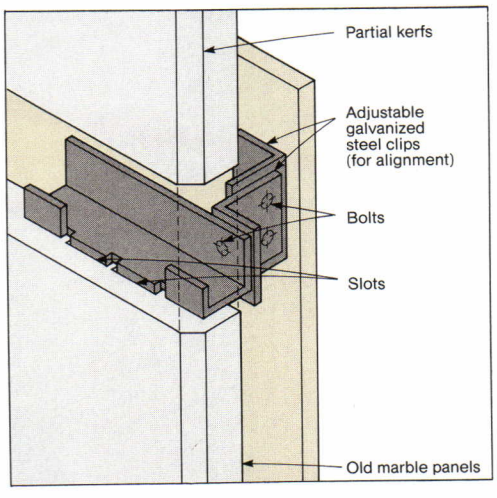
Its skin of white Carrara marble has deteriorated from environmental exposure, and the company plans to replace the 43,000 panels with panels of light-colored granite. Amoco reports that the project will cost $60 million to $80 million before it is completed in 1992.

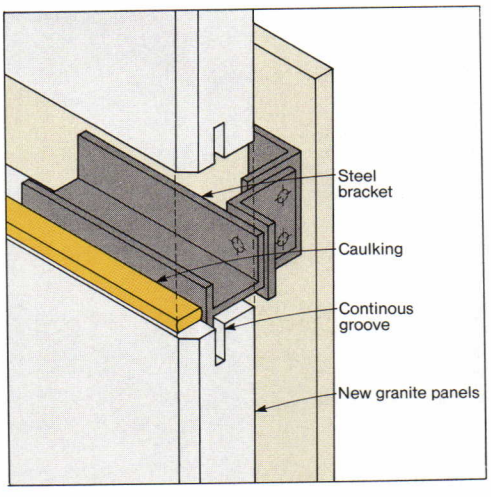
Architect Edward Durell Stone had specified the material, from the same quarry that Michelangelo selected stone for his sculptures, for its unblemished purity. Large marble panels were designed in thin sections to lessen the weight of the cladding and to ease attachment to the structure. At the time the building was designed, use of thin-stone veneers for high-rise construction was relatively new, a product of advances in stonecutting technology in the 1960s—less than a decade before the building plans were on the board. Until then it was not possible to produce thin sections that would not crack during cutting, and therefore marble and other stones made impractical envelopes for any construction taller than a few stories.

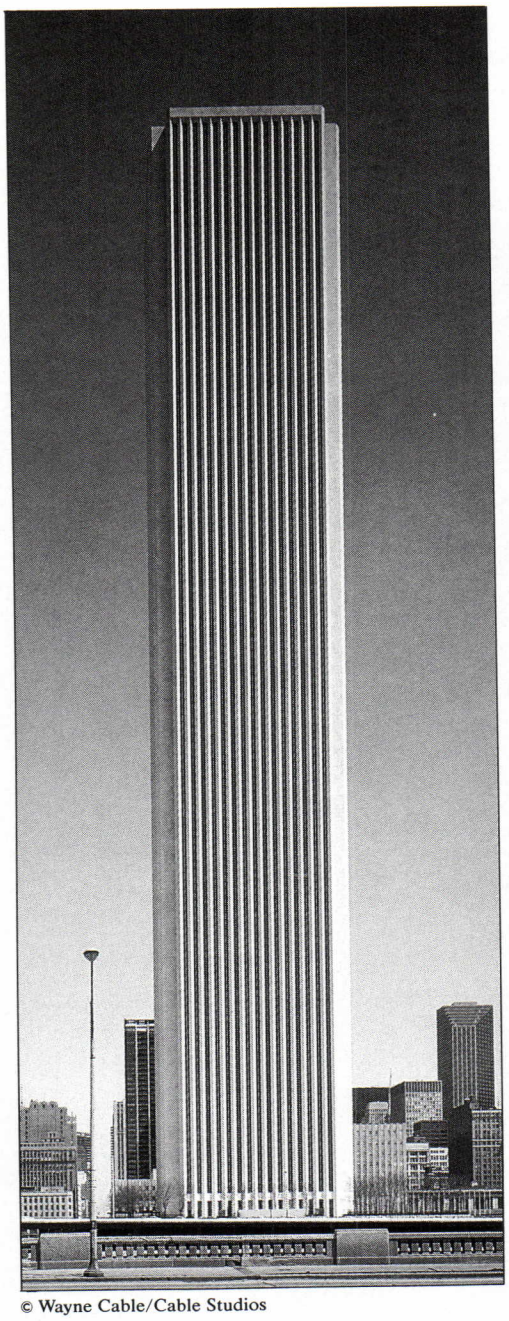
However, at 1¼ inches, the marble panels on the Amoco building were too thin for their environmental conditions, according to architect Ian Chin, of Wiss, Janney, Elstner Associates of Chicago, designers of the new facade. Bowing of the marble was the first sign of trouble. "Marble undergoes permanent expansion from heat," Chin said, and the daily temperature cycles have caused the exposed marble surface to expand while its unexposed side remains stable. As a result, the panels have curved.

In general, Chin says, the bowing is mostly an esthetic problem. None of the panels have popped out of their structural attachments, he says, and no evidence of water leakage has been uncovered. But Chin sees the bowing as symptomatic of a much greater problem: the marble is losing strength. Expansion of the panel surfaces and the subsequent bowing cause the marble grains to separate and initiate cracks in the cementlike binder that holds the grains together. And more pronounced bowing means greater losses in strength, Chin says. The decay is hastened by environmental conditions—carbon dioxide, acid rain, and soot.

White granite was selected as the replacement veneer because it is a more stable material and because it will maintain the general appearance of Amoco's building. The North Carolina granite is expected to appear somewhat whiter than the Italian marble from a distance, but on closer inspection, the granite has a typical peppered appearance. The whitest panels will be installed at street level. The granite panels will be two inches thick and weigh 400 pounds each and be attached with continuous kerfs. The original marble slabs weigh 275 pounds each.







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Above left, old marble system; above, new granite system. Left, Amoco before.

As a safety measure, Amoco has secured each of the tower's 43,000 bowed marble panels with stainless steel straps and has built canopies around all entrances. Steel towers for hoisting panels are being welded to each of the four corners for the entire height of the structure. Replacement of the stone is to begin next spring and is expected to take about two years.

Amoco has filed suit against the office of the late Edward Durell Stone and the collaborating firm of Perkins & Will. Also named in the suit are Turner Construction, Peter Bratti Associates, the firm that installed the marble, and Alberto Bulfalini Successori, supplier of the Italian marble.

Failures of thin-stone veneers are not uncommon. The 27-story Chase Lincoln First Bank of Rochester, N.Y., also was clad in Carrara marble and suffered similar problems. After a three-year recladding process, it now has a new skin.

"The complete behavior of thin-stone veneers is not really understood," says Chin, and he cautions that the design of a stone facade must be carefully engineered.—Elena Marcheso Moreno

News continued on page 28

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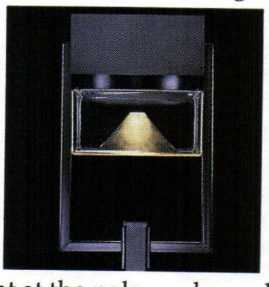

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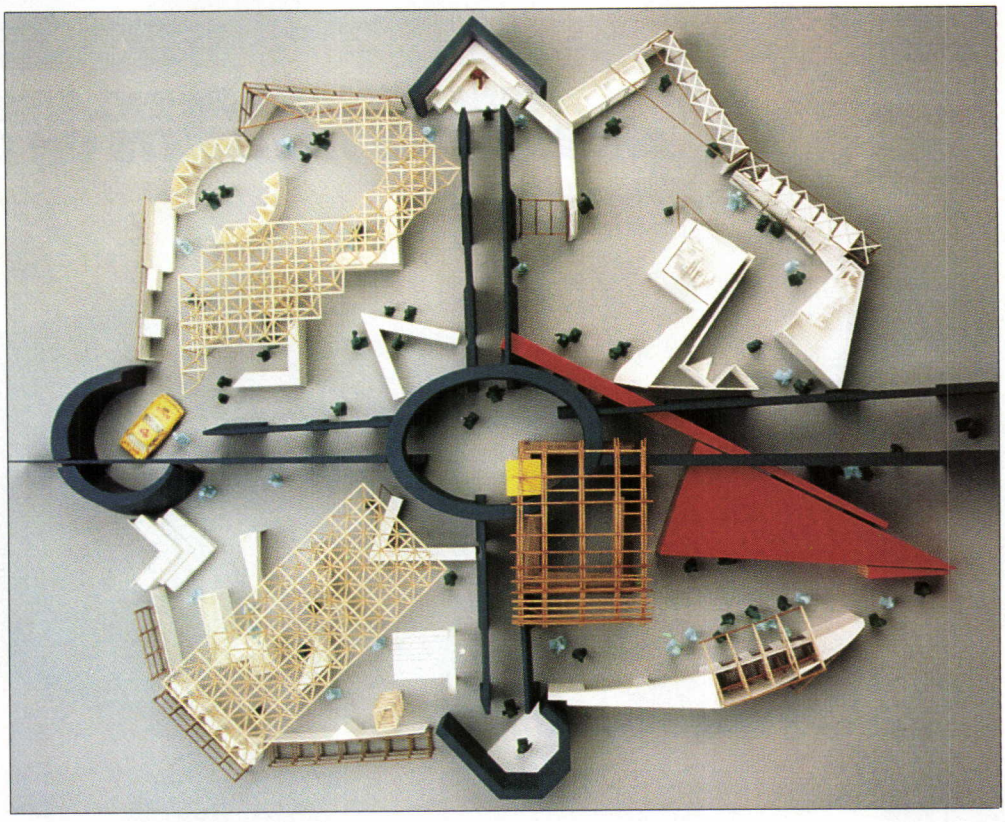

Design

American Architecture Exhibit Opens in Soviet Union

"Design USA," a cultural exchange exhibition highlighting American architecture and design, opened in Moscow on September 4 and will travel to eight other Soviet cities during a 19-month tour. The Yoknapatawpha Exhibit Group, a joint venture of Mockbee Coker Howorth Architects and Communications Arts Company of Jackson, Miss., designed the temporary exhibition for the United States Information Agency.

The 13,000-square-foot exhibition space uses a modular component system that can be assembled into various configurations to fit different exhibit halls. The main design model (shown above) is the arrangement used for the show's Moscow installation and comprises one large single floor plan organized as a series of four quadrants. In Leningrad, where the show goes next, the setting is a long narrow space two stories high in a late 19th-century building. The flexible modular system of four components within each quadrant, says project architect Thomas Howorth, will allow the exhibit to be laid out in a linear arrangement using the same sequence of display areas. Rising 14 feet tall, the blue "parti walls," as Howorth calls them, are intended to introduce an architectural order while the red pieces add a bit of dynamism to the circulation pattern.

The exhibit opens with a multiscreen video presentation of architecture and life in six American communities: Miami, Pittsburgh, Chicago, Dallas, San Francisco, and Oxford, Miss. A collection of elaborate models illustrates recent trends in skyscrapers, and the section "Housing America" explores the basics of residential design and demographics.

A full-scale kitchen provides the transition from architecture to product design. (As an interesting parallel, this show marks the 30th anniversary of the American National Exhibition, the USIA's first major exhibition in the Soviet Union, that was the setting of the Nixon-Khruschev "kitchen debates.")

The product design section begins with a brief history of the subject, highlighting the work of Raymond Loewy, Norman Bel Geddes, Walter Dorwin Teague, Buckminster Fuller. The exhibit also includes furniture and product designs by Charles Eames, George Nelson, and Eero Saarinen.

The graphic design section features examples of editorial design, environmental graphics, advertising, packaging and corporate identity programs and a complete graphics studio.

The final quadrant, called "Design in Motion," looks at the process of automobile design in the United States and the role of the automobile in American life. An American sports car is on view.

"Design USA" is expected to draw more than two million visitors. Seminars in each of the host cities will introduce American architects and designers to their Soviet counterparts.—Lynn Nesmith

News continued on page 31

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Burgee's Scheme Attempts to Capture Times Square Vitality

The long-delayed and controversial plan to redevelop Times Square has taken a new direction. In late August, responding to negative public reaction, sponsors of the massive redevelopment project presented a new scheme by John Burgee Architects (with Philip Johnson as design consultant) that attempts to capture the atmosphere of the Times Square area.

Burgee's and Johnson's original 1982 scheme of four towers with mansard roofs and limestone and granite facades was criticized for being too big and too dense, as well as for its bland historicist detailing. Neighborhood, preservation, and architectural groups joined forces to block the $2.5 billion development.

Unveiled with fanfare at a press conference at City Hall, the new scheme features the four office towers that range from 32 to 57 stories and contain approximately 4.1 million square feet of office space. Although the new proposal is almost identical to the earlier design in density and height, their surface treatments are significantly different. Each designed as a separate entity, the buildings will incorporate blue and green reflective glass, asymmetrical grids, setbacks and cutouts, gabled, straight and curved roof-lines, and 12,000-square feet of multi-colored signage.

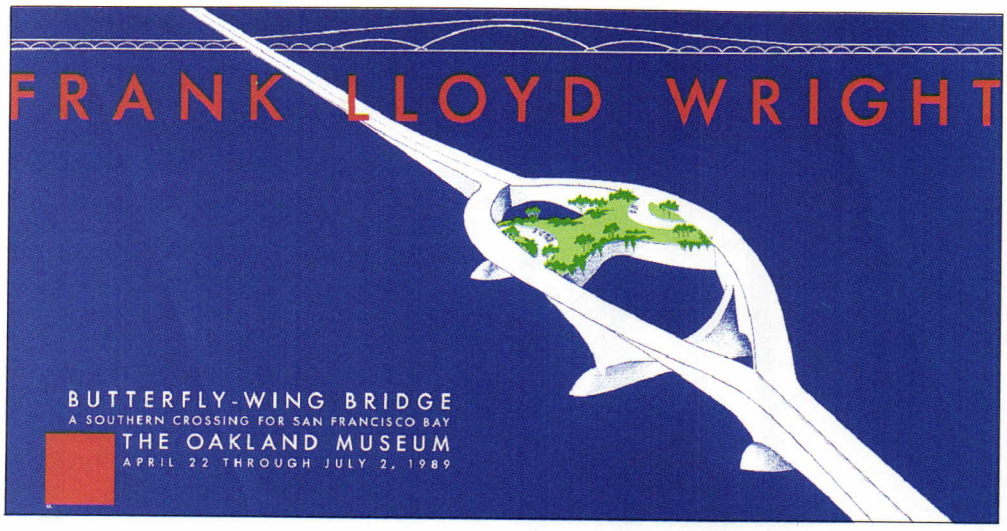
Below left, original scheme drew from classical precedents; below, revised plan reflects Times Square's honky-tonk nature.

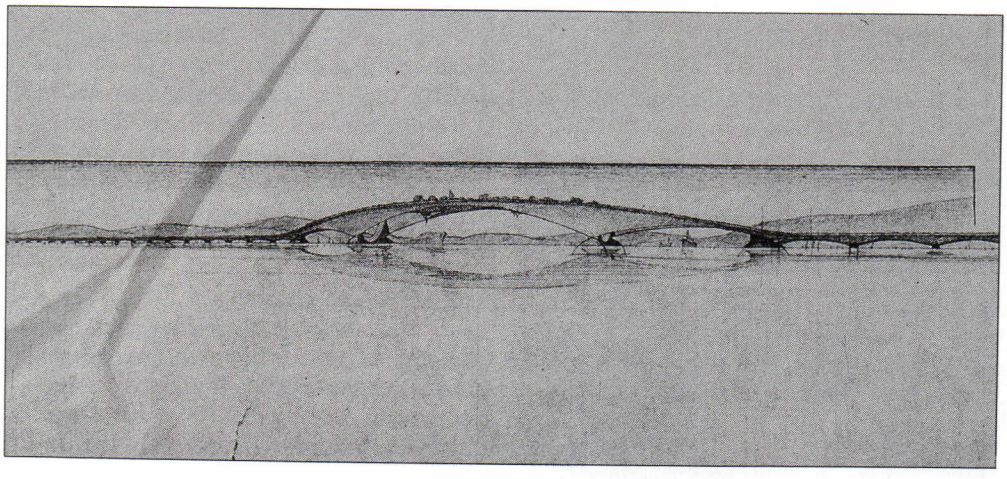
Photographs by Nathaniel Lieberman

The new assemblage of contrasting forms, colors, and materials reflects, says Burgee, trends in architecture and public opinion over the past seven years, as well as one of the firms "so many new directions." The esthetic of the new scheme responds as much to the legendary spirit of the place as the actual physical context. "When people talk about Times Square, they talk about neon lights and kissing sailors, that's Times Square." said Burgee.

At the press conference, Mayor Koch acknowledged the importance of maintaining the vibrant and eclectic spirit of Times Square. Commenting on the design, he said, "I'm told this represents a broad new chapter in 20th century architecture. To use John Burgee and Philip Johnson's characterization, this is now beyond post-modern— this is 'new modern.'"

—Lynn Nesmith





Wright's 'Butterfly' Bridge: Will It Fly Today?

Forty years ago Frank Lloyd Wright designed a "Butterfly Wing Bridge" for a southern crossing of the San Francisco Bay. Now engineer T.Y. Lin and former Wright apprentice Aaron G. Green, FAIA, have proposed a modified version of the scheme for a 10-mile-long bridge.

The new bridge would comprise a series of concrete arches that rise up from taproot piles. At the center of the span, a landscape park would be suspended between the two sections of the roadway.

Although Bay area voters rejected a proposal in 1972 for another bridge across the Bay, proponents of this scheme cite growing traffic congestion and argue that Wright's design would add to rather than detract from the landscape. In addition, this bridge would be a privately financed toll road that would revert to public ownership after investors are repaid.

The revival of the idea of a southern Bay bridge comes just as the Wright scheme is again in public view. Last spring Wright's scheme was the subject of an exhibition at the Oakland Museum (see poster, above left), and Wright's elaborate model, long in storage, made a cameo appearance in the action movie "Die Hard."

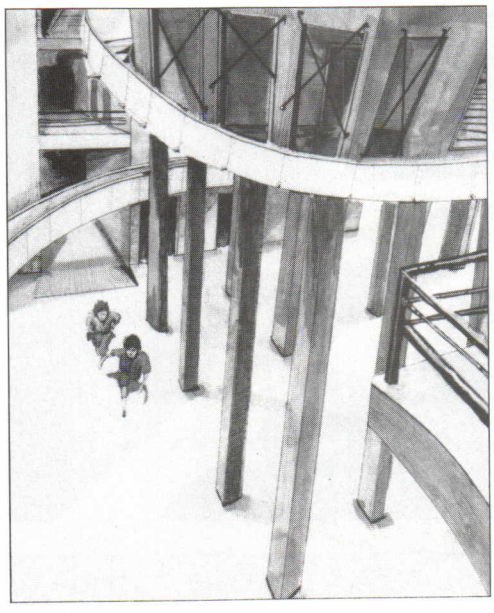
—Lynn Nesmith

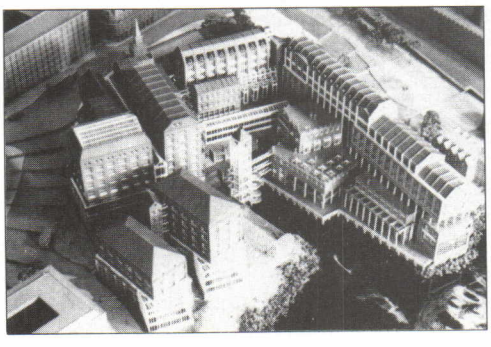
ACSA/AIA Honors Students

AIA and the Association of Collegiate Schools of Architecture have awarded $30,000 in prizes in a student design competition for a large mixed-use development for a historically sensitive site in London. Cosponsored by the Otis Elevator Co., the competition called for incorporating spiral escalators as prominent elements in the design. The program was written by Stephen King, AIA, of Swanke Hayden Connell Architects of New York City and London. More than 1,200 students participated in the competition.

First place was presented to Andrew MacKenzie Hull of Carleton University; Tom Dubicanac served as faculty sponsor. Second place went to David Lawrence Kelley of Oklahoma State University with sponsor Robert Condia, and third place to Keith Andreyko, David Brennan, Chi-Chun Chen, Brian Frolo, Daniel Lim, Tom Sofranko and William Willoughby of Kent State University, with Thom Stauffer, as sponsor.

Other winning teams are Wilfred Atanga-Tantoh and Jae Young-Joon of the University of Texas at Arlington, with faculty sponsor Richard Scherr; David M. Genther and John R. Howard of Drexler University, with sponsor Alan Greenberger; and Kyo Nam Chin, Lewis William Church and Anne Martha Lilly of Virginia Polytechnic Institute, with sponsor Robert J. Dunay.





Above, Hull's first place scheme; below, Kelley's second place proposal.

BRIEFS

NIAE Announces Dinkeloo Awards
The National Institute for Architectural Education has named Robert De Alba of Yale University, Paul Edward Harney of Rice University, and Geoffrey Campbell of the University of Minnesota 1989 recipients of the John Dinkeloo Fellowships. The program provides recent architecture graduates an award of $5,000 for study abroad. Administered jointly with the American Academy in Rome. The Dinkeloo fellowship provides each recipient with at least two months in residence at the academy. Contact NIAE, 30 W. 22nd St., New York, N.Y. 10010.

Masonry Institute Scholarships
The Masonry Institute of Michigan has awarded eight $1,000 scholarships to students in the school of architecture at Lawrence Technological University. They are: Marie Alvaro, William Beach, Carolyn Bean, Dallas Felder, Lisa Keiffer, Charles Miller, David Willoughby, and David Zinner.

Call for Applications
The Temple Hoyne Buell Center for the Study of American Architecture at Columbia University is accepting applications for two residential fellowships for the 1990-91 academic year for research projects in American architecture, landscape

architecture, and urbanism. A Ph.D. or equivalent professional achievement is required. The center intends to offer a senior fellowship at $50,000 and a junior fellowship at $30,000. The fellows will be expected to teach one seminar and take part in the activities of the center during the academic year. Application deadline is Dec. 15. For more information, contact Gwendolyn Wright, Temple Hoyne Buell Center, 400 Avery Hall, Columbia University, New York, N.Y. 10027.

Architectural Drawing Exhibition
The American Society of Architectural Perspectivists has selected the winners in its fourth national competitive exhibition. The Hugh Ferriss memorial prize recipient is Dan Willis of University Park, Pa., for his pencil representation of a memorial to Edgar Allan Poe.

Francis T. Taliaferro Scholarship
RTKL Associates has endowed a $25,000 American Institute of Architects scholarship in honor of Francis T. Taliaferro, FAIA, one of the firm's founders, who retired from the firm last June. The scholarship will be administered by the American Architectural Foundation and awarded on the basis of academic excellence. The scholarship also will help students enrolled in academic programs leading to the bachelor's or master's degree in architecture.

Historic Theater Awards
The League of Historic American Theatres presented awards for four projects during its annual conference. Awards were presented to: Carnegie Hall, New York City; Woodland Opera House, Woodland, Calif.; Playhouse Square Center, Cleveland; and the Los Angeles Historic Theatre Foundation, which received the League Award for its contributions to the League and to theater preservation.

Albert Kahn Scholarship
Keith Steven Fineberg, a sixth-year architecture student at the University of Michigan's college of architecture and urban planning, has been awarded the Albert Kahn Associates Fellowship.

Toaster Design Competition
Black & Decker in conjunction with the Kansas City Chapter of the Industrial Designers Society of America is sponsoring a competition for designers to create the toaster of tomorrow. The competition challenges entrants to study the evolution of toasting and anticipate future consumer needs. Prizes for the top three designs and three honorable mentions are: first prize $10,000; second prize $7,000; third prize $5,000; and three $1,000 honorable mentions. The deadline for entries is November 15. Contact the Kansas City Chapter/IDSA, P.O. Box 31003, Kansas City, Mo. 64129.

Call for Qualifications
The City of New York is sponsoring a design competition for a 600,000 square-foot municipal police training complex to be located on a nine-acre site in the Bronx. In a first round, six architectural firms will be selected to enter the competition. A request for qualifications package will be available after November 1, and completed responses must be returned no later than November 30. For more information, contact Adrienne Bresnan, AIA, Division of Design and Construction Management, New York City Department of General Services, One Center Street, 16 Floor South, New York, N.Y. 10007.

Rome Prize Fellowships
The American Academy in Rome has announced the 1990-91 Rome Prize fellowship competition in the fields of architecture, landscape architecture, and advanced design arts (urban planning and design arts including interior, industrial, graphic, fashion, and set design). The deadline is Nov. 15. Fellowships provide winners with a stipend, travel allowance to and from Rome, housing, most meals, and a studio/study space at the academy's facility in Rome. No courses are offered; winners pursue independent study. Applications are available from the Fellowship Coordinator, American Academy in Rome, 41 East 65th St., New York, N.Y. 10021. □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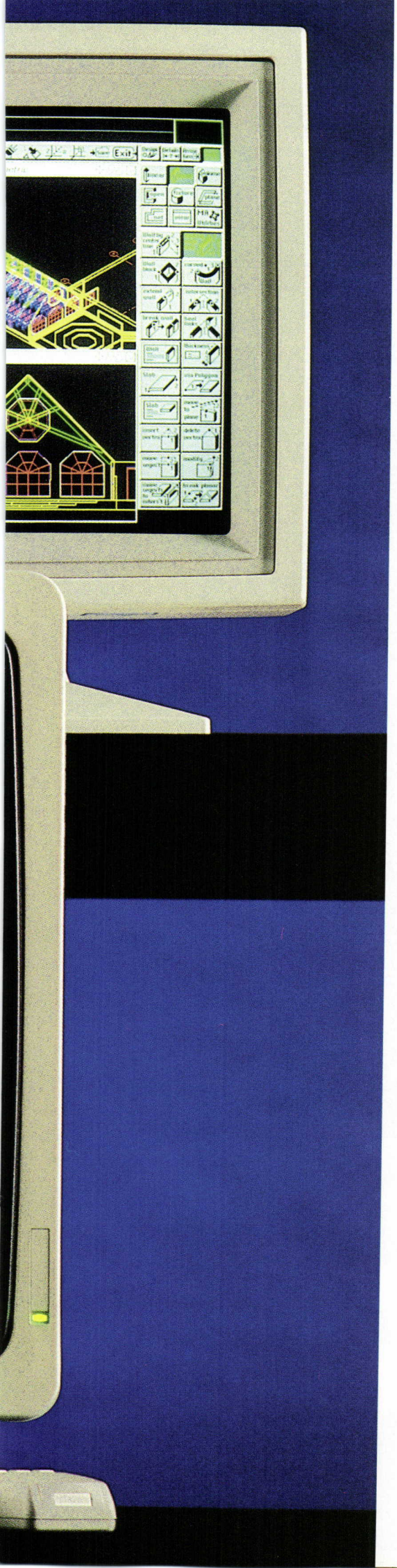

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ModelView image of the Pacific First Center, Seattle, designed by The Callison Partnership, Ltd., Seattle and San Diego.

