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PROGRESSIVE ARCHITECTURE

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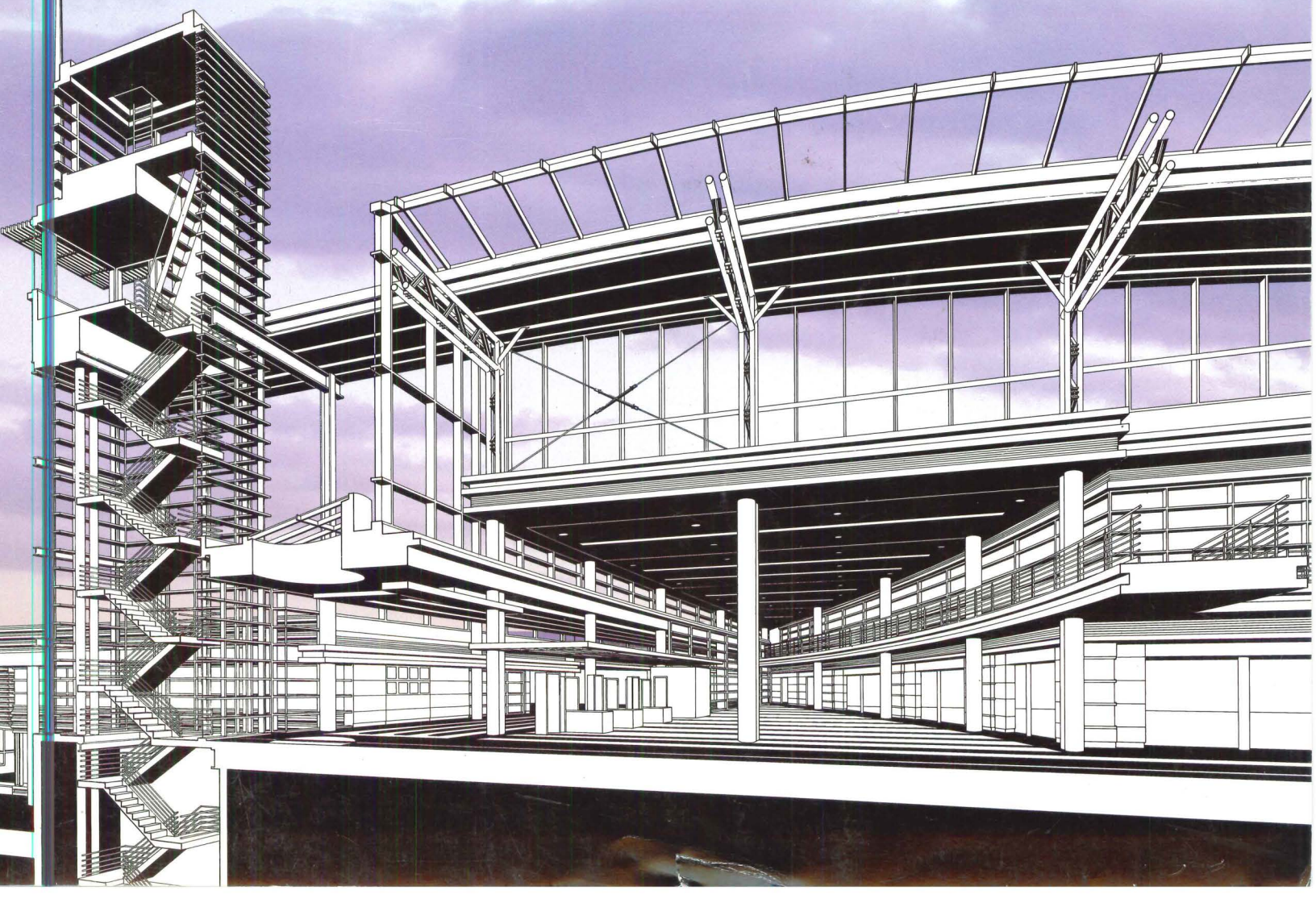

JoAnne McDowell On Reuse

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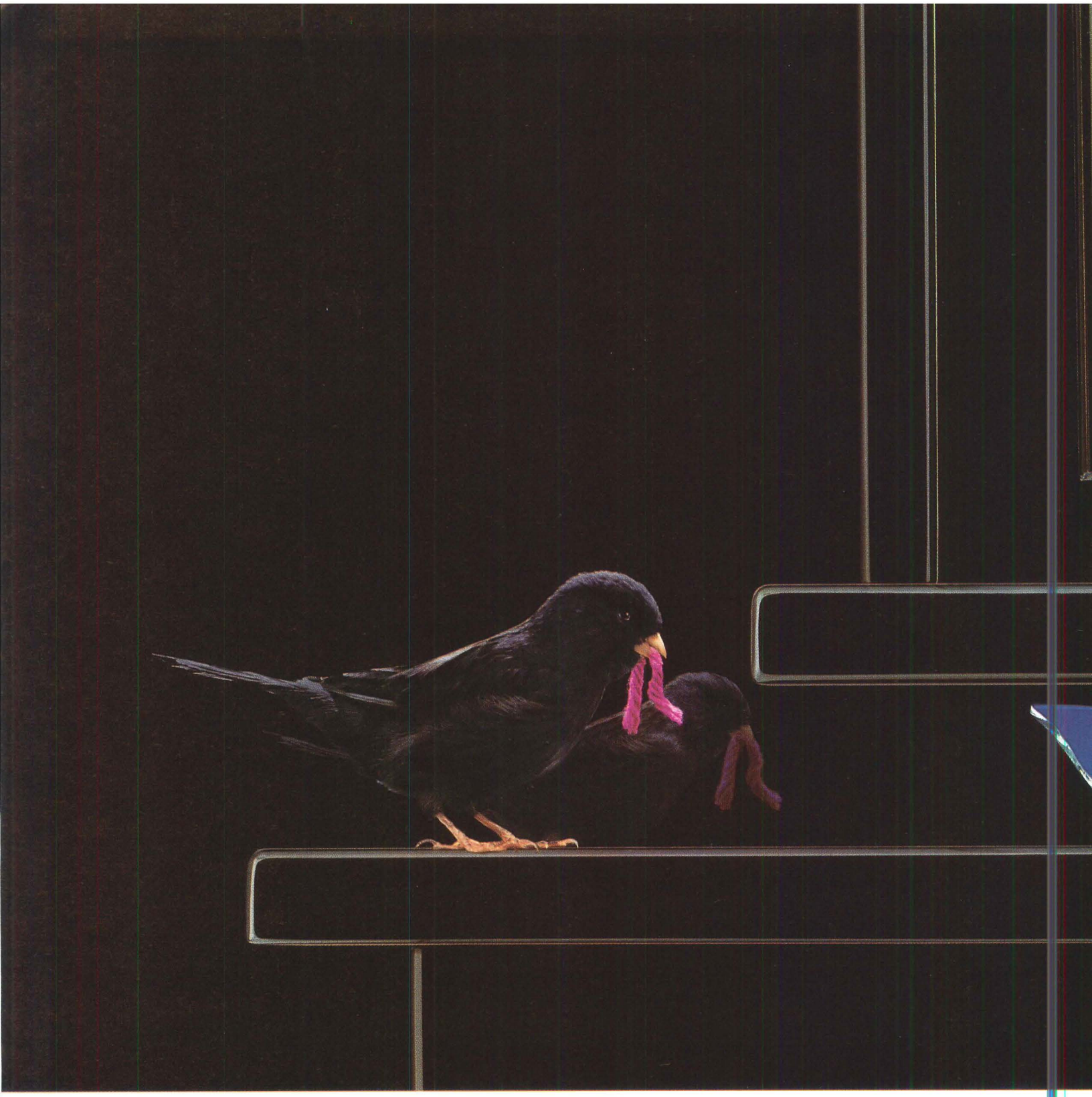

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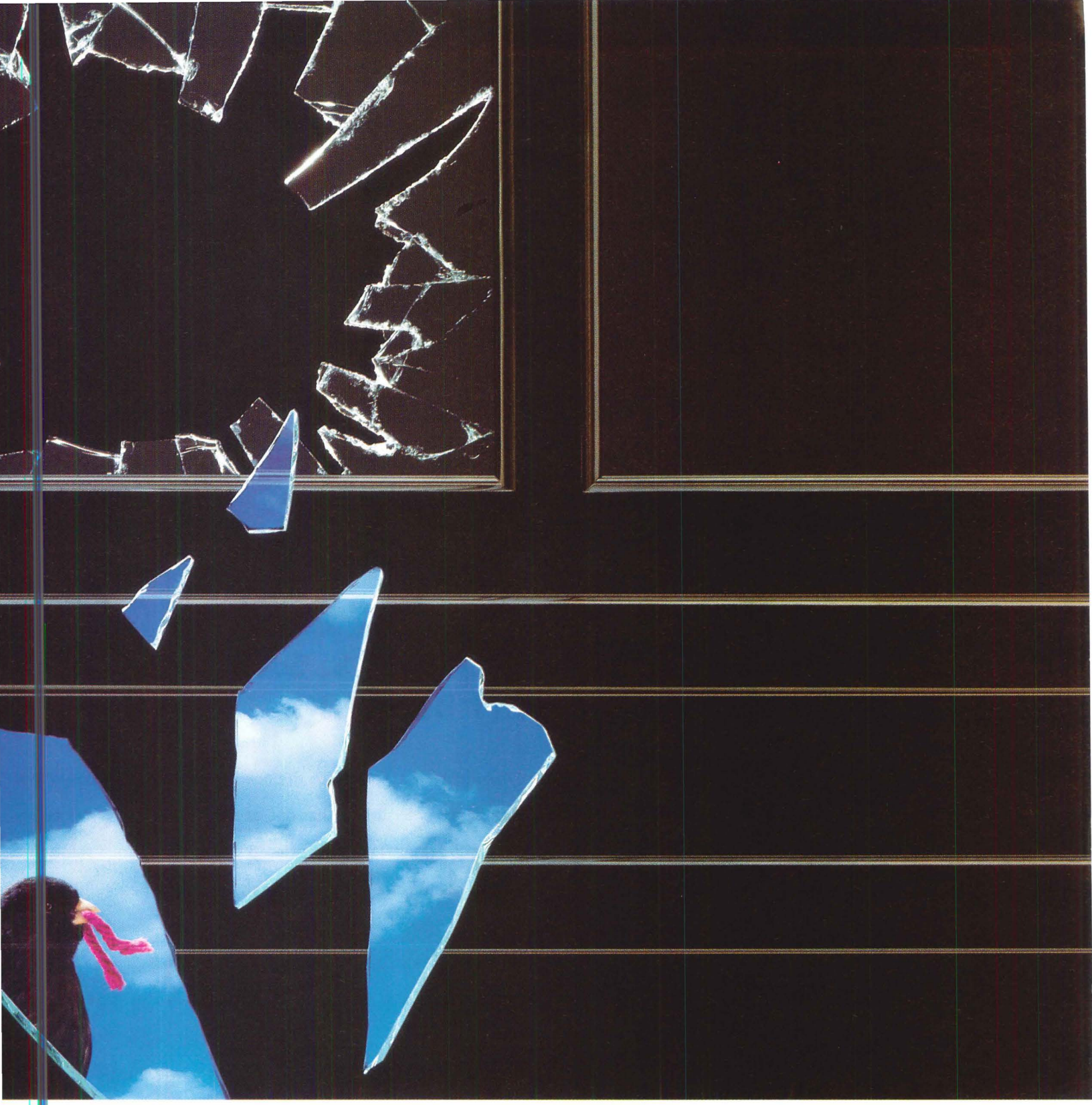

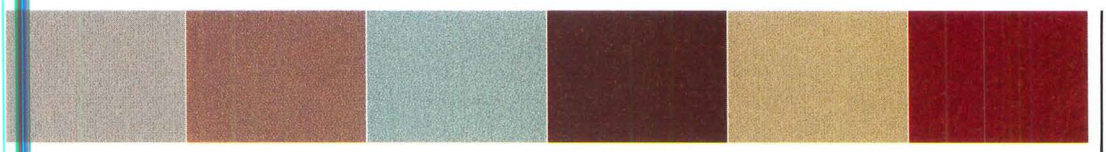

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Cover: *International Terminal, O'Hare International Airport, Chicago, Group One Design (p. 88). Perspective section through concessions court. Sky photo by James Steinkamp, Steinkamp/Ballogg. Cover design by Derek Bacchus.*

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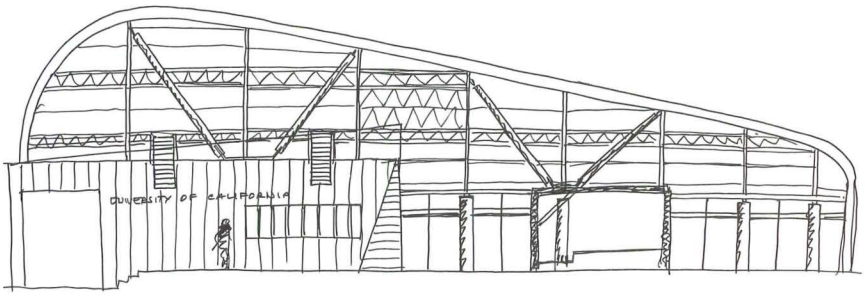

Design development sketches of the Powell Library Staging Facility by Hodgetts + Fung (p. 104).

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Editorial | Monumental Buildings in Context

As even our more monumental projects become increasingly intertwined with their settings, architects should accept the shared decision making that they represent.

We need monuments. The profession, of course, needs monuments to shape its history and maintain its stature – to impress the public with that crucial distinction between architecture and mere building. The public, for its part, needs monuments to give identity to its institutions and to lend legibility to its built environment. The formlessness and alienation of our city edges and suburbs are surely due in part to their dearth of effective monuments.

The air terminal that is the subject of this month's cover article is one such monument, a structure that will gain a place in the memories of its users. Even more of an archetypal monument is the Israeli Supreme Court that was the subject of P/A's April cover article; so rich was this with opportunity to symbolize a national institution that Ziva Freiman entitled the story "The Job of a Lifetime." At first, I found this title a bit disturbing, with its implication of competition for "the job" and the attendant envy, not to mention the suggestion that its architects could never expect another comparable opportunity. But rarely today do even such coveted commissions ensure the kind of autonomy that used to be enjoyed by those who built for kings or dictators, mayors or museum directors.

As both of these buildings demonstrate, the nature of monumental architecture seems to have changed fundamentally over the past decade or so. While the term "monumental building" immediately suggests to us a freestanding structure – a Taj Mahal, a Lincoln Memorial – today's monuments are increasingly enmeshed in larger contexts, both physical and political. A building such as the Holocaust Memorial in Washington, P/A's February cover subject, is typical of the modern-day monument, in that its form and surfaces are subject to imposed restrictions and mandated reviews.

These controls have tightened in recent decades, reflecting the increased involvement in the design process of local governments, quasi-governmental authorities, and community groups (see article on the Riverside South development, page 118). Many architects equate community input and official review with a loss of power for the profession, even though there are often architects on the reviewing side, as well.

But limitations imposed from outside are by no means the only factors operating here. The 1980s saw a shift in architects' own design attitudes, away from the isolated, self-referential building toward an engagement with context. After all, self-contained, alienating structures such as Edward D. Stone's Kennedy Center in Washington (1971) had helped give Modernism a bad name. The Centre Pompidou in Paris by Piano & Rogers, (P/A, May 1977, p. 84) though brilliant, set off heated debate about response to context.

The contextualist position was powerfully boosted by Stirling & Wilford's museum in Stuttgart (P/A, Oct. 1984, p. 67). A monument it is, but one assembled of diverse volumes organized around an intricate context-dictated path, the parts related in form not only to the surrounding city but to the whole architectural history of Europe.

For more than a decade, competition programs and juries have been putting great emphasis on response to setting as a measure of excellence. Among the many examples to be cited are the Vietnam Memorial in Washington by Maya Lin (1983) and Peter Eisenman's Wexner Arts Center at Ohio State University (P/A, Oct. 1989, p. 67). Returning to the Israeli Supreme Court, another competition winner, we see many of the contextualist devices: articulation of parts, allusions to local traditions, axes determined by existing landmarks, etc.

I am not one of those who see the increase in community involvement and control – or the more deferential attitude of most architects toward context – as embodying a loss of power for the profession. We are involved in a long-term process, emerging in the 1960s and continuing today, of revealing how decisions get made, in government, business, and the professions (with freedom-of-information acts, shareholder revolts, debates on medical ethics, etc.). Though the path is not always direct, the long-term trend is toward greater public involvement in decisions affecting us all.

The power of the profession does not depend on acting autonomously, in defiance of public opinion. Bureaucratic meddling can, of course, hamstring architecture, and we should be forthright in opposing useless regulation. But the strength of architects lies in our ability to synthesize the sometimes contradictory impulses of today's society into responsive spaces and forms. We may be building no more Taj Mahals, but if we can create more structures comparable to the Stuttgart Museum or the Israeli Supreme Court, the public – and the profession – will be well served. ■

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Views

Automation Debate, Continued

I found Mr. Reid Neubert's arrogant definition of CAD (Practice, April 1993, p. 59) typical of vendors who miraculously pass off the ignorance of their products as the customer's fault: "But wait, you're only using vanilla CAD!" Tastes more like a scoop of "tutti-frutti" if you ask me. Architects are diverse and specialized professionals in their own right. As such, we have much better things to do than redefine the entire process of delivering professional services just so a handful of CAD vendors can make a purple fortune.

As with [those who sell] any other product, CAD vendors will have to take responsibility for ... their customer base. Frankly, Mr. Neubert's lengthy dissertation on drawing walls is sad commentary on the vendor perspective of what it is architects do. Increasing the object resolution of automated drawing environments will go a long way toward making CAD systems more useful and cost effective, but the real work has not yet begun. I only suggest starting with the hideous "user-interface" of vanilla AutoCAD and its tragic repercussions for third-party vendors and thousands of hapless "operators." The customers are, after all, design professionals.

Until recently, the profession has not been prescriptive in its response to the bill of goods CAD vendors have sold it. Nor is that its charter. Vendors will need to work with university-based researchers who have a professional domain and develop their products. However, CAD vendors have traditionally eschewed such partnerships, preferring instead to regard the university as a profit center, rather than research and development partners. For many reasons, this posture is no longer tenable.

When CAD vendors stop playing fast and loose with the marketplace and provide powerful, integrated, cost-effective, and, human-factored software solutions for their unique problems, architects will readily buy and use their products. Until then, it would be best if CAD vendors and their consultants, etc., did not offend their customers by insinuating that we do not understand their products. To the contrary.

Frederick Abler
Graduate Studio - CAD Research Center
College of Architecture
California Polytechnic State University
San Luis Obispo, California

I must take exception to Mr. Franklin's opinions regarding the use of computers by architects (Practice, April 1993, p. 59).

He states that he is not computer literate; this becomes evident from his other points and arguments. His reservations about CAD sound very much like the complaints of T-square aficionados when faced with newfangled parallel rules and electric erasers. A computer, after all, is simply a tool. To those of us who are computer literate, CAD is as much a tool for design as a pencil and roll of buff paper. One need not "obliterate" computer-produced sketches to produce new ones; neither must one print out paper records at every step. One loses information only at well-chosen points. As a production tool, CAD far outdistances hand methods. It can 3-D model a plan quickly, provide database control for budgets and schedules, even provide quick information for engineers and estimators, without time-consuming take-offs. All of the hand production techniques promoted by Mr. Franklin can easily be achieved with CAD, and much more quickly and accurately. Hand-offs are no different with CAD than with a parallel rule. I prefer sending a computer disk to sending an entire roll of bluelines, for the cost if not the convenience.

As for the stereotype of the young CAD operator, may I present my father. He began using AutoCAD in his late 50s and will not part with it now well into his 60s. It appears to me that Mr. Franklin's objections to CAD are based more on fear than fact. I am grateful that my firm is not so shortsighted.

Tami Corthell, Architect
Madison, Wisconsin

Sustainability and Highway Retail

We found it very disturbing that P/A featured a Wal-Mart store (P/A, March 1993, p. 23) as a "demonstration of the mainstreaming of environmental issues" while 50 pages later your feature article "The State of Sustainability" speaks of the importance of reinforcing urban centers. What good does it do to have skylights and dimmable fluorescent lights in a suburban shopping complex while the bricks and stones of Main Street a few miles down the road go unused? Wal-Mart is notorious for sucking the life out of nearby downtowns, and for its dependence on the automobile. Wal-Mart's choice of sites has not always been environmentally sound. For example, a proposal for a Wal-Mart store in a floodplain in Western Massachusetts would involve the diversion of a major river. When P/A seems to be examining the need for well considered locational decisions as a part of sustainable design, why extol the virtues of what is an environmental and economic nightmare for many small cities and towns across the country?

Elizabeth Humstone
Humstone Associates
Turner Brooks
Brooks & Carey Architects
Burlington, Vermont

[We should have noted the irony of energy conservation in highway retail. –Editors]

EIFS Cautions

P/A should be applauded as one of the first publications to reveal the soft underside of the EIFS story (April 1993, p. 45). For years we have seen only praise for this material, while its serious flaws have been largely disregarded in the search for a cheap cladding. While you only had space for "the tip of the iceberg," the ASTM Symposium of September 21–24, 1992, addressed the entire scope of this problem, including the fire safety issue.

Thomas B. Battles, AIA
President, Precasts/Prestressed Concrete Institute
Chicago

[P/A endeavors to publish balanced articles on a full range of building products and systems, and we have covered EIFS before. We know architects who choose EIFS for qualities other than its cost. –Editors]

Colorado's Amendment Two

I feel P/A's plans to proceed with the "New Public Realm" exhibition in Denver (April 1993, p. 22) will further enforce Amendment 2, validating their hate message by carrying on "business as usual." The convention and trade bureaus can point to no change in convention dollars spent as a sign of acceptance of Amendment 2.

No esoteric "possible/maybe" discussion of Amendment 2 at this symposium is going to have anything like the effect that withdrawing your exhibit would have had.

Richard Gibbons
Richard Gibbons & Associates
Architecture and Design
Chicago

Embarcadero Winners Correction

The announcement of the winners of the International San Francisco Embarcadero Waterfront Competition (Apr. 1993, p. 20) should have included Thurman Grant, Mark Motonaga, and Anthony Paradowski of N.o. Architecture, San Francisco.

A more complete report on the competition appeared in last month's News Report (p. 17).

NRDC Lighting Economies

In the table representing lighting loads for the Natural Resources Defense Council offices (March 1993, p. 88) the word "cost" should not have appeared in the second column. The cost savings in dollars appear in column three. ■

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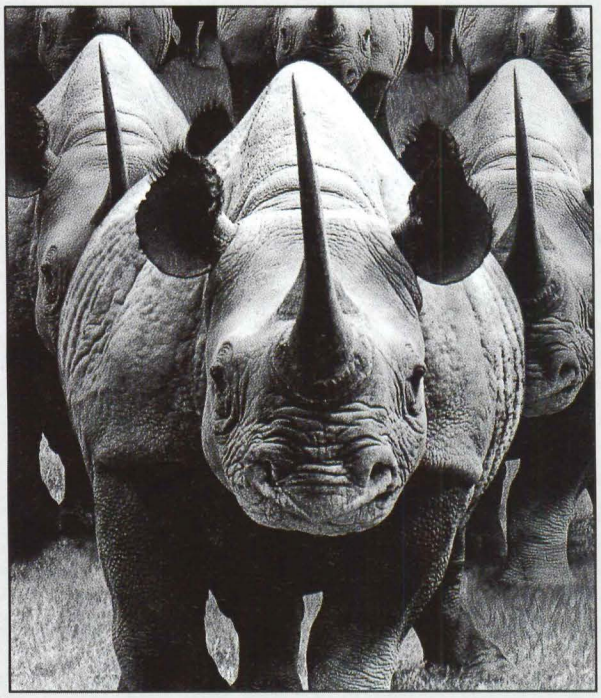

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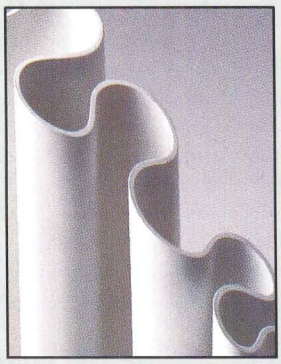

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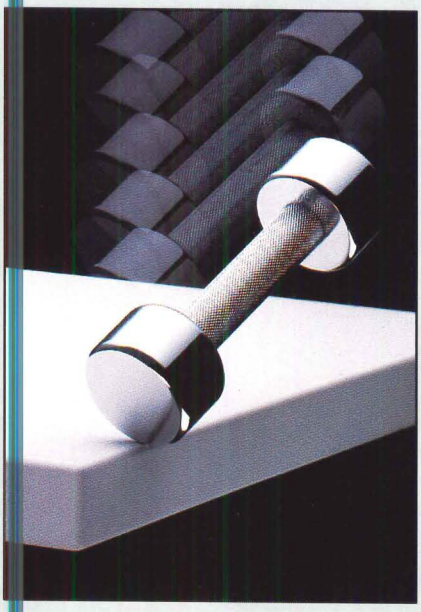

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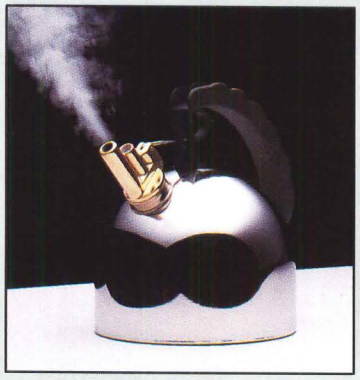

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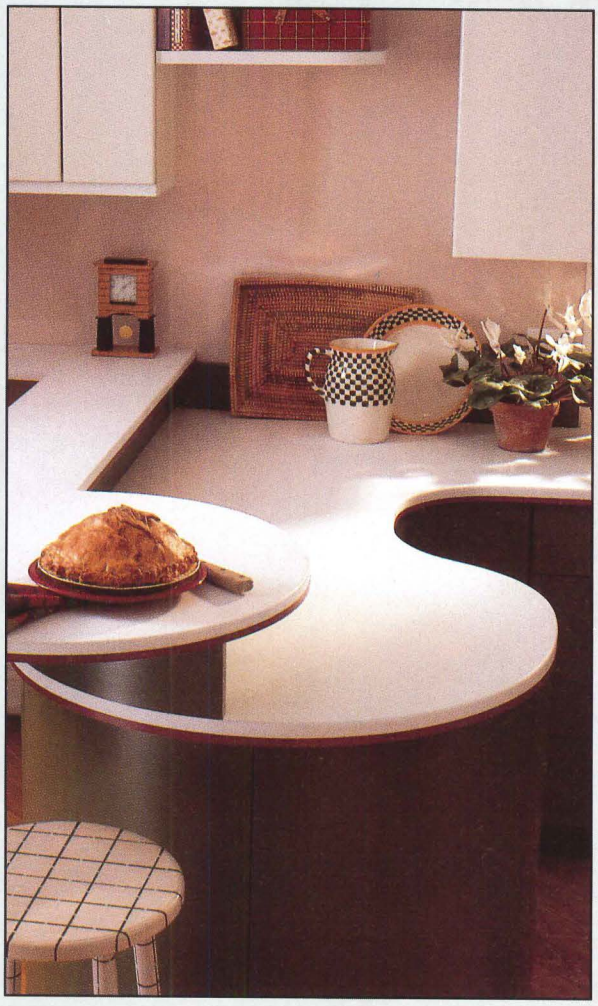

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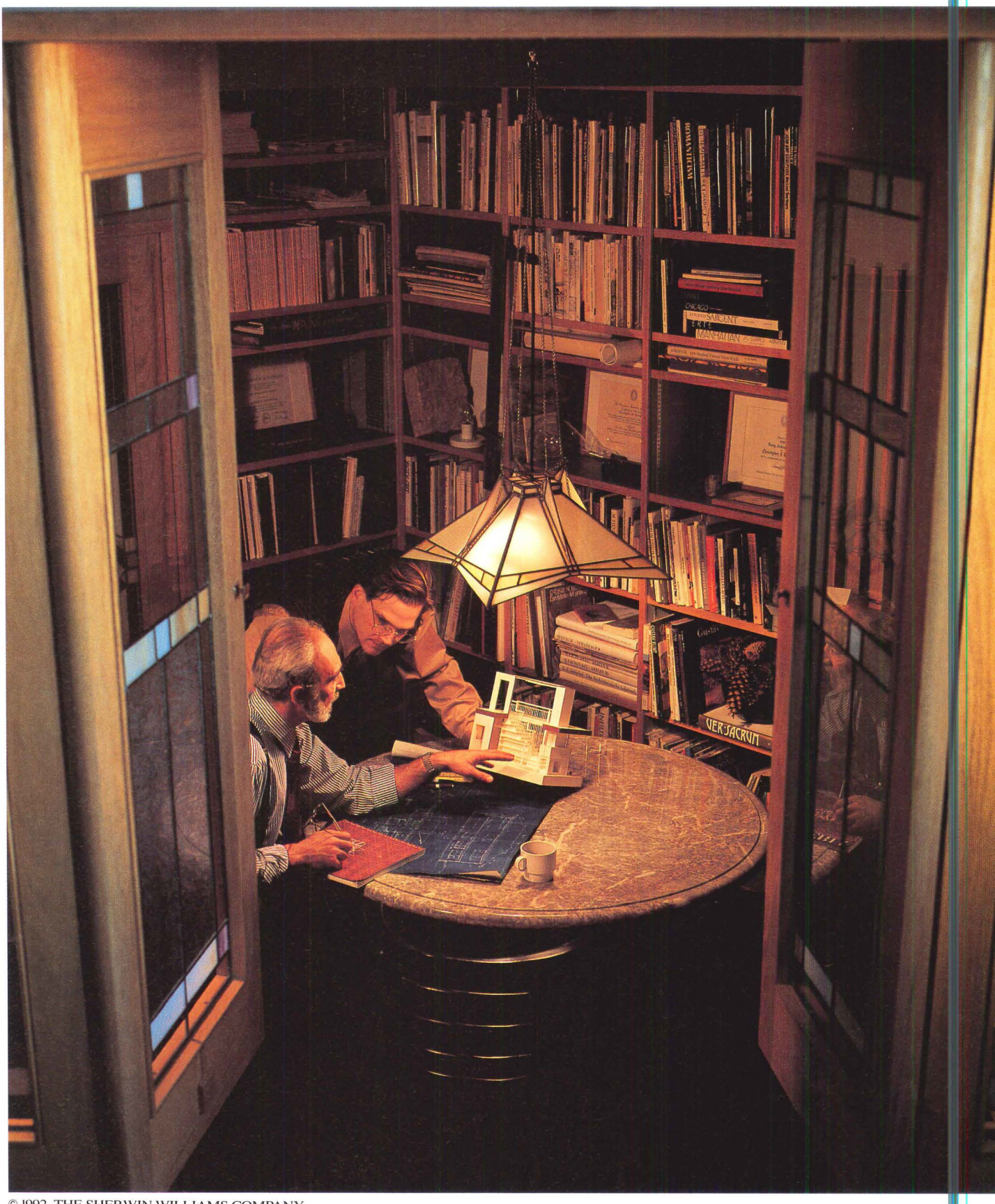

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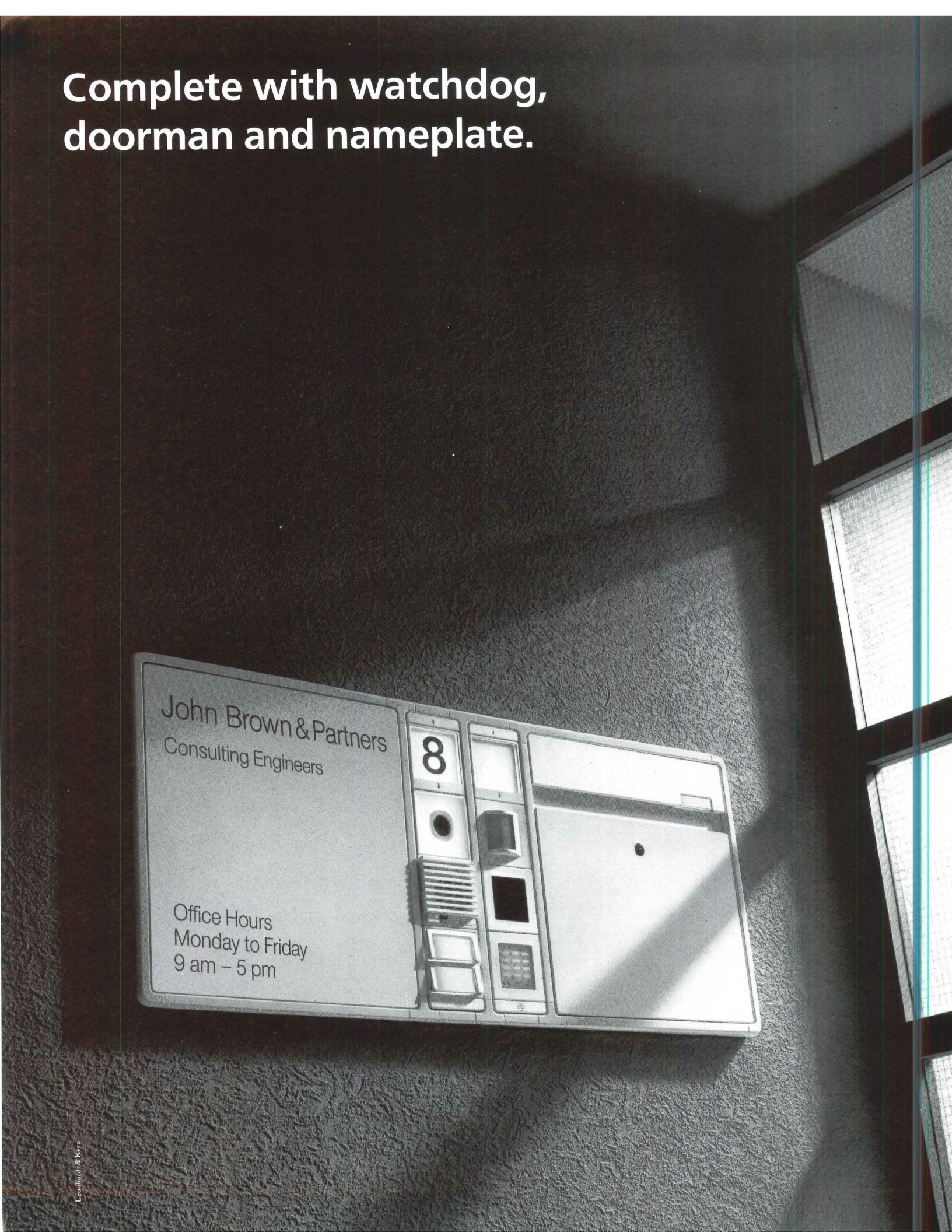

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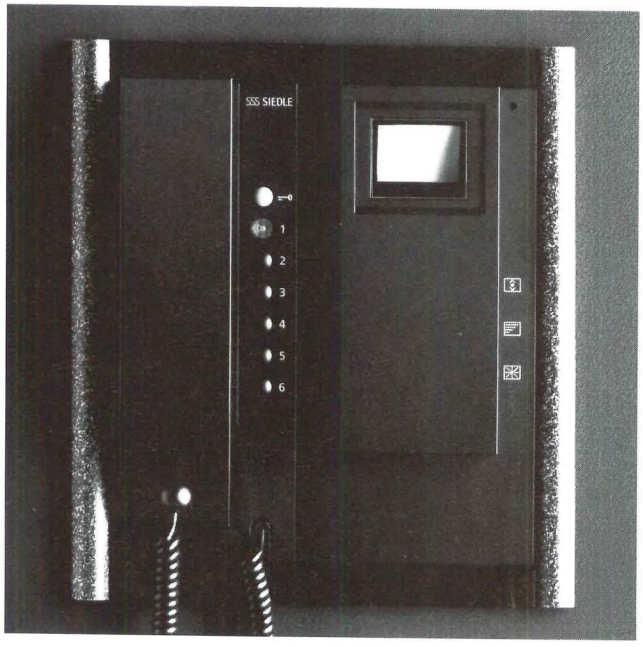

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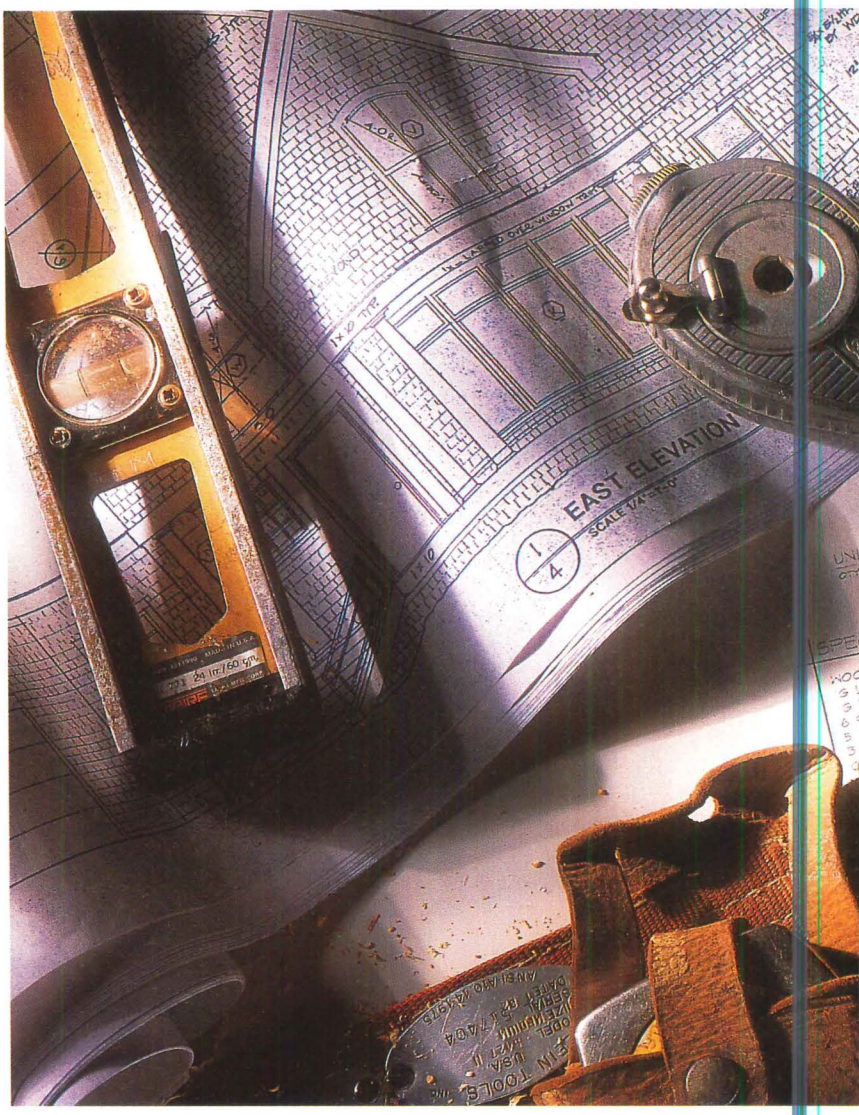
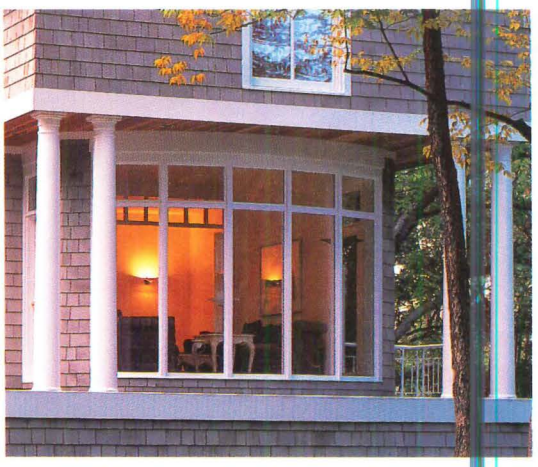


As the 1991 Parade of Homes approached, builders/architects Waters & Bonner Inc. felt they had a showstopper. Naturally, windows were a critical element in their plans. So early on in the project, Keith Waters contacted Marvin Windows.

His biggest challenge was the focal point of the home: a unit made up of five 8 ft. x 2 ft. transom-topped windows, arranged in a curved subsill to form a bow. The fact that Marvin could craft such a window didn't really startle Keith. Past experience had taught him otherwise. But he was surprised when Marvin's Architectural Department offered to draft the CAD drawings for the subsill; a gesture that saved his firm a considerable amount of time and trouble.



Yet Marvin didn't stop there. Next, they turned their attention to a soaring, 10-lite window that was also part of the plans. And by suggesting a reduction of just three inches in the overall height of this 18 ft. unit, they were able to save Waters & Bonner and the homeowner over $400.00.