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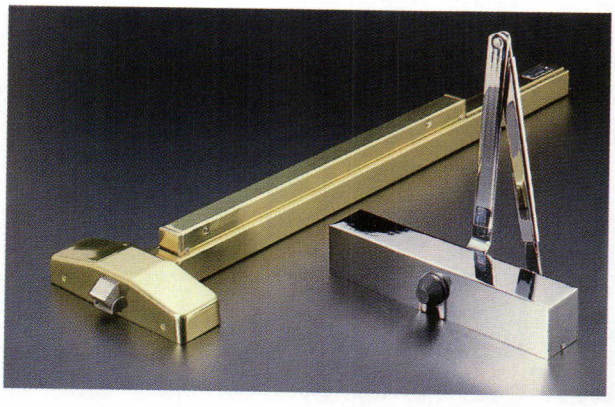

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The 29-story First Indiana Plaza in downtown Indianapol
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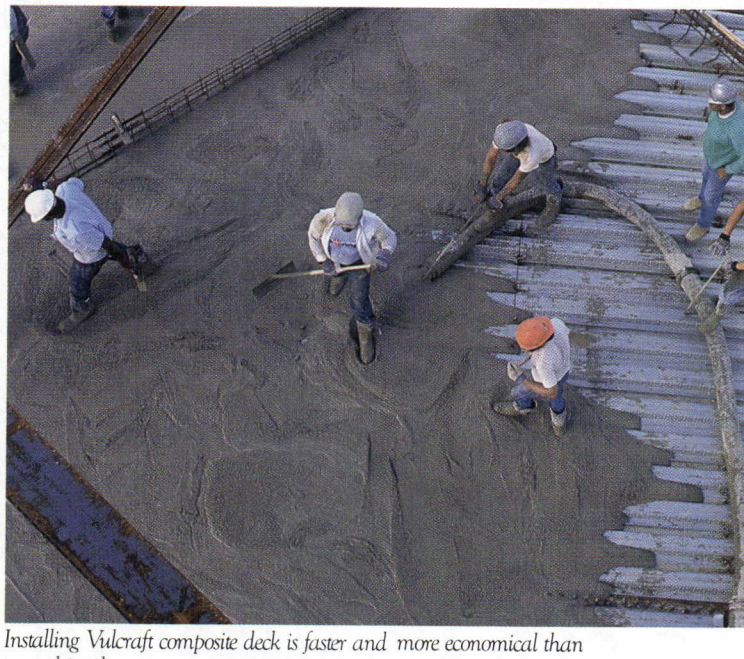

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SITE's Fascination with Architecture as Art

SITE (Rizzoli, $50.)

The growth and evolution of SITE (Alison Sky, Michelle Stone, James Wines, et al.) over the last 20 years tells us much about the changing roles of architecture and art in the larger public environment of the 1970s and '80s. SITE came out of the social and esthetic ferment of the '60s, when artists were redefining their roles in relation to pluralistic consumer society. By moving out of the museums and galleries and into the streets, SITE and others challenged both the architect's presumption to be the sole proprietor of design in the public environment and the public's assumption that public art is stone men sitting on stone horses.

The publication of the collected works of SITE offers us the opportunity to test our understanding of the limits of "serious architecture" and of the ability of artists and architects to understand and communicate with "taste cultures" other than their own.

Ever since I first heard James Wines and Alison Sky give a presentation at Temple University in the late 1960s I have found their words and works thought-provoking, exciting, and sometimes infuriating. Much of the text of this book, which includes a brief history of SITE by Wines and an interview of Wines and Sky by Herbert Muschamp, discusses SITE's continuing battle with what its members see as a rigid and monolithic architectural establishment: "architecture. . . often seems like a profession of closed minds and rigid formulas."

Having worked in a firm that has taken its share of brickbats for what it has written and built, I can understand and sympathize with SITE's frustration with the limitations of the profession. The cultural split between SITE and the profession is real. SITE is part of an artistic, academic world that is interested in ideas, in testing the limits of expression, and in creating the *zeitgeist*. Most architects are by and large pragmatic realists, businessmen-architects with business clients, who safely follow rather than lead revolutions, esthetic or otherwise.

This isn't to say that all truth and beauty lie with SITE and its artistic world. In the hands of the best architects and clients, the language and theories of architecture, both classical and modern (or whatever), can and do result in great buildings. Conversely, the artistic, verbal, academic tradition of conceptual art and architecture can tend to dig itself into ever narrower theoretical positions, creating an "us versus them" exclusivity that limits rather than expands the possible ways of doing art and architecture.

SITE states right up front that they start a design with a verbal idea, which is generally drawn from "certain sociological, psychological, and phenomenological themes like fragmentation, mutation, entropy, inversion, indeterminacy, and change." All of the above constitute what I think some have come to call deconstructivist architecture.

The danger of an art and architecture that relies on a conceptual framework made up of ever more esoteric ideas is that verbal overwhelms visual and that the reality of the artist's hand and eye—which in the end are the true medium, if not the sole message, of both art and

continued on page 42

© Andreas Sterling

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Above, the Swatch store on Nantucket, completed in 1987, features suspended mannequins. Below, 'door within a door within a door' design series, 1986, treats doors as furniture.

Books *from page 41*
architecture—is obscured by words. To wit, Wines describes a book he wrote as being based on "the Jungian notion that true iconic meaning comes from a collective unconscious, from undefinable sensations that we share collectively. The artist discovers relevant imagery in the ambient sensibility of the society; it is an unconsciously recognized presence that makes connections to other people's minds." Many of us, artist and architect alike, have lost sight of the fact that good ideas, while necessary, are hardly sufficient. It's what SITE does with them—how their collective hands and eyes mold and temper ideas—that makes the art.

Left, the Best showroom in Hialeah, Fla., completed in 1979, has native vegetation enclosed behind a glass water wall.

The nature of SITE's clients underscores the dichotomy between SITE and the architectural profession. The firm's most steadfast clients, Frances and Sydney Lewis, have commissioned more than a dozen Best showrooms over a 10-year period. The Lewises are an example of the great patron clients: thay have supported individual artists and architects for years, allowing and encouraging conceptual freedom and design experimentation. The result of this collaboration is a body of work that is fascinating in its variety, ingenuity, and conceptual brilliance—a high-wire act performed on the most ordinary of 20th-century buildings—the commercial box/store sitting in a sea of cars.

This series of peeling, falling, tilting, sinking, overgrown, and drowned boxes does for the suburban store what Louis Sullivan did for the small-town bank. Like Sullivan, SITE accepts the Best store for what it is, a conventional box. But where Sullivan turned his dumb Main Street building into pure architectural poetry by the application of a great architect's feeling for proportion, scale, color, and decoration, SITE transforms its building through fragmentation, contrast, and exaggeration. The result places a conceptual as well as a humorous spin on the conventions of a classic late-20th-century building type—the suburban box.

For me, this is "deconstructivism" that really works. Unlike some of the more esoteric modern movement deconstructivist architects who work only with the abstract, structurally derived vocabulary of modernist architecture, SITE works its magic on an ordinary building, so that the ordinariness of this everyday object is heightened and made more obvious. When SITE is through with the transformation, ordinary architecture has been made extraordinary for artist and lay person alike. For me, the dominant role of convention and symbolism of the ordinary in the Best stores is their evocative power.

SITE's example should teach us architects the difficult lesson that not all aspects of our environment are amenable to the tender touch of our architectural "good taste" and the fine arts commission. The valuable lesson of SITE is that sometimes it is preferable to accept and exult in the ordinary, the banal, and the humorous in our environment, rather than to enforce the white-bread dullness of "good taste" and earth tones all over the place. SITE teaches us to see the commonplace through new eyes, with its wacky, wonderful buildings.

—Steven Izenour

Mr. Izenour practices with the Philadelphia firm Venturi, Rauch & Scott Brown and has co-written a number of books on roadside architecture.

Books continued on page 44

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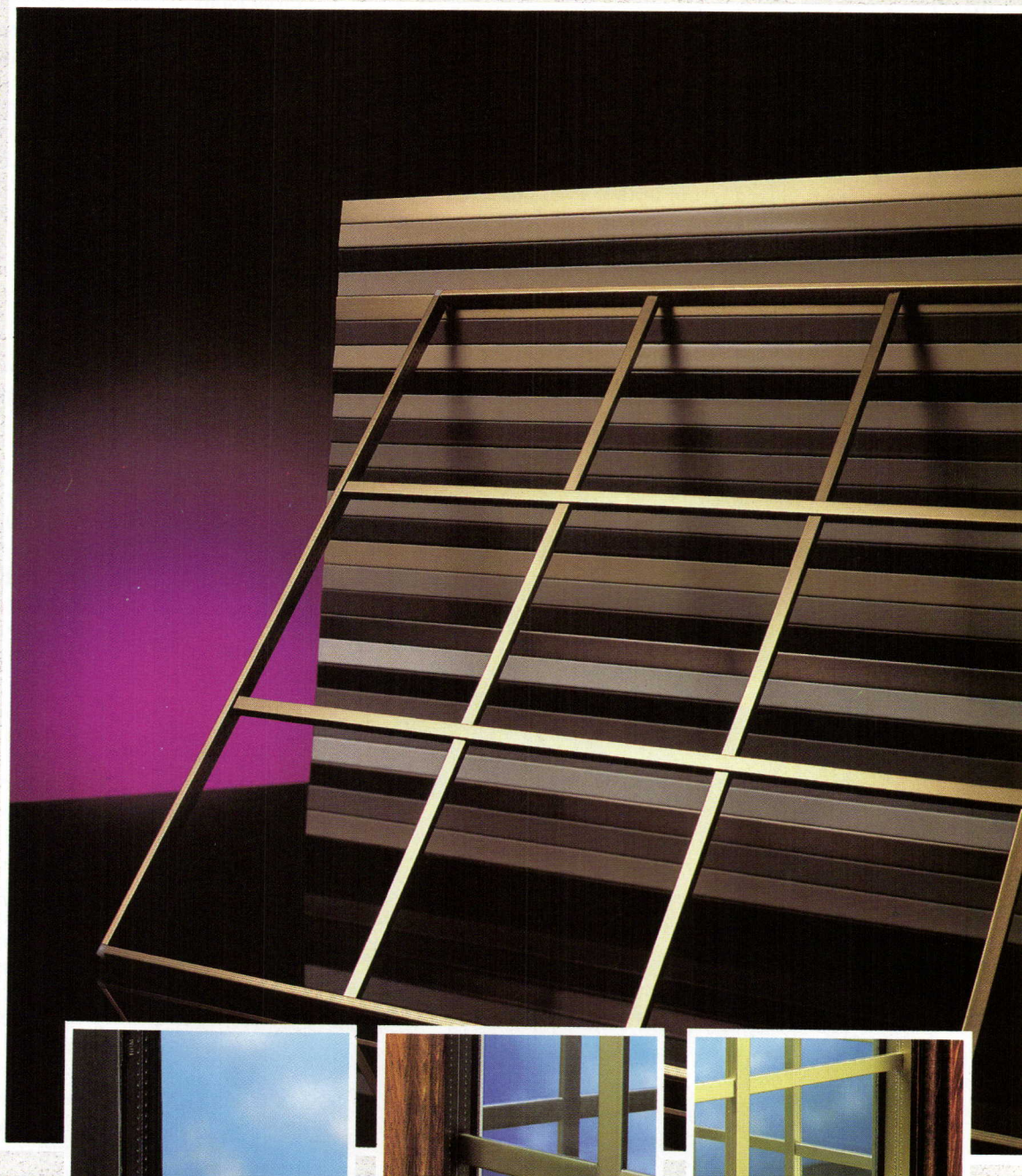

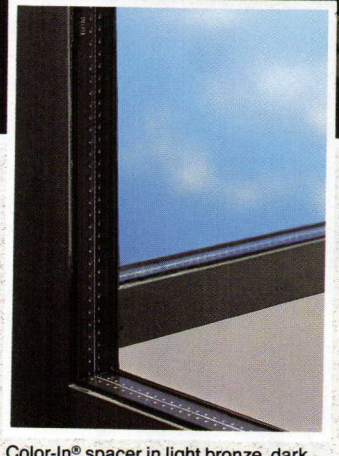

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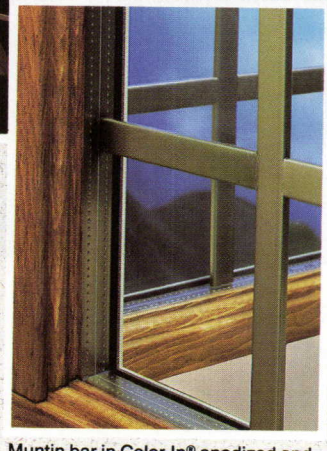

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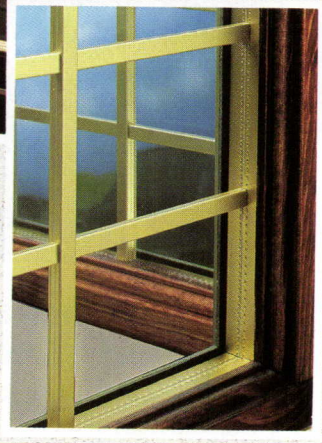

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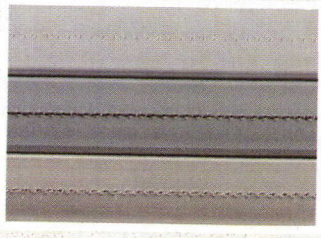

Clear Anodized Aluminum, Electrogalvanized Steel and Mill Finish Aluminum Spacer "colors."

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The American Design Adventure: 1940-1975. Arthur J. Pulos. (MIT Press, $50.)

This chronicle is the sequel to Arthur J. Pulos's *American Design Ethic* of 1983, a chronological and factual overview of American design from the colonial era to 1940. From both books one can readily conclude that American design history is grounded in pragmatism (our only philosophy) and in the twin forces of democracy and technology, of which John Kouwenhoven has written so eloquently. Architects should be interested in this book because they have played a role in the history of modern design and because most environmental designers rely on industrial design products to characterize contemporary architecture.

Historiographically, Pulos employs an organic model of history—cycles of conception, birth, service, death, and renewal—to frame his discussion. He believes that technological products are transitory in character, "constantly being made obsolete by advancing technology and changes in public need and fancy." Pulos also implies that there is a hierarchical system of values in American design in which "lower order" products evolve into "higher order" ones, with the higher incorporating all the attributes of the lower. The designer's role in this is dual: "as the humane and esthetic conscience of industry" and as a "surrogate for the consumer."

There is, of course, a contradiction in this role in that conscience, in an industry increasingly driven by marketing strategies, is not a high value. In fact, after reading Pulo's account of our design history, one can conclude that conscience and surrogation have as high a profile in industrial design as affordable housing does in architecture. And the esthetic intents of industrial designers, "their aspirations to eternal value," fail to resolve the social contractions inherent in the profession.

Thematically, Pulos's history begins with the pre-World War II context for design and with the designer's role in the war effort; then it moves on to the institutionalization of modernity as our way of life, brought on not only through products but also through an ethos that designers help fabricate, to postwar culture and conspicuous consumption, to the professionalization of design practice, and the formal education of designers, to the internationalization of design, and to the role of design in society. Throughout all this Pulos documents the inclusion of human factors in design and the important changes in materials for industrial products.

To blend these themes into a history, Pulos relies on the products themselves, which he sees as mirrors of life, reflecting the spirit of their times. Pulos imagines the products as unique solutions to problems, evolving toward the perfection of "type forms." Categorically, Pulos describes the design characteristics of houses, furniture, large and small appliances, tools, flatware and dinnerware, all kinds of equipment, instrumentation devices, and transportation vehicles.

Based on Pulos's presentation, it seems that the idealism that underwrote a good deal of the origins of modern design practice was relegated to the organizations that were formed to promote or regulate design, and that design practice has been shaped largely by clients and the profit motive.

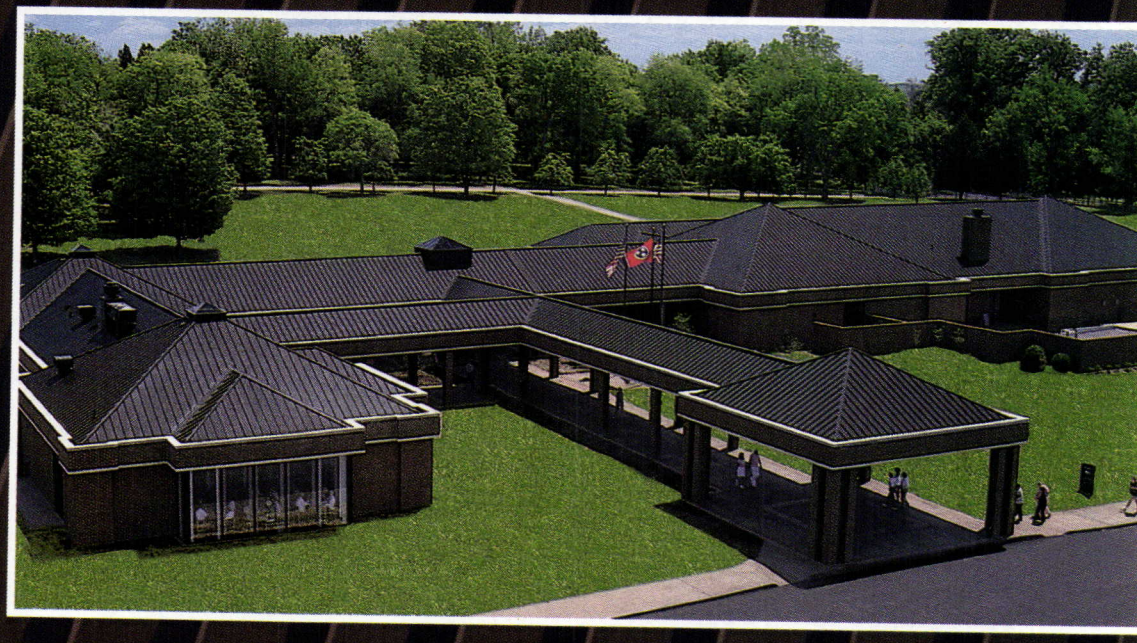
American design philosophy is characterized as "combining esthetic principles with empirical exploration and practical experience." This approach has some limitations in practice and in Pulos's accounting of the history of practice. In our time there are the issues of technology transfer to the Third World and the consumer economics and materialism to which such transfers are related. There is no mention of alternative appropriate technology in industrial design, the kind of thing that Victor Papanek advocates.

Pulos, an industrial designer and chairman emeritus of the department of design at Syracuse University, has written a broad-brush history focused on style that no doubt will become the foundation for more specialized studies. The book is clearly written, well illustrated, and finely designed (except for a strange bibliography). However, it is only a first step toward a social history of American design.

—Herbert Gottfried

Mr. Gottfried teaches at Iowa State University's college of design.

Andrew Jackson's
d admire.



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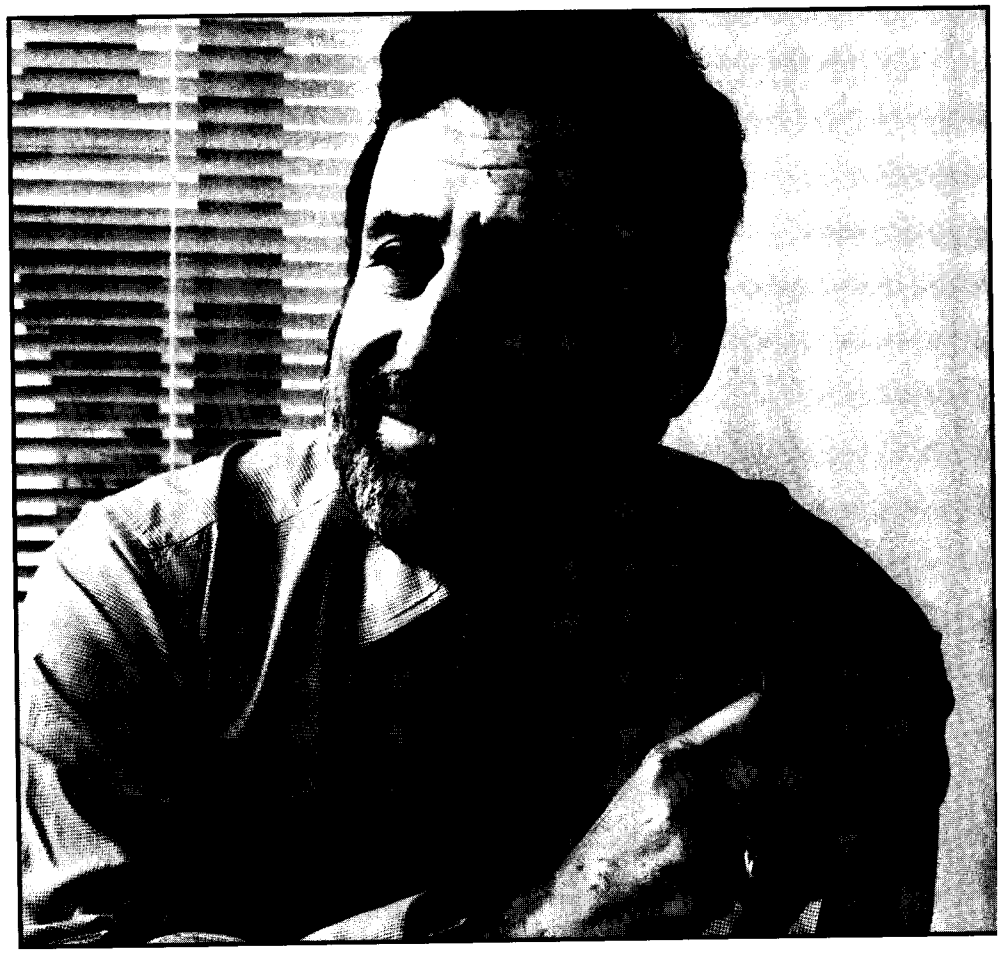
"None of us studied architecture expecting to be defendants in a lawsuit. Most architects are creative people—they may or may not be businessmen, although the better they are in business the better it is—but few expected to be defendants in this changing profession. It's something that has affected me personally, and, I expect, the growth of many architectural firms. It's caused me concerns, maybe burned me out, in spite of the fact that we've won every one of our suits.

In the middle '70s to the early '80s, I felt insurance was the biggest problem architects faced—that and litigation. And it's a continuing problem, no question about it. But I think that today DPIC Companies is with us for our entire future. Although we had only had two other insurers in 69 years, we really moved away from our previous insurer without any hesitation. DPIC was the first insurer that ever discussed loss prevention. And they were the first insurer that ever gave a damn about how we practiced architecture. That makes us very comfortable. Because, really, they are the most important partner in this firm. They provide us with the assurance we need to know they are going to be there. They assist us in undertaking contracts and procedures necessary to try to keep out of trouble in this litigious world. They provide us with legal counsel when there's a problem brewing. In fact, we took advantage of their Early Warning program just this week.

I feel very good about them."



Martin David Dubin

Dave Dubin is a principal in Dubin, Dubin and Moutoussamy, a 75-year-old architectural firm based in Chicago. He is past president of both the Chicago and Illinois AIA. We value our relationship with his firm and thank him for his willingness to talk to you about us.

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ARCHITECTURE

Discovery

The results of our 1989 Discovery search begin on the next page. You may recall that we asked architects whose buildings had not previously been shown in the national architectural press to submit recent buildings or designed objects. We received significantly more submissions than for our two earlier Discovery issues, and the overall quality was the best yet. From just over 600 entries by more than 200 firms or single practitioners, we selected 16 buildings and eight objects.

The great majority of submissions fell broadly in what is generally considered today's design mainstream. The selection criteria we used were the same as for all buildings we publish. Our main emphasis was on the building or object as an experience. Is it harmonious with its environment? Is it comfortably and appropriately scaled? Is it user friendly as well as useful? Is its design interesting, pleasing, fresh rather than derivative?

We are grateful to all who submitted.

—Allen Freeman

Above, elevation on Hillsborough Bay. Below, V-shaped courtyard with 200-year-old oaks. Facing page, slivered court with trellises, now overgrown with vines.□

Photographs by Robert Miller

Civic Harmony

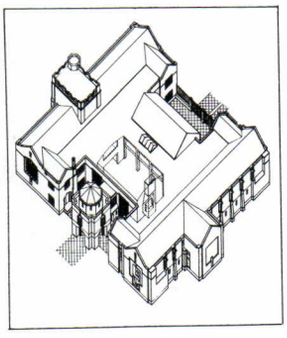
Library addition and renovation, Morristown, N.J.
Short & Ford Architects, Princeton

Photographs © Michael Moran

The original public library of Morristown, N.J., was designed in 1917 by Edward Tilton of McKim, Mead & White. In the 1930s a children's library was added. Fifty years later, Short & Ford Architects of Princeton, N.J., was asked to expand the library to twice its existing 17,000 square feet and in the process has reconstituted the library's role as a piece of civic architecture. The addition rectifies past planning mistakes and completes the library in a way that seems inevitable.