Keith's prediction proved to be correct. Waters & Bonner won a regional Reggie Award for the home's

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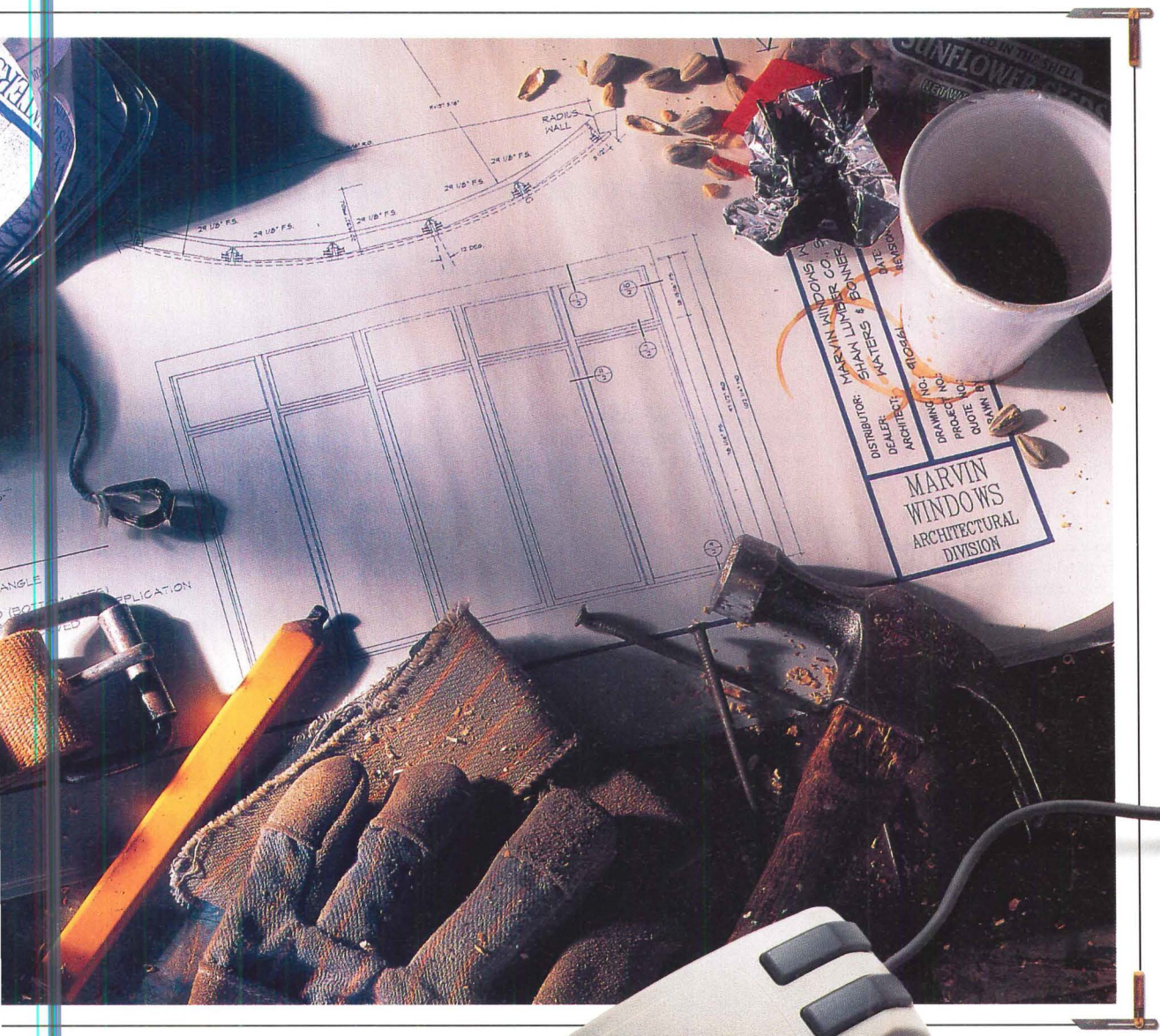

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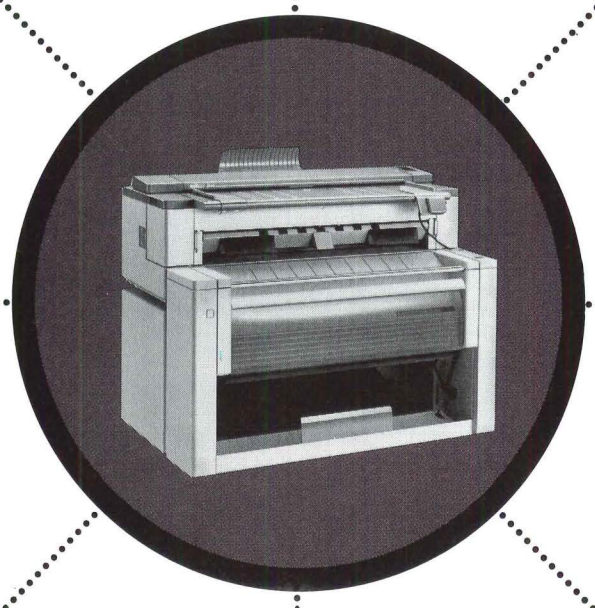

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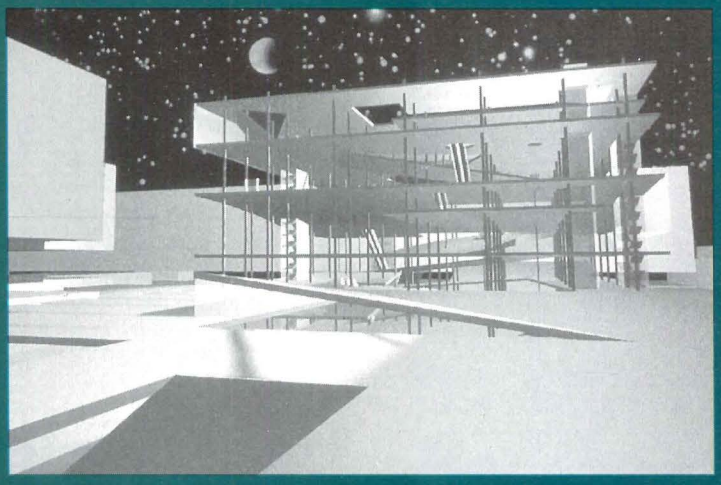
Alan Gilbert

Photos from a destroyed Polish village at Holocaust Museum.

Atsushi Nakamichi

P.20 The provocative designs of Shin Takamatsu, on display at MoMA in San Francisco. (Above: Origin I, 1981)

6.93 News Report



P.24 In Projects, Rem Koolhaas's competition-winning design for a library at the Sorbonne.

P.21 Washington Report: Architects tackle environmental problems at this month's World Congress in Chicago.

P.23 Amtrak releases a design for a new Penn Station in the adjacent General Post Office.

Holocaust Museum Opens to Acclaim

If a building can be judged by the clarity and eloquence with which it communicates, the United States Holocaust Memorial Museum (P/A, Feb. 1993, p. 60), which was dedicated on a raw and frigid morning in late April, is nothing short of brilliant. Herbert Muschamp in *The New York Times* set the tone a week and a half before the opening when he wrote that "James Ingo Freed, of Pei Cobb Freed & Partners, has designed a work of such enormous power that it ... defies language." Syndicated columnists George Will and Charles Krauthammer both judged the museum "a masterpiece." Brendan Gill in *The New Yorker* called it "one of the most interesting buildings put up in this country during the past quarter-century."

The dedication ceremonies in the nation's capital drew perhaps 10,000, among them Holocaust survivors, their rescuers, and U.S. and foreign dignitaries. Because Holocaust survivors are growing old and their memories fading, President Bill Clinton spoke at the dedication of the need "to deepen our memory and our humanity and to transmit these lessons from generation to generation." (Clinton was certainly also familiar with the recent survey showing that 37 percent of Americans were unfamiliar with the Holocaust.) Among other speakers at the ceremony were Nobel Peace Prize laureate Elie Wiesel, who reached back into his childhood to recall "Auschwitz, the black hole in history," and Stephanie Podgorska Burzminski, who, orphaned at age 16 in the Polish town of Przemysl, concealed and saved 13 Jews in the attic of her family's apartment.

The prescribed tour of the exhibits, designed by Ralph Applebaum and Martin Smith, begins in a gray steel elevator whose doors snap shut and then disgorge visitors on the fourth floor, from which a

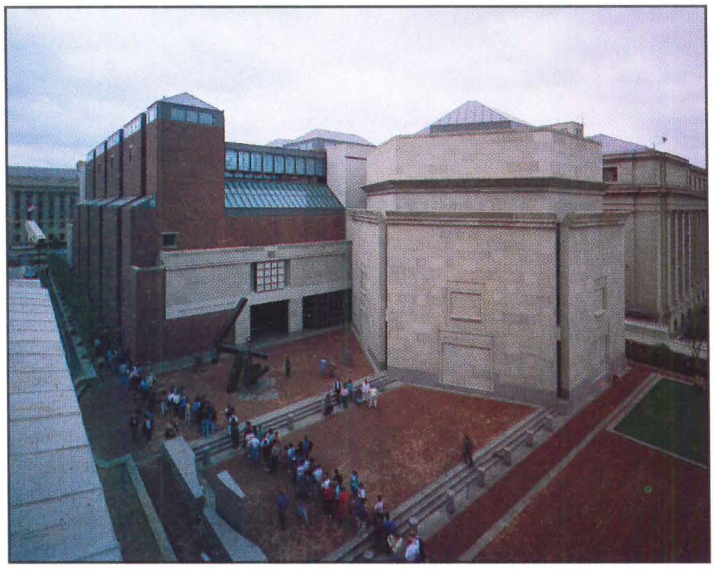
Pencil Points

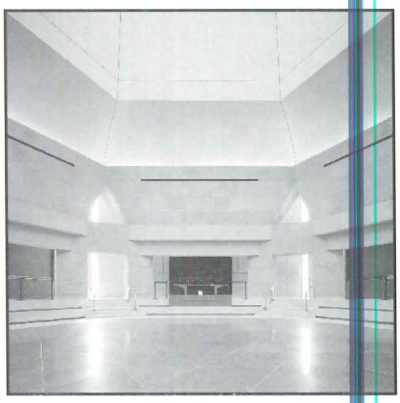
Four new academic appointments have been made at U.S. schools of architecture. Cynthia Weese will begin her duties as dean of the Washington University School of Architecture next month; Kent Lovering Hubbell has been named chairman of Cornell University's Department of Architecture in the College of Architecture, Art, and Planning; Lawrence Speck has been named dean of the School of Architecture at the University of Texas at Austin; and Lars Lerup has been named dean at Rice University's School of Architecture.

Hugh Hardy of Hardy Holzman Pfeiffer Associates, New York, is one of seven newly elected members of the American Academy of Arts and Letters. Architect member Kevin Roche praised Hardy for the "clear vision, sure hand, and disarming wit reflected in work which exudes confidence."

The Pompidou Center is currently seeking projects for inclusion in a 1995 exhibition titled "Inhabited Bridges: The History and Future of a Major Urban Vitality." The show will present historic examples, contemporary structures, and unbuilt designs. The show is intended to reintroduce the concept of multifunctional bridges as plausible additions to the cityscape. Contact Ruth Eaton, Centre Georges Pompidou, 75191 Paris Cedex 04, France (33-1) 44/8 4255 or FAX (33-1) 44/8 1204.

Although New York is not a city noted for its environmental sensitivity, it has more "green" spots than one would imagine. The Green Apple Map, published by Modern World Design, New York, documents the city's natural spaces, ecologically designed buildings, green markets and businesses, environmental centers and museums, and other related sites. Contact Modern World Design, 157 Ludlow St., #4, New York, NY 10002 FAX (212) 674-1631. Cost: $4.





Photos: Alan Gilbert

West entrance to the museum on opening day (left); the Hall of Remembrance (above).

sparsely lighted journey loops down to the first floor. Again and again the solitary path overlooks or actually crosses the building's airless central atrium, the Hall of Witness, with its disturbingly distorted axes and warped angles, its steel reinforcing bands on brick reminiscent of those that braced the crematoria at Auschwitz, and its hovering watchtowers and catwalks.

The permanent exhibitions rely most heavily on black-and-white moving and still images that tell their story in chapters of mounting menace. The displays begin with the rise of Nazism in 1933, progress through the implementation of the "final solution," and end with postwar efforts to resettle the survivors. Except for strains of the German national anthem, the hard-surfaced exhibition halls are silent. They are studded with footbridges that suggest the paths of frantically fleeing refugees, serve to give a sense of place to the spaces they connect, and recall the familiar image of the bridge over the Warsaw Ghetto whose purpose was to insulate the city's gentiles from Jewish contamination. The museum's many bridges also help alleviate claustrophobia, as does the compelling balancing act that the exhibitions manage to maintain between story-telling and history, impressions and analysis.

Among the museum's most moving displays is one that personalizes the massacre of millions. It consists of a three-story, chimney-shaped tower covered from top to bottom with snapshots of life in the Polish village of Ejszyszki. It was a town of 3,500 souls whose decimation by the Nazis in 1941 left only 29 survivors. One of them was Yaffa Sonenson Eilach, the collector of these photographs of a lost world.

As a complement to its many thousand images, the museum now possesses the world's largest collection of holocaust artifacts. It includes boxcar number 31599G; canisters of Zyklon-B gas; piles of umbrellas, of musty-smelling shoes, of toothbrushes; a stable-like barracks from Auschwitz, where prisoners were stored for the night like cordwood; and a frail Spanish boat that ferried many of Denmark's Jews to freedom in Sweden.

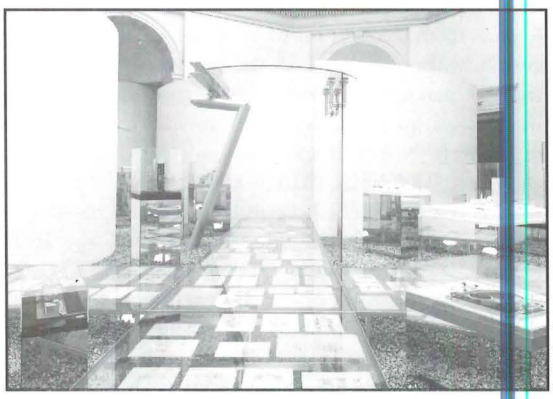
The tour concludes in the Hall of Remembrance, a six-sided, tranquil – if too self-consciously inspiring – space for lighting candles, gathering thoughts, perhaps shedding tears. The museum doesn't attempt to explain the Holocaust. As Elie Wiesel said at the dedication, "This museum is not an answer. It is a question mark. It is a response. We believe in the absolute necessity to communicate the tale." **Andrea Oppenheimer Dean** ■

The author, a former Executive Editor of Architecture *magazine, is Editor-at-Large of* Historic Preservation.

Takamatsu in Multimedia San Francisco Show

On March 4, the first U.S. exhibition of the work of Shin Takamatsu, often called the "bad boy" of Japanese architecture, opened at the San Francisco Museum of Modern Art. The installation, which Takamatsu designed and furnished with over 25 models and 520 drawings and sketches, is a tour de force of media presentation. Via a Sony high-definition 3-D video projected on a 110-inch screen, viewers equipped with special goggles take a magic carpet ride around, over, and through Takamatsu's buildings.

Inside the rotunda gallery, corner pavilions are devoted to 4 of the 69 projects that Takamatsu has



Ben Blackwell

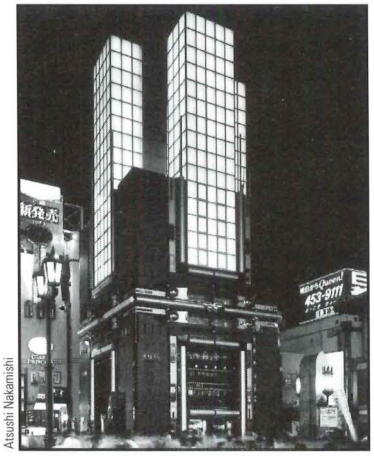
Takamatsu installation, with "graphic stepping stones."

built since 1977: Origin I-II-III, Kirin Plaza Osaka, Syntax, and Kunibiki Messe. Separate videos, models, and drawings in several media illustrate the design process of these projects in the pavilions while similar presentations of other built and unbuilt projects occupy the center of the rotunda.

The installation suggests a recasting of the Japanese garden for the information age. Curved partitions of off-white curtains stand in for shoji screens in the pavilions, the pebbles covering the floor in the central space are sprayed with gold paint, and – the most astonishing trope of all – the glass pathways connecting the pavilions have drawings mounted like graphic stepping stones on their undersides.

As for the buildings themselves, many observers see in them disturbing qualities associated with life-threatening technology. For example, the late Anton Furst, designer of sets for the film *Batman*, cited Takamatsu's architecture as one of his inspirations for the sinister Gotham City.

In recent works Takamatsu has moved away from the expression of mechanistic form and exaggerated detail that made his earlier buildings appear more as objects than as buildings for human habitation. Still, the masterful monochromatic pencil drawings and air-brushed renderings of unlabeled plans and elevations evoke the mood of *film noir*. That the uneasiness at the end of the second millennium has touched architecture is not surprising.



Atsushi Nakamishi

Takamatsu's Kirin Plaza, Osaka (1987).

Nor is it surprising that Japan has produced a highly gifted and accomplished architect to express both the anxiety and the excitement of late-20th-Century technology.

During the 1980s, when most of Takamatsu's buildings were designed, Japan – for all we knew – was paved with gold; architects like Takamatsu enjoyed the patronage of purveyors of luxury – fashion designers and others who prospered in a society rich beyond the dreams of avarice. If, as we now hear, the gilded bubble has burst, Takamatsu's exhibition may become a time capsule, a way, in an era of limits, to go back to the future.

Sally Woodbridge ■

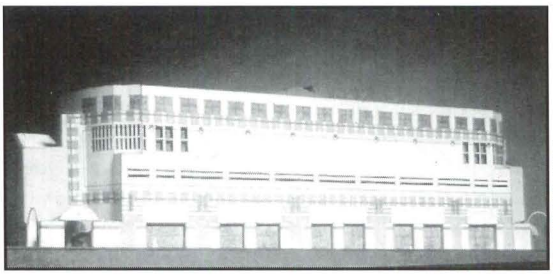
Austin Museum Comes Off the Shelf

After more than ten years and what seemed to be certain death, the design for a downtown art museum in Austin, Texas, by Venturi, Scott Brown & Associates (VSBA) of Philadelphia appears to live again.

Originally conceived in 1983, the museum project was to have been built with city funds on land donated by Watson-Casey, a development company that planned a large mixed-use development in the warehouse district at the southern edge of downtown. Laguna Gloria Art Museum, a private museum founded in 1946 and housed in a West Austin mansion, would operate the new museum. The building was to comprise four stories and 86,000 square feet in an arrangement of lineal galleries and circulation spaces similar to the one used later in VSBA's Seattle Museum of Art (P/A, Feb. 1992, p. 19).

The City of Austin passed a $14.7-million bond issue in 1985 to fund the project, and began selling bonds in 1986. But the real estate market went sour, Watson-Casey folded, and the lender left with the property couldn't agree on terms with city officials. In 1990, the city council voted to kill the project.

But museum board members kept working behind the scenes, forging alliances with the George Washington Carver Museum and the Mexican American Cultural Center, impoverished but politically well-connected arts groups, to come up with a new plan. Early this year, the groups announced their joint backing for the project, rechristened the Austin Museum of Art, which Laguna Gloria would operate. The Meadows Foundation, they said, had donated $375,000, approximately half the money needed to buy land from the Union Pacific Railroad a block south of the original site. In late April, the city council voted to lend the groups the rest of the purchase price and to spend the money on construction.



Laguna Gloria Art Museum

VSBA design for Austin Museum of Art.

According to Daniel Stetson, Laguna Gloria's director of two years, the design for the museum is to be virtually identical to that of 1986, when VSBA last changed the building's façade, although the foundation needs to be restudied for the new site, and the building will be pushed back on half a block, instead of on the original quarter-block.

Stetson says the board of the new Austin Museum of Art is confident that it can raise the rest of the money for the land, at which time the city will sell the rest of the bonds. Until that happens, and until the city and the arts groups can work out details of new construction contracts, however, "Nothing is definite," says Stetson. "We've found that out before with this project." **Joel Warren Barna** ■

Washington Report

Organizers of this month's World Congress of Architects in Chicago sounded unabashed notes of alarm in their call to action: "Trends in population growth, development, industrial production, and scarce-resource utilization point us inexorably toward a global crisis of sustainability, threatening the viability of life on Earth." Saying that "architects have the imagination, the talent, the training, the influence and the responsibility to help alter that course," UIA and AIA officials urged redefinition of a profession – and a planet – at a crossroads.

Some might think that such pronouncements showed gall on the part a profession that seemed quite content to ride a decade-long wave of environmentally conscienceless growth and development. But on the eve of what promises to be the world's largest gathering of architects in recent times, it appears that the profession is more deeply concerned than ever about the fate of the earth – and more confident about design's potential to help reshape it.

And just how can the Federal government aid such efforts? Advocates of aggressive Federal actions to encourage conservation remain uncertain that a national energy tax alone can do all that is possible or necessary.

Other initiatives seem probable, but their shape and extent are unclear. "Research and development projects are vital and appropriate [spending] areas," said one Department of Energy official, but he could not predict what new buildings-related programs would win the support of Energy Secretary Hazel O'Leary. Adding that DOE may have strayed too far into the indoor air-quality and interior environment business, he signaled that hard-nosed budgeting could cut such programs in the future.

The "sustainable design" practiced most often by architects has tended to focus on avoiding the use of materials

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Washington Report
(continued from previous page)

that are energy-profligate, that contribute to unhealthful interior environments, or that injure ecosystems in their manufacture or use. Only the most "Californized" versions of sustainable design seem to address environmental issues very far beyond the building edge: How people, goods, and services move from one place to another; where food comes from and how it is produced; how waste is created, where it goes and how it is treated; how energy is generated; and how all of these matters relate to microclimates and regional ecosystems.

These are the types of bigger issues that many believe have to be tackled and are in danger of slipping by. The Environmental Protection Agency reported this spring that the Clean Air Act had reduced pollutants from automobile emissions. But it also warned that levels would rise again in the next decade, even with tougher standards, because of expected increases in the number of vehicles on roads – and noted that automobile emissions now probably account for half of all cancers related to toxins in the air.

With 5 percent of the earth's population, the U.S. alone produces almost one-quarter of the globe's emissions from use of carbon-based fuels, giving rise to differences in outlooks and priorities: "Your 'green architecture' is a very nice thing," said an Eastern European architect planning to attend the World Congress. "But we are not the ones driving all over the place in private cars and wasting fuels." While ignoring his own country's considerable role in poisoning a subcontinent, he had a point.