According to architect Charles A. Farrell, AIA, the original library faced a small side street that intersected with the town's main thoroughfare, South Street. Across the street from the library is St. Peter's Church, an imposing edifice to which the library refers in its use of the same granite and a crenelated tower to mark its entrance. Eventually, facing the church on the other side of South Street, a town hall was constructed during the 1930s, itself an imposing monument of limestone, with its own generous greensward, reflecting pool, and World War I memorial.

The odd thing about the library is that it originally ignored its important position on South Street. The 1930s addition only made matters worse because its side entrance faced South Street. Farrell relates that the library building committee was concerned that the addition be in harmony with what was already there, that the old and new not appear as "some kind of odd couple standing on the corner."

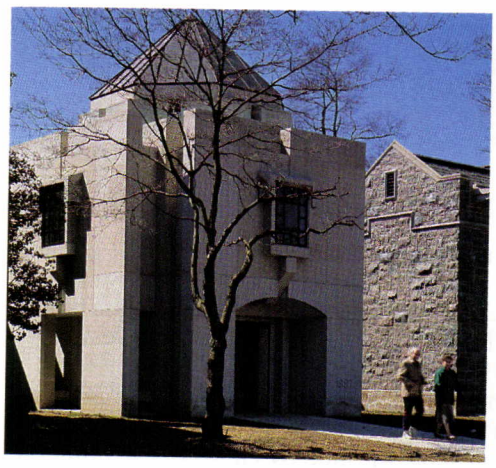


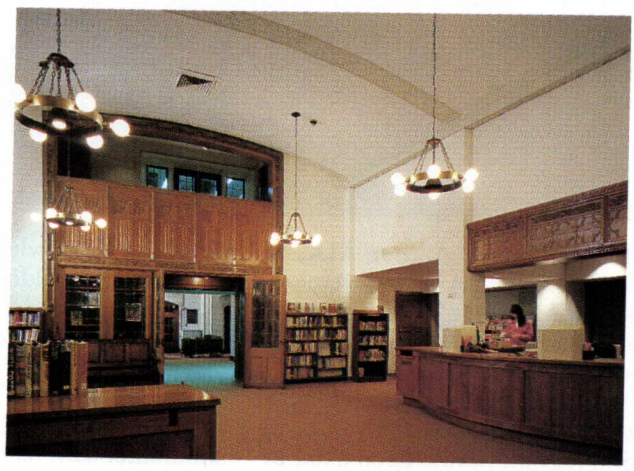
Farrell's solution ingeniously interprets the existing plan as an incomplete H-shaped scheme and adds the missing pieces. In virtually duplicating in height and massing of the 1917 wing, with some interpretive Gothic details, the addition becomes the perfect mate for the original. It properly reorients the building's entrance to a forecourt that faces South Street and places within it a small jewel that upstages the original towered entrance. Farrell recalls that the library's director often referred to the original building and its collection as a "big little library, meaning that they had a big collection but it had a small-town character." The limestone pavilion that now sits at the library's center and serves as its entrance is Farrell's interpretation of the "big little" theme. This virtually freestanding piece houses the rare books in a single oak-paneled room on the second floor and becomes a one-room library of its own.

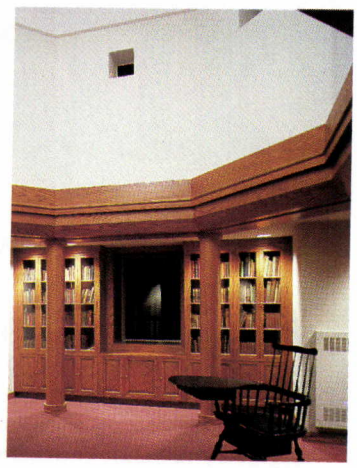
As the interior spaces are redistributed, the original children's library becomes an orientation center with a central desk and plenty of chairs for browsing through books near a large fireplace. The first floor has a new children's wing, a high-ceiling periodical room, and staff areas, while the second floor has more stacks and a history center. Below grade is an auditorium and storage. Best of all, the renovation has returned the previously cluttered 1917 wing to its original use as an open reading room.

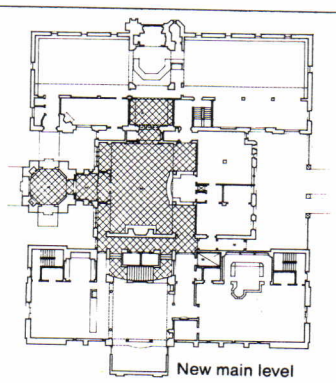
—Michael J. Crosbie

Top and immediate right, South Street elevation of the original library (at left in top photo) and new addition, joined at the center by limestone entry portico with rare book room above. Right middle, oak-appointed rare book room; far right, main desk area and orientation room.

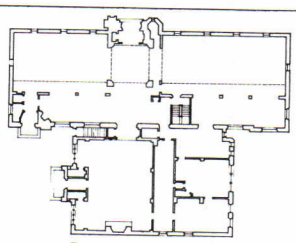




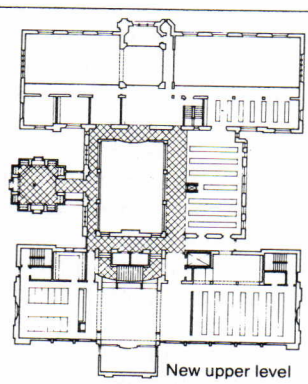




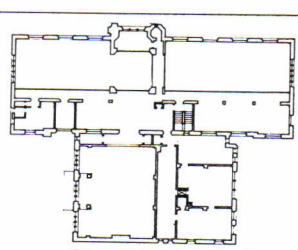
New main level



Pre-existing main level



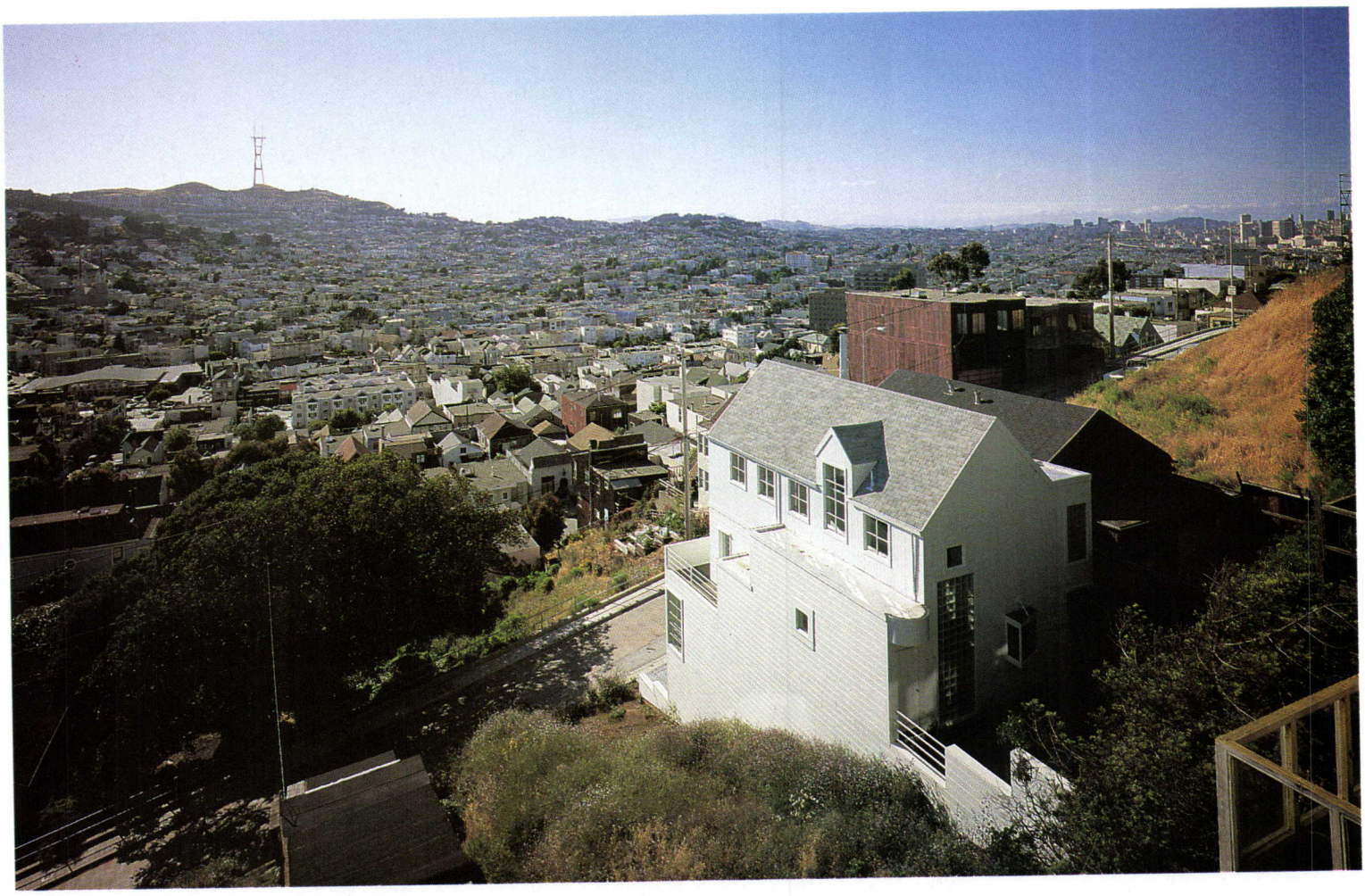
New upper level

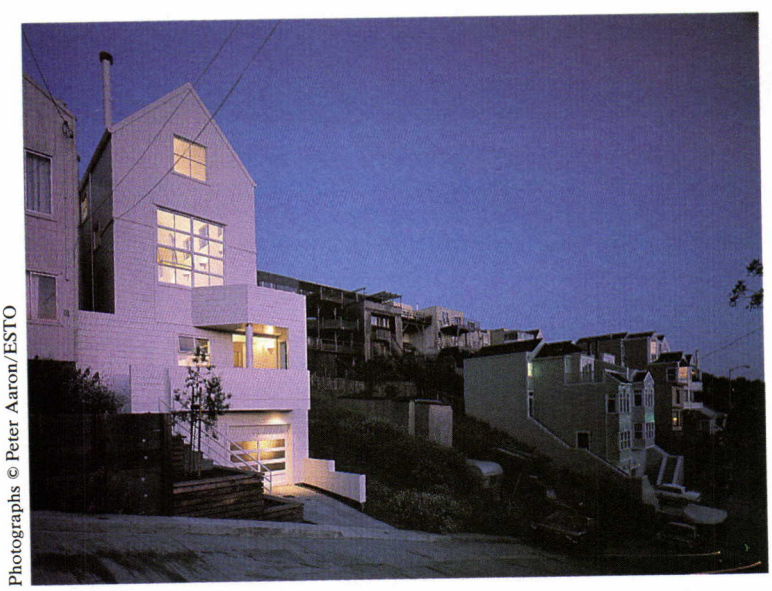


Pre-existing upper level

Loft House Fits into Hillside

Veverka-Kruse residence, San Francisco
Massey & Veverka Architects





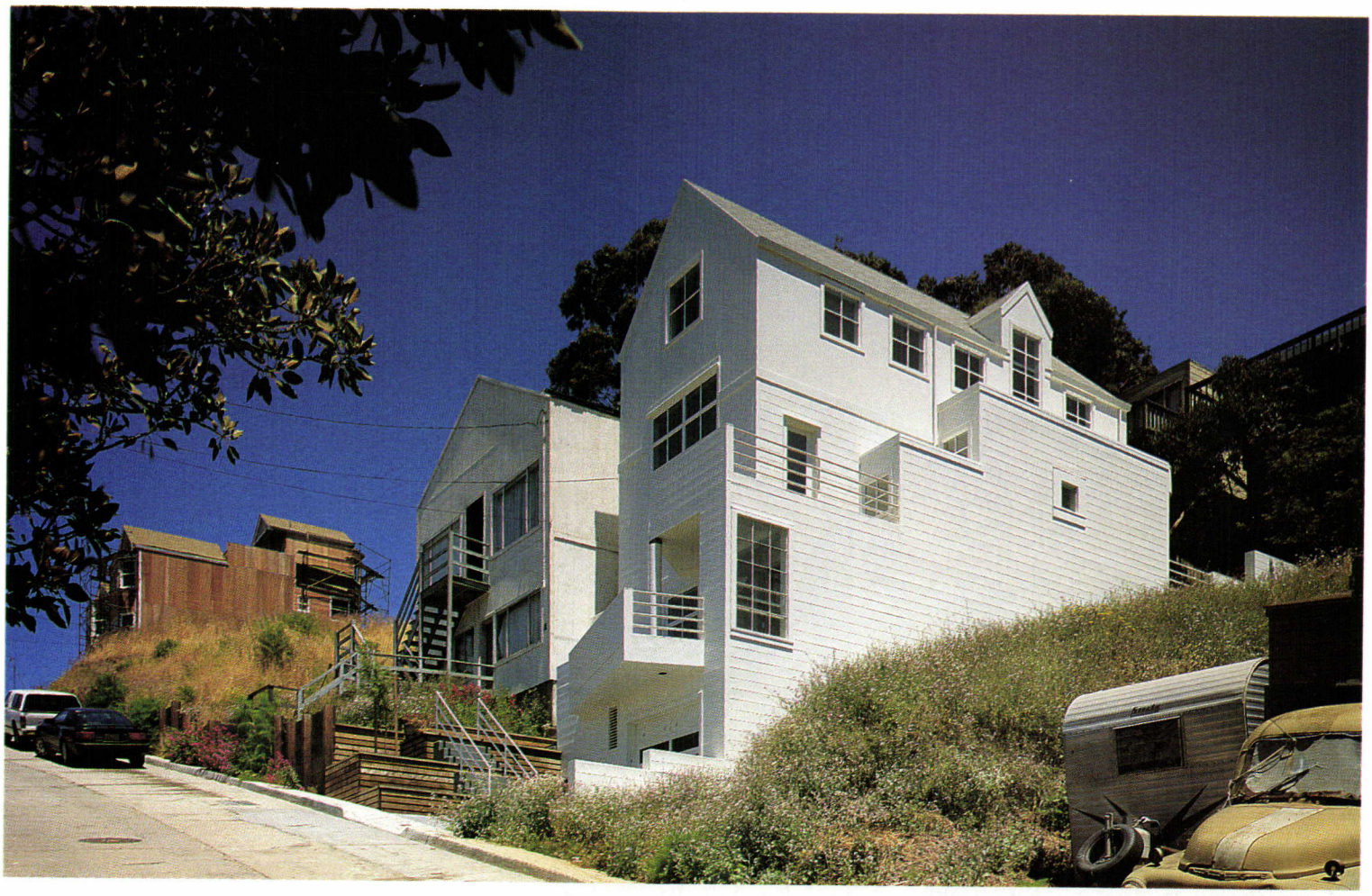
Photographs © Peter Aaron/ESTO

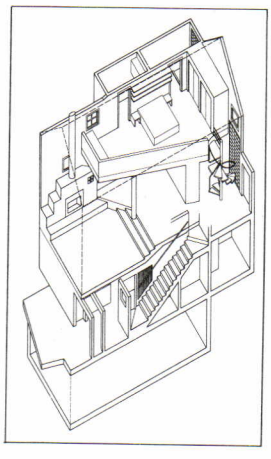
In San Francisco's Bernal Heights, the streets are steep and narrow, the houses are small, and the population is diverse, thoroughly integrated, and intent on protecting the community from insensitive development. Most houses cover the width of their typically 25x70-foot lots, and many have steep roofs—factors that lend continuity to an otherwise eclectic mix of century-old farm dwellings, narrow Victorians, "earthquake shacks" built soon after 1906, and subsequent infill houses of varying quality.

In designing this house for Elsie Street on Bernal Heights' west slope, Gerald Veverka, AIA, was faced with a number of constraints. He was required to adhere to the Elsie Street Plan, an overly prescriptive design document influenced by Christopher Alexander's *A Pattern Language.* He had to win approval of drawings and a model by some 30 neighbors during a city review presentation on the building site; and at three stages of design development he had to present the design to the Northwest Bernal Block Club.

Because of the restraints and Veverka's desire to make a house that belongs in its setting, the residence fits in with its surroundings; despite the restraints, it is more interesting than any other nearby house. On weekends, says the architect, passersby occasionally stop to look but don't stare.

Veverka, now in his 40s, left MBT Associates three and a half years ago to join Stephen Massey, AIA, in Massey & Veverka, a firm of four design professionals in downtown San Francisco. The house on Elsie Street, which he designed for himself and his wife (their children are grown and living away from home),





is essentially like a loft apartment atop a floor of two more bedrooms and a bathroom above a ground-level garage embedded in a hillside—in all, an 1,800-square-foot dwelling on four levels that satisfied the lender's requirements calling for a standard three-bedroom, two-bath house.

From Mission Street at the foot of the hill, a distance of four blocks, the Veverka-Kruse house pairs pleasantly with an older one to its immediate left. But at closer range the new house's refinement of design is pronounced. Facing due west and clad in redwood siding painted white, the house is built in a hillside that rises from right to left as well as front to back. On the front elevation, the first two levels extend to the lot lines on both sides, forming a base from which the cinched-in upper two stories emerge. On the right side next to a vacant lot, the base steps up, expressing the house's vertical circulation as well as the natural slope; on the opposite side, a gate opens to a narrow walkway leading to the backyard. Utility meters are neatly concealed behind the gate.

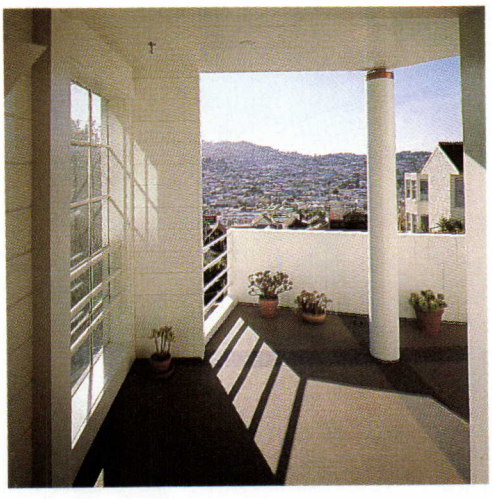
To enter the house, you climb stairs on a terraced bank and gain entry from a projecting porch over the garage. Characteristic of many houses in Bernal Heights and elsewhere in San Francisco, the entry is understated. This first floor of living space is functional, nicely detailed, but unexceptional in layout and tight in feeling.

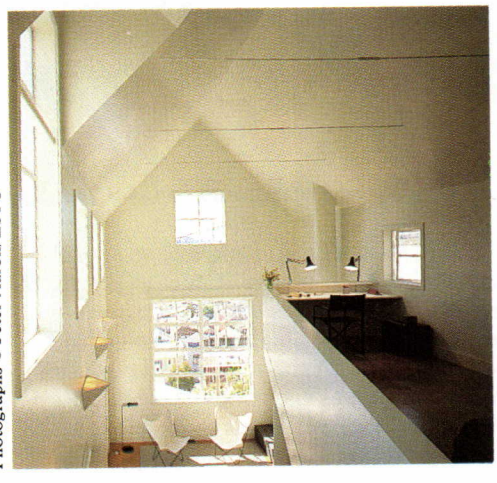
In sharp contrast, the loft room is a soaring and graceful 36x16-foot space of pristine whiteness. It rises 25 feet to a peaked ceiling crossed by six slender white tie rods that express the spare, taut character of the architecture. Ample daylight, pouring in from five windows positioned high on the long south elevation, reflects off the white walls and makes the room glow. Veverka says good cross-ventilation and San Francisco's reliable fog make sun control on these windows unnecessary.

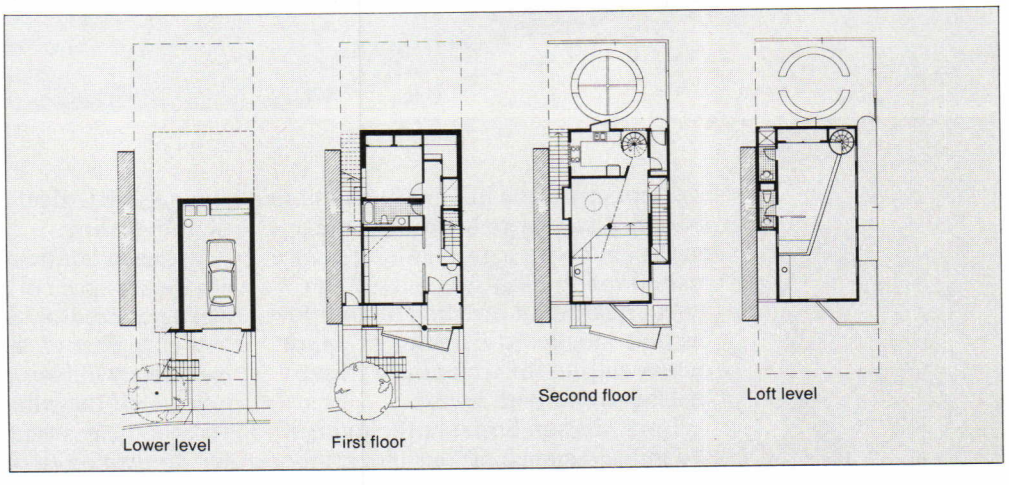
A metal stair at the southeast corner twirls up to the loft over the kitchen and dining space, and three steps descend to a sparsely furnished sitting area. A sculpted fireplace fills out the north wall; a little L-shaped porch wraps around the room's southwest corner above the front door. Through a big window, the view to the west—of houses stacked up the slopes of Twin Peaks and, when the fog lifts, of the distant south tower of Golden Gate Bridge—fills the west wall.

The house is polite and pristine yet neither sterile nor dull. It is a well-mannered good neighbor.—Allen Freeman

Above left, the house faces due west toward Twin Peaks. The site, next to a vacant lot soon to be built upon, is 25 feet wide and rises some 20 feet from the curb to the rear of its 70-foot depth. Above, steps climb a terrace in front of the house; the front door is slightly recessed behind a porch on the corner of the house. Far left, in twilight photograph the double-height interior space can be seen through the big west window.







Photographs © Peter Aaron/ESTO

Top left, the view from the front door. Above, a dormer interrupts cathedral ceiling on the south side of the house, and the loft along the north wall narrows toward the front. Top right, afternoon sun streams through west windows. Right, glass block window on the kitchen's north wall shields view of adjacent house. Facing page, from the west window toward the rear of the house. Walls are gypsumboard; floors throughout are cork. □

Fluid Path through Rainforest

Between a house and studio in Puerto Rico
George Warner, Cambridge, Mass.

Photographs © Ron Gregory

Located high in the rain forests of Puerto Rico where sudden storms often precipitate landslides, this footbridge is firmly rooted in its surroundings. Rather than punctuating the dense vegetation with one straight line, the structure accommodates the mountainous terrain and defers to the tropical landscape yet maintains its integrity as a series of distinct architectural elements that combine along a steeply sloping site.

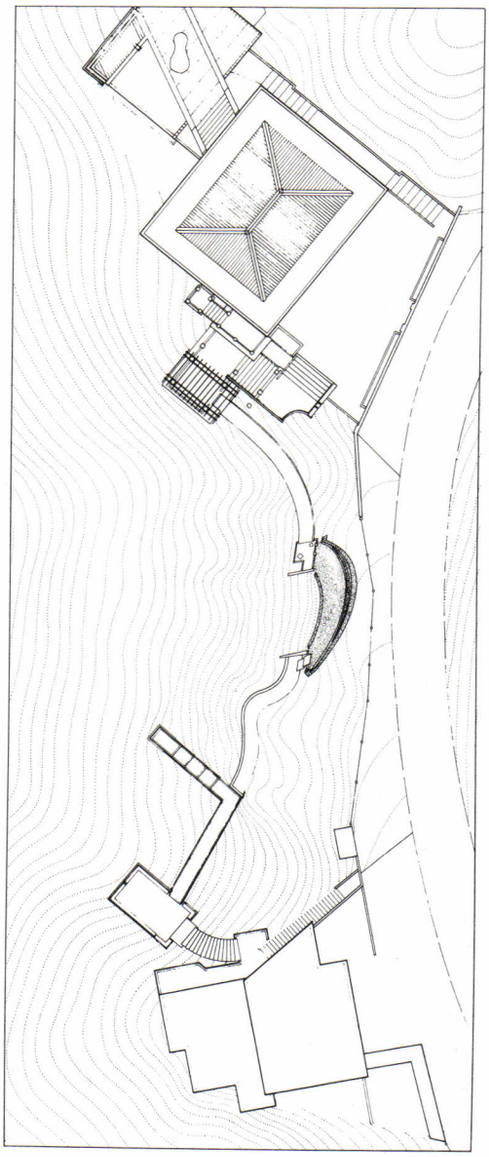
Architect George Warner designed the bridge in bits and pieces, each embedded in its immediate site by powerful stands of bamboo and dramatic landscapes. The intimate path ebbs and flows against the dense vegetation to prevent a complete view of the footbridge from any vantage point. It connects a main house and studio at the weekend retreat of the late Fred Mueller, who collected art and owned the Pace Gallery in New York City.

Warner, 30, is now employed by Graham Gund Architects of Cambridge, Mass., but was a student at Harvard University's graduate school of design when he received the bridge commission, which became the subject of his master's thesis. The design evolved in fragments: portions near the houses were erected before the middle sections were designed. Warner, who also served as contractor, lived in the studio house for the year and a half it took him and five unskilled laborers to build the bridge.

A platform extends from the main house, and there Warner created an outdoor room enclosed by ancient Indian sandstone screens from Mueller's collection. Steps turn and decend from this level to a wood-trellised pergola. Then the path travels down a long gentle curve to a stone wall, built with local materials, that pierces the mountainside in a banana-shaped arc. A waist-high projection from the backstop offers visual relief and a seating area that recedes into the wall at each end.

The path rises once again from its low stone wall in a series of curves to a stepped pier that looks out across the river valley to more mountains and down upon the coast of Puerto Rico. Steel railings reminiscent of Oriental screens protect the lookout. Farther up the path is another platform, with benches for quiet contemplation of a sculptural white *flamboyan* tree; beyond is the final ascent on the curved stairway to the studio.