"Get your own house in order" has been a sentiment expressed before in forums where others are asked to share America's environmental concerns; while it may be heard again in Chicago, at least it will come amidst evidence of our renewed determination to help do just that. **Thomas Vonier** ■

Seattle Port HQ Kicks Off Redevelopment

The Port of Seattle has begun a major redevelopment of the city's central waterfront with a dramatic conversion of a cannery warehouse into its headquarters. The three-story, 750-foot-long building is on a pier angling out into Elliott Bay. A white metal and blue-green glass exterior gives it the look of a Modernist cruise ship. Architects Hewitt/Isley of Seattle took the building down to its muscular reinforced concrete structure, then set about making the most of the structure and the spaces that it yielded.

The redevelopment area, south of the headquarters building, extends for four blocks on both sides of Alaskan Way, the waterfront boulevard. The 18 acres on the bay side of the boulevard are being developed by the port itself with the same architects, chosen from a star-studded array of competitors.

The port will build a boat transit shed and a fish processing plant (there has been citizen pressure to retain maritime uses of the waterfront), a combination maritime museum and conference center, a restaurant and shops building, and a new short-term-moorage marina for some 85 boats. Hewitt/Isley is seeking to give these buildings the same workmanlike, waterfront look that the headquarters has, using shed roofs and brightly colored metal siding.

Because the waterfront sits beneath steep bluffs, the plan calls for at least two pedestrian bridges to link the new development to the neighborhoods above. The central aim is to make the area a significant community amenity. The buildings will be grouped around a central plaza with fine water views, and the marina will be ringed by walkways.

Patrick Barta

Port of Seattle headquarters by Hewitt/Isley

The portion of the project on the city side of Alaskan Way will be privately developed and will include a hotel, an office building, and housing. The chosen developers are Broadacre Management Corp. and Gary Waterman, Ltd., whose design by the Seattle offices of NBBJ and Zimmer Gunsul Frasca was a surehanded interpretation of the port's guidelines. **Donald Canty** ■

Monterey Design Conference Explores Limits

At the 11th Monterey Design Conference, held at the Asilomar Conference Center near Monterey, California, on March 19–21, the theme of "Limits/No Limits" set the tone for presentations on subjects ranging from the limitless potential of computers to the environmental limits on land use. Journalist and astronomy writer Timothy Ferris of Berkeley, California, opened the conference with a discussion of the idea of limits in both art and science. Citing Magritte's painting of a picture frame floating eerily before a "real" landscape, he said both physics and art are opposed to arbitrary delineations between real and unreal. Architect Mack Scogin of Atlanta's Scogin Elam & Bray found "no limits" to good architecture in a democratic society where people are demanding good design, particularly in public buildings.

"No limits" aptly describes the field of computer-aided design and digital graphics, according to Dennis Neeley, an architect who also heads a CAD software company, ASG. In five years, according to Neeley, architecture will be dominated by digital technology, spelling the end to eons of "hand-drawn, paper-based" technology. Janet Abrams, the former director of the Chicago Institute for Architecture and Urbanism, dwelt on the limitlessness of global communications and their effect on both public and personal space. Ease of communication and the popularity of meetings have made airports and convention centers the most important public spaces of our time, Abrams asserted, while those spaces grow increasingly crowded and characterless. Architect Michael Rotondi of Santa Monica said the computer is an "instrument for conceptualizing and extending consciousness," and described the new role of the architect as mediator between the conceptual and the physical, between "new urban space and electronic space."

Environmental limits occupied the attention of the next set of speakers, including Robert Berkebile of Kansas City, Missouri, who scolded architects for pursuing aesthetic goals without regard to sustainability, while architect James Cutler described his evolution from Kahn-trained formalist to environmental activist in reaction to the degradation of his home state, Washington. Architect Samuel J. Caudill of Aspen, Colorado, showed work from a career of sustainable architecture, most notably the Amory Lovins house and the Rocky Mountain Institute (P/A, March 1993, p. 77).

Wolf Prix, principal of Vienna-based Coop Himmelblau, was the personification of "no limits" design philosophy, relishing his bad-boy role as he skewered the timidity of received ideas of functionality and construction. A very different architect, Pritzker Prize winner Fumihiko Maki (P/A, May 1993, p. 17), did not dwell on limits or the lack of them in his presentation, although projects like his Tokyo Metropolitan Gymnasium suggest that this Japanese master has found his own balance between the limits of necessity and the limitlessness of plastic imagination.

The Monterey Design Conference was sponsored by the California Council of the AIA.
Morris Newman ■

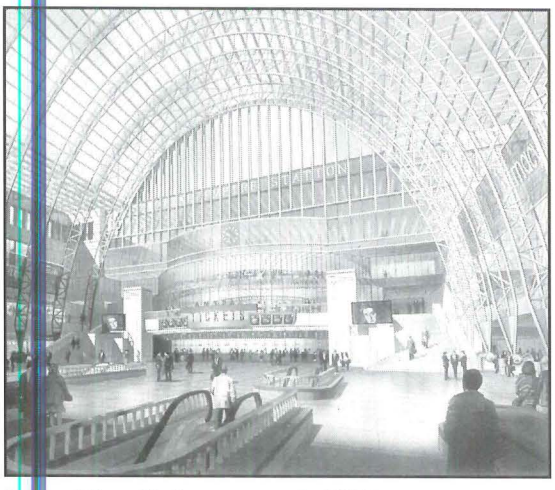
Correa's Indian Mission Opens in Manhattan

A sliver of red has been added to the skyscape of Midtown Manhattan – the Indian Mission to the United Nations. Twenty-eight floors tall, this tower comprises 22 apartments above four floors of offices and reception rooms – living and working quarters for most of the delegation at the Mission. Designed by Charles Correa of Bombay, India, (Bond Ryder & Associates of New York, now part of Davis Brody & Associates, are the architects of record), the Mission stands out for its modesty: it is less bulky and more straightforward than most recent arrivals to the East Side.

Correa compares the tower to "a well-mannered Indian who has lived in New York for years" – a building that follows the protocol of its host city as it discloses its foreign origins. A pair of massive brass doors lends an air of the exotic for pedestrians; the colors of the steel cladding – red and blue – replicate a traditional northern Indian palette. But Le Corbusier's influence is more obvious than India's indigenous architecture – both here and in Correa's work back home. (Louis Kahn was equally inspirational; see P/A April 1993, p. 86.) Correa cites a conversation with Le Corbusier about the Secretariat in Chandigarh, when the Swiss master addressed the metaphysical connotations of the junction of earth and sky. He advised architects to consider carefully the design of the roofline, the emblem of a building's character. Accordingly, Correa capped the Indian Mission with a double-height penthouse porch, derived from *barsati*, the lightweight structures for sleeping common to Indian rooftops. Seen from one of its taller neighbors, Correa's aerie brings to mind Le Corbusier's garden in the sky, if not India's vernacular houses. But these references are moot when you look up at the tower from the street. From there, it looks like a study in Midtown propriety. **Philip Arcidi** ■

Bernstein Associates

Indian Mission (in red) on the Midtown skyline.



Proposed Penn Station concourse by HOK.

Post Office for New Penn Station?

The demolition of New York's Pennsylvania Station in 1964 – and its replacement, a subterranean disappointment beneath the new Madison Square Garden – was the spark that led to a fervent preservation movement in New York and elsewhere. Last year, Amtrak officials made the surprising announcement that they were considering the acquisition of the soon-to-be-vacated General Post Office, across the street from the current station, as a new terminal (P/A, June 1992, p. 164).

The post office was built in 1913 and, like the old Penn Station, was designed by McKim, Mead & White. Its columnar Classical façade would evoke the dignity of other Northeast Corridor stations, many of which have been rehabilitated in recent years. The current Penn Station has proven to be insistently inhospitable, despite some $32 million Amtrak has poured into renovations.

While it is still unclear whether Amtrak and its developer partner, LCOR, Inc., can get the $315 million – mostly Federal funds – to make the move, the railroad revealed last month a design for the conversion of the post office by the New York office of Hellmuth, Obata & Kassabaum. The plan calls for bringing passengers up from the train platforms (most of which already extend under the post office) into the building's central court, which would be covered with a parabolic, 120-foot-tall glass-and-steel roof. Commuter trains would continue to run from the present station.

The plan may face a tough fight in Congress, where the wisdom of spending transit dollars on a largely aesthetic project is sure to be questioned. But the scheme has a friend in Senator Daniel Patrick Moynihan of New York, an architecture aficionado who chairs the Senate Finance Committee. "You don't get a second chance like this often," Moynihan told *The New York Times*. "We must do it." **Mark Alden Branch** ■

AIA Honorary Members Announced

The American Institute of Architects has selected 15 men and women for honorary membership in the Institute. Honorary membership is a means of recognizing non-architects for "their outstanding contributions to the architectural profession and the allied arts and sciences." This year's honorees are:

- Trudy Aron, executive director of AIA Kansas;
- Marianna L. Barthold, executive director of AIA Central Oklahoma;
- Edward J. Carlough, president, Sheet Metal Workers International Association;
- Carlos Diniz, illustrator, delineator, and renderer;
- Patsy L. Frost, assistant to the AIA/Columbus executive director;
- Roberta Brandes Gratz, author and *New York Post* reporter, cited as "an advocate for the cities and for preservation";
- Charles L. Hite, associate director of the hospital division of the Duke Endowment, a "catalyst for student and professional education in healthcare architecture";
- Roger G. Kennedy, director of the Smithsonian Museum of Natural History;
- R. Lawrence Kirkegaard, acoustics consultant;
- Randell Lee Makinson, director and curator of the Gamble House and "the principal world scholar on Greene & Greene";
- Eleanor McNamara, executive director of AIA Arizona;
- W. Brown Morton, chair and associate professor of the department of preservation at Mary Washington College;
- Martha Murphree, executive director of AIA Houston;
- Frederick D. Schwengel, president of the U.S. Capitol Historical Society and a former U.S. Representative from Iowa;
- Nancy C. Somerville, senior director of the AIA's state and local government affairs department. ■

Projects

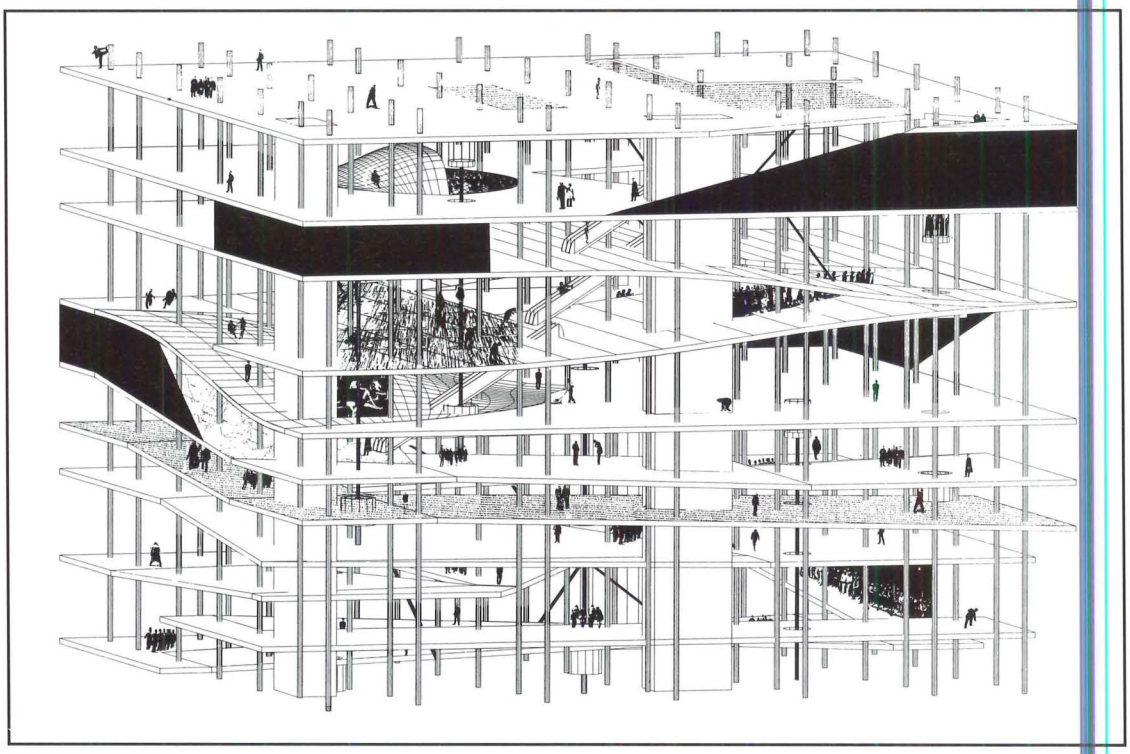
Sorbonne Library

Rem Koolhaas and his Office for Metropolitan Architecture in Rotterdam now have another chance to explore some of the ideas behind their 1989 competition scheme for the Bibliothèque de France (P/A, April 1990, p. 125). The firm's recent competition-winning design for a library at the Sorbonne in Paris revives the idea of a structural grid animated by varying floor plates.

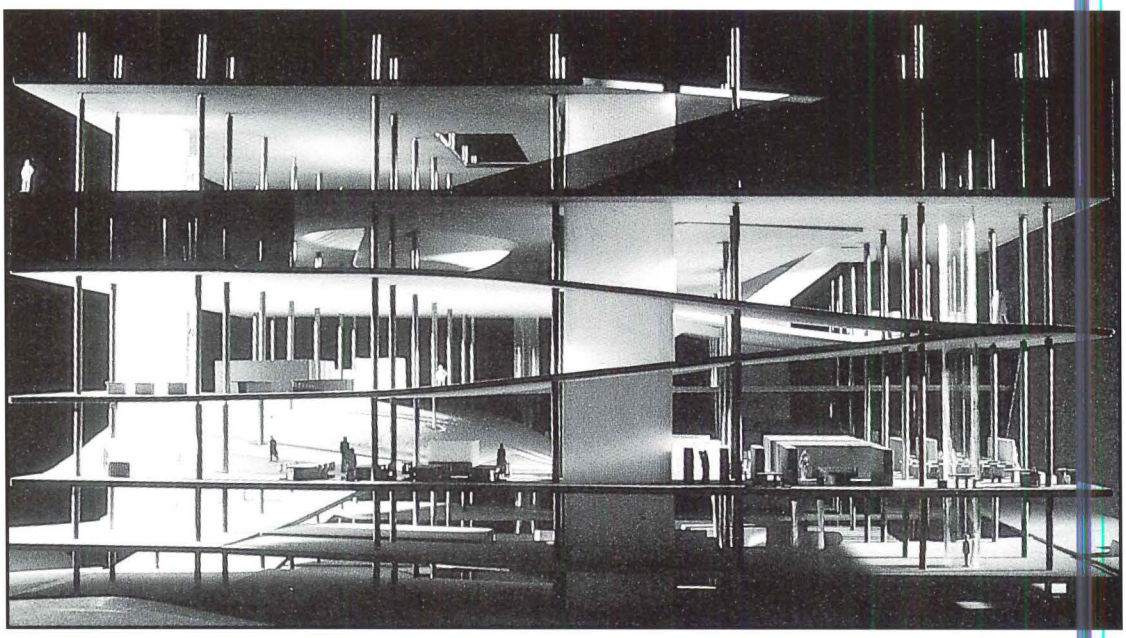
The building is designed for a site near the Seine, a leftover parcel next to Edouard Albert's 1964 Faculty of Sciences megastructure. The program calls for a science library and a humanities library; OMA has placed the former, which is mostly stacks, below ground; the latter, which is mostly reading rooms, is on top.

The architects describe the scheme as "a mutation of the classical industrial loft building." The floors slope in order to provide a single ramplike circulation route through the structure "like a warped interior boulevard." (More direct circulation routes are also provided.) The boulevard is envisioned as a permanent element, like a city street, while the programmed spaces can change over time. Continuing the urban analogy, events such as "plazas, parks, monumental staircases, cafés, and shops" occur along the boulevard.

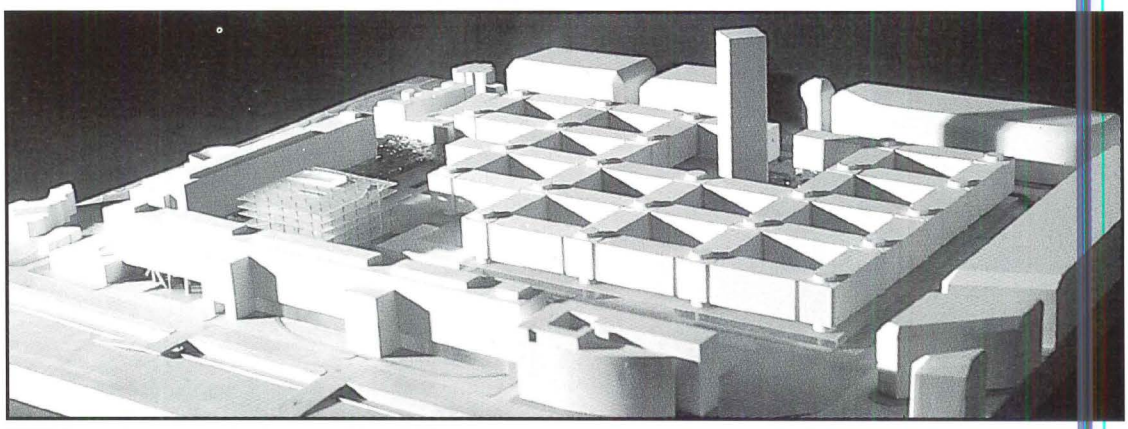
The Seine-facing façade of the building will have clear glass, to reveal the columns and irregular floor plates.



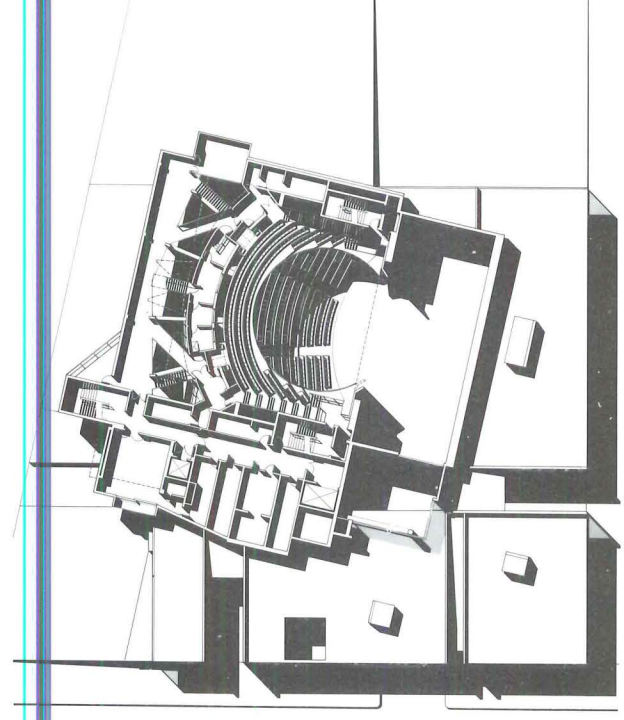
ELEVATION PROJECTION



MODEL PHOTO

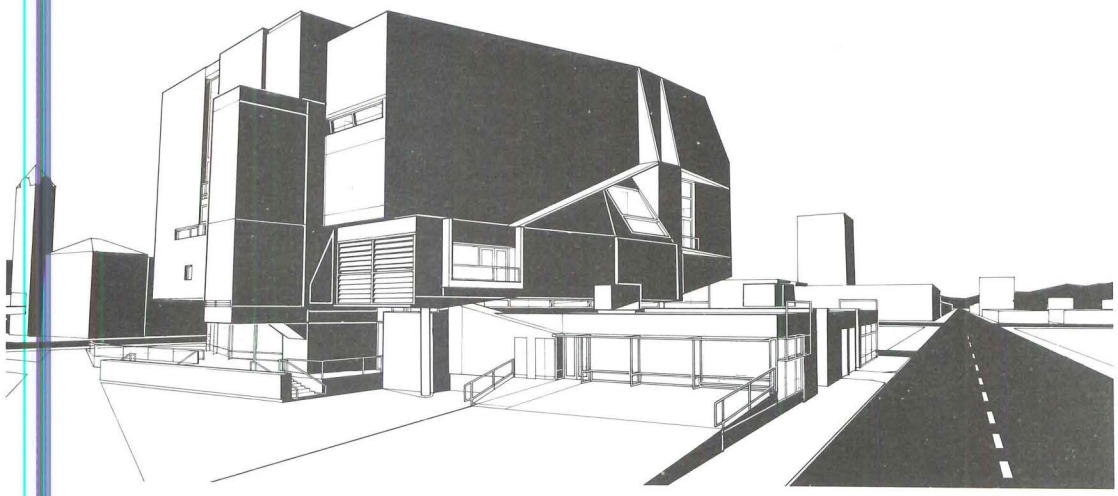


VIEW FROM THE SEINE OF LIBRARY AMONG EXISTING BUILDINGS

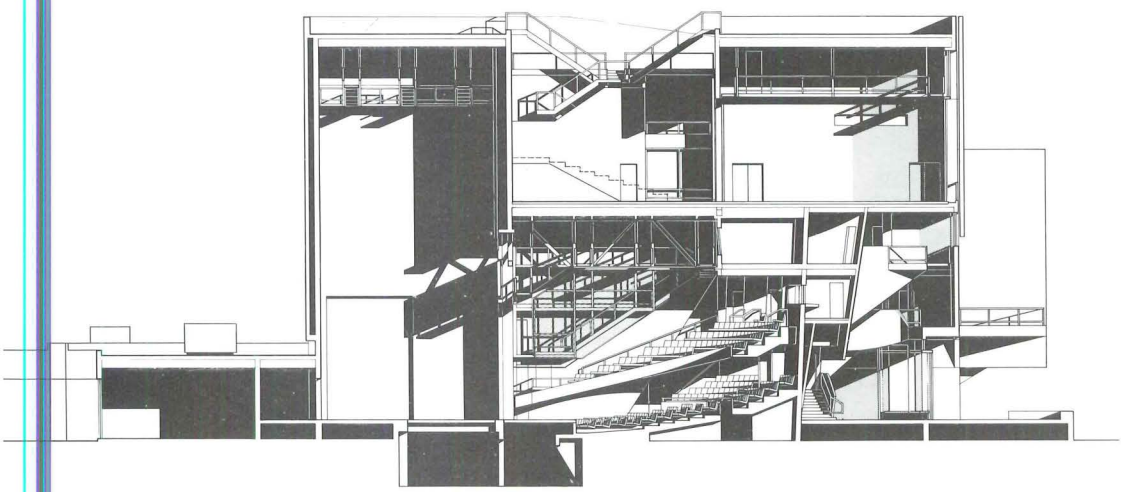


BALCONY LEVEL FLOOR PLAN

N 40'/12m



PERSPECTIVE FROM SOUTHEAST



SECTION THROUGH THEATER

N 20'/6m

San Jose Theater

This theater in downtown San Jose, California, commissioned by the city's redevelopment agency, is one of the first projects of the new San Jose office of Holt Hinshaw Jones Architecture (see profile, P/A, July 1991, p. 72). The $15-million, 48,000-square-foot building, which the architects describe as "both welcoming and appropriate to its contemporary context – the heart of Silicon Valley," will house a 625-seat theater and support functions for the San Jose Repertory Theater Company.

The architects describe the building as a " 'magic box' containing the theatrical experience," and as a "cube hovering over its base." The cubic volume, which is canted from the base, is created by combining the theater and fly tower with a rehearsal hall and secondary performance space above. The cube will be clad in a collage of metal panels of various textures and treatments.

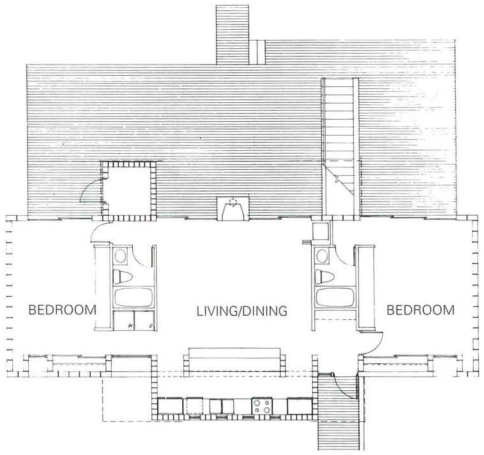
At street level, the lobby will adjoin a café and restaurant. The building should be completed in 1995.

Coast Guard Resort

A heavy buffer of native vegetation will offer privacy and will minimize the visual impact of this oceanside vacation getaway for Coast Guard personnel on Jupiter Island, Florida, north of Palm Beach. The firm of Harper Carreno Mateu, Coral Gables, Florida, says the design of the six residential units (two with three bedrooms and four with two bedrooms) was inspired by nautilus shells, turtles, and umbrellas. Bedrooms are on opposite sides of a vaulted living area to allow for use by more than one family.

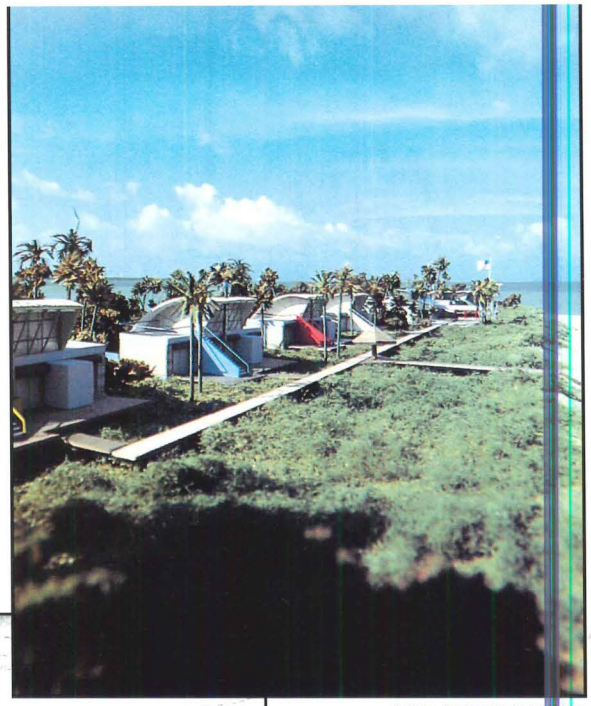
The recreational building – centrally placed to further protect against disturbing neighboring properties – is enlivened by a "crow's-nest" tower and a wave-like canopy; the building also includes a caretaker's residence and office.

Materials include exposed concrete block, wood bow trusses, and metal roofing. The complex is scheduled for completion in 1994.

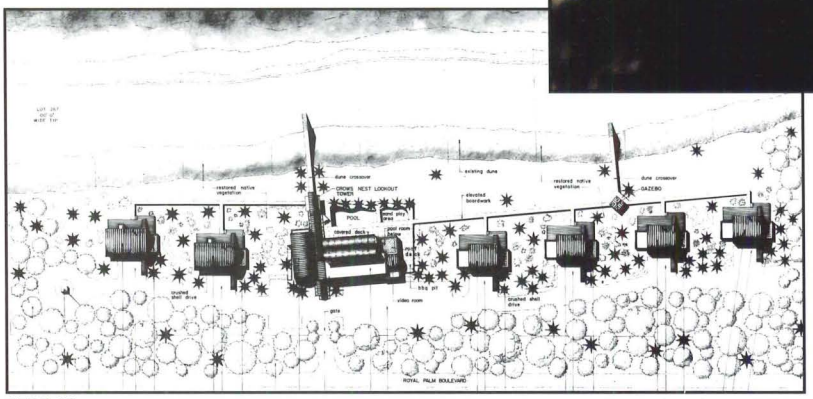


FLOOR PLAN - TWO BEDROOM UNIT

N 10'/3m



MODEL PHOTO FROM SOUTH



SITE PLAN

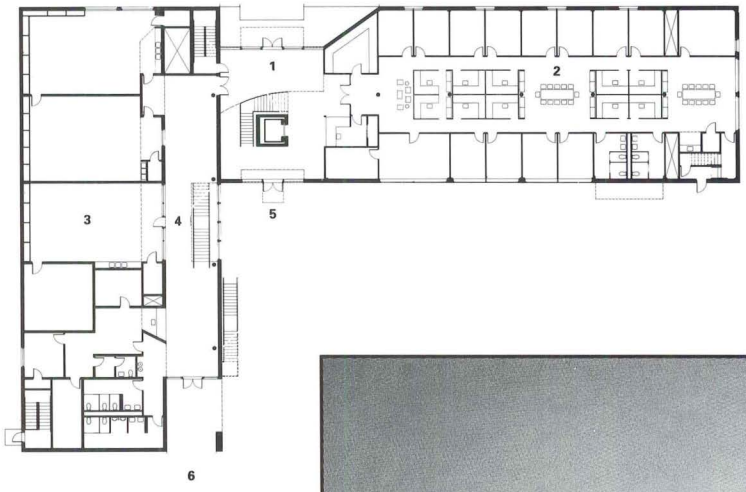
N 100'/30m

New Building at MFA

Houston's Museum of Fine Arts continues its recent expansion program with this 57,000-square-foot, three-story building by Carlos Jimenez Architectural Design Studio in Houston. The new building has a dual purpose: administrative offices for the museum, and classrooms for the museum's Glassell School of Art across the street. Jimenez has designed an L-shaped building for the one-block site, with classrooms in one leg, offices in another, and a common lobby.

The limestone-clad building faces the existing school across Montrose Boulevard, and the east elevation is intended to "maintain a civic presence and scale reflecting its identity as a museum building," according to Jimenez. The west elevation, which faces the parking lot and includes a drop-off entrance, addresses a residential area and thus has a "less formal character."

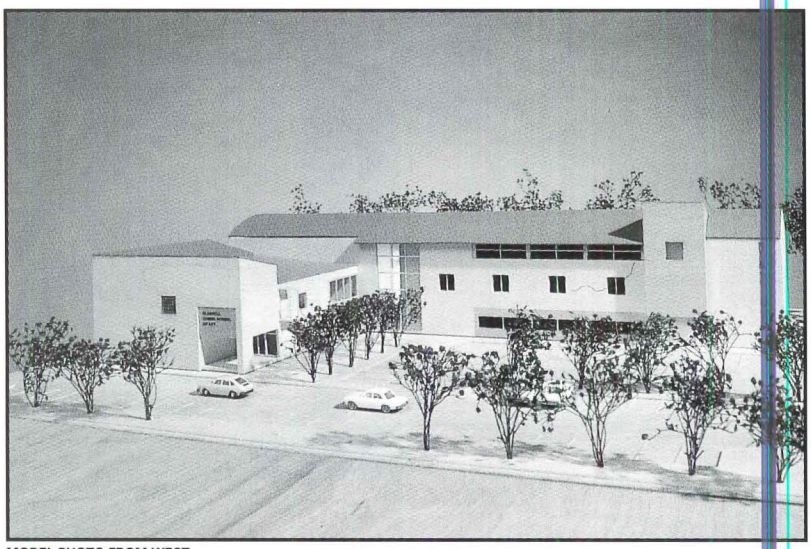
Ground was broken on the project in April; completion is scheduled for summer 1994.



1 ENTRY
2 OFFICES
3 JUNIOR SCHOOL
4 GALLERY
5 COURTYARD
6 DROP-OFF

FIRST FLOOR PLAN

N 40'/12m



MODEL PHOTO FROM WEST

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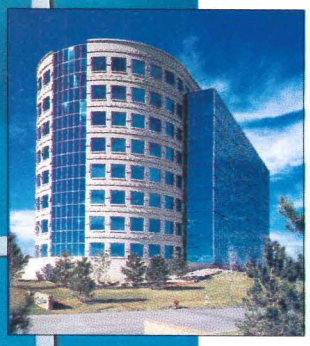

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Calendar

Exhibitions

Chicago's World's Fair Centennial
Through July 15

Chicago. "Grand Illusions: Chicago's World's Fair of 1893" includes more than 500 objects from the fair. Historical Society.

Pritzker Winners
Through July 18

Louisville. This traveling exhibition of work by Pritzker Prize laureates was organized to raise public awareness of outstanding architecture. J.B. Speed Museum.

Civic Visions, World's Fairs
Through August 1

Montreal. This show takes a look at the history of world's fairs, focusing on site planning issues. Canadian Centre for Architecture.

Postwar Moscow
Through August 15

Chicago. "The Moscow Avant-Garde in Architecture: 1955–1991" covers the work of ten architects, including state commissions for civic complexes, schools, offices, and housing. Art Institute.

Work by Black Architects
Through August 20

Chicago. "Design Diaspora: Black Architects and International Architecture 1970–1990" is a juried exhibition designed "to present an international perspective of architecture that examines current design trends and cross-cultural influences within the Black African Diaspora." A four-year tour is planned. Athenaeum.

Kahn's Sketches
Through August 29

Montreal. Travel sketches and portraits by Louis Kahn are on view. Canadian Centre for Architecture.

Speculating on the Future
June 4–June 25

Chicago. "Speculations: Visions from Chicago" is a presentation of work that responds to the question: "Can we suspend the forces that currently guide our designs (i.e., codes, ego, bottom-line programs, profit, zoning) to see a fresh architectural spirit that honors all living things?" Corporate Art Source and I-Space.

20th-Century Chicago
June 12–August 29

Chicago. An installation designed by eight young architects in conjunction with Stanley Tigerman, chronicles the city's evolution in "Chicago Architecture and Design, 1923–1993: Reconfiguration of an American Metropolis." Art Institute.

P/A's New Public Realm
June 14–July 14

Chicago. This traveling exhibition of visionary public works proposals submitted to P/A's ideas competition (P/A, Oct. 1992, p. 73) is supplemented by photos of neglected spaces, substandard housing, and decrepit infrastructure. A reception will be held June 19 from 5 to 7 p.m. Chicago Architecture Foundation.

"It's Not Just a Boy's Club"
June 16–July 2

Chicago. "More Than the Sum of Our Body Parts" is a series of sculptural and multimedia installations intended "to enlighten the viewer to the status of the architectural profession, the current role of women in the profession, and the position of women in other professions." It is organized by Chicks in Architecture Refuse to Yield (CARY), a collective of women and men whose goal is to focus attention on the status of women architects. Randolph Street Gallery.

Chicago Chapter AIA
Dates vary

Chicago. The Chicago Chapter of the AIA has organized several seminars and tours about the city during the AIA/UIA Convention in June (see Conferences). They have also published the *AIA Guide to Chicago.* Contact Alice Sinkevitch for more information (312) 670-7770.

Competitions

Precast/Prestressed Concrete
Submission deadline June 18

Chicago. The 31st annual PCI design awards program accepts entries in three categories: design/structures; design/bridges; and Harry H. Edwards Industry Advancement. Contact Precast/Prestressed Concrete Institute, 175 W. Jackson Blvd., Chicago, IL 60604 (312) 786-0300 or FAX (312) 786-0353.

Religious Structures Awards
Registration deadline July 1, Submission deadline August 2

Washington, DC. The Interfaith Forum on Religion, Art, and Architecture (IFRAA) has announced its annual design awards program. Contact IFRAA, Doris Justis, Executive Secretary, 1777 Church St., NW, Washington, DC 20036 (202) 387-8333 or FAX (202) 986-6447.

Hermosa Beach Pier
Registration deadline July 9, Submission deadline September 1

Hermosa Beach, California. Proposals for the renovation and expansion of an existing public recreational pier are invited in the Hermosa Beach Pier Competition; the program calls for an entrance plaza and a county lifeguard headquarters. Prize money totaling $12,000 will be awarded. Contact Hermosa Beach Chamber of Commerce, 323 Pier Ave., Hermosa Beach, CA 90254 (310) 372-1375 or FAX (310) 798-2594.

Critical Care Design Awards
Submission deadline July 31

Washington, DC. Healthcare units that "demonstrate exceptional concern for flexibility, safety, efficiency, and sensitivity for humane healthcare" may be entered in an awards program sponsored by the Society of Critical Care Medicine, American Association of Critical Care Nurses, and the AIA. Contact 1993 Review, AIA, 1735 New York Ave., NW, Washington, DC 20006-5292 FAX (202) 626-7518.

P/A Awards
Entry deadline September 10

Stamford, Connecticut. The 41st annual P/A Awards (see p. 83) recognizes projects scheduled for completion after January 1, 1994. Winning entries will be featured in P/A's January 1994 issue. Contact Awards Editor, P/A, 600 Summer St., Stamford, CT 06904 (203) 348-7531 or FAX (203) 348-4023.

Conferences

NeoCon® 93
June 14–17

Chicago. This year's contract furniture show at the Merchandise Mart is joined by two new events, the National Commercial Buildings Show and the Intelligent Buildings Conference. Contact NeoCon 93 Registration, 222 Merchandise Mart Plaza, Ste. 470, Chicago, IL 60654 (800) 677-6278 or FAX (312) 527-7782.

Architectural Administrators
June 16–20

Chicago. The 24th Annual Convention of the Society of Architectural Administrators includes a series of seminars designed to update business management techniques for architectural offices. This year's theme is "Teambuilding." Contact Wendy Rae, Martenson Clark Associates, Kirkland, WA 98034 (206) 823-2244 or FAX (206) 821-1715.

AIA/UIA World Congress
June 18–20

Chicago. The World Congress of Architects is a four-day summit that combines the AIA's 125th annual convention and the XVIIIth Congress of the International Union of Architects. The theme is "Architecture at the Crossroads: Designing for a Sustainable Future." Contact World Congress Hotline (202) 626-7395 or FAX (202) 626-7518.

Architecture and Children
June 21–23

Albuquerque. "Architecture + Children: Learning Through the Natural, Built, and Cultural Environment" is being held to discuss ways to use the design disciplines to teach children how to learn from and about their environment. Contact UNM Architecture + Children Summit, UNM Architecture and Planning Bldg., 2414 Central Ave., SE, Albuquerque, NM 87131-1226 (505) 277-7422.

CSI Convention, Exhibit
June 25–27

Houston. The Construction Specifications Institute's 37th Annual Convention and Exhibit has been announced. Contact Sandy Humphries, CSI, Convention Services Dept., (703) 684-0300. ■

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Buried Buildings

Engineer **Stephen S. Ruggiero** discusses the techniques of designing underground structures that are watertight, and how to keep them that way.

Abstract

This article examines the fundamentals for designing and detailing watertight underground buildings. The most important factor in achieving success is in collecting and draining the ground water, which literally surrounds the building. Providing a continuous waterproofing barrier is also important (and several waterproofing details are presented), but in the author's experience the barrier is not quite as important as providing proper drainage. Techniques of roof drainage, exterior wall drainage, and base-slab drainage are discussed. Finally, the success of the project depends greatly upon field supervision and troubleshooting during construction. These are even more critical than for other types of construction because the end product is buried and failures are extremely difficult and expensive to correct.

Although the techniques of constructing watertight underground buildings have been sufficiently developed, many architects are reluctant to bury their buildings. Admittedly, the potential for leakage is greater than in other forms of construction, but with proper development of the design and follow-up during construction, these buildings can perform successfully for even the most sensitive occupancies.

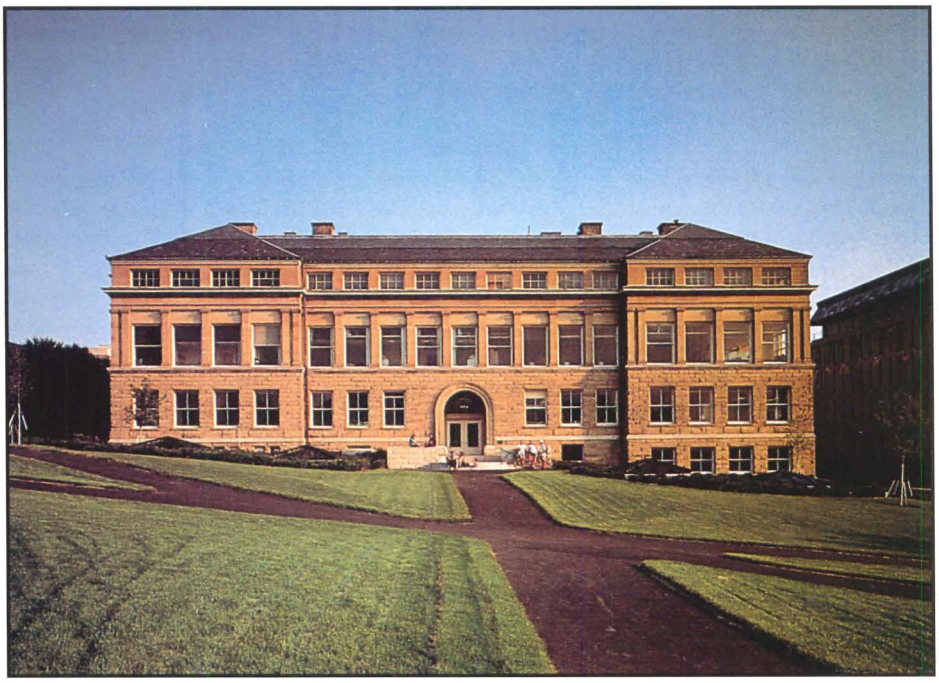
General Considerations

A number of site conditions must be considered in developing the overall strategy for waterproofing and drainage. The most important of these is determining the groundwater characteristics. Architects need to establish the seasonal watertable and its 50 to 100 year maximum height, and be concerned with perched water tables, which occur at higher elevations because of impermeable layers such as rock and clay that accumulate water as it percolates down from the surface. This information should be obtained by testing at the site during the spring season, and it should be compared with historical data for existing facilities near the area of construction.

While sloped sites present some special considerations for detailing the roof structure, they can also simplify roof drainage. In order to accommodate the site's slope the roof structure is best designed as a series of stepped tiers, as opposed to a single sloped plane. A stepped profile provides better control of roof drainage and precludes potential problems of soil migration down-slope (2).

Underground extensions of existing buildings often present difficult flashing details at locations where the new waterproofing system must connect to the existing one. This becomes even more precarious when the existing facility has no membrane, in which case the new one must terminate into a buried reglet-type detail. Because this type of detail is vulnerable to leakage, the drainage system must ensure that the reglet is not exposed, even temporarily, to hydrostatic pressure.