With the exception of the banana wall, materials are mostly steel and concrete, in keeping with Puerto Rican construction practices. But, like the fluid forms of the jungle, the bridge's curving geometry celebrates nature.—Elena Marcheso Moreno



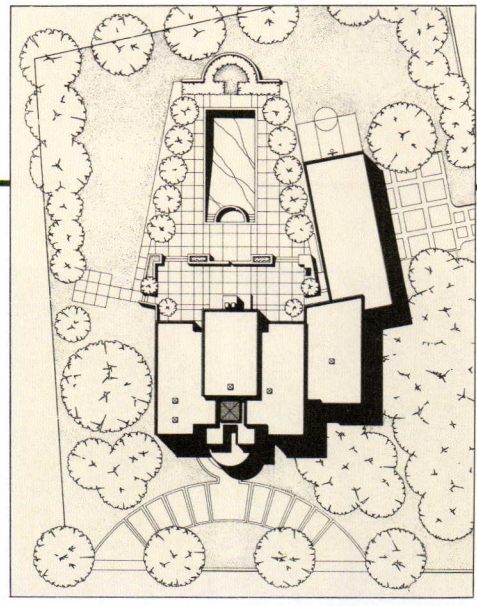
Facing page, the studio platform. From the corner of the main house (right) the bridge commences in a wood-trellised pergola. Above right, paths lead up from the stone wall to both houses. Top, a stepped pier provides dramatic views toward the mountains.

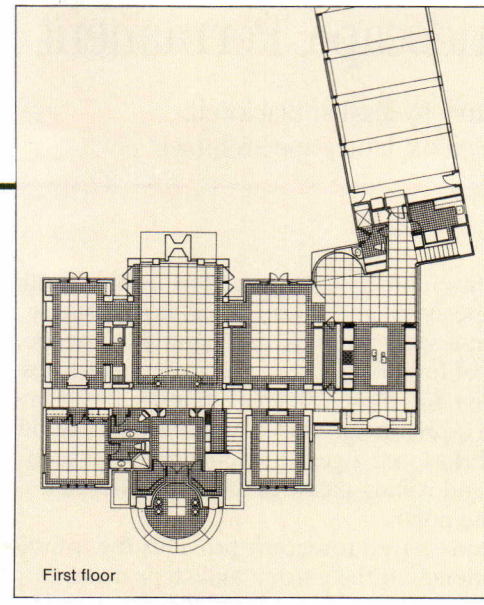
lene torch and burnished by hand.

Entertaining Spaces

Gersch residence, Hillsborough, Calif.
House & House Architects, San Francisco

Photographs © Gerald Ratto Photography





This classicist-inspired house in the affluent San Francisco suburb of Hillsborough works best as a setting for large social functions. At other times, when you can wander through its minimally furnished first-floor rooms, you may not particularly warm to it but you can appreciate the ingenious cost-saving approach of its architect, the young, four-person San Francisco firm of House & House. Stephen House, AIA, and Cathi House, the husband-and-wife team heading the office, now are designing a broad selection of other Bay area houses, none of which resembles this one. For this commission, completed in the summer of 1988, Cathi House was the design architect; Stephen House and James Cathcart worked as a project team. The clients, a husband and wife with two children, have entertained comfortably here with a sit-down dinner for 110.

The Gersch house faces an 80-year-old mansion—one of Hillsborough's nicer ones—across a short cul-de-sac. Symmetrical and axial in plan and formal in elevations, the new house suggests a moderne form of stripped classicism. Setbacks, niches, and deep vertical reveals segment the white stucco facades, and deep-set windows punctuate them. There is a three-foot-high base of split-faced limestone and a simple, stepped-out cornice.

A curved front portico sets off the main axis, a high chimney expresses the axis on the rear elevation, and the long swimming pool, flanked by landscaping that forces perspective, extends the sight line on this axis to the rear of the lot.

The gallery-like living room, rising 25 feet to a peaked ceiling and unfurnished except for a baby grand piano, is the house's major central space. Its gypsumboard wall surfaces are painted and textured to resemble stone. The walls themselves are thick, imparting a feeling of solidity and permanance, and the windows and doors are deep-set. Here and throughout the wood-frame house, the architects designed to use workers from less costly trades as much as possible, that is, to employ more framing carpenters and fewer finishing carpenters. They then selectively used some expensive materials, such as limestone for floors and columns. Impressively, this house was built in a costly labor market for only about $100 per square foot.—Allen Freeman

Facing page, the front (top) and rear elevations. Copper pyramid, the point of which is visible above the entrance, covers the foyer. In landscape plan, top, the house, on a corner lot, is oriented toward the quiet cul-de-sac while the garage faces the busier street. Above and left, opposing axial views of the living room.

Evolving Landscape, Permanent Pavilion

On an estate near Boston; by Marlon Blackwell, architect, and James Heroux, landscape architect

This garden ensemble by architect Marlon Blackwell and landscape architect James Heroux is a classicist response that respects the wild and natural landscape. A sequence of formal parterres, the garden alternates between open and closed spaces along an axis terminating with a pristine garden house. The setting on a 40-acre estate north of Boston is a gentle sloping ridge between a neo-Georgian house and rolling pastures and unadulterated low-lying wetlands to the north.

A rectangular, bluestone-paved forecourt provides the transition from the main residence to the garden and steps down to an oval sculpture courtyard. An arbor anchors the courtyard's opposite edge, through which you can descend the hill on a meandering path through woodlands to an old horse paddock.

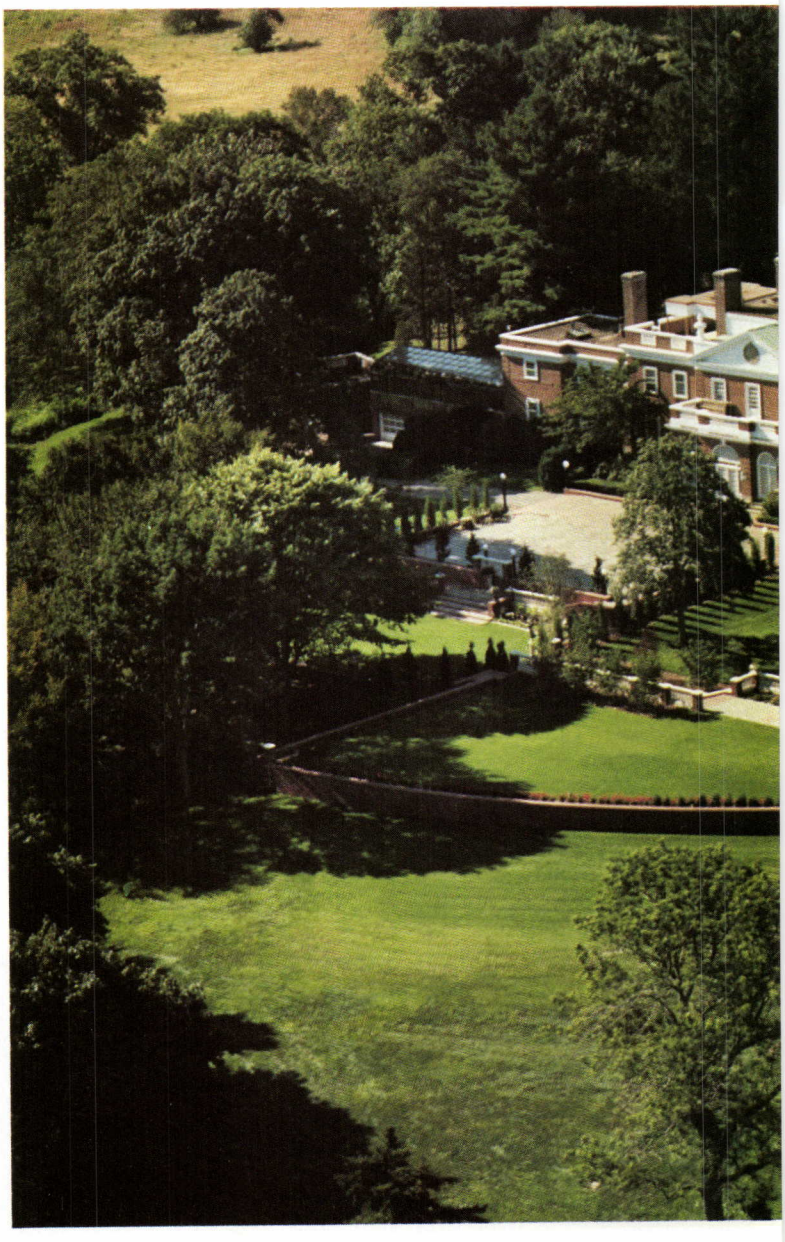
The arrangement of the garden, the antithesis of a maze, encourages exploration through openings in the walls and hedges away from its formal confines. Yet the open lawn areas in conjunction with the sheltered arbors provide a series of contrasts along the axis while framing the approach to the garden house.

A composition of simple geometrical forms, the garden house is set on a plinth and centered on axis. A glass cube 10 feet square intersects with the brick wall of the drum component and cantilevers over a reflecting pool, which repeats the circular and square forms. The brick rotunda component, crowned with a cone-shaped skylight, is interrupted by a second cube form pushed out the back elevation, making space for the fireplace.

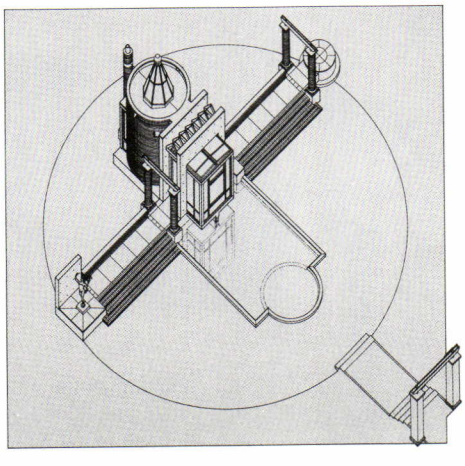
Blackwell and his client, Henry Audesse, fondly recall a pact they made during the construction. Blackwell agreed not to use what Audesse calls the "blasphemous term modern" in describing the structure as long as Audesse promised never to call it a gazebo.

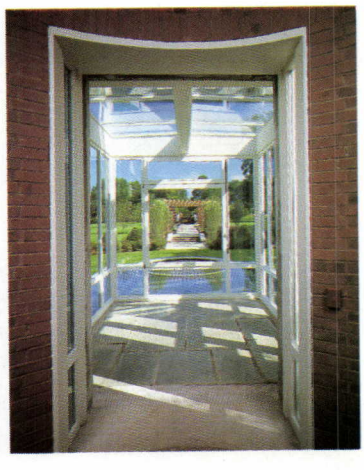
The garden is evolving as Audesse adds plants and the existing vegetation matures. But, no matter how this garden grows, the pavilion will remain Blackwell's small but serious exercise in architectural forms and an arresting landscape focus.

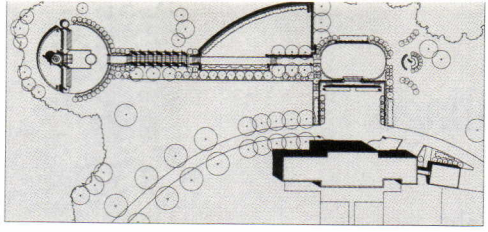
—Lynn Nesmith



Right, aerial of the Seven Pines estate; facing page below, garden house is balanced with a bronze statue of Mercury and an observation platform with a symbolic gateway to the wetlands beyond. Below, left, the brick rotunda with a hearth framed by windows; right, views out through the 'sun cube.'



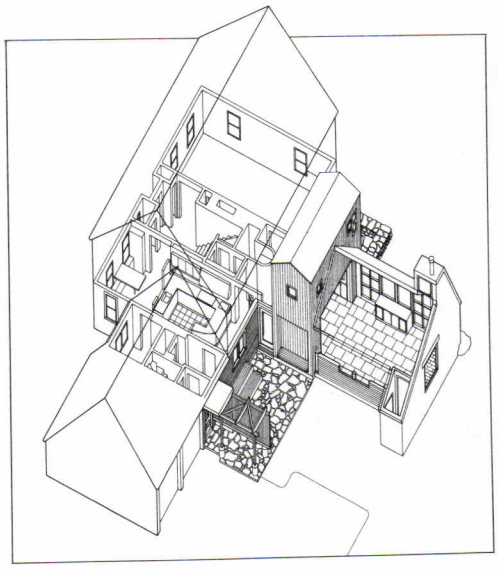


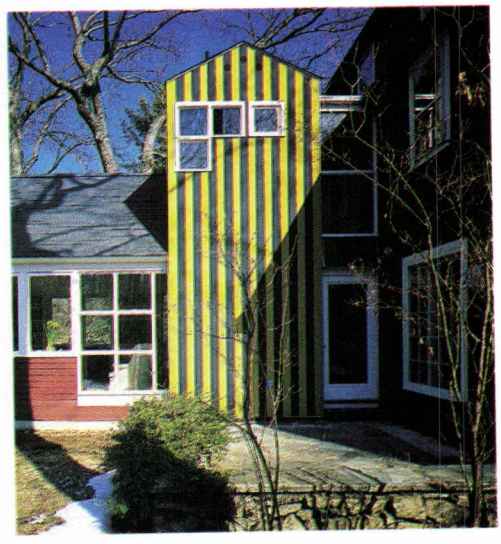


Photographs © Kevin A. Latady

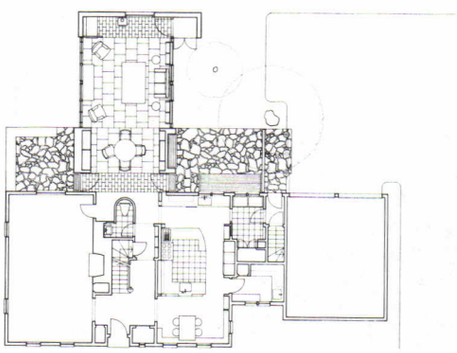
Integrating Appendage

Addition to a suburban Boston house
Stein & Associates, Cambridge, Mass.





Left, the new forms step away from a traditional one. Bottom, a glazed section separates the bold, striped, two-story component from the clapboard house. Below, the vertical massing and palette continue within. Right, light floods the new space.



First floor

The Cambridge, Mass., firm of Stein & Associates has assembled several discrete forms of contrasting colors and materials to define a new living space for the Bennett house in Chestnut Hill, Mass. Appropriately inspired by aggregate traditional New England farmhouses, Robert J. Stein, AIA, extended the 650-square-foot addition from the rear of the colonial-style house, creating a whole greater than the sum of its parts.

Sited near the front of a one-acre lot in the affluent Boston suburb, the barn-red clapboard house built in the 1930s offered its large and private backyard as the logical place for expansion. The sequence of spaces making up the addition begins with a narrow, glazed section whose opposing doors and slate floor establish a minor but useful cross axis.

Next is the most prominent component, the vertical two-story form executed in a black and yellow striped pattern both inside and out. A shallow gable parallel to that of the main house provides an intimate exterior scale for this component, which on the ground floor is the dining room. For the next space, the family room, Stein provided a cathedral ceiling and a wall of windows for abundant natural light. This section repeats the red clapboard siding and white-framed windows of the main house.

Anchoring the addition is another form clad in white brick. The rear wall is punctuated with a large window placed on axis with the entry foyer of the original house. The raised slate hearth along this wall incorporates an existing rock outcropping and flows into a built-in inglenook defined by an arced partition.

In the original house, Stein enlarged the kitchen and reoriented the first floor to respect the centered entry of colonial tradition. On the second floor, he tucked an expanded master bath and laundry room within the striped element, a use reinforcing this section's reference to an Aldo Rossi bath house.

An appendage completely different in character from the original, Stein's addition nevertheless complements its elder companion while integrating the various parts into a functioning whole.—Lynn Nesmith

Referential, Spacious, Tightly Wrapped

A Kitchen with Character

A Sphinx and a Former Factory

House at Stinson Beach; Hollis Street Project
Banta/Collins, Emeryville, Calif.

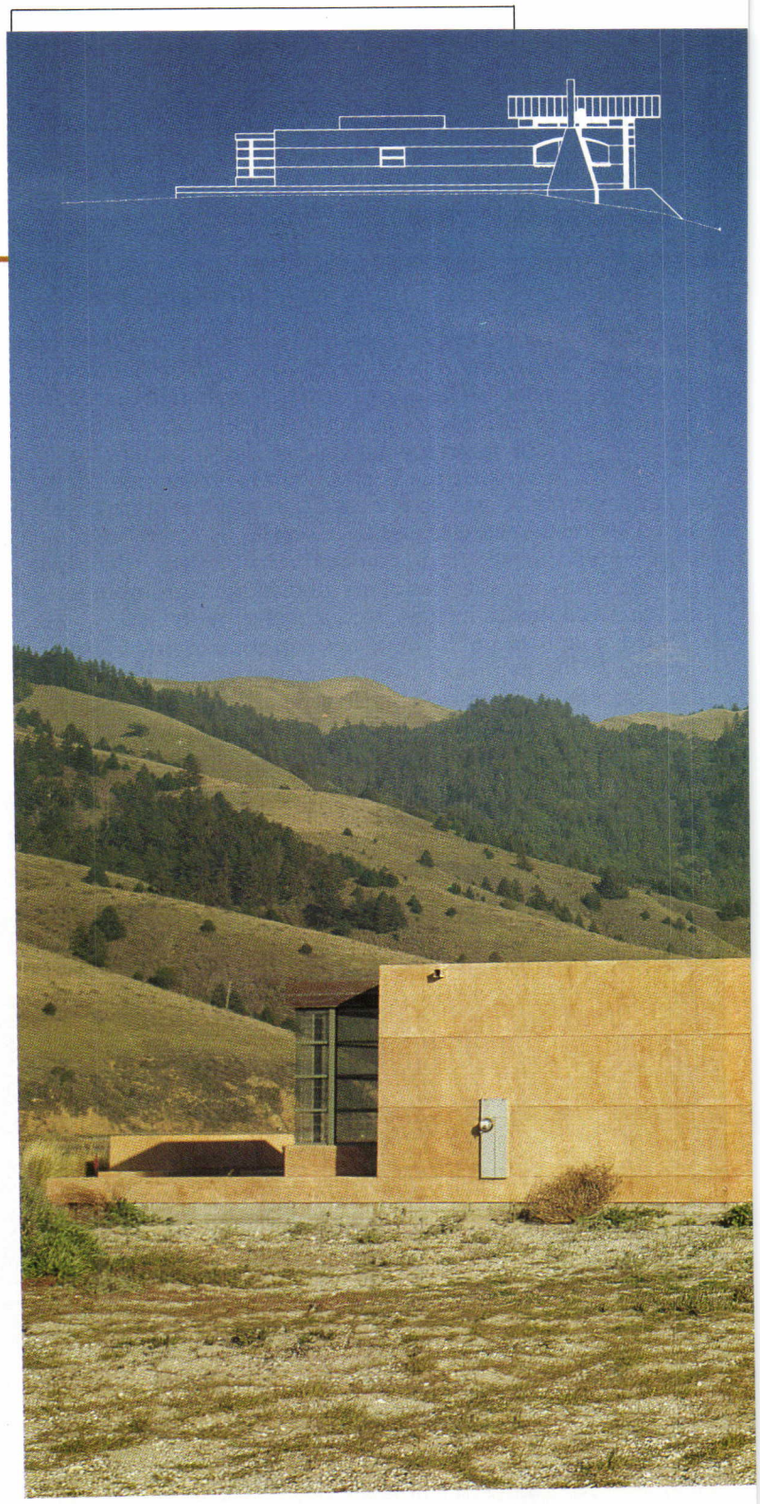
The beach house at right and the converted factory on the following pages are works of an unconventional year-old professional partnership, Banta/Collins, in the small, Bay area industrial city of Emeryville, Calif. Philip Banta, AIA, is a 39-year-old Harvard- and Berkeley-educated architect who previously worked for SOM and ELS Design Group; Francis Collins is a builder-developer who was trained as an artist. As Banta explains the working relationship, he runs the firm, which consists of one other registered architect and three graduate architects, and Collins brings in much of the work and is an active participant in the design process.

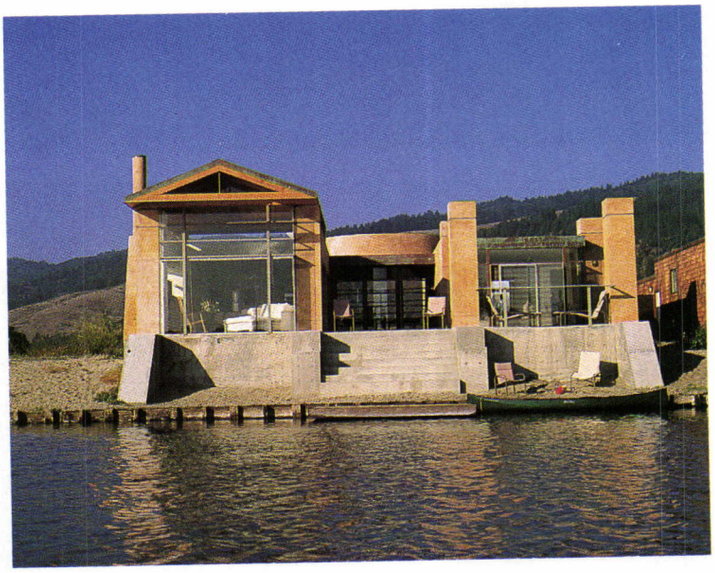
For this house at Stinson Beach, Calif., just north of San Francisco, Collins, with a family of five, was both client and builder. The photographs artfully disguise the fact that the house fits snugly on a narrow lot in a beach-house row. Clinging to a canal, its foundation grabs the narrow sandy beach with four concrete, sphinxlike paws. Steps down to the beach between the inner paws and a pediment over an end bay, one of three, make the little house into an oddly asymmetrical waterside temple.

The plan is an H whose parallel wings (one of which is truncated) are joined by a central rotunda. The long outer walls of the H are stucco with little window penetration, providing privacy from close neighbors. (The west elevation at right was photographed across a still-vacant lot.) Framed in steel, the rotunda's curved glass windows and doors allow views and breezes through the house from front to back. The narrow end elevations and the walls facing inward are glassy as well. The rotunda is a generously sized and welcoming entry foyer and connector between the sleeping wing on the east side (three bedrooms and two baths) and the west wing, comprising a kitchen and dining area flanked by sitting rooms at the wing's ends.

Interiors are bright, pleasant, and durable. The small living room especially seems designed around the views—of the canal through a wraparound window wall with butt-glazed corners, of the other wing of the house across the grassy court through sliding doors, and of the western sky through a broadly arched window above the fireplace (photo on next spread). You settle in comfortably and soon appreciate the way sunlight animates the space.

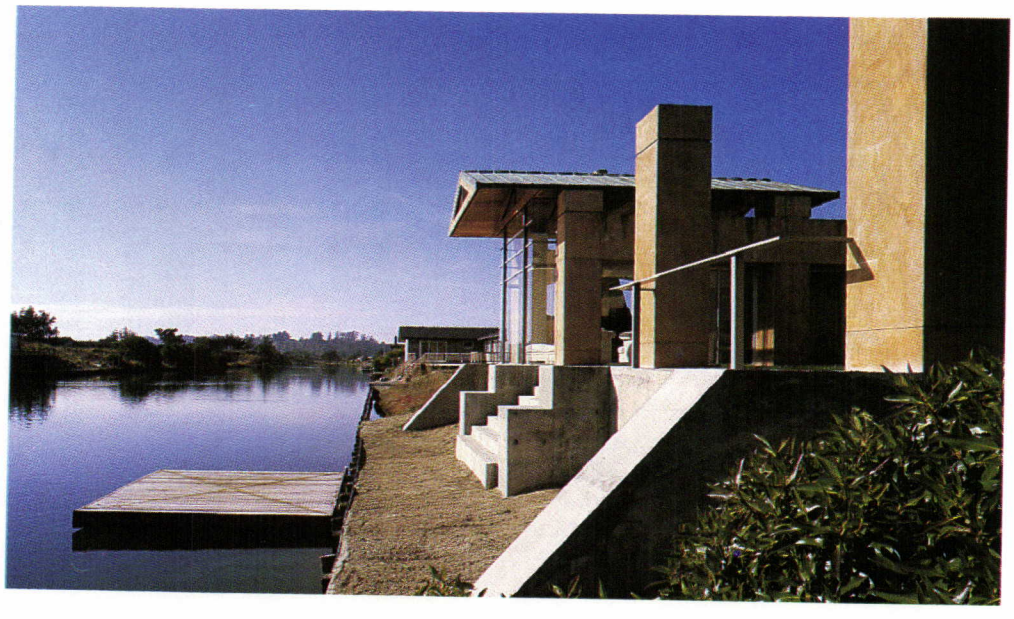
While the exterior seems introverted, formal, somewhat mysterious, interiors are open, casual, and welcoming. Contradictions make the house all the more interesting.

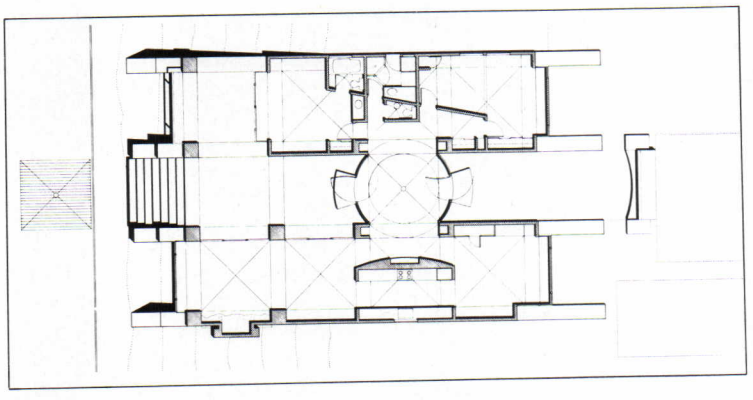




Photographs © Andrew McKinney

Above, the western elevation. The entry rotunda protrudes above the flat roof. Gabled roof over clerestory defines the living room. Glazed bays extend from north and south ends of house. Left, the view from across the canal. Right, columns intended to support roof over patio outside master bedroom were left freestanding when roof was dropped from the design.