Underground construction at the property line can complicate or compromise the waterproofing system. Typically such construction utilizes lagging



Jeff Goldberg/Esto

1

2

1 *The Carl L. Kroch Library, a new addition to Cornell University's central library designed by Shepley Bulfinch Richardson & Abbott, is buried beneath the lawn in front of the older building.*
2 *During construction at the library, the underground addition's stepped-roof profile can be seen.*

walls at the perimeter of the excavation that form the substrate for "blind side" waterproofing application – waterproofing located at the exterior of the underground wall. The waterproofing membrane is applied to the wood lagging wall, and the concrete walls of the building are cast against the membrane. The relatively rough and uneven substrate surface presented by the lagging wall in combination with the inaccessibility of the membrane once the wall is cast in place make this a somewhat precarious waterproofing assembly. As will be discussed later, a number of options exist for improving the design and performance of waterproofing and drainage in such situations, but these ultimately affect the methods of excavation and the general design of the structural walls.

Drainage

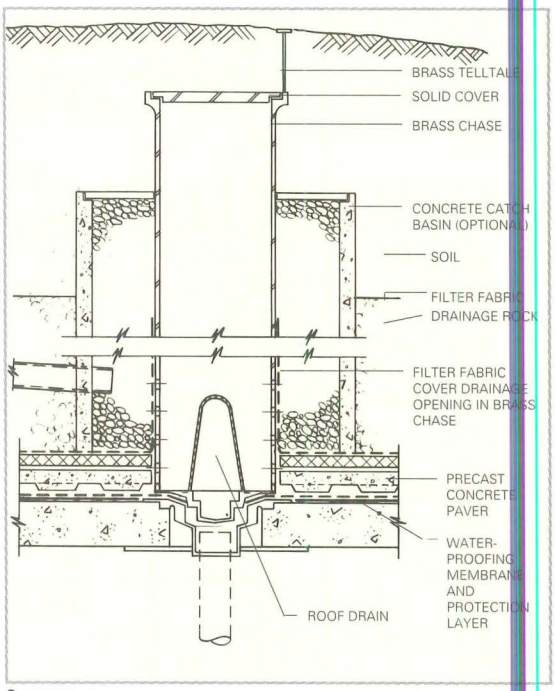
The objective in designing a watertight underground building is to provide a drainage layer or blanket that encapsulates the building structure. Water will inevitably flow to and collect on or against the waterproofed structure. In the absence of a free draining layer, this water will accumulate, causing local hydrostatic pressures that attack even minor breaches in the waterproofing membrane. This is particularly true on large horizontal surfaces such as roofs where landscaping materials tend to slow the movement of water even if the deck is properly sloped to drains. The ideal drainage material provides an interconnected system of voids that allow water to flow freely between the waterproofed structure and the surrounding overburden (i.e., backfill, landscaping, paving, etc.). The accompanying sidebar reviews various materials that are commonly used as drainage media.

Roof drainage. The roofs of underground buildings are plaza-type construction, and are exposed almost continually to surface water that percolates to the level of the roof deck. Historically, plaza systems have had problems because of poor drainage. Retention of water by landscape overburden prolongs the roof's exposure to water and contributes to deterioration of paving materials and plantings. The key to improving the performance of the entire roof assembly is to provide the means for prompt movement of water through the overburden, along the waterproofing membrane, and into drains.

In a typical section through a landscaped roof system, a filter fabric over the drainage rock should be placed directly below the planting soil (3). Care must be taken to ensure that the particle size of the soil mix is appropriate for the filter fabric to reduce the probability of clogging or "silting." Another drainage layer should be placed at the level of the waterproofing membrane to ensure that water will ultimately flow to the membrane level drains. Depending on budget constraints and on the nature of the landscaping operations during construction, this drainage layer can be a prefabricated drainage panel or a system of precast concrete pavers. The latter is significantly more expensive but provides proven longevity and greater protection to the membrane against landscaping installation – for example, driving grading stakes into the soil until they hit solid structure!

The roof deck must be sloped $\frac{1}{4}$-inch per foot to facilitate the flow of water and to ensure residual slope to drains after all long-term deflections have occurred in the structure. Concrete structures tend to creep under sustained dead loads. All too often designers specify a slope of $\frac{1}{8}$-inch per foot and the roof deck tends to pond water as a result. The configuration of the roof drains must allow water to flow readily into the drain bowl at the level of the waterproofing membrane (3). While this may sound academic, many so-called plaza drains have an open grate at the surface level and few, if any, weep holes at the membrane level.

In landscaping applications a number of concerns arise for the drainage system, such as how to provide maintenance for the "buried" roof level drains, and whether or not to combine surface drains with roof-level drains. One way of handling that is to provide a "chase" which allows access to the roof drain for routine maintenance (3). The top of the chase can be a solid plate buried just below the surface with a "telltale" to mark its location, or the chase can be continued to the surface and capped with an open grate. In the latter case, the roof drains also act as area drains, thereby maximizing the use of leader pipes that service the drains. The disadvantage of combining roof-level and surface drains is that the roof drains will tend to become clogged more often and will require appropriate maintenance.



3 TYPICAL DRAIN AT LANDSCAPED ROOF

Thin soil layers (18 inches deep or less), which often result from the need to reduce dead loads on the structure, can be problematic to drain, particularly if the soil mix is not sufficiently permeable. Ideally, the drainage rock below the planting soil should serve to drain the soil and to minimize pro-

Drainage Media

Porous Insulation: These boards usually consist of expanded polystyrene beads that are glued together with an asphaltic binder. The author questions their long-term durability in wet environments particularly when subject to freeze/thaw cycles.

Prefabricated Drainage Panels: These generally consist of a polymeric grid, usually polystyrene or polyethylene (the latter being prone to creep under sustained loading), which forms a series of interconnected voids that are covered by an integral filter fabric. Care must be taken during construction to avoid impact damage to the panels; but otherwise they perform their intended function well.

Precast Concrete Pavers: These pavers have drainage channels cast in two directions on their underside. When placed over the roof waterproofing membrane, they provide a system of voids for drainage and add a substantial protection layer to the system.

Drainage Rock: Ideally this material consists of $\frac{3}{4}$- to 1-inch smooth rounded (river run) stones, which are relatively easy to compact but have sufficient void space between the stones to allow drainage. This material must be free of fines and can be somewhat difficult to procure. Drainage rock is prone to clogging from infiltration of fines, and should be covered with filter fabric. Under some circumstances, the rock can be a potential puncture hazard to the waterproofing membrane.

Drainage Pipes: The two most common pipes used in below-grade drainage are PVC with drilled drainage holes and porous concrete pipes that are manufactured from concrete with essentially little or no fines.

longed saturation of the soil and the ensuing damage to plant roots. However, the need to include filter fabrics between the soil and the rock, as well as the inclusion of rigid insulation boards below the soil, all tend to slow the movement of water to the membrane level. As a result, the planting soil may stay wet from capillary rise of water that accumulates in the stone (above the insulation layer). To remedy this problem, a series of flexible perforated pipes can be placed within the drainage stone and routed to "utility boxes" located above the roof drains.

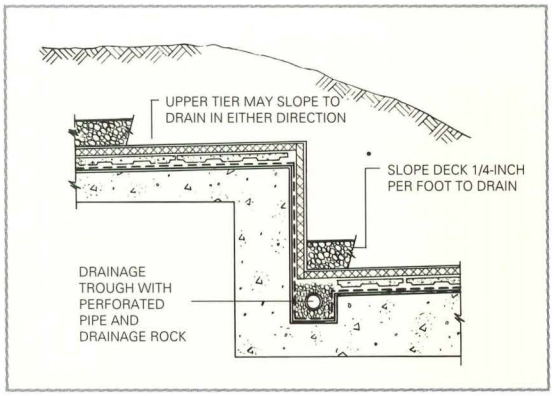
As mentioned earlier, sloped sites, which require tiered roof structures, present an interesting opportunity to eliminate through-slab roof drains, or at least to minimize their presence. All penetrations of the waterproofing membrane, no matter how well conceived and constructed, are potential leak sources. A drainage trough can be created by sloping the horizontal sections back toward the vertical steps in a tiered structure (4). This drainage concept can be used with single-plane roof surfaces by casting curbs in the appropriate places to serve as a water dam. When water collects and ponds against the vertical surfaces, the perforated drainage pipes in the trough conduct the water to solid leader pipes that discharge either into manholes located off the building proper, or into catch basins constructed around a roof drain (3). In the latter case, the drains can be located in building areas that are less sensitive to leakage. This type of drainage scheme is particularly useful in large buildings because it can eliminate the need for long runs of leader pipe within the building ceilings, whose depth is often insufficient to allow pipes to be properly pitched.

Exterior wall drainage. The drainage material I prefer for use directly over the waterproofed structural walls is a prefabricated panel, with the insulation placed outboard of the panel. The other alternative is to use drainage stone placed outboard of the insulation. In the first case puncture damage from misplaced or compacted stone is precluded, and the panel is protected from backfilling.

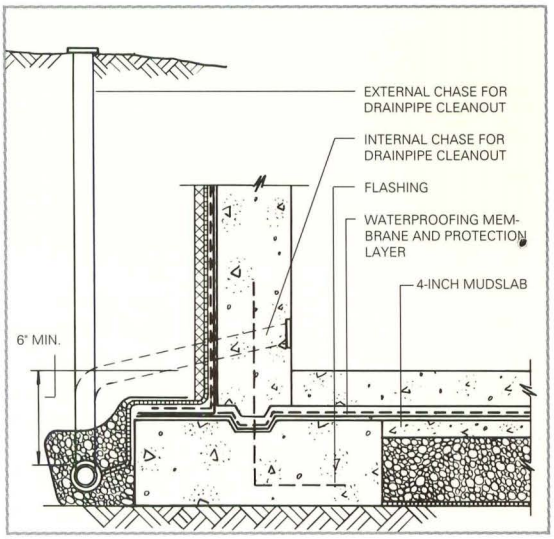
Perched water is common at the top of rock or clay layers and its presence will significantly affect the design of the exterior wall drainage and waterproofing. One of the simplest approaches for dealing with perched water is to excavate approximately five feet beyond the proposed face of the exterior wall to create a drainage zone that is back-filled with drainage rock. The intent is to allow the perched water to flow downward to the footing drains or sub-slab drains, and to prevent water (or limit the amount of it) from migrating laterally to the building walls. This initially open space also allows ample room for installing waterproofing onto the exterior walls of the building. In the case of perched water tables the wall system benefits from using both drainage media; the stone to help limit the flow that reaches the building, and the drainage panels to carry whatever seeps laterally through the stone and insulation boards.

The wall drainage medium must connect hydraulically to a footing drain (5); otherwise water will tend to collect at the slab base and infiltrate the vulnerable wall-to-footing/slab joints. Long-term performance of the wall drainage system depends on the footing drain's remaining free and unclogged. To this end the pipe should be encircled by drainage rock and filter fabric that limit the accumulation of fines (sand and clay particles) at or in the pipes. Care must be taken to limit the amount of construction debris that accumulates at the bottom of the excavation, as this material often severely reduces the effectiveness of the footing drains. Finally, a system of "cleanouts" must be provided to allow removal of fines that inevitably infiltrate the pipe. Cleanouts should be located at all 90-degree turns in the pipe and at intervals no greater than 150 feet. For footing drains that may be located three or four stories below grade, a decision must be made as to how to provide access to the pipes (5). Generally it is preferable to keep the cleanouts external to the building and avoid penetration of the waterproofed structure. The more direct access provided by through-wall penetrations does, however, increase the effectiveness of the cleanouts.

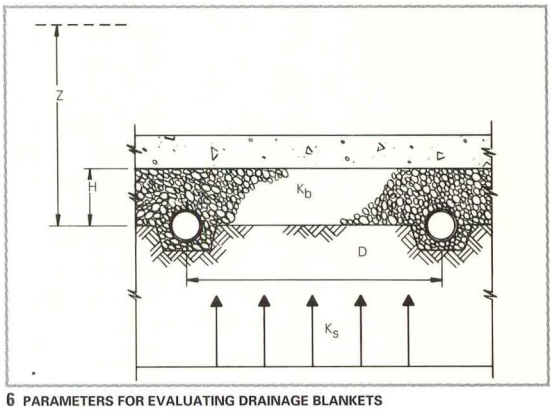
Base-slab drainage. Drainage blankets below the base-slab generally consist of a layer of drainage rock with 4-inch- or 6-inch-diameter perforated pipes spaced at some distance throughout the layer. Often, geotechnical engineers have "rules of thumb" for configuring the blanket to accommodate various infiltration rates (6). Except for extreme infiltration rates, a 12-inch-thick blanket with 4-inch-diameter pipes spaced at 20-foot-centers should eliminate hydrostatic uplift on the slab. Architects tend to forget that maximum groundwater levels often occur during 50- to 100-year-return storms that result in power failures and emergency conditions. Oversized pumps with emergency back-up pumps and power sources are essential to system performance.



4 SECTION AT TIERED ROOF STRUCTURE



5 SECTION AT WALL-TO-FOOTING



6 PARAMETERS FOR EVALUATING DRAINAGE BLANKETS

6 *For a given watertable height (Z) and a relatively permeable drainage blanket (Kb), the blanket's thickness (H) and the distance between the drainage pipes (D) are then selected to ensure that water traveling through the native soil with a given permeability (Ks) can reach the pipes before contacting the slab. As H increases D can decrease. Usually D is approximately 20 feet, and H is chosen to suit the value of Ks.*

Waterproofing

Effective drainage serves to control, or limit, hydrostatic conditions. However, the structure will always be exposed to moisture and intermittent hydrostatic pressure. For this reason a membrane waterproofing system should ideally encapsulate the

most demanding of roofing environments and should be protected by only time-proven systems of the highest quality.

Waterproofing systems generally consist of two types: sheet membranes that are fabricated in large sheets and seamed together at the site; and liquid-applied membranes that are field fabricated by spreading the liquid membrane on-site to form a monolithic, seamless membrane. Sheet systems provide better quality from project-to-project because they are less dependent on workmanship, and the need for clean, dry substrates, which are often nonexistent in underground construction. The sheet membrane systems are also less likely to be affected by structural or substrate movement, and they have better flashing accessories for penetrations such as drains and expansion joints.

7 HEAT-WELDING WATERPROOFING MEMBRANE TO ATTACHMENT DISKS

Typically, sheet membrane seams are heat welded or adhered to one another. Heat-welded seams are more reliable than adhesive seams, particularly when the seam is exposed continuously to water. The heat-welding process can be monitored and tested effectively at the site. Adhesive seams require greater care during surface preparation and application because of their sensitivity to weather conditions, and testing during installation cannot be achieved without compromising their bond.

In the flashing of sheet membranes there are three cardinal rules: Never bury the terminal edge of the membrane below the wearing surface or landscaping; whenever possible, maintain continuity of the membrane; and to the extent possible, allow ease of access to the membrane. Complying with these rules often requires ingenuity on the part of the designer to devise architectural treatments that accommodate them. This is particularly true when the membrane must extend above the plaza surface, say six to eight inches, and must be protected in a manner that is pleasing to the eye.

Specifying and detailing a quality waterproofing system is only the first step in achieving a watertight building. I cannot overemphasize the need for construction monitoring and troubleshooting by a qualified design professional. Architects should review typical installation procedures and the proper implementation of flashing details, and all roof surfaces should pass a 48-hour flood test. Evaluating a flood test involves more than checking the underside of the roof deck for leaks, as the concrete structure will often retain water that penetrates the membrane. The key to proper diagnostics is to "walk" the membrane and its seams immediately after draining the test area to identify problems, which will be readily apparent to the trained eye. Last but not least is the never-ending battle to protect the membrane from damage during subsequent construction procedures. Historically, many waterproofing failures can be traced back to damage that could have occurred only during construction. It is vital that protection layers and insulation be placed over the system as soon as possible; every effort should be made by the architect to enlist the general contractor's active participation in "policing" the trades that work on or above the waterproofing system.

Special Considerations for Walls

In its simplest form, wall waterproofing is applied to the exterior side of the structure. This requires excavation procedures that allow sufficient working space between the building walls and the surrounding earth. Attachment of the waterproofing is straightforward for most adhered systems, but loose-laid sheet membranes require mechanical anchorage. These often consist of stainless steel bars or "battens" fastened through the membrane, and then the battens are covered with a flashing strip of membrane. A better technical solution is available for heat-weldable membranes, where a series of attachment discs are first secured to the concrete wall surface. The membrane is then heat-welded to the discs, which hold the membrane in place with no through-punctures (7).

In many cases, it is not possible or desirable to excavate in a manner that allows sufficient space for traditional exterior side waterproofing. Examples include construction at the property line or immediately adjacent to existing structures, or concrete slurry walls to serve as part of the structure as well as for retaining earth and water at the perimeter of an excavation. A number of approaches can be used to accommodate these forms of construction.

Lagging wall construction. In this case, the waterproofing is applied to the retaining wall at the perimeter of the excavation, which is often constructed of steel piles with wood lagging spanning between them. The primary pitfall of this approach is that the lagging wall provides a poor substrate for application of the waterproofing. Further, wood surfaces buried below grade are subject to rotting and therefore can present long-term problems for the waterproofing, which must either be adhered or fastened to the wood substrate. A better installation can be achieved by using galvanized steel deck to span over the supporting steel piles (8). The con-

and therefore can present long-term problems for the waterproofing, which must either be adhered or fastened to the wood substrate. A better installation can be achieved by using galvanized steel deck to span over the supporting steel piles (8). The continuous-span deck provides a smooth substrate to receive insulation and waterproofing membrane.

Split wall construction. This type of construction consists of placing the waterproofing membrane between two concrete surfaces. This technique is useful when dealing with rough but solid substrates that are directly adjacent to the new building, such as excavated ledge, or rubblestone foundations of an existing building. Often this type of construction is required at only a portion of the building, and care must be taken to provide enough "free" membrane material at the perimeter of the split wall construction to allow proper transition to an exterior-side waterproofing system, for example.

Cavity wall construction. This detail can be applied to all forms of underground construction, and in many situations provides the greatest potential for long-term success. In this type of construction the outer wall acts as the primary water screen (9). Although it is not waterproofed, any water that seeps through cracks or cold joints is collected by gutters within the cavity space. The water is then routed by leader pipes into the base-slab drainage blanket. Access must be provided through the concrete masonry wall to clean out the gutter at drain pipe locations.

Base-Slab Waterproofing

Clients often question the need to incur the significant expense of providing a waterproofed slab capable of resisting the maximum predicted hydrostatic forces. Clearly, construction of a simple slab on grade with a sub-slab drainage blanket is preferred by most building owners. However, it is not so clear that the least expensive approach is always good enough. To this end, the client should answer the question: how important is it that the base slab not leak – at all? The value of the occupied space and its contents should be a prime consideration. Also, the rate of infiltration through the soil below the base slab is an important consideration. Clay and rock strata often have relatively low permeability rates, which allow sub-slab drainage blankets to perform with a greater factor of safety than highly permeable soils. Nevertheless, for those facilities that require the highest probability of long-term success, base-slab waterproofing is appropriate.

The critical waterproofing details inevitably occur at the wall-to-footing-to-slab juncture and, where applicable, at slab-to-pile-cap intersections. In the first case it is desirable to choose a building configuration that allows the membrane to turn the wall-to-slab-corner without being penetrated by reinforcing bars. The other alternative – extending the membrane through the wall-to-footing key – is less secure and requires significant effort to properly "flash" each rebar that connects the wall to the footing. Pile caps present similar flashing problems if rebar is necessary to connect the cap to the structure. These bars should be made as large as possible to minimize their number.

As with the cavity wall approach discussed above, an internal base slab drainage space provides high reliability and avoids the need to draw-down the watertable (9). With this approach, the drainage blanket provides the second line of defense in the drainage cavity and is activated only when portions of the waterproofing fail. This configuration is very convenient when the basement level has an industrial use, because the floor slab can be penetrated to run utility and plumbing lines without penetrating the waterproofing envelope.

Stephen S. Ruggiero ■

The author is a senior associate of Simpson Gumpertz & Heger Consulting Engineers in Arlington, Massachusetts, who specializes in the design and troubleshooting of waterproofing and drainage systems for underground buildings, and has written and lectured extensively on the topic.

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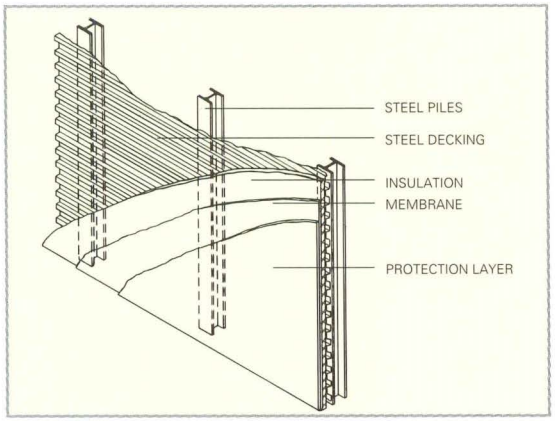
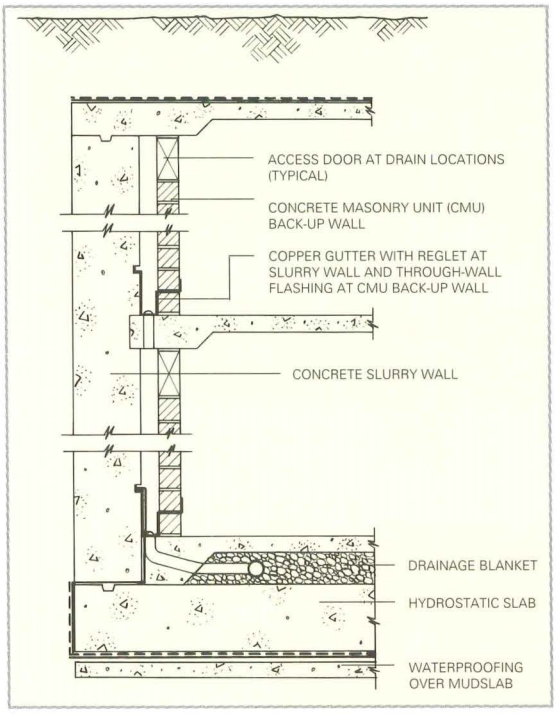


8 LAGGING WALL WATERPROOFING PREPARED FOR FINAL CASTING OF EXTERIOR CONCRETE WALL



9 SECTION AT CAVITY WALL

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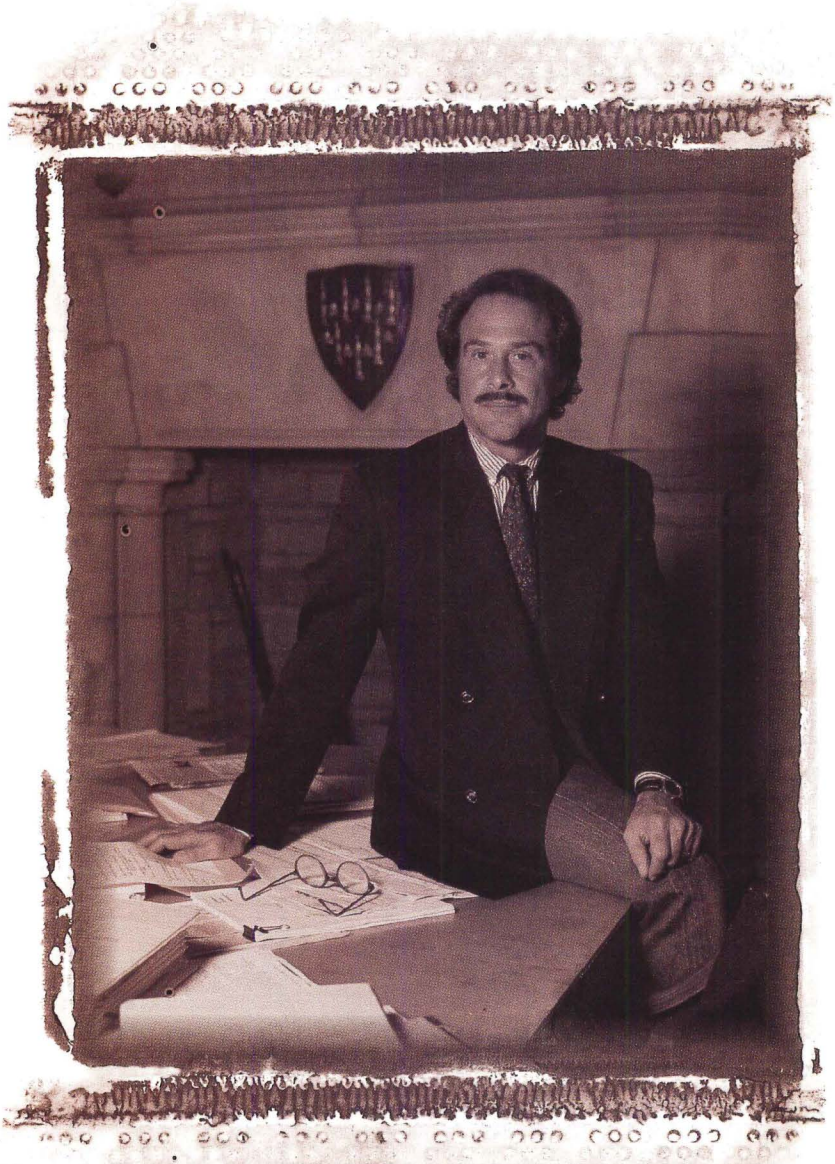

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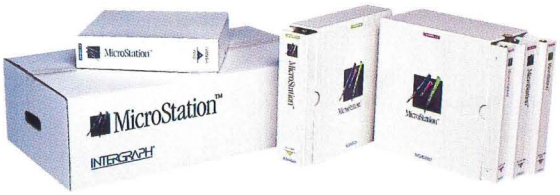

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Technics Q&A | A Forum for Answers to your Technical Questions

Questions on tile grout discoloration, acoustic ceiling tile, roofing warranties and bonds, sandstone placement, and stone anchoring.

Editor's Note

With this issue P/A debuts a new Technics feature. Technics Q&A will appear several times a year to present answers to your questions about technical subjects. The answers are written by architects and consultants with expertise in technical fields, many of whom have authored Technics articles for P/A. We invite our readers to make use of this forum for technical information by submitting questions, the answers to which will benefit not only them, but also their fellow practitioners. **Michael J. Crosbie**

Tile Grout Discoloration

We have had problems with discoloration of tile grout on interior applications. What causes it, and how can it be corrected?

Jose Molina
Molina & Associates
Houston, Texas

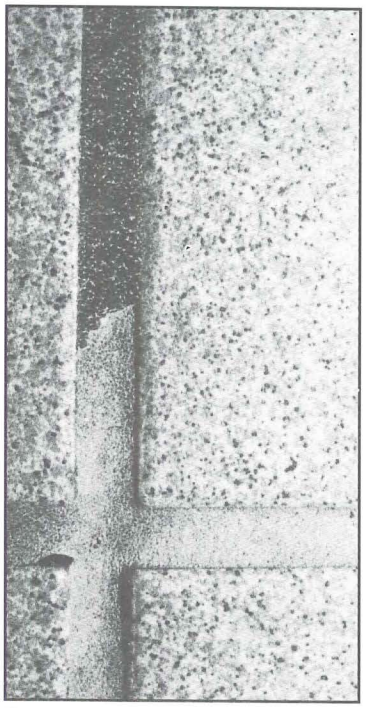
Surface discoloration of ceramic tile mortar-jointing grout is primarily an aesthetic concern, producing an unsightly, mottled look (1).

Staining occurs in several ways. Very fine material within the grout can bleed before the grout has hardened, causing a white film called laitence. Excessive moisture from the tile substrate can migrate through the tile work to the grout surface after it has hardened, leaving a white film called efflorescence. This condition can occur if too much batch water is incorporated into the grout-mix during installation.

Surface discoloration can also occur if a liquid latex polymer modifier has been added to the grout and the grout is too fluid. The latex can bleed to the surface and upon drying create a white cloudy polymeric film that cannot easily be cleaned.

A "dusting" phenomenon of a pigmented grout can occur through inadequate curing of the installed grout material, and perhaps because of excess washing of the tile surface with liberal amounts of water before the freshly installed grout has hardened. The result is a weakened surface region of the grout. Pigmented grouts can also become chemically altered and discolored by exposure to certain acids and cleaning detergents.

Grout discoloration can be corrected by four methods. Beginning with the least aggressive: 1. clean with a stiff-bristle brush or toothbrush with deionized water; 2. clean with a suitable aqueous detergent solution; 3. clean with a mild acid wash, such as muriatic acid, followed by a thorough water rinse; 4. abrade or scarify the surface film with a carborundum blade; this may, however, affect the apparent color of the grout.



1 WHITE FILM COATING ON DARK TILE GROUT

As with any remedial efforts, small mock-up test areas should be established prior to wide-scale repairs. This step is needed so all parties involved can assess the effectiveness and suitability of the resultant repairs. Again, start with the least aggressive cleaning methods. It may be preferable, especially if future litigation is a possibility, to document existing conditions thoroughly, using the services of a construction materials failure consultant. Samples can be studied to determine the source and causes of discoloration.

Gail Hook, an architect in Northbrook, Illinois, and Paul Kofoed, a Senior Chemist with Erlin, Hime Associates, construction materials consultants, a division of Wiss, Janney, Elstner, Associates in Northbrook, Illinois.

Acoustic Tile

I am designing an office with open-plan partitions. I prefer the look of an acoustic tile with a Noise Reduction Coefficient (NRC) of 0.6 to the appearance of another tile with an NRC of 0.9. Is a difference of 0.3 in NRC really perceptible? If so, how important is this difference?

Steve Brown
Brown Associates, Architects
Dayton, Ohio

Open-plan offices rely on a sound-absorptive ceiling to provide privacy between cubicles, along with a sound-masking system, sound-absorptive partitions, and an intelligent layout. A high NRC means that a higher percentage of sound energy in the

Tech Notes

ASTM has released the second edition of its *Standards on Masonry*. The book includes 43 standards and is 49 percent revised since the 1990 edition. New to the second edition are specification for ready-mixed mortar for unit masonry, and specification for solid concrete interlocking paving units. The book is available for $45 ($41 for members) from ASTM, 1916 Race St., Philadelphia, PA 19103. (215) 299-5585.

The AIA/ACSA Council on Architectural Research has released the second edition of *A/R - Architecture/Research*. The journal contains articles on building-related R&D activities, together with almost 700 abstracts on current or recently completed architectural research projects in North America. For information, contact the AIA/ACSA Council on Architectural Research, 1735 New York Ave. NW, Washington, DC 20006 (202) 785-5912.

The National Roofing Contractors Association (NRCA) has released the 1993 edition of the *Commercial Low-Slope Roofing Materials Guide*. The guide contains a directory of commercial and low-slope roof membrane, insulation board, and roof fastener products as well as membrane systems warranties offered by manufacturers. The guide is available for $95 from NRCA, 10255 W. Higgins Rd., Rosemont, IL 60018. (708) 299-9070.

"If sandstone is to be installed during the freeze/thaw cycle it should be allowed to dry out or it may undergo unseen deterioration."

speech range is absorbed rather than reflected. This corresponds in your case to 10 percent reflection versus 30 percent reflection, which is a significant difference in performance. For example, nubby-faced fiberglass ceilings have a high NRC (0.9 to 1.0) and also have a minimal "sound glancing" effect. Glancing energy occurs when sound hits the panel at an oblique angle and is reflected across the room, reducing acoustical privacy. Smooth-face, high-density boards made of mineral tile tend to have lower NRCs, exhibit more glancing effects, and, therefore, do not work as well for open-plan offices. My suggestion in your case is to specify the tile with 0.9 NRC and avoid user privacy complaints later.

Mark Holden, a principal with Jaffee Holden Scarborough, acoustics consultants in Norwalk, Connecticut.

2 SANDSTONE SPALLING BECAUSE OF POOR BEDDING PLACEMENT

Sandstone Placement

We are contemplating the use of sandstone as exterior cladding on a project, and would appreciate some guidelines on its placement and detailing.

Dan Horvat
Gensler and Associates
Denver, Colorado

The primary objective in detailing sandstone is to keep water out of it and away from it. This objective should be considered early in the design with the development of flashing, weeping, and sealant systems coordinated with all other exterior wall cladding material and anchorage systems. As rules of thumb, the following should be observed: sandstone units should be placed with their natural bedding plane, or bed face, parallel to the mortar setting bed. Placing the bed face perpendicular to the setting bed will allow water to penetrate and be retained within the stone's bedding planes, which may cause the natural bonding between the planes to weaken and separate (2). Sandstone, as does all stone, contains a certain amount of quarry sap or ground water when it is initially removed from the earth. The higher the stone's absorption characteristics (and sandstone's are relatively high) the more ground water will be present. Therefore, if sandstone is to be installed during the freeze/thaw cycle it should be allowed to dry out or it may exhibit or undergo unseen deterioration soon after it is installed.

Other detailing tips include the provision of washes and drips on projecting stone to throw water off and away from the building face and to limit discoloration of materials below. Sandstone should not be used below grade, but if such a condition is unavoidable use a bituminous dampproofing, preferably coal-tar based, at all surfaces in contact with grade. Do not use salt-bearing accelerators or retarders in mortar mixes; they may stain the stone or cause deterioration. Protect the stone with an alkali-resistant barrier whenever concrete is to be placed against it to avoid staining. Also, do not place landscaping in contact with sandstone. Plantings retain moisture and can prevent sandstone from drying out after a rain. Wherever sealant joints are to be in contact with sandstone, the sealant should be laboratory tested for compatibility with and adhesion to the finished sandstone prior to its installation to avoid potential stone or sealant staining and adhesion failures.

Timothy T. Taylor, AIA, CSI, ASTM, a specification writer with Skidmore, Owings & Merrill in Washington, DC.

Roofing Coverage

In regard to roofing, what is the difference between a warranty, a guaranty, and a bond?

Andy Quarress
Leidenfrost/Horowitz & Associates
Glendale, California

Bonds were previously a form of security used in the application of bituminous-based roofs to return a certain dollar-per-square amount in the event of a leak. This rarely covered more than

"Guaranties and warranties came about in the 1970s as the result of marketing competition among single-ply roofing manufacturers."

the original cost of the roofing materials.

Guaranties and warranties, being essentially the same, came about in the 1970s as the result of marketing competition among single-ply roofing manufacturers in a growing and highly competitive field. Their first concern, however, was to insure against over-extension of their liability. So exclusions quickly became the teeth they used to limit losses.

Some of the conditions to be concerned with in reviewing a warranty are:

- Is it limited to the original cost, pro-rated, or does it have a "no dollar limit"?
- Does it cover material, labor, and/or consequential damages?
- Does it cover just the roofing material, or are the insulation, drains, and fasteners included (if made by the same manufacturer)?
- Who is financially responsible? Is it the manufacturer, the contractor/installer, or is there a third-party insurer, and what is their financial condition?
- Is the issuing party a manufacturer, a contractor, or simply a broker of materials?
- Be especially careful of these possible exclusions: going over an existing roof; the structural system below; roof insulation and fasteners; the warranty's definitions of "wind" and "ponding"; maintenance required and prohibited; the method of reporting leaks and their consequent documentation; any conditions that could void the warranty.

There is no substitute for quality analysis, design, materials, workmanship, and maintenance. It is better to deal with roofing issues at the front end with controlled costs, rather than to place all the integrity of the roofing system in a piece of paper. If you have to enforce the warranty, you've already lost.

B. Harrison McCampbell, AIA, of McCampbell & Associates, roofing and waterproofing consultants in Knoxville, Tennessee.

Stone Anchors

When attaching veneer stone to a building exterior with metal anchors, what are the best materials to use for durability and how should they be detailed?

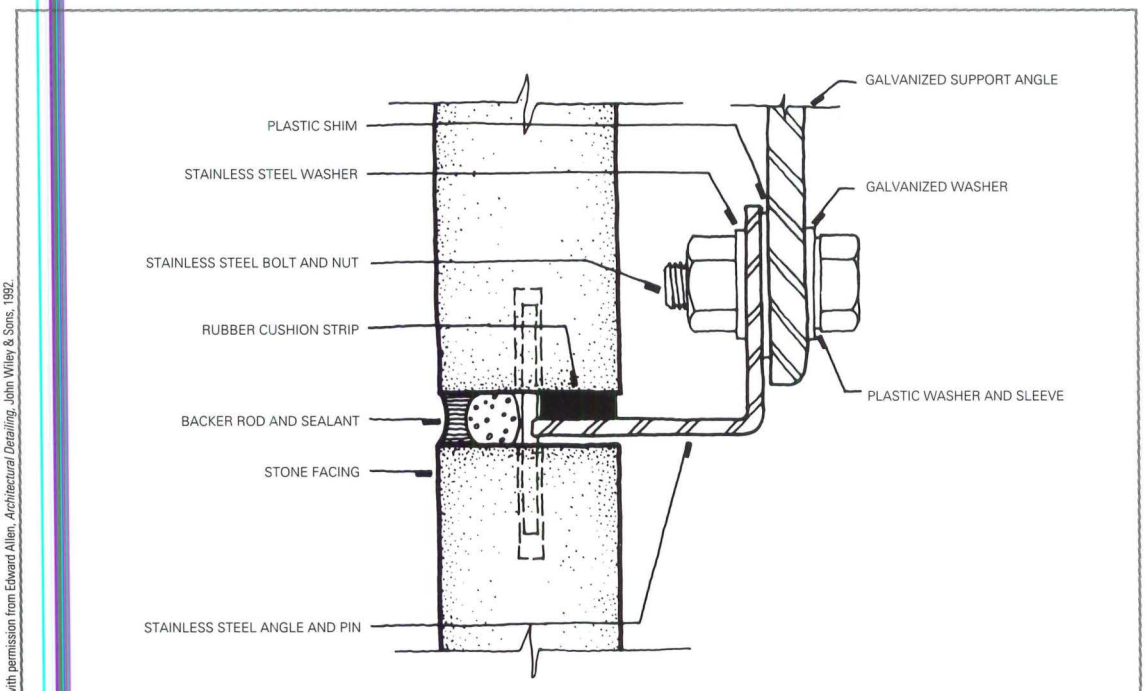
James H. Ogden
Taylor Clark Architects
New York, New York

The preferred choice in anchoring materials is stainless steel, primarily because it will not rust. This prevents the staining of the stone, the corrosion failure of the anchor, and the spalling of the stone that could occur from the expansion of carbon steel as it rusts. Stainless steel is also resistant to the acid chemistry of such stones as granite.

The stainless steel anchor is fastened to its support angle with a stainless steel bolt, nut, and washer. Note in the detail (3) that a plastic shim and sleeve are used to isolate the stainless steel components from the galvanized steel support angle to prevent corrosion caused by the dissimilar metals. A galvanized steel washer is used against the back of the galvanized angle, isolated from the stainless steel bolt head by a plastic washer. The whole detail could be executed in stainless steel, of course, but the support angles would be prohibitively expensive in this material.

Edward Allen, AIA, a writer and consultant on architectural detailing in South Natick, Massachusetts.

Readers are invited to submit their questions regarding technical issues. You can mail, phone, or fax your questions to the attention of Michael J. Crosbie, Senior Editor, Technics. The answers are presented in good faith, but P/A does not warrant, and assumes no liability for, their accuracy, completeness, or fitness for any particular purpose.



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3 STONE FACING ANCHOR DETAIL

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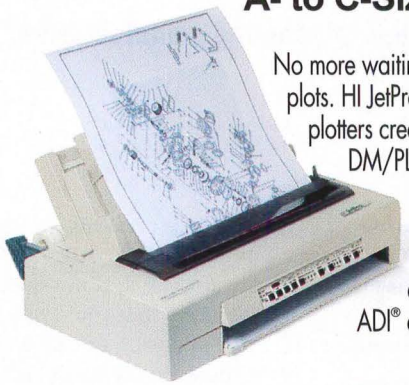

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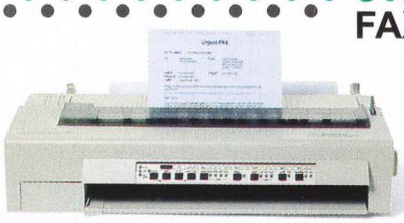

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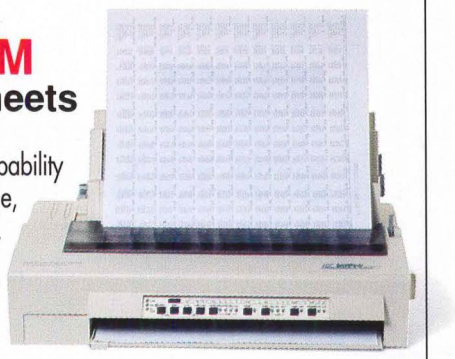
Spreadsheets

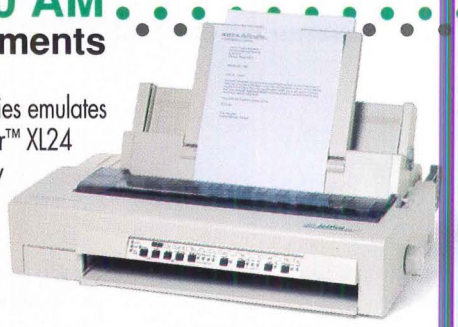


C-size and rollfeed capability allow you to create large, readable spreadsheets. Drivers are available for Windows™ 3.0 and 3.1 compatibility.

9:15 AM
Multiple Review Copies

For meetings create A-size review copies in one minute; high-quality, C-size review copies in under five minutes.

9:30 AM
Documents

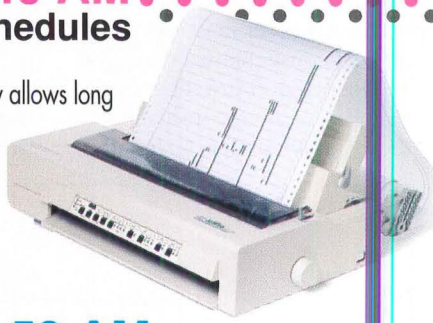


HI JetPro Series emulates the IBM® Proprinter™ XL24 to create high quality reports and letters from a wide range of word processing packages.