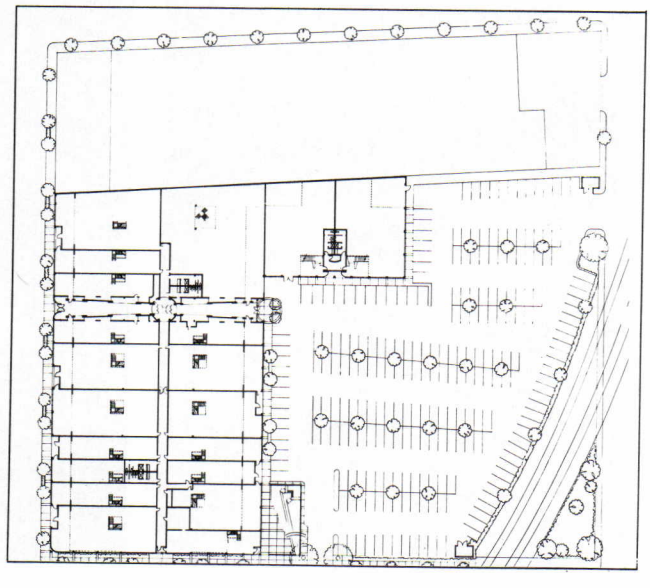


Above, the living room's deep bay, facing the canal, has butt-glazed corners. Window over fireplace faces west. Right, the rotunda through open front door in view toward the canal. Floors throughout the house are sealed concrete.

Photographs © Andrew McKinney

The rotunda above is the pivot within Banta/Collins's renovated 1916 International-Harvester truck factory in Emeryville. The Hollis Street Project, as it is now called (exterior photo, overleaf), provides 20 suites of well-designed, relatively inexpensive space for young entrepreneurial companies. Tenants include an audiovisual presentation firm, an asbestos testing laboratory, and a restaurant. Banta describes the building as an "efficient glass engine for office workers."

The architects stripped the building to its bones (concrete columns, steel trusses, wood-plank roof), inserted a second level, which required new foundation work, and replaced the original metal-sash windows and brick knee wall with wood-sash windows fabricated on the site and a stucco knee wall. By structural necessity, they preserved many horizontal and vertical X-braces used for shear, exposing and exploiting them. Banta/Collins also drew from the area's artists and artisans, as shown by the bold artwork above. The interior spaces are bold but comfortable and anything but corporate-slick.—Allen Freeman



Below, exterior photos show Banta/ Collins's new window/knee-wall system on the Hollis Street Project. The main entrance and building corners are expressed with towers that bring daylight into the building and become beacons at night. Right, a typical interior space where original exterior metal sashes were reused to enclose a second-story conference room. Facing page, the new restaurant fits into a corner space. □

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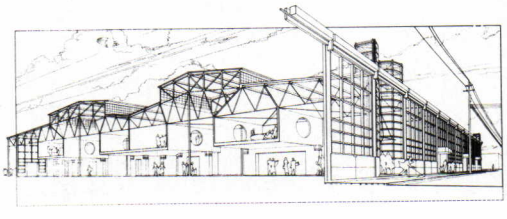

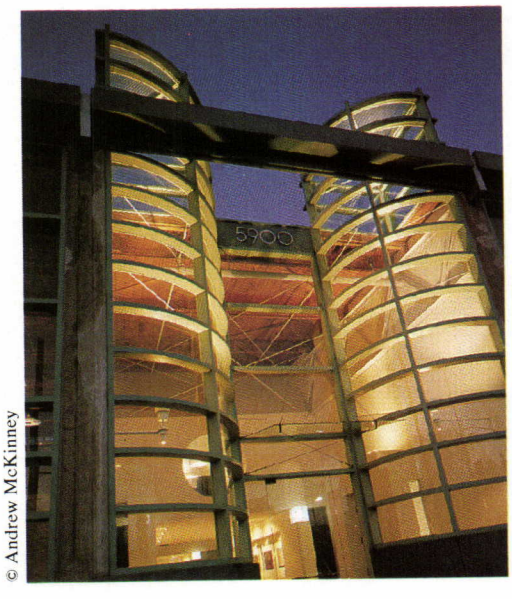

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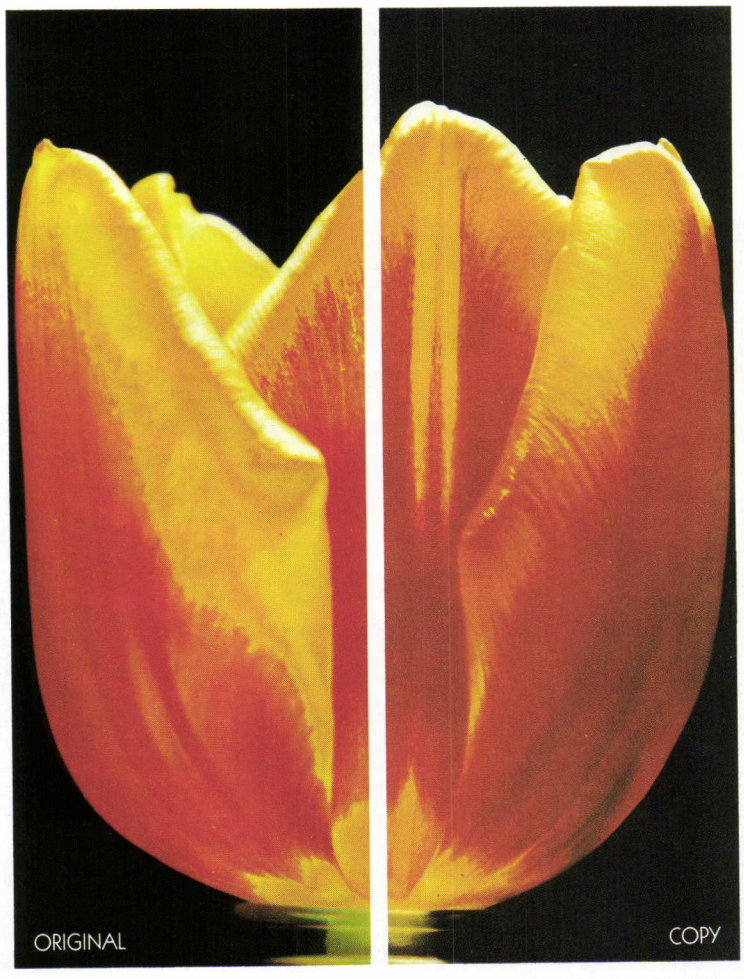

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Mission To Armenia

After earthquake, U.S. and Soviet architects collaborate.
By Christopher Arnold, AIA

Chris Arnold

The 1988 earthquake destroyed Spitak and took 9,000 lives in the small town.

One Friday evening in late March of this year, seven American architects could be found in a high-ceilinged room of a converted mansion on a main street of Yerevan, the capital city of Soviet Armenia. They were engaged in the familiar last throes of preparing for a design review: perched on ladders, searching for pins and Scotch tape, adding last-minute touches.

In ones and twos an audience assembled. The leader of the team began a presentation, an interpreter at his side. The audience of architects and officials listened intently; at the end, there were applause and questions. An Armenian architect, director of a state architectural design office that was workplace for some 200 architects, and in whose office the American team had worked, rose to respond to the American presentation. "In a very short time," he said, "they have understood our problem. They have a feeling for our city and they have created its architectural face. And I must tell you that I have watched seven architects work as one man."

After his words, other officials spoke. The chief architect for the state construction agency charged with executing the work promised implementation of the ideas presented. An architect from Moscow, in charge of the entire reconstruction planning, praised the work in idiomatic English, saying, "This was the first group of visitors that, besides concern, brought also their pencils, pens, and minds, and created designs for us."

This American team had just spent a week on the design of the new city of Spitak in Soviet Armenia, a project to replace a city wiped out in the devastating earthquake of four months prior. This Friday evening presentation to the Armenian Architects' Union marked the end of the first collaborative planning project in history between American and Soviet architects and planners. This is the story of that collaboration: how it originated, how it was organized, how it took place, and what it produced.

On Dec. 7, 1988, beginning at 11:41 a.m., two earthquakes, four minutes apart, struck northern Armenia. The Armenian Socialist Soviet Republic borders on Turkey and Iran as well as on the neighboring Soviet republics of Georgia and Azerbaidzhan. The first earthquake was 6.9 on the Richter scale, the aftershock 5.8. For comparison, the 1971 San Fernando earthquake was 6.9, the Whittier earthquake was 6.1, and the 1985 Mexico City earthquake was 8.2. (The scale is logarithmic: each point represents a tenfold increase in intensity and a 30-fold increase in energy release. A 7.9 earthquake has approximately 1,000 times the energy release of a 5.9 earthquake.)

In seismic terms, the Armenia earthquakes were moderate to large; they were not like the great earthquake of San Francisco (8.3) or New Madrid, Mo. (8.2). However, the devastation in the 400-square-kilometer (150-square-mile) epicentral region was severe. Officially recorded deaths numbered more than 25,000, but the final count may be twice that number. Nearly 20,000 people were injured, and 500,000 were left homeless and relocated to other areas of Armenia and to other cities in the Soviet Union, including Moscow, 1,200 miles distant.

Armenia's second-largest city, Leninakan, with 239,000 inhabitants, suffered 80 percent damage or destruction. Kirovakan, the republic's third-largest city with 150,000 inhabitants, suffered 25 percent damage or destruction. The smaller industrial city of Spitak, population 22,000, was destroyed and about 9,000 lives were lost there. Nearly 20 smaller towns were heavily damaged; and 500 villages were damaged and 100 of those were destroyed. In all, direct property losses were estimated at more than $15 billion. To this must be added losses from business interruptions and the closing of a nearby nuclear power plant that was not damaged in the earthquake. The human losses were incalculable; tens of thousands of surviving families will be marked forever by the death of parents, children, relatives, and friends.

Almost all the casualties occurred in buildings that suffered complete or partial collapse, and for the most part these were buildings constructed after World War II. Precast concrete frame buildings constructed after 1970 were particularly vulnerable. The causes of the poor performance of these buildings have received much engineering analysis, and there is general agreement that the problems lie in the use of some poor concepts combined with inadequate quality control at the building site.

The Soviet design and construction process is highly centralized: many standard plans emanate from Moscow. These plans, in theory, are modified to suit special conditions such as environmental or seismic requirements occurring in certain regions of the Soviet Union. Armenian buildings supposedly were designed to seismic code criteria for a level of strength that was, in fact, only about one-half to one-quarter that of the earthquakes.

Mr. Arnold, a noted architect and seismic researcher, is a principal of Building Systems Development, Inc. in San Mateo, Ca. He is a frequent contributor to this magazine.

ARCHITECTURE/OCTOBER 1989 101

Chris Arnold

'Every member of this team has a very rich soul, and is a wonderful artist. Their team is very powerful.'

tion have not yet left their marks on the Soviet Union. The Russian planner, unable to travel like his Western counterpart and denied easy access to international professional literature that chronicles these developments, has continued along a line of planning development that was essentially discarded in the West some 20 years ago.

In essence, the Russian post-earthquake decision is as dramatic a change as would be a decision in San Francisco or Los Angeles to develop future suburbs only as high-rise housing. In shifting to a low-rise building environment for the new cities of Armenia, the Russian planners were stranded with no viable models and no time to develop them. One of the characteristics of post-disaster planning is to throw the planner back on his or her available resources—there is no time for study tours of new planning developments, literature searches, and symposia out of which appropriate planning models can be developed. So, the Russian planners in Armenia tended to continue a tradition of geometric patterns of freestanding buildings, closely spaced to be sure, but still occupying the space rather than creating it. It was this style of planning that we saw in the design for Spitak and, even more clearly, in the large model of the Russian plan for Leninakan that the city architect showed us.

The Russian decision to restrict building height fit with our own concept of appropriate form for the new city. Walking the streets of Yerevan we found a strong tradition of two- and three-story architecture, simple but inventive street facades constructed of the warm Armenian tufa stone, interior private courtyards, and wide streets that were lively with pedestrians, sidewalk cafes, and basement bars. Traditional city planning elements punctuated the grid. An attractive crescent appealed to us, as did the great oval plaza on which our hotel was situated, sharing its oversized statue of Lenin with a fine collection of tufa-faced public buildings dating from the 1930s to 1950s. We went back to these forms in our design and tried to create a downtown Spitak that would have the charm and liveliness that we could see still existing in parts of Yerevan.

For New Spitak, then, we designed a main street that would be shared by pedestrians and light traffic. The street was punctuated on one side by a crescent with restaurants, cafes, and a movie theater and on the other by the main market. A large plaza accommodated major public buildings and offered a vista leading to the church on the hill, as proposed in the Russian plan. High-density, low-rise housing occupied the central part of town, with the densities decreasing to single-family houses in the foothills. Elementary schools were interspersed amid the housing. The city was approached, as in the Russian plan, by an access road from a new freeway that ran though a light industrial area and passed a lake. A large sports center, a typical feature of Russian town planning, bordered the lake. Bypasses enabled the downtown area to be skirted, and many of the major institutions were dispersed along a main road that borders on the perimeter of the downtown area.

The Russian plan was exquisitely drawn, but to small scale; its individual buildings were represented by white blocks. Their design was not developed because, with the exception of major public buildings that would be designed, almost all buildings would be built from standard plans. We developed our plans in detail for key areas such as the market, the main square, and the housing blocks, and Hasselman produced six sheets of sketches that showed the proposed architectural character of the whole scheme. These sketches, borrowing judiciously from architectural themes observed throughout Yerevan, were most forceful in translating the diagrammatic plans into powerful architectural and cultural statements. For example, the Armenian lettering on the fountain in the main square was contributed by Pogosian and took the form of the first few lines of a well-known Armenian epic poem on freedom. The Armenians are quite proud of their distinct culture, and the Armenian flag is displayed prominently in our drawings.

Following Pogosian's strong support for the ideas our plan presented, responsible officials, both Armenian and Russian, promised to try to implement its concepts. In one week we had come much further than we had expected. To what extent our ideas might be implemented was impossible to tell, but the reception went well beyond polite acceptance. The next day our hosts took us on a tour of the early church architecture around Yerevan. That night we flew back to Moscow and two days later returned home.

Much human and professional detail must be left out of this short account. The great hospitality of the Armenians at all levels and the friendly, professional cooperation of the Russian planners sharing their programs and plans augurs well for further cooperation. We left all our supplies behind because the Armenian offices were woefully short of drafting equipment, and we wooed our Russian friends with the high technology of electric pencil sharpeners.

We came away convinced that under the right conditions an experienced architectural post-disaster task force can make a significant contribution. In this instance, however, timing was everything. Had we been there a week or so earlier, the urban design problems identified by the Armenians would not have surfaced so clearly; a week later, all the decisions would have been made. We might have implemented other parts of our proposed program, but the force of what we did for Spitak would not have been possible.

Such a situation demands an experienced team with members accustomed to travel, able to improvise, willing to play many roles, sensitive to unusual political and social situations, and willing to put the needs of the team ahead of personal predilections. As Odermatt said, "We left our egos at the airport." This may sound obvious, but when these criteria are met, as they were in abundance by this team, the results can be wonderful—a few weeks' work that we all will recall with pleasure for the rest of our professional lives. We will remember Pogosian' words: "Every member of this team has a very rich soul, and is a wonderful artist. Their team is very powerful." □


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(MIT Press, 1960). Because most buildings, like the cities Lynch studied, cannot be perceived in their entirety from any one location at one time, effective wayfinding requires that a person know the locations of places now out of sight and how to get to them. In short, wayfinding is a cognitive as well as a perceptual task. It depends on what one knows of an environment as well as what one sees.

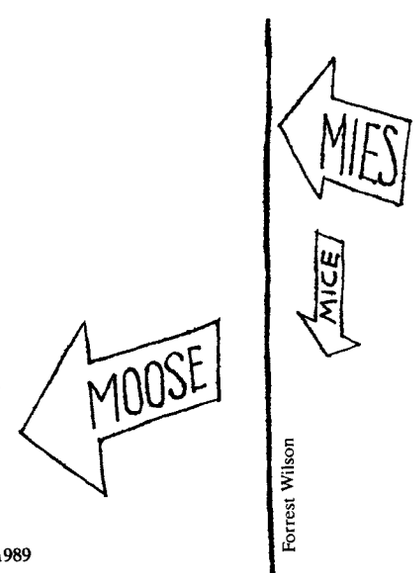
Thinking of wayfinding as cognitive as well as perceptual broadens our understanding of the kinds of information that an environment might usefully provide. Such information can be divided into four categories: (1) signs and numbers, (2) architectural differentiation, (3) perceptual access, and (4) plan configuration. Most buildings, of course, have multiple categories of information; thus attention must be given to both graphic and architectural variables and the ways they relate to and can reinforce one another.

Signs and numbers. These are the most common and conscious forms of information for wayfinding in the architectural environment. While signs can facilitate both wayfinding and a sense of comfort and confidence, they are not without their limits. Particularly in buildings with exceedingly complex floor plans, it may not be possible—no matter how many signs are used—to achieve wayfinding performance as good as that in simpler buildings without any signage whatsoever. Furthermore, too many signs, or an effort to convey too much information on any one sign, can contribute to information overload for building users. In *Wayfinding in Architecture* (Van Nostrand Reinhold, 1984), R. Passini emphasizes how important it is that building users be able to take in information from signs at a glance.

Architectural differentiation. For many building users, wayfinding is facilitated primarily by elements other than formal signage systems. In this author's study of a nursing home, more than three-fourths of the aids to orientation mentioned by residents were not signs but rather distinctive elements within the environment, such as plants, a grandfather clock, or the elevator. Such features served to differentiate one space and corridor from another and thus to facilitate wayfinding.

Perceptual access. Where it is possible to see through or out of a building—as with an atrium or open gallery—wayfinding is simplified. It is not necessary to construct a cognitive map of a building if desired destinations are within one's field of vision. Similarly, views to the exterior from key decision points such as corridor intersections and elevator lobbies permit identification of one's present location by relating it to landmarks in the larger environment.

Plan configuration. Research suggests that it is far easier to find one's way in some buildings than in others. What often differentiates more legible buildings from those that thwart effective wayfinding is the configuration of their floor plans. In general, it appears that legibility is enhanced and wayfinding is facilitated when building plan configurations can be visualized easily and described readily. One can think, for example, of L-, T-, or I-shaped buildings. Right-angle corridor intersections are more readily noted and remembered than are oblique relationships. Clarity of plan configuration is most important when an environment provides only limited information through signs, differentiation, or access.



Assessing architectural legibility

In summary, the design of more legible settings involves providing and systematically organizing complementary forms of environmental information. No single aid to wayfinding is likely to solve the problem. Indeed, the boundaries quickly blur between forms of information that might be viewed as solely graphic or as architectural in character. Both must be considered in concert and in the context of the wayfinding process. Research has clearly demonstrated that signs can rarely if ever solve problems created by an illegible and confusing building.

While it is neither possible nor desirable to formulate definitive answers to all wayfinding problems, one can assess the legibility of proposed or existing environments. The following questions for design review can both heighten awareness of potential problems and suggest possible directions for enhancing architectural legibility.

- Does the building possess some correspondence between exterior and interior? Are primary entries and destinations apparent? Is the visual access provided from exterior to interior?
- Are views to the exterior provided at key decision points such as corridor intersections? Are primary destinations within the building made visible through an atrium or open gallery?
- Does the building provide clear identification of regions (such as wings or organizational departments)?
- Do architectural features (such as artwork, lighting, color, and finishes) reinforce signage in the identification of key locations?
- Are long, unbroken corridors with many identical elements along their length (such as office doors) kept to a minimum?
- Is the plan of the building one that can be visualized and described readily (such I-, T-, and L-shaped plans)? Are corridor intersections at right angles rather than oblique angles?
- Are key services and amenities (such as elevator lobbies) placed at distinctive locations, such as the intersection of major corridors?
- Is the signage system treated as supplemental rather than the primary form of wayfinding information?
- Is information on signs presented in manageable chunks? Is information prioritized in terms of importance? Are all signs treated as components of a system with consistency in design and placement? Do signs recognize the potential for first-time or non-English-speaking users?
- Are directories and "you are here" maps located in highly visible places and oriented to correspond to the environment they represent (for instance, north to the top and straight ahead)? Is typography large enough to be legible? Is the user's present location clearly indicated? Can users access map or directory information in multiple ways (for example, by store name, category of merchandise, and location)?

It must be recognized that a legible environment is by no means a boring one. Quite the contrary, it is often the simplest of settings—such as institutional buildings that provide little or no environmental information—that cause the greatest problems in wayfinding. Legible buildings, much like the most satisfying of the cities Lynch studied, can be rich and complex within a comprehensible structure. Well designed environments can and should support stimulation and exploration as well as orientation. □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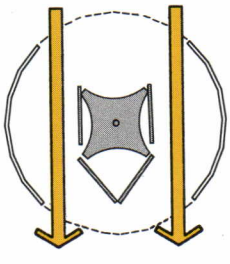
Normal stopped position shown. During rotation, wings are always in contact.



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Designing Cues for Wanderers

Special needs in nursing homes. By Margaret Calkins

Demographic trends are directing a good deal of attention to the environmental needs of the elderly, both in residential and long-term care facilities. This, in turn, has led to greater interest in approaches to designing environments for people with dementia, particularly in long-term care settings.

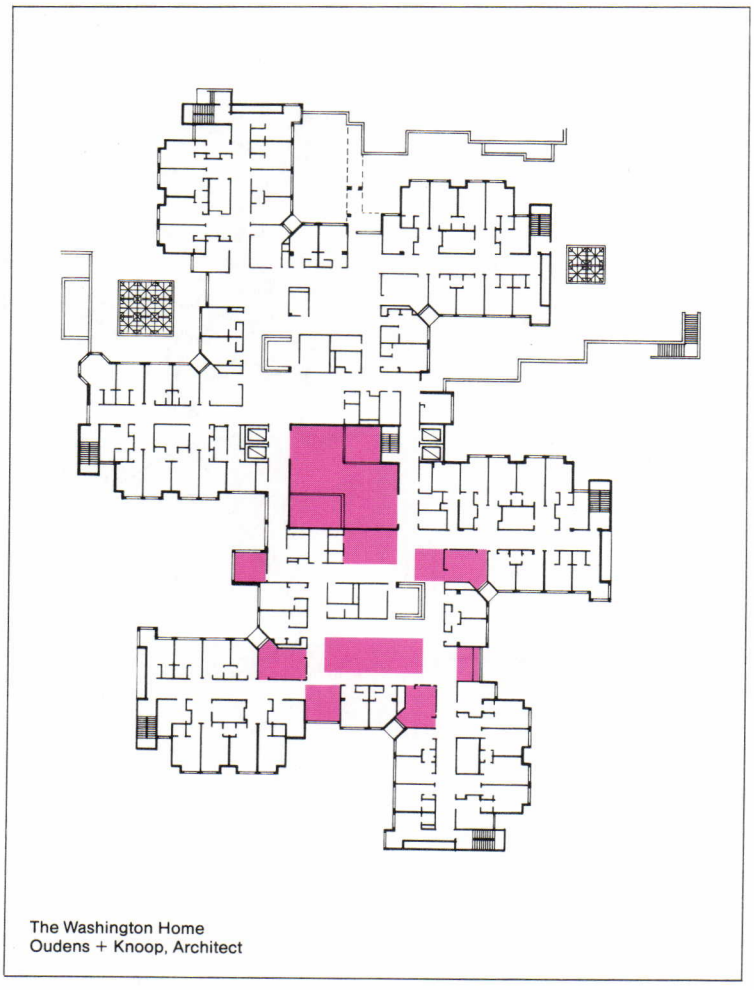
It has been estimated that more than half of the residents in nursing homes suffer from Alzheimer's disease or a related dementia. Dementia is not a disease; it is a group of symptoms that include, among others, memory loss, confusion, impaired judgment, and reduced reasoning capacity. The person with dementia also may experience personality and behavior changes and have difficulty finding words, finishing thoughts, performing simple activities such as dressing, or following directions. There are more than 100 types of dementia—many of which are treatable—but the most common is Alzheimer's disease, a progressive, degenerative form of dementia. There is, at the present time, no definitive positive diagnosis for Alzheimer's disease. And, while the various forms of dementia differ, they also are similar in many respects. Therefore, the acronym ARD often is used to refer to Alzheimer's and related dementias.

Some people have questioned the need to examine environments for dementia patients. They suggest that there are other groups—the cognitively intact but frail elderly, for instance—who could benefit more from environmental interventions. Although such groups deserve as much attention as the dementia patients, there are also compelling reasons to examine the environmental needs of the cognitively impaired.

M.P. Lawton and L. Hahemow suggested in their 1973 book *In Psychology of the Aging Process,* that, "as individual competence decreases, the environment assumes increasing importance in determining well-being. One corollary of this hypothesis is that the low-competent are increasingly sensitive to noxious environments. The opposite, more positive corollary is that small environmental change may produce a disproportionate amount of improvement in effect or behavior in the low-competent individual." As people with progressive dementia gradually become less competent, according to this model, they may benefit more from environmental modifications. We also stand to learn more about the needs of the cognitively intact elderly.

Wandering behavior is a common symptom of ARD. *Nursing Home Security and Safety Management* magazine estimated in 1984 that a wandering resident may cost a long-term care facility up to $2,000 per year in extra staff time spent supervising, searching for, and retrieving a wanderer. In an average nursing home of 100 beds, there may be 10 wandering residents, costing an extra $20,000 per year. This figure is likely to rise as the percentage of confused and wandering residents increases in proportion to the number who are cognitively intact but frail or nonambulatory.

Historically, the most common means of coping with wandering was to restrain the resident, through either chemical or physical means. This was regarded as saving time, freeing staff to care for the other residents. And restraints kept the wanderers safe, thus ensuring that the facility would meet its legal responsibility to protect its residents. However, codes usually require that anyone who is physically restrained be released and exercised every two hours. Moreover, some staff believed that the chemical restraints most frequently used were causing more behavioral problems than they solved.

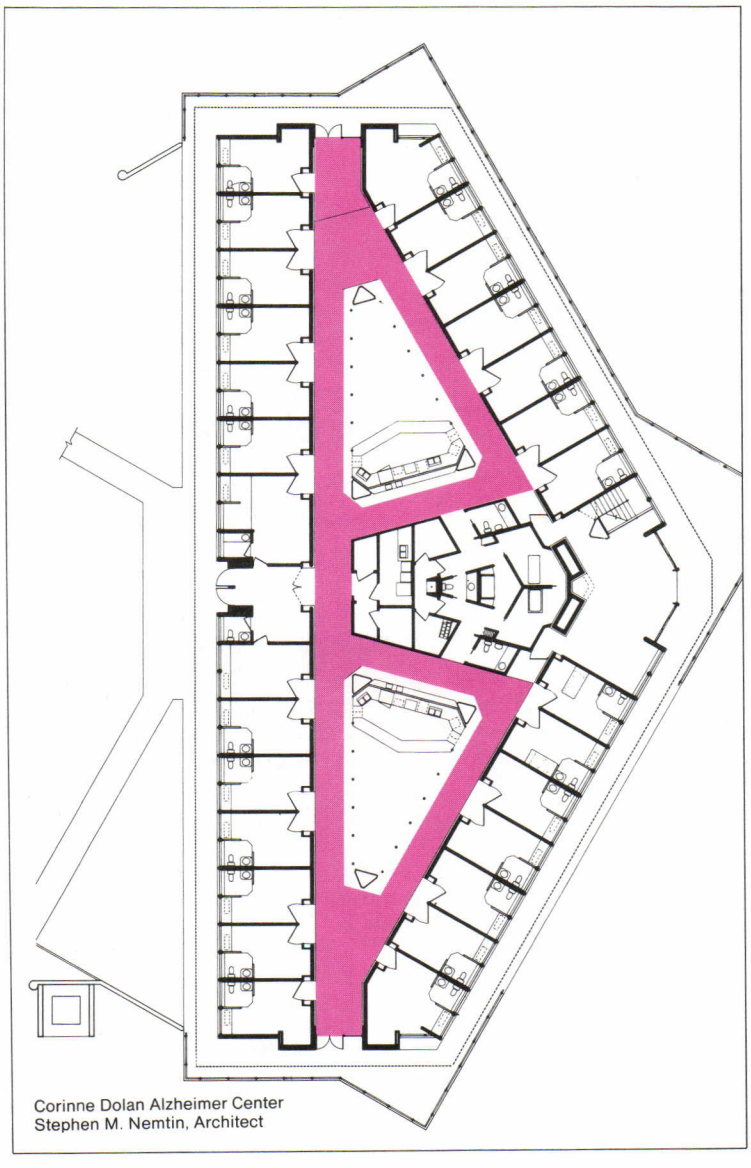


The Washington Home
Oudens + Knoop, Architect

The surge of interest in ARD over the last 10 years has increased substantially our understanding of the complex behavioral manifestations of dementia. Wandering need not be seen in a purely negative light. It has many benefits: it provides exercise, it allows residents to maintain some sense of independence and control over their lives, and it can enable the residents to experience a greater variety of spaces, which may relieve some of the monotony of being in a single, somewhat restrictive environment.

Wandering is not a simple behavior. It may reflect any number of different needs of the resident. A wanderer may be search-

Ms. Calkins, author of Design for Dementia *(National Health Publishing, 1988), currently is conducting environmental research at the newly opened Corinne Dolan Alzheimers Center.*



Corinne Dolan Alzheimer Center
Stephen M. Nemtin, Architect

ing for something unattainable, such as mother or home (possibly even a childhood home), or it may be that the wanderer cannot find his or her room among 20 identical bedroom doors. Wandering may develop in response to boredom or a desire to do something useful. ("I need to make dinner for my family" might be an explanation for wandering.) A wandering resident may be trying to escape from an overly stimulating environment or may simply be seeking physical activity.

All these needs can be met at least partially through an appropriately designed environment. The traditional nursing home design—with a long, double-loaded corridor and a nursing station in the middle with a view into the dayroom—will not therapeutically support wandering. Staff sitting behind a nursing station may not be able to see the residents at the ends of the corridor, and a chronic wanderer may be frustrated by confronting a dead end every time he or she walks down the hall.

A design that features a never-ending corridor allows a wanderer to walk without continually encountering barriers. If the corridor is arranged so that staff members have visual access along the entire path, they will feel more comfortable about giving wandering residents the freedom to move about.

When new construction is not feasible and the existing building cannot be modified to provide a continuous corridor, locating activity rooms at the end of the hallway decreases the dead-end feeling of the wandering path and provides the wanderer the option of joining a social activity.

Since overstimulation can be a problem too, the provision of a variety of smaller, more private social or visiting areas may decrease the chances that residents may be overwhelmed. The designer can introduce fresh air, the sounds of nature, and small nooks by making the wandering path lead to an outdoor courtyard. Bird feeders and raised garden planters encourage activity among wanderers (but all vegetation must be nontoxic). Nooks add sensory stimulation and relieve boredom for residents. A window seat that looks out over a scenic view or has a bird feeder hanging outside can be a pleasant change from watching the staff and other residents.

Tactile wall hangings that invite residents to touch and manipulate them provide an activity that does not need to be directed by staff. In a similar vein, staff at one facility with 13-foot-wide corridors turned a dead-end corridor into a bowling alley. Tape on the floor defined the lane, and plastic pins and a rubber ball were on hand all the time so the residents could bowl whenever they wished. With some staff direction in the beginning, the residents were able to recall this familiar activity, and soon they were bowling on their own.

When wandering is a result of disorientation, there is a need to increase wayfinding cues within the environment. Traditional signage may not be appropriate, as these residents may not be able to read or to understand what they read. The more abstract the graphic, the less likely residents will understand it. The designer should look for methods of repeating the same information in several ways and of stimulating more than one sense by using tactile and olfactory orientation cues when possible. In signage for bedrooms, the cue can be personalized with something from a resident's past to which he or she relates.

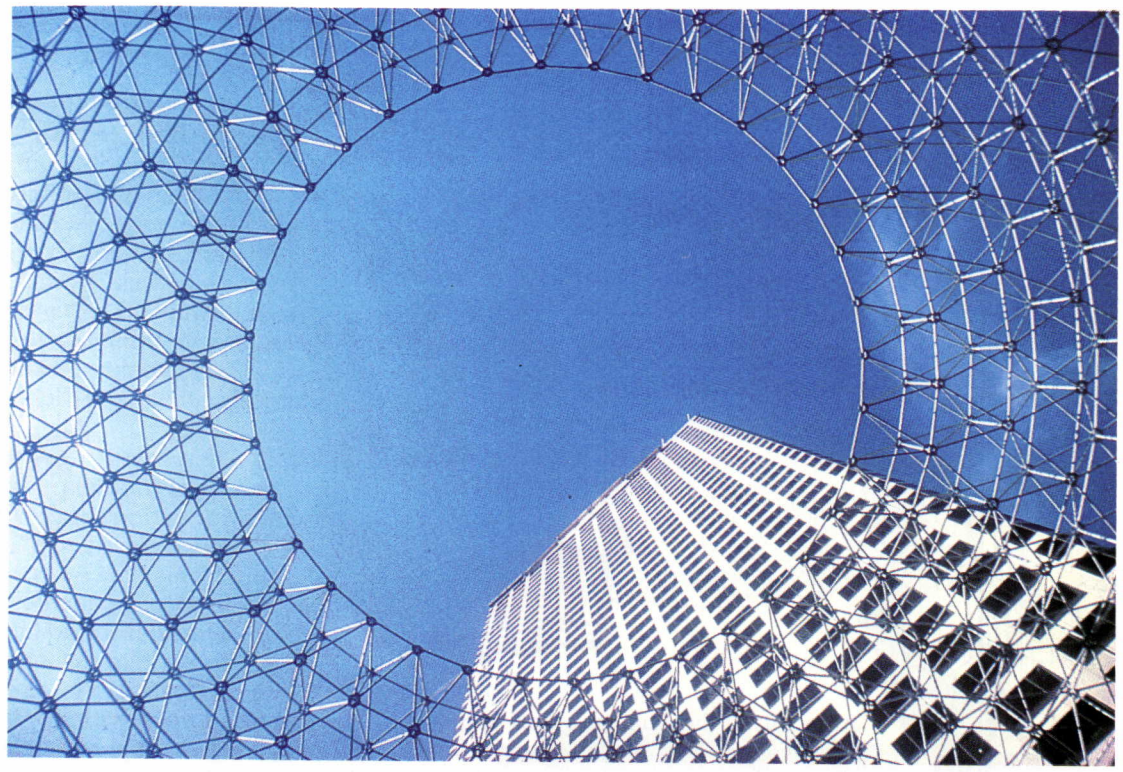
Provision for safe wandering will alleviate the staff's worry that residents have access to potentially dangerous equipment or environments. Many facilities are struggling with the issue of locking units for the sake of security, while some codes forbid locking or disguising devices on fire doors.

Beyond facility design, there are a number of wandering control products now available. Most such devices are expensive and involve a wrist or ankle bracelet that triggers an alarm (visual and/or acoustic) when the resident tries to leave a designated area. Often these tags are obtrusive. Some companies try to make the tag less obvious by hiding it in a watch or belt. It is important to make sure the resident cannot remove the tag; otherwise the system is useless. Another system acceptable in many states (but not all) is electromagnetic door locks that use buttons or key pads to unlock the doors to allow staff and visitors access and egress. These are tied into the fire alarm system so that when an alarm goes off the doors automatically unlock. This system has the disadvantage of limiting all residents.

Wandering is just one behavioral manifestation of dementia. For others there are many other design principles for supporting those suffering from dementia and other disabilities. What still is missing, however, is research to substantiate many design principles that now are based on clinical observations. Without systematic evaluation of the effects of the built environment, we are doomed to repeat failures rather than overcome them. □

How Far Far-Out CADD?

Desirable limits to automation.
By Forrest Wilson



Courtesy of Pearce Structures

The industrialization of building evolved slowly in small increments over a long period of time. In contrast, the arrival of "smart" objects, from talking key rings to self-regulating high-rise buildings, was sudden. Electronic systems appeared first as novelty and became everyday reality in less than a decade. Le Corbusier, Gropius, and Mies enthusiastically proclaimed building industrialization and included it in their design philosophies, but today's architects are not nearly as comfortable with "smart" technology and harbor vague suspicions concerning design by floppy disk.

While there may be some misunderstanding on the part of architects concerning what and how much computers can do, it seems that most confusion arises over how much of what architects do can and should be automated. A comparison of two very different case studies shows that virtually every project benefits from computer aid but that architecture still requires a human expert.

In the first case study, the computer emerges as form generator for architects designing the enclosure for Biosphere II, a state-of-the-art space frame project scheduled for completion next year. It would have been impossible without computer-aided design. The second case study is the carving and construction of a 12th-century-style Gothic cathedral in New York City, begun 60 years ago and planned for completion in 2152. The computer will not change the cathedral's form but will affect vitally its financing and fabrication.

But first, a general understanding is in order of what intelligence is and how machines emulate it. Marvin Minsky, MIT computer scientist and author of *The Mechanisms of Mind,* says that thought can be broken down into separate mental "agents." Each mental agent, by itself, does some simple thing. But joined in societies of other, seemingly unrelated acts, mental agents combine to form intelligence. As an analogy, a break shoe, steering wheel, back seat, bolts, cotter pins, and a few thousand other specific parts, all in the right place and interacting properly, become an automobile. Stones, doors, floor tiles, and telephones can combine to make part of a building, while big ears, long tongue, and strange name combine to make an aardvark.

The part of Minsky's conclusions that will be more difficult for architects to accept, he says, is that professional judgment is so specialized that it is easier to turn into software than are tasks of common sense. Architects are often offended, he adds, when their skills are compared to computer software. A typical person objects that he or she doesn't "feel like a machine," Minsky notes. "But," he asks, "if people are not some sort of machine or other, what makes them authorities on what it feels like to be a machine?"

We can think but we cannot know how the mind works. We drive cars and punch computer keyboards without the foggiest idea of how they operate. Knowing how to do something is not the same as knowing how it works. Conscious thoughts send signal-signs to our mind engines, says Minsky. "We act achieving our ends in mysterious ways."

We all know computers are stupid. They make rude noises, give answers to questions other than those asked, and send the wrong bills and bank balances. But when the data is correct and the program well written, computers are doggedly persistent and can be annoyingly accurate. Even the earliest computer programs were good at things people consider very difficult. In 1956 a pro-

be completed in 1992, the north tower in 2002, the transepts in 2052, and the 40-story crossing tower in 2152. "Goals are small and do not end. When we stop, we begin again where we left off with nothing lost. If we do 12 feet of tower a year, we have accomplished a minor goal," says Walsh. "If you think of 160 years of construction time, the mind cannot conceive such a project in its entirety. It certainly is not fast-track."

The cathedral builders look forward to integrating the computer into its construction. Walsh, the workers, and the Very Reverend James Parks Morton, dean of the cathedral, are willing to give "floppy disk masonry" a fair appraisal, and their immediate desire is to use CADD/CAM to help pay for construction. To understand the significance of this decision, one has to understand the cathedral design, its building process, and the people involved.

St. John the Divine began as Romanesque and was changed to Gothic. Buckminster Fuller once proposed a 40-story geodesic frame as the crossing tower. Others have suggested the towers be rented out as apartments, the "Cathedral Arms." Architecture students at Columbia University periodically redesign the cathedral as a class project.The cathedral architect, Ralph Adams Cram, set the tone when he said, "I would like to see it done this way, but change it the way you want." Cram himself did five or six versions, one of them shortened by 45 feet in order to save money during the Great Depression.

Morton opened the stoneyard to teach carving to the youth of Spanish Harlem during the recession in 1976, and the continued building of the cathedral was a byproduct of that program. From a modest beginning with six apprentices, the program has grown to 40. Cutters and carvers include homeless men and women and people from the prison system who report and leave on a strict schedule. Many carvers have not graduated from high school. When they applied for a job, Walsh gave them a ruler and told them to come back when they could read it. Those who took the time to learn he hired. Apprentices stayed, although the cathedral could not afford their salaries or continuation of the program. Consequently, the Stoneyard Institute was organized to find work outside the cathedral.

Since that time architectural styles have changed. Stone is popular again, and the stoneyard has returned to its original mission of completing the cathedral and raising money through outside contracts. When Cram's St. Paul's church in Yonkers was declared unsafe and its congregation planned to tear it down, the stoneyard offered to rebuild it for the cost of demolition. "We did not make any money," says Walsh, "but we owed it to Cram." More lucrative projects have included restoring the Soldiers Monument, Trinity Church, the gate towers at Columbia University (by McKim Meade & White), and the brownstone Presbyterian church at Fifth Avenue and 55th Street.

In defining the nature of the work, Walsh says the romantic part of the job is carving, but the technical experience comes from the banker masons (those that work on the banker table shaping the stones). "Originally, we thought that carving would be too difficult, but we were wrong. The results were fascinating—the carvers reach within themselves and come up with designs that could only have come from street experience. Ideas for carving are thrown into a pot, and the group selects one, and several people work on the same carving. If a cutter cannot come up with an idea, he or she must carve foliage." Carvings include a pinnacle of endangered species, Moses' parting of the Red Sea eagerly awaited by a person with surfboard, chariots of fire, and Jacob wrestling with an angel that twists itself into the DNA molecule spiral.

The bell tower (right) continues to rise at the rate of 12 to 14 feet a year. Completion of the tower is scheduled for 1992 and the entire cathedral by 2152. A pilot CADD-CAM project is underway to find how much of the thinking and cutting work can be done by computer in 1989. They anticipate carving will continue by hand until 2152 (below).

The individuals doing the work are no less fascinating. The master of the works on the Fifth Avenue project is Michael Drummond, a former miner who learned stone carving in Scotland while recuperating from injuries sustained in a cave-in. The lead carver is a visiting French master mason who is assisted by carvers from the stoneyard including a Russian émigré professor of art history. The "top man" on the job is a woman, Kelly Ingram, who gilds gold leaf to the cross atop the steeple. The highly respected owner-builder, Melvyn Kaufman, is a steadfast supporter of the cathedral. He has the distinction of being the first benefactor to have his head carved on it. But "he is too pigheaded to climb the scaffolding and see it," says Walsh, although his entire staff has made the climb to admire it.

Given the nature of this pre-industrial undertaking and the people involved—a situation that demands a maximum of common sense and a minimum of mathematical theory—what place is there for the computer? Owner-builder Kaufman says, "Computers as used at St. John point the way to architecture's future. Today, computers are used mainly as drafting tools. But when they are used to fit an arch stone at St. John, something different is happening."

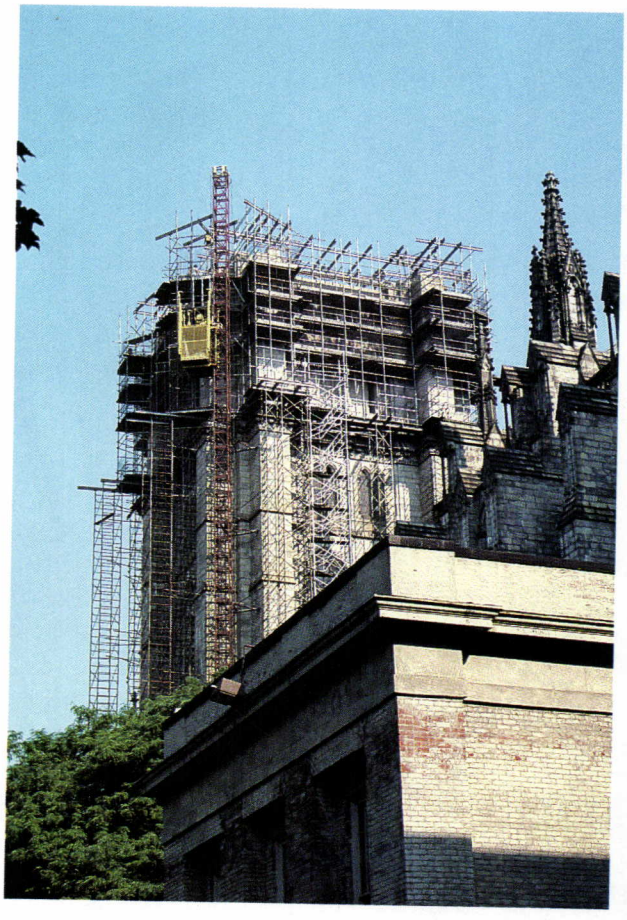
Kaufman became impressed with the computer as a design tool when Jerald McCue, chairman of Harvard's graduate school of design came to his office with a program developed at Harvard to run on a personal computer. The program could design complex shapes, allowing anyone to design and build a house in an hour. "You can shape a 4x8 panel, study it at any angle, and visually walk through it," Kaufman says. Consequently, Kaufman donated "a barrel of Macintoshes" to Harvard so that each student could have one on his or her drafting table. "These are tomorrow's minds," he says.

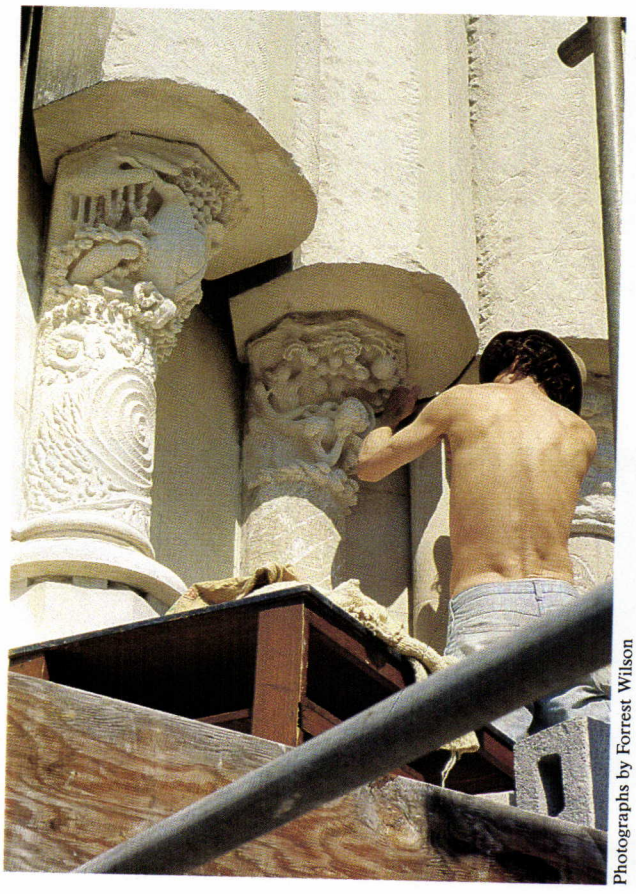
Walsh believes furthermore that this sort of computer drawing is valuable to the cathedral. "Although we continue to use metal templates, it is possible to draw the entire cathedral with the computer. The most complex stone we cut uses from 14 to 16 templates. A carver working on a stone may leave it, and when he or she returns will have forgotten where they were. The computer can tell them.

"The cutters can revolve the entire belfry in space and study it from all angles," Walsh continues. "We would like to eventually link the CADD system with a CAM system to actually cut the stone to approximations our carvers can finish. Drawings would go from CADD to the actual cutting of the stone without human interference."

Although some people fear the computer will change the carver's art, Walsh thinks it will free the carver to do more interesting work. "I love it," says Alan Byrd, a master mason who spent 13 years on the restoration of Wells Cathedral in England. "It saves a lot of walking." Using the computer in this way also allows master mason Byrd to see what master of the works Walsh has in his mind.

Thomas Mazzotta, a graduate of Cornell's school of architecture and president of Computer-Aided Systems Inc., is working





Photographs by Forrest Wilson

with Walsh to automate stonecutting. "We intend in the not-too-distant future to use a CADD system to do three-dimensional shop drawings with the help of computer-aided-manufacturing software. This information will generate a numerically controlled program to direct an electronic saw used to cut the stone," says Mazzotta. "As we see it, a mason designer will use a CADD system to feed information directly and electronically into the manufacturing process. The mason always retains full control over the machines and the work to be done."

Mazzotta believes that this process will not replace the artisans but rather extend their capabilities. The arch of the bell tower served as a pilot project. A byproduct of the 3D model will eliminate the traditional setting-out process, in which full-scale drawings are drafted on the floor of the cathedral. Instead, the artisans can study the geometric relationships of the stones via a CADD drawing at full scale.

The idea already has proved workable. The automated saw already has been used to produce one of the columns of Antonio Gaudi's Church of the Sagrada Familia in Barcelona. It is planned that this building, begun in 1903 and worked on until 1926 and then abandoned, finally will be completed through the use of CADD and CAM.

In comparing the particular case studies of the space-age space frame and the "ancient" cathedral—with the marvelous cast of characters that contributes to its undertaking—what conclusions can we draw about the use of computers in architecural design? First, construction techniques, materials, and methods have progressed rapidly from the industrialization of building to the industrialization of design. The computer strains quantities of data for knowledge, optimizes, and creates architectural form. Space frames and aircraft evolve new shapes from new knowledge as a result of the symbiotic relationship of human being and machine.

The results are not automatically architecture. A combination of keys on the computer may activate a structural analysis, but no combination will print out an esthetic analysis. Repeated architectural elements, even if as attractive as space frames, will at best form interesting patterns but no more. A perfectly regular meter in verse or in architecture is so monotonous that it becomes intolerable, as Japanese artisans have known for centuries. Herbert Read explained this concept in *The Meaning of Art* (Penguin Books, 1949), saying that "potters often deliberately mar the perfect shape which evolves naturally on the potter's wheel, because they feel that true beauty is not so regular." In architectural design, the extent of departure is determined not by physical laws but by the instinct and sensibility of the stonecutter and the architect.

The cathedral computer stops short of final completion. It supplies templates, warns of misfitted stones, and soon may do 80 percent of the cutting. The 20 percent of the stone left to the cathedral carvers is enough. The computer does what it does best, which is to make sense from nonsense, but also leaves margin for humans to do what they do best and dearly love to do. Humans filter out and treasure nonsense that so wonderfully symbolizes the human condition—such as endangered species, spiralling DNA angels, and surfers patiently awaiting the parting of the Red Sea.

All in all, it seems probable that the computer in the cathedral has gone as far as it should go. It is best to leave 20 percent of the stone to be carved by humans, at least until computers learn to laugh. □

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The Hows And Whys of Sheet Metal Roofs

Recommendations for specifying and detailing roofs.

My usual reluctance to recommend an association's literature doesn't apply to the *Architectural Sheet Metal Manual,* published by the Sheet Metal and Air Conditioning Contractors National Association (SMACNA). It's a book that should be on almost every architect's reference shelf. The manual describes and details a wide variety of metal components, with emphasis on flashing, gutters, and metal roofing details. Its drawings and text can help the architect design most of the components for a custom metal roof.

The substrate. Most metal roofs are not structural and therefore require a rigid substrate. The structure must be designed with sufficient load-carrying capacity to support all expected loads, including the workers installing the metal roofing. The substrate also must be nailable; made of a material thick and dense enough to hold the nails so they can't be pulled out easily.

The two recommended substrate materials for metal roofs are plywood decking or wood sleepers. In some areas, local codes require the substrate be made of a noncombustible material, and gypsum board is the material of choice. If gypsum board is used, the attachment clips for the roof must be installed using nails long enough to reach through the gypsum and into the supporting members below.

Waterproofing. Once the substrate is in place, it is necessary to install two other materials before the metal roofing is attached. The first material, laid directly over the substrate is a waterproofing membrane, usually 30-pound felts. On a moderately sloped roof, each successive ply should lap the previous ply by four inches. A waterproof membrane should be considered for any metal roof with a pitch of less than three inches per foot, particularly in climates that experience ice or snow. After the felts are in place, rosin-sized building paper is laid over top to act as a slip sheet to reduce friction and to allow expansion and contraction between the waterproof membrane and the metal roofing.

The metal. Several different metals and their various coatings are commonly used for roofing (see December 1987, page 141).

Much of the difference between roof types is visual. Batten and standing seams run vertically down the roof, while bermuda roofs have a distinctive horizontal character. Flat seam roofs produce little or no pattern. Regardless, there is minimal structural difference in these roof types.

Batten seam roofs are more resistant to uplift than standing seam roofs. Flat seam roofs typically are used on roofs with a pitch less than 3 inches per foot, standing and batten seam roofs are not recommended on roofs with a pitch less 3 inches per foot. Bermuda roofs should have at least a pitch of 2½ inches per foot.

Roofing pans are formed of sheets, either with an onsite portable roll-forming machine or in the factory. The difference between sheets and pans is important to remember. If a 20-inch sheet is specified for a standing seam roof, the ultimate pan width will be anywhere from 16¼ to 17¼ inches wide, depending on the height of the seam. This measurement difference applies to all four types of roofs.

Widths of sheets or pans often are determined by the gauge of the metal or, in the case of copper, its weight (in ounces). For example, on a bermuda roof, the sheet width for 26-gauge galvanized steel should be between 20 and 24 inches. The sheet's width can be increased to 26 to 28 inches, if the gauge is increased to 24. The exception is on batten seam roofs, where the maximum recommended distance between battens is 20 inches.

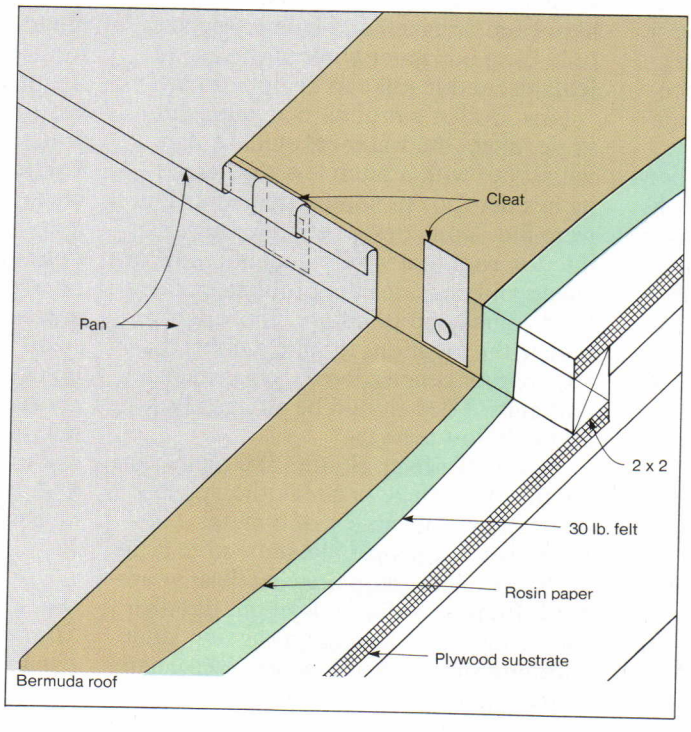
One reason for limiting the width of the pans is oil canning, a term used loosely to decribe the waviness that occurs in flat metal-roofing panels. It usually is either a result of the manufacturing process and/or because of unrelieved expansion and contraction.

During manufacturing, the cold-rolling equipment often "squeezes" the edges of the metal sheet more than the center, creating an uneven surface, hence, an uneven distribution of stress and a wavy appearance of the roofing panels. Metals that are highly reflective, such as copper, visibly show more oil canning than less reflective metals. However, over a period of time, the copper roof will lose the wavy look as it develops a patina.

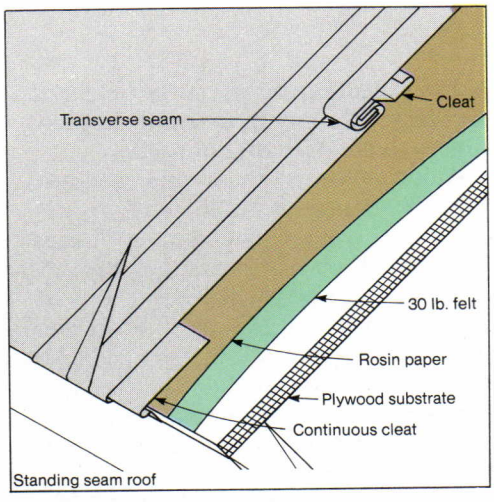
But where harmless oil canning ends and destructive buckling begins is hard to determine. Localized buckling often occurs through improper handling. Long flat sections of flashing or paneling shouldn't be allowed to drape, kink, or "fish-eye," and all long metal sections require proper support before they are installed.

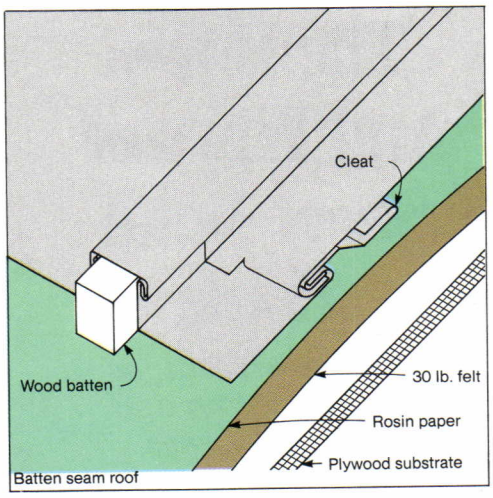
Buckling can be prevented simply with good installation procedures. For example, termination points, cleats, and clips should not constrict the edges of the panel when thermal stresses build up; they should allow the panel to move. Limiting the panel size also will help eliminate a certain amount of expansion and contraction.

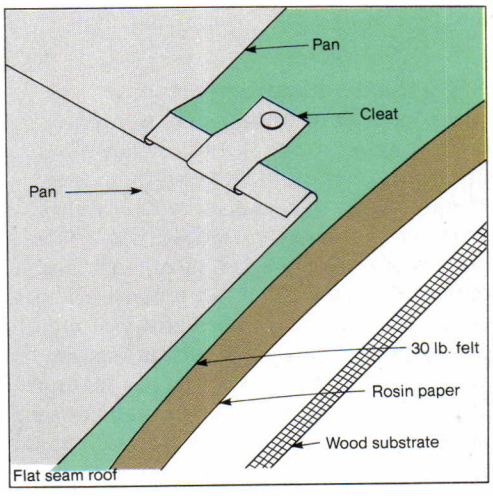
Metal panels that have been finished with a dark-colored coating, of course, will absorb higher levels of thermal energy, and thus expand a great deal more than a roof panel that hasn't been painted or has been painted a light color. Do not use reflective paint fin-



Bermuda roof







ishes—they will accentuate the appearance of oil canning, although they do not contribute to its creation.

The thickness of the metal and the smoothness of the underlayment also will affect oil canning. Specify the thickest metal the application calls for; this isn't a place to cut costs. Before the metal panels go down, it's best to inspect the underlayment. Check to see that it is smooth and has been laid correctly. Consider giving the metal roofing contractor the right to approve or disapprove the substrate before proceeding.

Fasteners and corrosion. It is important that fasteners be galvanically compatible with the metal roofing. This recently was made clear to me through inspection of a copper roof that had been installed 50 years ago and today is leaking badly. Despite its age, the copper still had years of life in it, but the roof's major point of failure was its galvanized nail fasteners. The roof no longer was attached to the substrate, because virtually all the nails were corroded through.

Remember your galvanic chart and don't use dissimilar metals for fasteners, flashing, copings, and gutters. In fact, any metal coming in contact with the roof should be similar or the same. Even runoff from copper flashing or condensation lines to mechanical equipment above or across a galvanized metal roof eventually will cause it to corrode. If dissimilar materials can't be avoided, separate them with nonconductive paint, washers, or tape.

You can expect a poorly finished product from a poorly or inadequately detailed design. To help produce good details, you might begin the design process by calling in a qualified contractor who has a track record installing metal roofs and can help avoid problems and suggest details. If a manufacturer supplies you with details,

There is very minimal structural difference in these types of metal roofing systems

don't automatically rely on them. Review them with the contractor and make changes where necessary to meet your particular situation. If the manufacturer won't warranty the roof with your changes, consider finding a different manufacturer or having the roof made from scratch.

Some of the first problems to be resolved are the roof joints and connections. Because sealants can be the weak link for leaks, design your flashing and closure details so they don't rely on sealants to keep the water out. For years, metal roofs have been designed and built to successfully keep out water without the use of sealants, and it still can be done today.

First, design a roof with an adequate slope, to get the water off quickly. Any metal roof with a pitch less than three inches per foot should be treated as if it were flat. Don't design elements or areas into the roof that will impede the flow of water, and consider the problems related to ice dams and ponding. Thoroughly review the locations of all elements that require roof penetrations, such as mechanical units. They should be along ridges and in built-up areas.

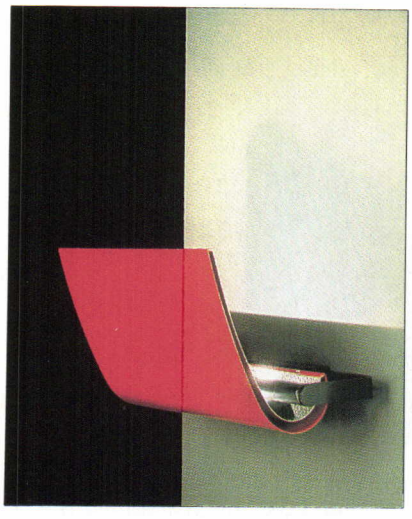
Because flashing, closure, and metal trim details often make or break the appearance and serviceability of a metal roof, the SMACNA people recommend that the architect review shop drawing details carefully. Require submittals on all details including joints, flashing, fastening, and substrate support and location. Make sure to pay attention to the following:

- Check the placement and size of clips and cleats. Do they allow the panels to expand and contract?
- Examine the edges of the panels, particularly at the eaves. They should be cleated in place—not nailed through—so they are able to move.
- Flashing should not be surface mounted.
- Check the number of exposed fasteners. The fewer the better—exposed fasteners develop fatigue over time and require maintenance. Find a way to detail roof connections using few or no exposed fasteners at all.
- While checking the number and type of fasteners, don't forget their spacing.
- Of course, fasteners should be made of the same or similar metal as the roof. If the fasteners aren't the same or at least similar, insist on separation.
- Check for sufficient overlap between elements to avoid one element pulling away from another and subsequently exposing the material below. Require that lapped sections be notched, or use backup plates.
- When using concealed built-in gutters make sure they are soldered, not nailed, together. Even built-in gutters of prefinished galvanized or aluminum should be soldered. However, because of galvanic corrosion, don't use copper; use stainless steel. Of course, solder shouldn't be used on other portions of a prefinished roof because it will damage the finish. Take into account that gutters at some time will overflow.
- Check that the contractor is not relying on solder for strength at joints.

—Timothy B. McDonald

Bill Zahner of Zahner Sheet Metal; John Stratton, SMACNA's Director of Technical Services; and Rosalind Raymond contributed to this article.

PRODUCTS



Contemporary Italian Lamp
The Model D5 halogen lamp, left, designed for LucePlan by Paolo Rizzatto and Sandra Severi Sarfatti has a sail-like reflector. The screen, of lacquered aluminum, is adjustable, allowing the light beam to be oriented to avoid glare.
LucePlan
Circle 402 on information card

Tables and Modular Work Surfaces
Surfaces Office Systems, above, from Elements Inc. include a wide variety of workstations and modular tables in many materials. Radius rounded-edge banding is available in either natural ash or black PVC. Accessories include hanging and lateral files, hanging storage, adjustable keyboard drawers, pencil drawers, modesty panels, wire grommets, tubes, printer grommets, and a bookcase.
Elements Inc.
Circle 403 on information card

Dressing Table and Stool
The Emozioni contemporary dressing table and stool is part of the Hastings Tile & Il Bagno Collection. The table, right, is mounted on a column of chrome-plated tubing and has a teardrop shaped, ½-inch-thick black crystal top with pull-out drawer. The mirror is adjustable and has a low-voltage halogen light. Both stand and stool are available in black with polished gold-plated tubing.
Hastings Tile & Il Bagno Collection
Circle 404 on information card

Stacking Chair
The Polar stacking chair, above, was designed by Komplot Design of Copenhagen for Thonet Industries. The chair features a bentwood arm and leg, seat back of molded plywood, and back support and rear legs of steel wire. It is 21x25x30½ inches.
Thonet Industries
Circle 401 on information card

Products *is written by Amy Gray Light*

Acoustic Ceiling System
New Intersections suspension system from USG Interiors, right, is based on two different sizes of ceiling panels installed at a slight angle to walls and corners. The ceiling is then finished with naturally textured two-foot-square Acoustone Frost ceiling panels. The hubs formed by this pinwheel effect are filled with matching five-inch-square panels. The canted perspective establishes a sawtooth perimeter that may be cut into conventional wall molding or finished with an island trim molding.
USG Interiors Inc.
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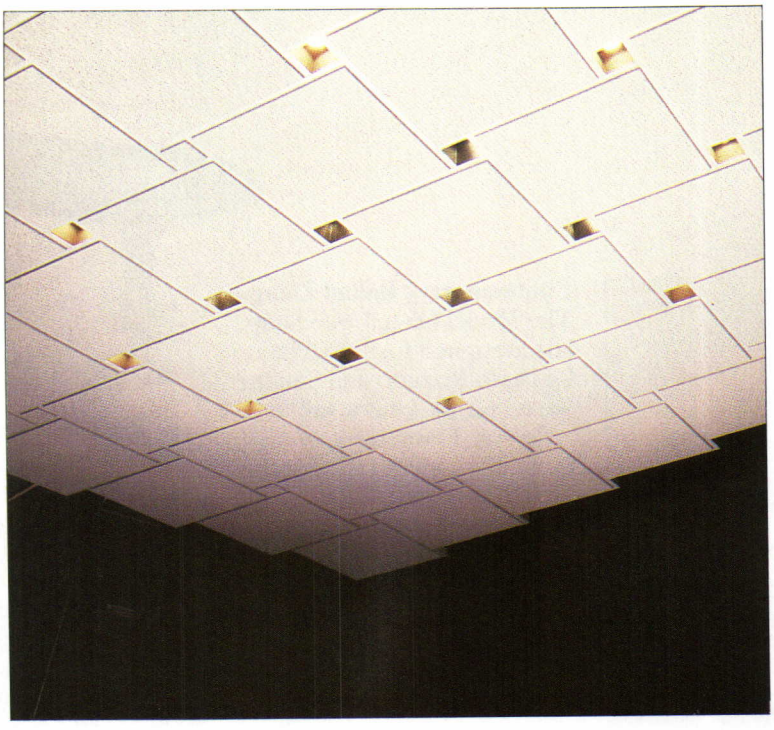

New Ergonomic Office Chair
The Hollington chair, by British designer Geoff Hollington, left , is being offered through Herman Miller Inc. The crafted ergonomic chairs provide comfort for a range of active work styles at the office.

The motion of the chairs imitates the body's pivot points in the ankle, knee, and pelvis, all the while keeping the back supported. An ankle tilt allows the chairs to open up and flex in response to the user's movements at seat and back angles. Two controls located on one arm adjust the chair to different body sizes. A pneumatic back tilt adjustment on the lounge chair lets the user adjust the angle of the chair's back in a number of positions.

The line includes high- and low-back work chairs, high- and low-back side chairs, and a lounge chair and ottoman.
Herman Miller Inc.
Circle 412 on information card

Vision Panels
Taliq Corp.'s Varilite vision panels switch from clear to translucent when turned on or off by electric current. The electronic window panels, left, consist of laminated liquid crystal film sandwiched between two sheets of glass. Polyvinyl butyral is used in the interlayers to create a permanently bonded unit. When voltage is applied, the liquid crystal molecules align perpendicular to the glass, and the glass appears clear. In the absence of voltage, the molecules are aligned randomly, diffusing light and rendering the glass translucent. The panels are suggested for areas where privacy is desired, for security areas such as retail display areas and bank teller stations, and for hospitals, laboratories, and clean rooms.
Taliq Corporation
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Products continued on page 132

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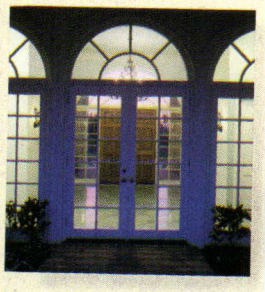

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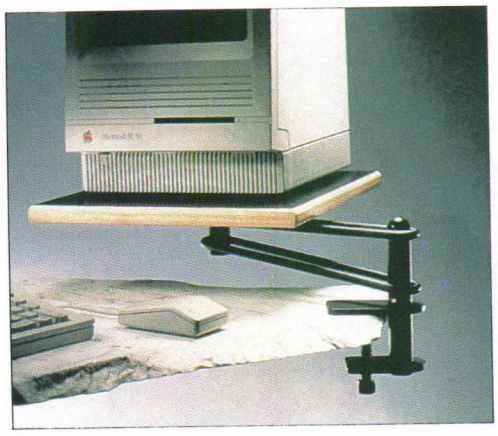
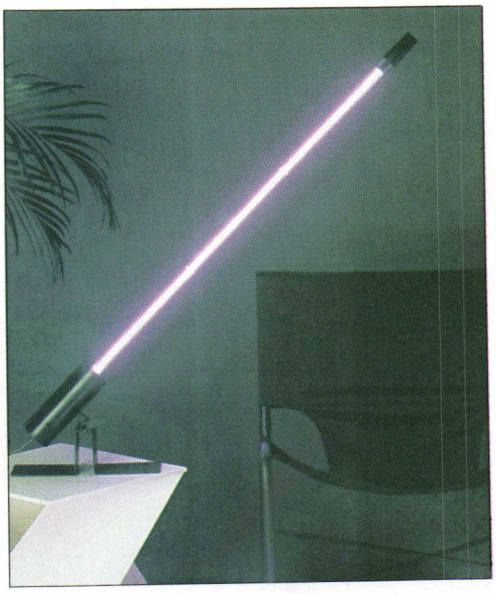
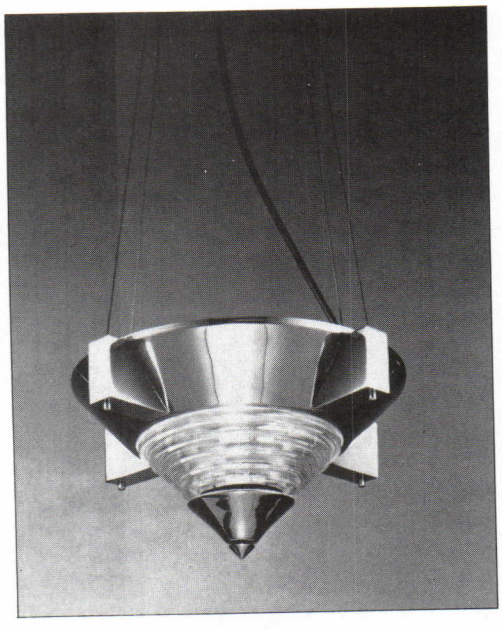


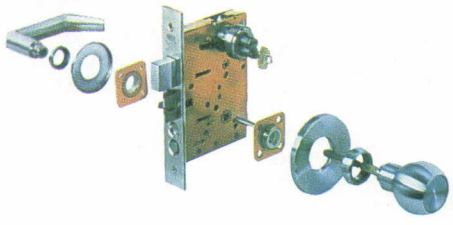
Agio Arm
Agio Designs introduces the Agio Arm, a desktop arm accessory specifically designed for Macintosh users that lifts the computer monitor off the work surface. The Agio Arm, left, is made of black, powder-coated carbon steel with machined components and solid brass bushings for rotating action to 360 degrees. The arm platform is constructed of black, high-pressure laminate edged in solid ash wood. The arm conforms to ANSI's updated Human Factors standards for viewing angle and nonglare surfaces. It is designed to support an SE or Mac II color monitor and has a rated capacity of 35 pounds. The unit will fit any desk one to two inches thick.
Agio Designs
Circle 414 on information card



Architectural Lighting
Architect-designer Kevin Schopfer introduces the Zarno series of lamps, right, through George Kovacs Lighting Inc. The name conveys the spirit of the futuristic models, which are offered in pendant, torchiere, floor, and table lamp models. They are finished in polished brass with clear stepped glass and matte black and brass bases or, in the case of the pendant, canopy form.
George Kovacs Lighting Inc.
Circle 413 on information card



Neon Accent Lamp
Neon Strokes from Data Display Systems, above, are contemporary, three-foot, neon accent lamps. They have a black metal base and pivoting swing-arm construction that lets the user adjust and lock the 36-inch neon tube from a horizontal to vertical position or any angle in between. A dimmer control changes Neon Strokes' appearance from a soft glow to a bright radiance. The lamp is available in blue, pink, green, and yellow and plugs into any AC outlet.
Data Display Systems
Circle 416 on information card
Products continued on page 136



Mortise Lock
Best Lock Corp.'s 34/35H Mortise lockset, left, has a conventional knob extruded from solid brass bar stocks and comes in various styles and finishes that match the 8K series cylindrical knobs. Four lever variation designs conform to most building codes for barrier-free access. Other features of the lockset include self-aligning trim through-bolted for proper alignment with case, hardened knob spindle, low-friction knob and lever handle bearing, and a patented design roller hub. The lever and knob can be intermixed for inside/outside trim.
Best Lock Corporation
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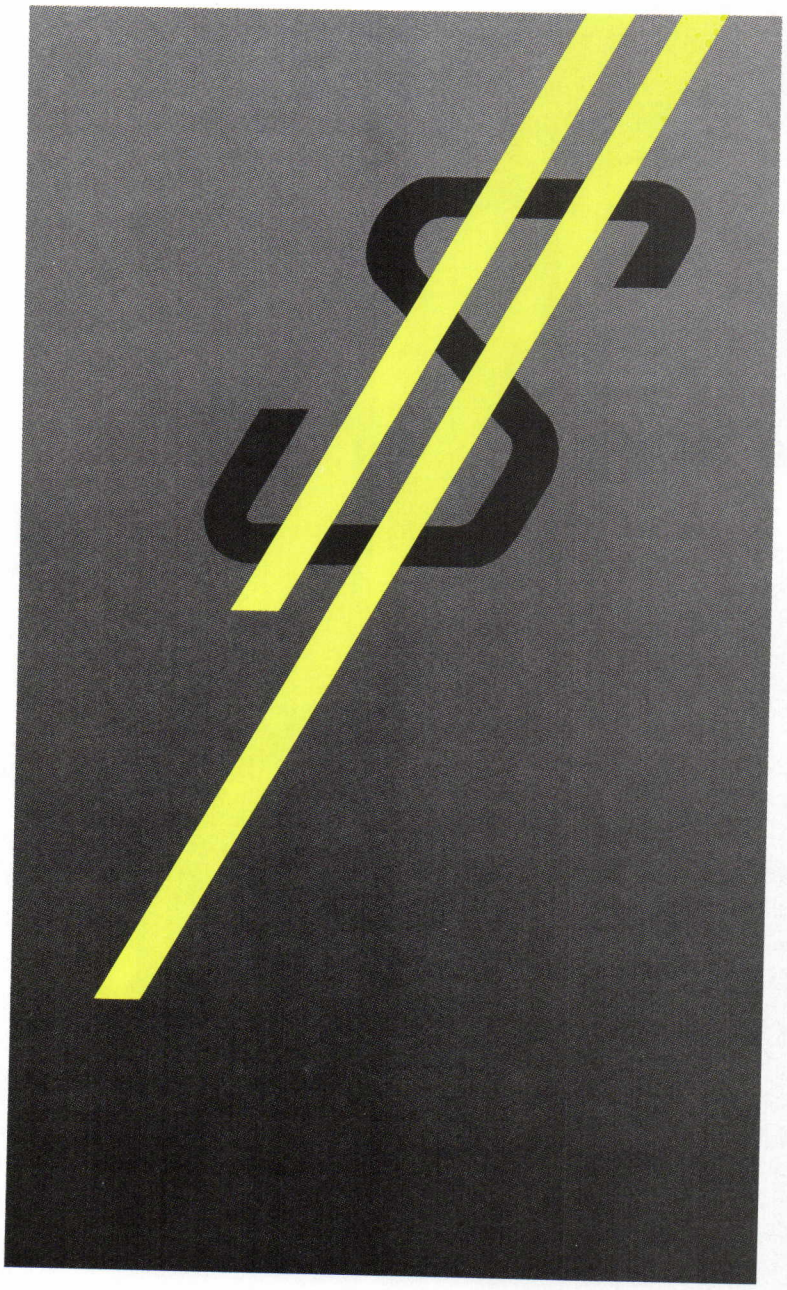

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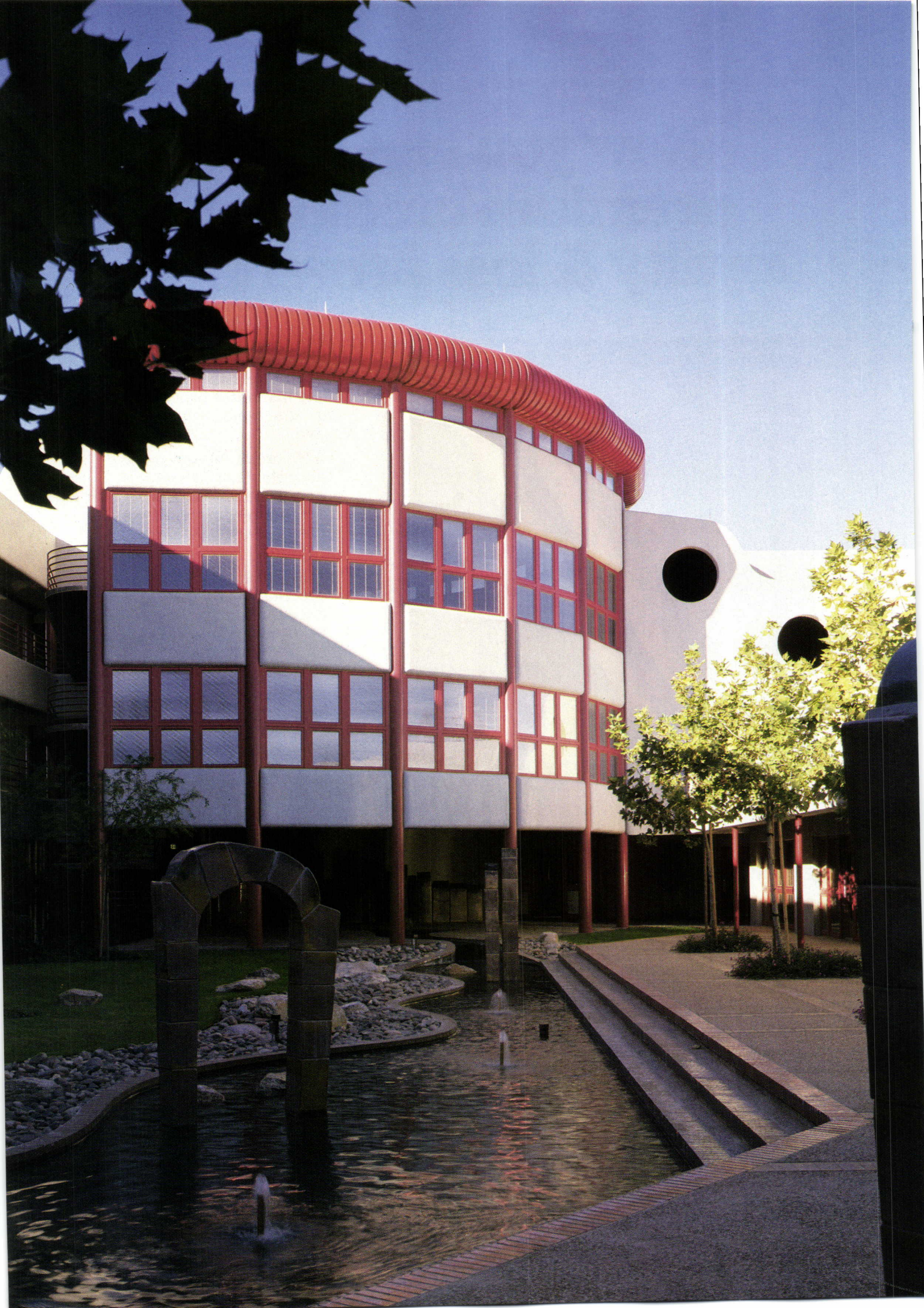

There's not much that's typical about this office building.

Except, maybe, the relentlessly red Pella Windows.

The owner wanted an alternative to the typical office building around Tucson.

The architect said that playfulness had been left out of today's architecture.

And from the beginning, Pella's custom color was the logical choice for carrying out the design.

Needless to say, this 70,000 square foot office building stands out in a neighborhood of predictably severe granite and glass offices. Williams Center features rounded corners, the playful juxtaposition of unusual shapes, and a dashing color scheme of red and white. You can't miss it.

In fact, the main entrance is easily recognized. It's under what appears to be a giant red metal water slide. Inside, however, the mood changes. Visitors and tenants reach their offices after passing through a charming courtyard with waterfall, meandering pool, lush vegetation, waterside seating, and contemporary sculpture.

The building's shape is the logical outgrowth of a desire to give all tenants a sense of place, regardless of how much or how little space they have. Small tenants aren't stuck with just a carved out portion of a rectangle. Here, tenants can even choose spaces with higher ceilings, or two-story spaces.

About those red windows.

It actually started with the red metal roof. Pella's custom color department scientifically matched the roof manufacturer's color, and applied it to the windows and trim. And, to be sure that the doors matched perfectly, even supplied the paint for the metal door manufacturer.

Pella's custom color capabilities are unlimited. You may choose the most unusual color in the known world, and putting it on a Pella Window will just be typically Pella. Plus, it's a super tough enamel finish that resists cracking, fading, chipping, and all sorts of plagues due to exposure. Yet, for all this protection on the outside, all you see on the inside is solid wood, ready to stain or paint.

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All windows feature the insulating efficiency of the Pella Double Glazing System with adjustable Type E Slimshade® blinds between the panes of glass. This gives an attractive, consistent appearance to windows from the outside, and the convenience of built-in blinds from the inside.

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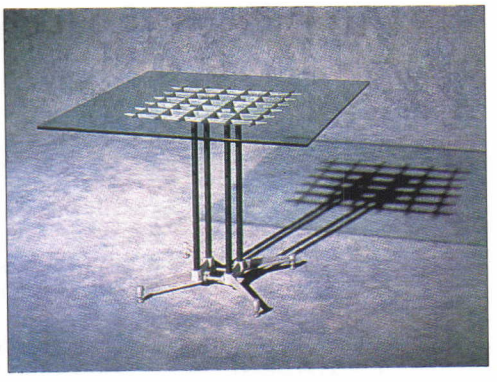
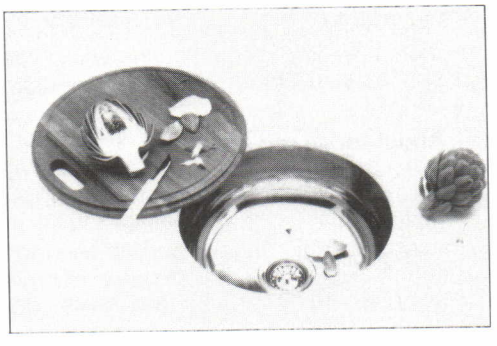
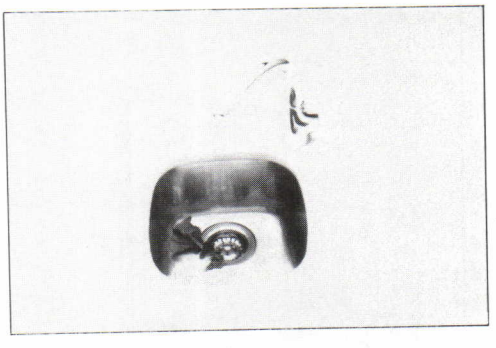


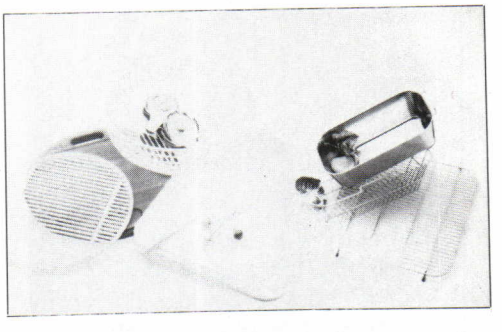
Aluminum Furniture
Architect Bob Josten designed the Grid Coffee Table and the Console Table for ICF, above, to work with many different styles of office furnishings, from contemporary to traditional. The sand-cast aluminum lends a textural quality to the two pieces and causes colors and woods in the background to stand out against the furniture. The glass-topped Grid Coffee Table measures 24x24x15 inches, and the Console Table is 18x64x29 inches.
International Contract Furnishings Inc.
Circle 418 on information card

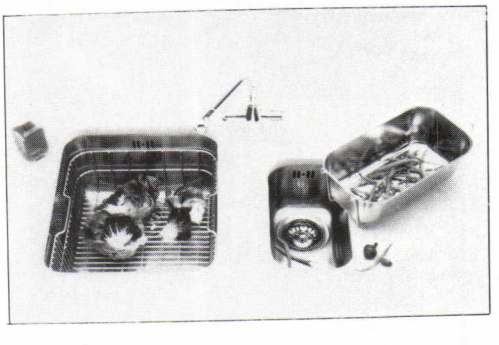
Distinctive Roofing Shingles
Beaver Shingles from FibreCem Corp. consist of three well-rounded "tails," which give the impression of numerous small shingles, each resembling a beaver tail. The roofing shingles are suggested for vertical cladding and rolling pitches. The charcoal gray shingles are made of fiber-reinforced cement and do not contain asbestos.
FibreCem Corporation
Circle 407 on information card

Garage Door Products
Raynor garage doors are constructed of steel and now accept stain for a deeply embossed, raised panel design to give the look of real wood grain. The stains are butternut, cedar, walnut, and oak and come with a kit providing all necessary materials for application. Raynor also offers automatic garage door openers with either ⅓ or ½ horsepower motors. A transmitter operates the unit, which features a convenience light that stays on five minutes. If the door strikes an object it automatically reverses direction. The opener is UL-listed for residential applications.
Raynor Garage Doors
Circle 405 on information card









Undermount Sink Components
Undermounted kitchen and hospitality sink components from Franke Inc., above and right, can be mounted below marble, granite, or manufactured solid surfacing materials. The Elements line of components includes accessories such as teak and white synthetic cutting boards and stainless steel grid drainers, drain baskets, and colanders. The Prestige sink with large bowl and elliptical or square sink compartments is in the Elements line, as is a highly polished round "salad" sink. Two new models in square and rectangular configurations complete the new line.
Franke Inc.
Circle 406 on information card
Products continued on pg. 138

Are they doors?

Are they show cases?

Yes

Brite Vue Glass Entrance Systems do double duty

Architect Charles Bergstrom AIA had an idea for client Jonathan Edwards Keepsake Diamonds in Seattle. Glazing Contractor Parker Henry Glass Co. turned to Brite Vue for the creative fabrication necessary to convert the idea to reality. Result...a beautiful glass wall of swinging doors and fixed panels when closed. At opening, doors pivot to connect with fixed panels in the rear thus forming five completely enclosed showcases. Security glass is 3/8" laminated to 3/8" with a .090 polyvinyl butyral interlayer. Aluminum rails are anodized light bronze.

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New Outdoor Lighting Line
Decorative outdoor lighting posts from Northern Lighting, a division of A.M.I., are manufactured in a variety of materials including cast iron, glass fiber, and polymer concrete. The combination of different construction materials and two-part designs makes the posts durable, easy to install, maintenance free, vandal resistant, and cost effective. Northern Lighting makes a replica of the famous "Central Park" post in cast iron from molds made from the original patterns. Several luminaires in different styles and lamp types also are available, including a compact fluorescent.
Northern Lighting
Circle 409 on information card

Roof Drain Brochure
A brochure from U-Flow Inc. describes three models of retrofit roof drains, called RetroDrains, designed to make the replacement of existing broken roof drains easier. The PC/PET RetroDrain, SuperDome RetroDrain, and AL/1100 RetroDrain can be installed without removing the existing drain. They come with a mechanical seal that locks them into the drainpipe, and they have a one-piece drain body construction, integral clamping ring on the PC/PET and SuperDome models, a mechanical drain connection device, and various strainer domes.
U-FLow Inc.
Circle 410 on information card

Ceramic and Marble Installation Brochure
The six-page "Ceramic Tile and Marble Installation Products Guide" from TEC Inc. features the manufacturer's line of tile installation products including thin-set mortars, mastics, latex additives, grouts, and care products.

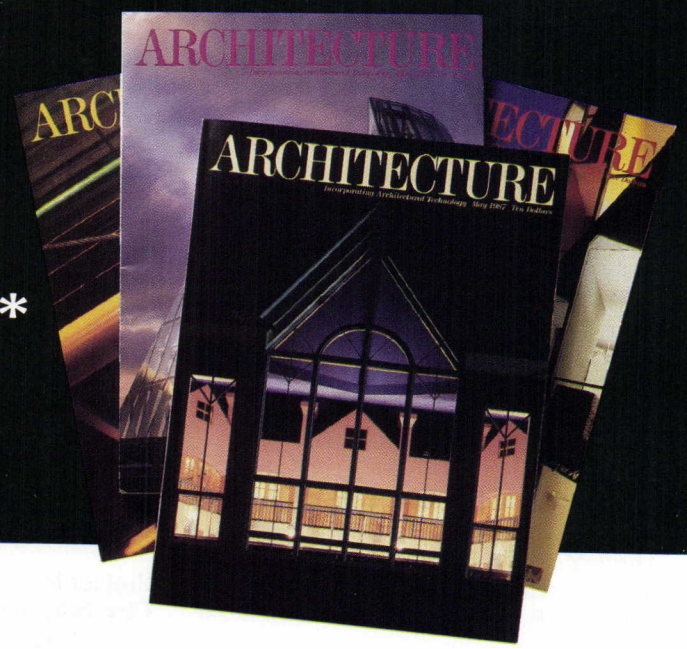
The brochure uses color photography accompanied by concise usage descriptions. A selection chart enables users to choose among a variety of interior and exterior tile applications. Coverage and admixture ratio tables also are provided. A photographic depiction of the wide array of TEC joint filler grout colors shows the actual widths and colors.
TEC Incorporated
Circle 408 on information card

CREDITS

Bayshore on the Boulevard, Tampa, Fla. (page 54). *Architect: Office of Architecture & Design, Tampa, Fla.* Project designer: Jay Baker. Project team: Cathy Boswell, Bill Briggs, Rob Civitello, Brad Crown, Dan Hassebroek, Randy Lore, Michael Malone, Phil Schawe, Russell Zeidner. Structural engineer: Martin Cagley & Conti. Mechanical engineer: H.M. Long & Associates. Landscape architect: Herbert Pickworth & Associates. General contractor: Enterprise Building Corp. Client: Urban Amenities/Ronald N. Miller and Charles F. Moore.

Credits continued on page 140

Architects Agree there's no Equal*



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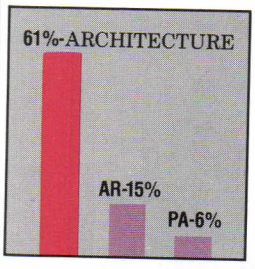

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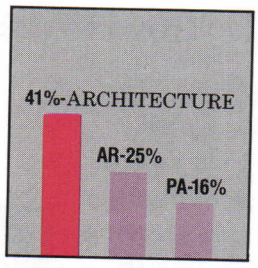

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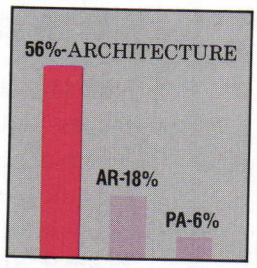

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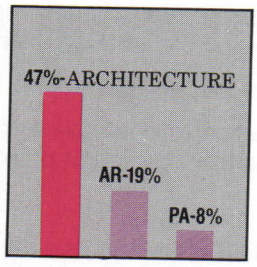

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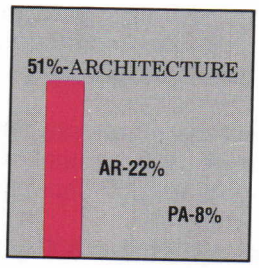

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The Joint Free Public Library of Morristown and Morris Township, Morristown, N.J. (page 60). *Architect: Short and Ford, Princeton, N.J.* Partner in charge: Jeremiah Ford III, AIA. Project designer: Charles Farrell. Design team: George Fett, AIA, Christopher Holm, Nancy Csira, John Ziegler, Mary Wasserman. Structural engineer: Blackburn Engineering & Associates. Civil engineer: Johnson Engineering. General contractor: Kaslow & Jeffrey Construction Co. Library director: Barbara Rice.

Quitman Lower Elementary School, Quitman, Miss. (page 62). *Architect: Archer & Archer, Meridian, Miss.* Project architect: B.B. Archer, AIA. Design team: Tom Little, Linda Troubaugh. Landscape architect: Steve Horn. Structural engineer: Carter/Eng-Land Design. Mechanical engineer: Bowron & Butler. Electrical engineer: Walter C. Couch Engineers. General contractor: Polk Construction Co.

Veverka/Kruse Residence, San Francisco (page 64). *Architect: Massey & Veverka Architects, San Francisco.* Geotechnical engineer: Keith G. Lightwood. Structural engineer: Raj Desai Associates. General contractor: Lombardi Construction.

Footbridge in the Tropical Rain Forest, Puerto Rico (page 68). *Designer: George Warner, Brookline, Mass.* Contractor: George Warner, Gonzaco Velazquez. Millwork: Julio Laguna. Steel: Steel & Pipes Inc., C.O. Jones, Steelworks (fabricators). Stone wall: Teodoro Garcia, Francisco Vasquez. Landscaping: George Warner, Maximo Delgado, Concrete: George Warner, Nicholas Remirez, Justo Rodrigues. Owner: Frederic D. Mueller.

ECCO Italian Designs, Jackson, Miss. (page 70). *Architect: Canizaro Trigiani, Jackson, Miss.* Partner in charge: David M. Trigiani, FAIA. Project architect: Gregory H. Tew. Owners: Ike Larue, Mark Frascogna, Axis Corp.

A Chair for a Painter, Rockford, Ill. (page 70). *Designer: Joseph Zimmer, Rockford, Ill.* Woodworking: Jon Critchfield, Metal work: Greg Lyle. Owner: Deborah Newton.

Chaise Lounge, San Francisco (page 72). *Architect: Robert Swatt, AIA, San Francisco.*

Playspaces, Des Moines (page 72). *Architect: Kirk V. Blunck, AIA.*

Project for Art on the Beach, Long Island City, N.Y. (page 73). *Architect: Cameron McNall, Los Angeles.*

Gersch Residence, Hillsborough, Calif. (page 74). *Architect: House & House, San Francisco.* Partner in charge: Cathi House. Project team: Steven House, AIA, James Cathcart. Structural engineer: Geoffrey F. Barrett. Lighting consultant: Novella T. Smith. Specialty finishes: Evans & Brown. Cabinetry and custom furniture: Geometry Manufacturing. General contractor: Covert & Associates.

Garden House and Formal Garden, Wenham, Mass. (page 76). *Architect: Marlon Blackwell, Boston.* Project designer (garden house): Marlon Blackwell. Design contributor (garden house): Kent Duckham. Designer (formal garden): Jim Heroux. Landscape architect: Jim Heroux. Owner: Henry Audesse.

Bennett House Addition and Renovation, Chestnut Hill, Mass. (page 80). *Architect: Stein & Associates (formerly Stein Williamson Associates), Boston.* Principal architect: Robert J. Stein, AIA. Project architect: Hugh "Gerry" Wedge. Project staff: John Paul Dunn, Caroline Dusedau, Jennifer Pearson. General contractor: Andy Marvel. Owner: Michael and Mona Bennett.

Wang Kitchen Renovation, Shaker Heights, Ohio (page 84). *Architect: Lawrence K. Man, AIA, Cambridge, Mass.* Contractor: Crowell/Blatchfore Construction. Cabinetmaker: Saher Milwork. Client: Douglas and Holly Wang.

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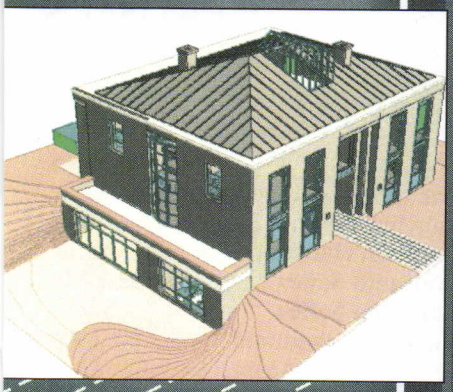

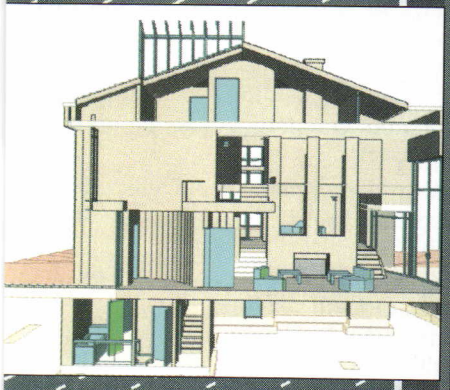

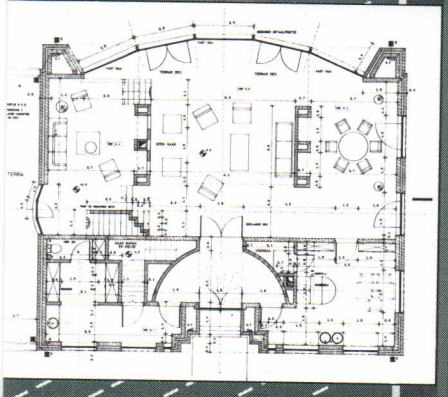

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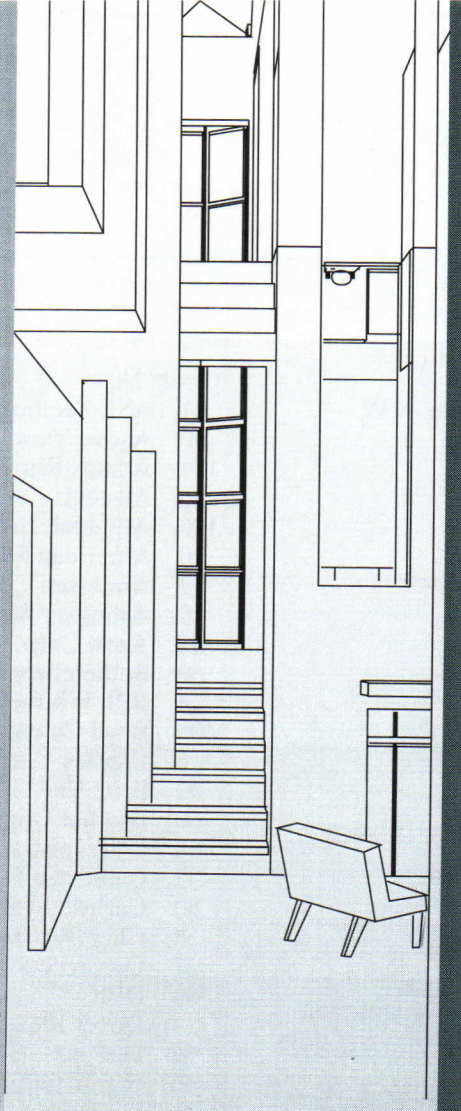

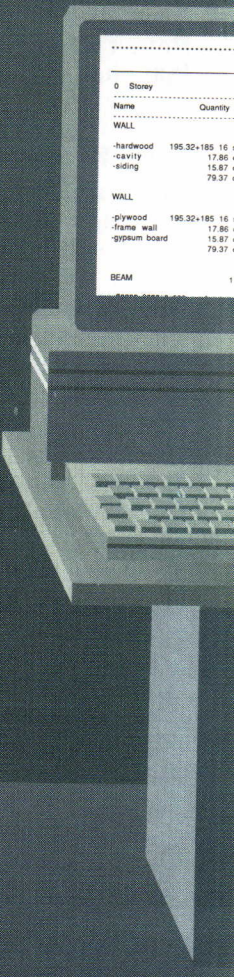

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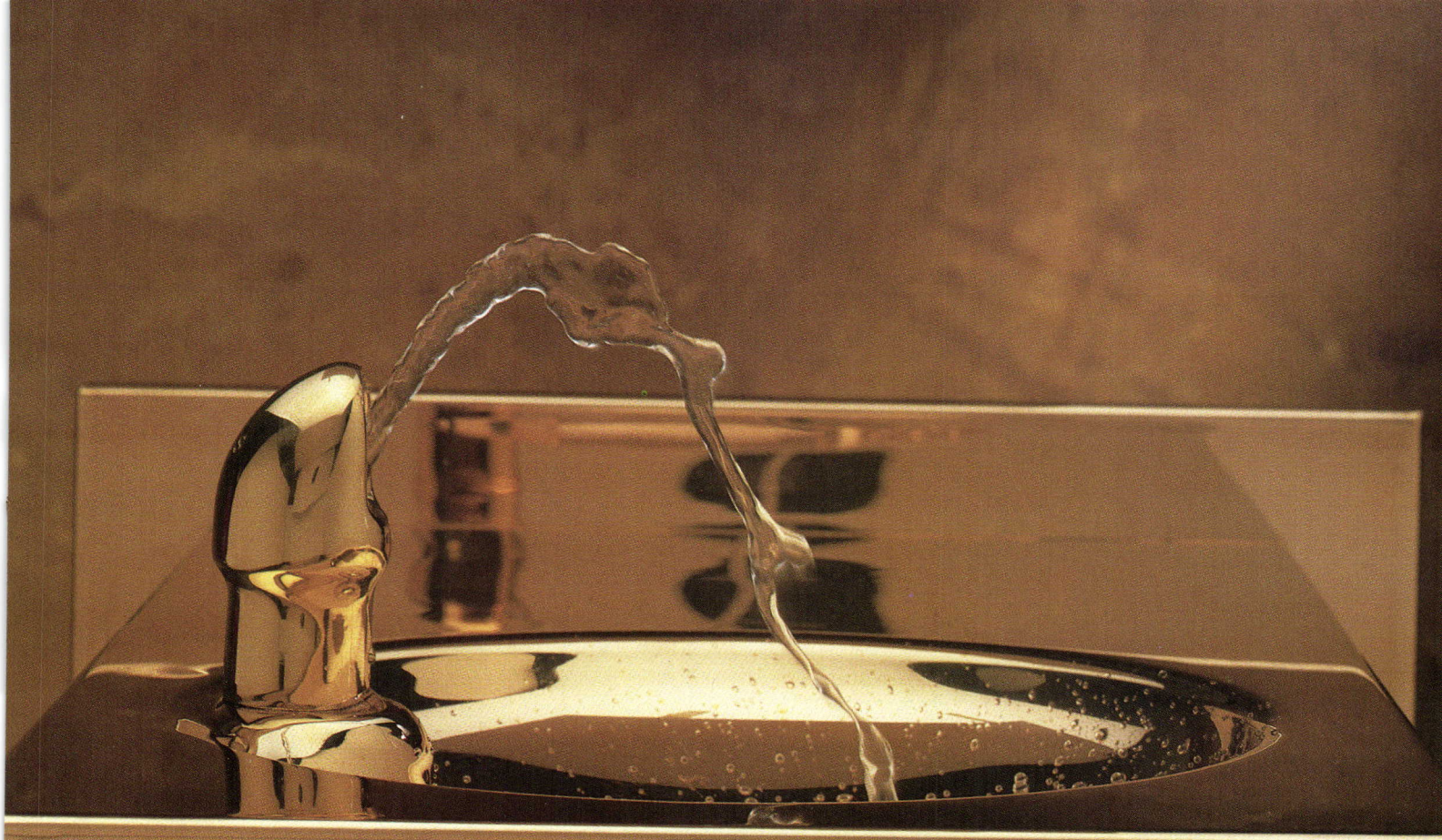

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