9:35 AM
Scanner Output

HI JetPro V100 automatically reads and outputs high-resolution, scanned, raster images from hand-held (PCX), desktop (TIFF) and large-format scanners (RLC and CALS). At a fraction of the cost of electrostatic plotters.

9:40 AM
Project Schedules



The rollfeed accessory allows long project management charts to be plotted from rolls of opaque or translucent bond paper.

9:50 AM
Presentation Charts

There's even time left to do large-scale charts for a 10:00 AM presentation. For information on HI JetPro Series plotters, or the name of your local dealer, call 1-800-444-3425.

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his image of Arata Isozaki's Walt Disney World Operations leadquarters was recreated as a wireframe using Visual Link, Autodesk's new Multimedia product that links 3D Studio to AutoCAD Release 12, and rendered in 3D Studio. The special textures and building materials were created in Animator Pro. This model was created by Patrick Micheli, of CAD/ASSIST in Alameda, California, who is an admirer of Isozaki's work.

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om conceptual design to building construction and beyond, the utodesk family of products includes the most complete set of chitectural tools for desktop computers in the industry. In recent onths, Autodesk has implemented a strategy that will ultimately able Autodesk CAD products to offer DWG file exchange. rchitects can choose a basic CAD package from Autodesk's oup of design automation products, including AutoCAD with extensive toolset for production 2D drafting and 3D design, eneric CADD® for personal or stand-alone 2D drafting with symbol libraries, and AutoSketch® for precision and conceptual 2D sketching. Add to these packages Autodesk's visualization tools, and their industry-leading 3D Studio® and Animator Pro™, along with AutoCAD-based independent software from strategic developers such as Softdesk ASG, CadPlus, LANDCADD, and ARCHIBUS, and there is no more complete and compatible architectural solution in the world. The company's Authorized Dealers, independent developers, and Autodesk Training Centers comprise a total network of support for AEC customers.

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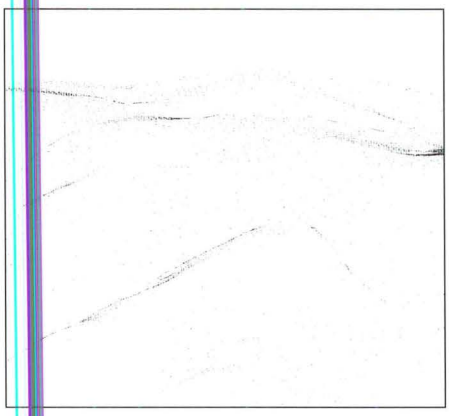
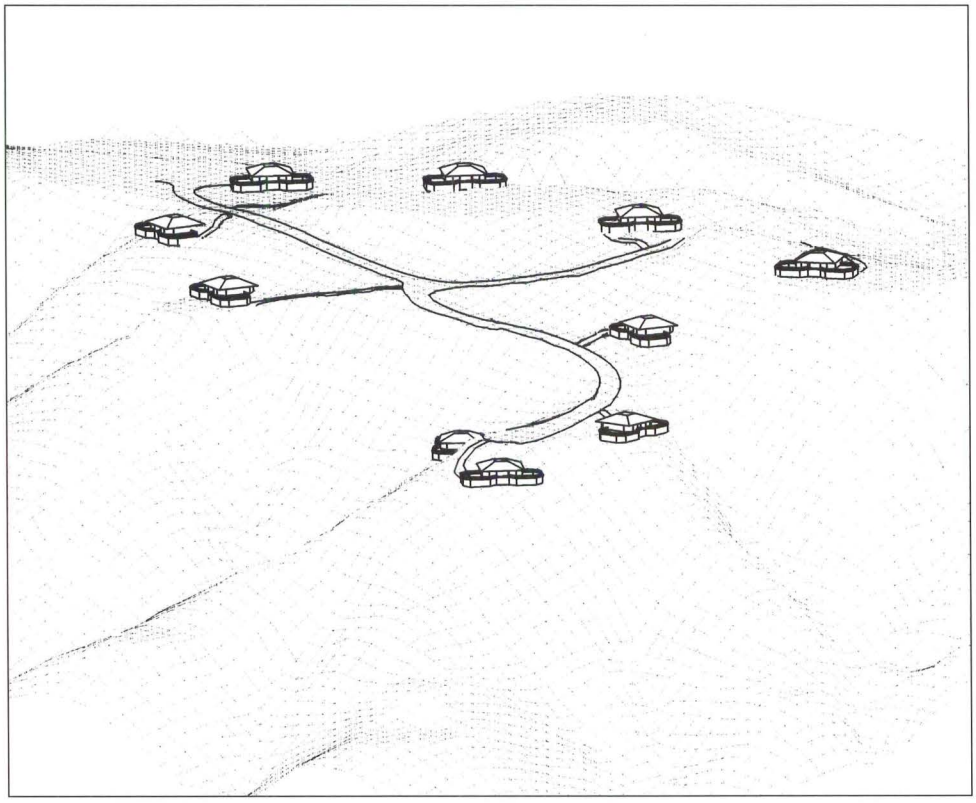
CONCEPT

CAD begins to make a difference from the very outset of a project. Although the computer cannot always take the place of impressionistic first sketches, it is possible to get projects off to an efficient start by taking advantage of AutoSketch, an easy-to-use 2D sketching package, or techniques such as scanning or digitizing to bring paper drawings — including site plans and drawings of existing buildings — into an electronic format.

John Peters Associates of Santa Ana, California, an interdisciplinary firm, uses LANDCADD to create 3D terrain models on proposed sites to help determine the ideal road and building placement on difficult locations, such as this model of a site in Rancho, California.

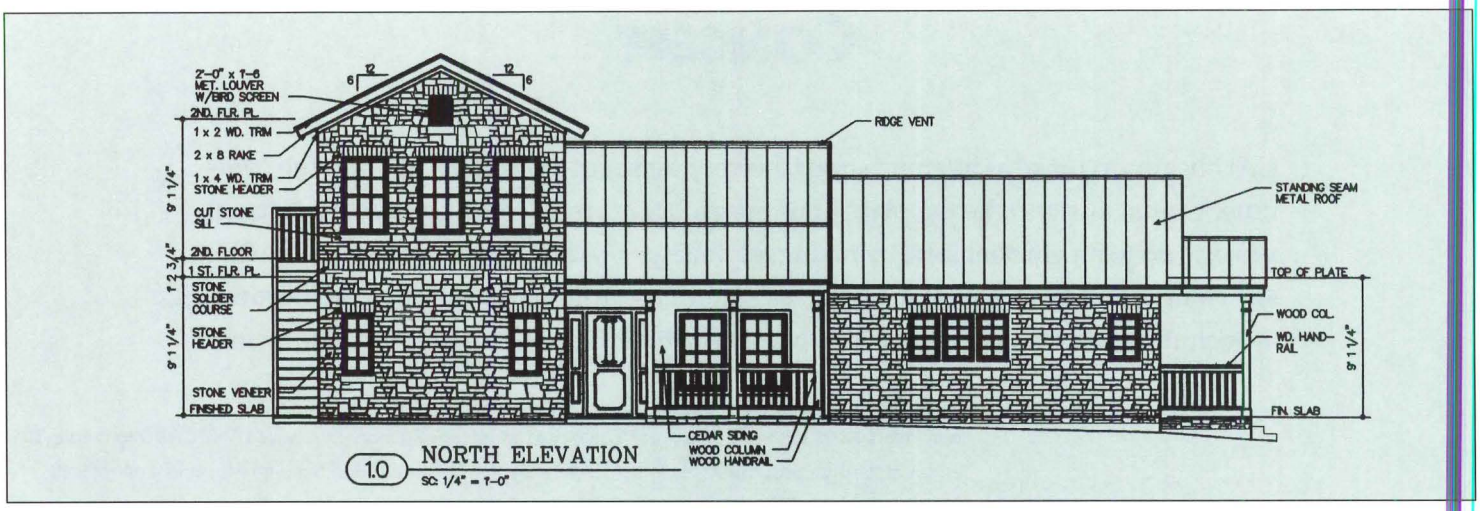




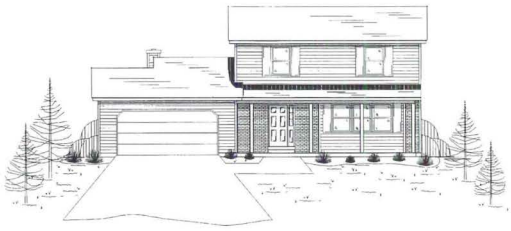
In the past, design professionals took it for granted that CAD could not be a substitute for a pen or pencil and a fat roll of tracing paper at the conceptual phase of a project. However, the experiences of John Peters, James W. Larson, AIA and David Roberts, however, are proving that the need to work out the first stages of a project on paper is a thing of the past.

Much of the work of John Peters Associates, a landscape architecture, planning, and civil engineering firm in Santa Ana, California involves planning studies for government agencies and developers. As president John Peters explains, the use of CAD has been critical to the environmentally sensitive nature of their work because it allows them to "manipulate form in 3D so we can really understand it." Topographical drawings representing large tracts of land are easily created using LANDCADD'S 2D and 3D terrain-modeling software package to digitize existing site information into the computer. To demonstrate the most logical places to build, the software enables the designer to do everything from studying views both from and towards the site, to slope analysis for hydrological studies. "What would have taken us months to do by hand," says Peters, "now takes only a matter of days."

Larson Architects, of Austin, Texas, specializes in custom residential design and commercial space planning. Recently, a prospective client came to Larson with some ideas for a house that he wanted to build, but he wasn't sure how to proceed. The client



Larson Architects of Austin, Texas, were given a proposed plan of this house (above) by a client who roughed it out using Autodesk's Home Series Software. Larson pulled up the plan in Generic CADD, refined the design and developed construction documents. Builder David Roberts of Kalamazoo, Michigan uses AutoSketch when he sits down with clients to help them customize their own home designs. Elevations, like the two shown below are printed out on a desktop printer after about an hour's session.

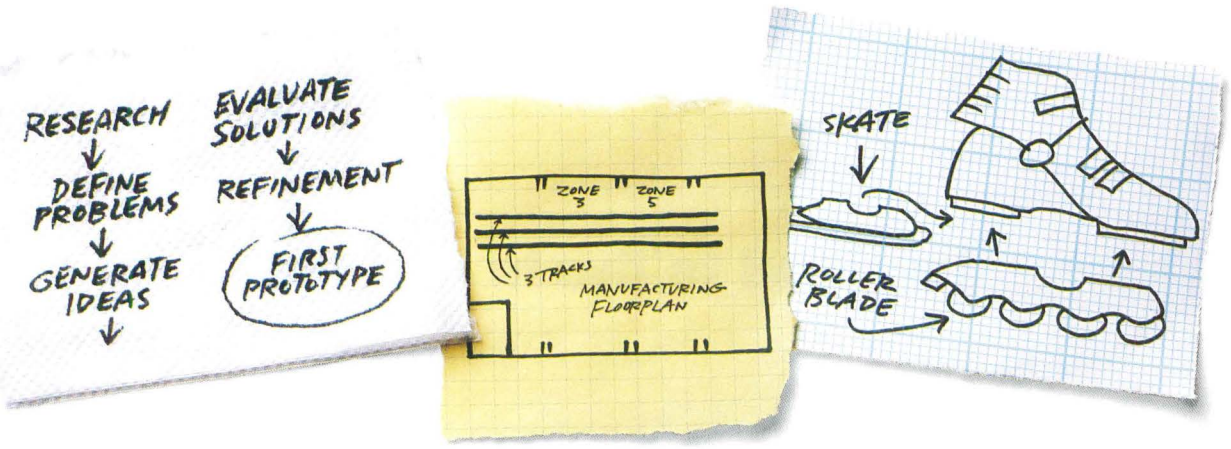


From Paper to Computer

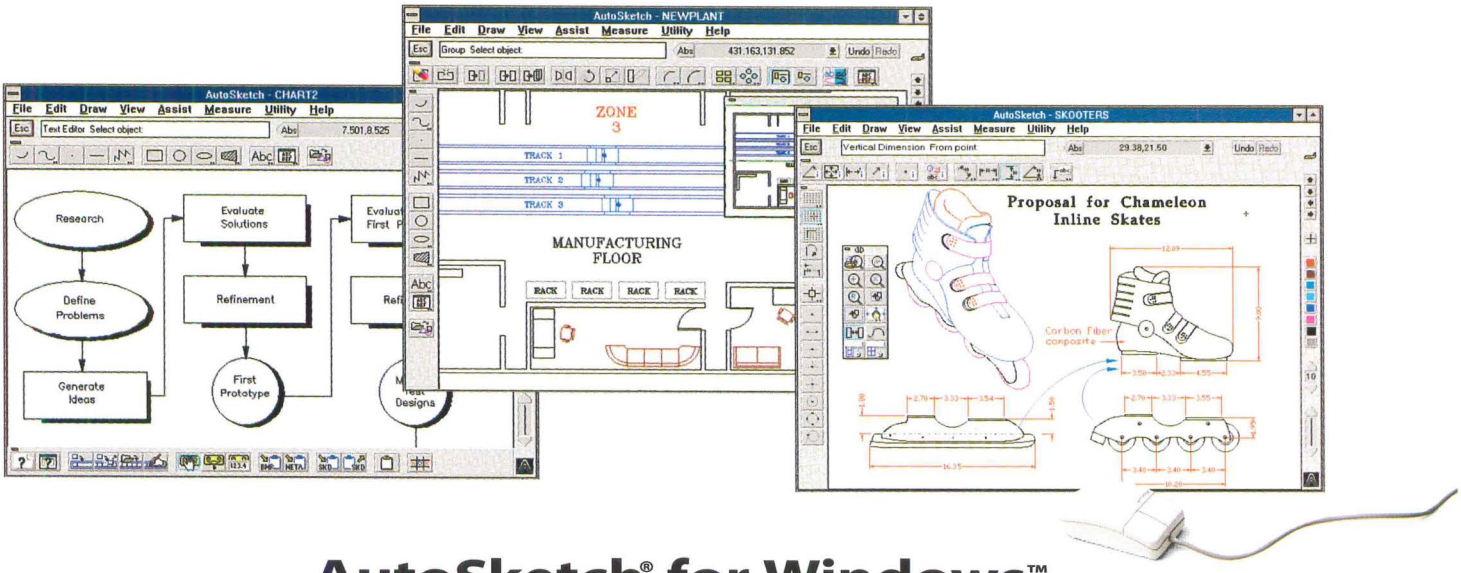
If the initial drawings have been manually drafted, it is possible to scan drawings into an electronic format by using a scanner. Scanning the drawing converts it into a pattern of dots that the computer interprets as a series of screen pixels, called a raster file. Many service bureaus can provide the service of scanning documents up to E size. Should the drawing need to be revised, the raster image can be imported into AutoCAD and used as an underlay that can then be electronically traced. If the drawings are clean, a more complicated process allows them to be converted into CAD drawings using software that translate raster files to vector files. Raster-to-vector programs convert the hand-drawn or scanned image to precisely measured digital lines and points (vectors). Once a vector file has been created it can be imported and edited in AutoCAD. This is an effective route to take when the drawing is near perfect. Otherwise, it is often much faster to simply digitize over the original drawing.

handed over a floppy diskette with a floor plan that he had drawn using the Home Series™ software, an inexpensive, do-it-yourself design and drafting package from Autodesk's Retail Products Division. Larson uses Generic CADD 6.0 and its counterpart for 3D drafting, Generic 3D™, for all of the design and production work in his office. Although Generic CADD is a professional design and drafting product and more comprehensive than the consumer-oriented Home Series, files between the two are interchangeable. The client was impressed that Larson did all of his work with CAD, and more impressed that his own sketch on Home Series easily became the starting point for Larson's more detailed drawings. Larson Architects got the job.

David Roberts, whose design and build firm, R. David Roberts Builder, in Kalamazoo, Michigan constructs 15 to 20 affordable houses a year says, "the computer has changed the way I work." With AutoSketch for Windows, Roberts sits with a prospective client and creates a preliminary drawing that can be printed on a desktop printer in less than an hour. The versatility of the software has enabled Roberts to create a library of floor plans, elevations and building components that he can quickly access and "mix and match" in an almost unlimited fashion. If the client is happy with what he sees and wants to proceed, these sketches can be easily transferred from AutoSketch into AutoCAD or Generic CADD for the creation of construction drawings.



Sketch.



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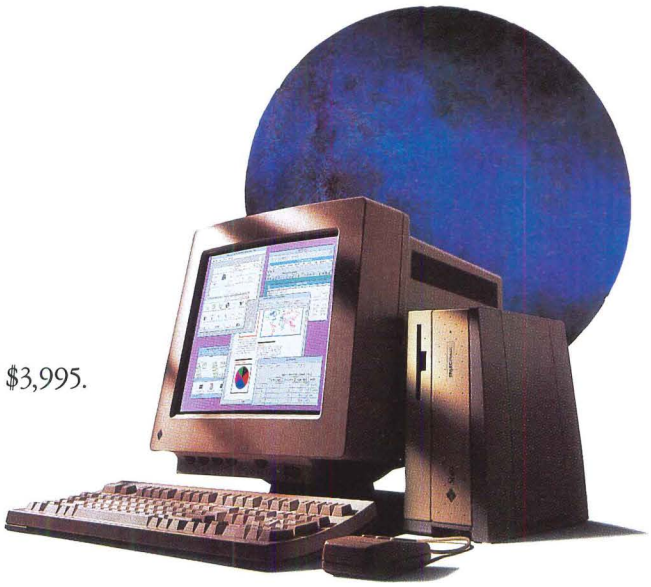

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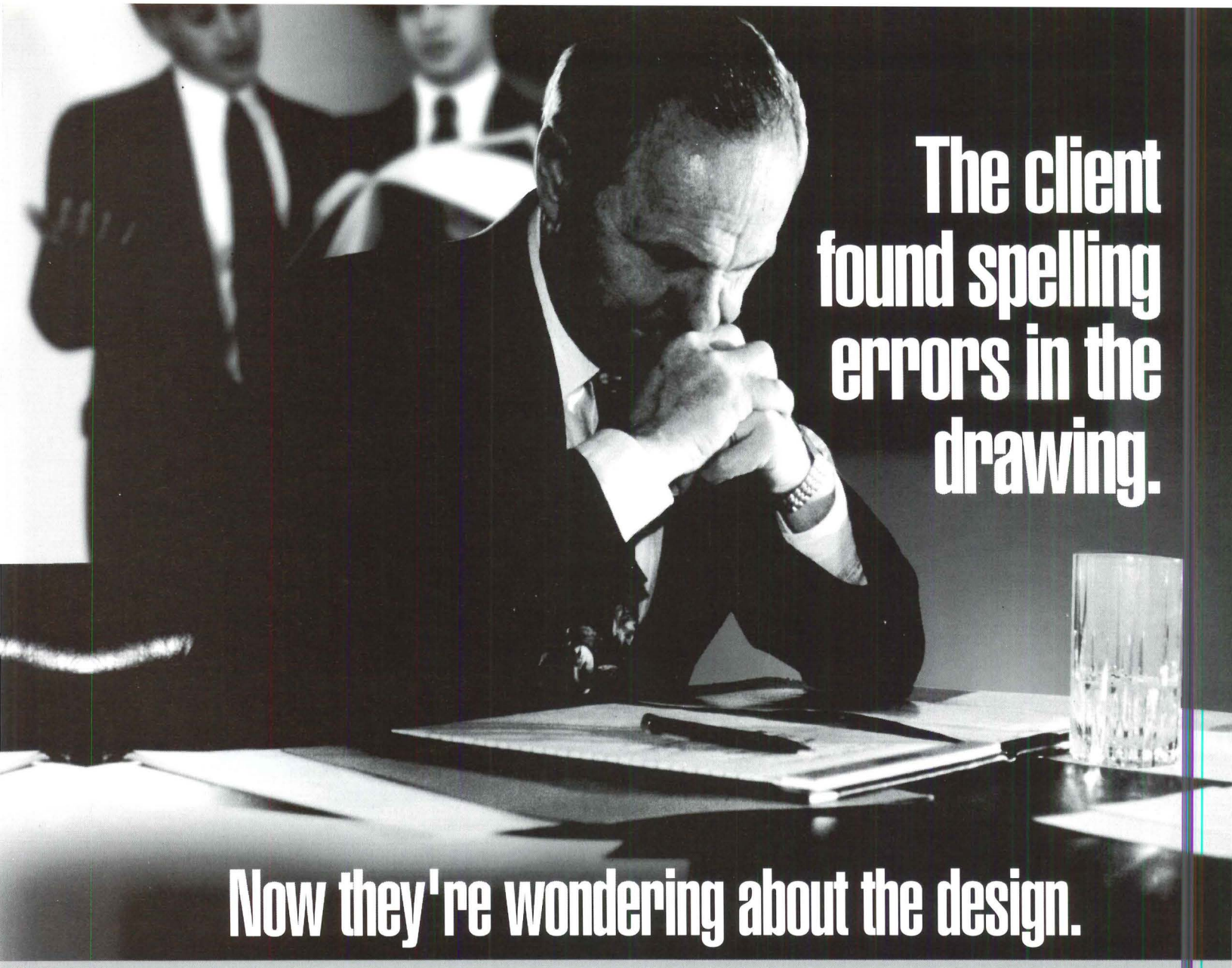

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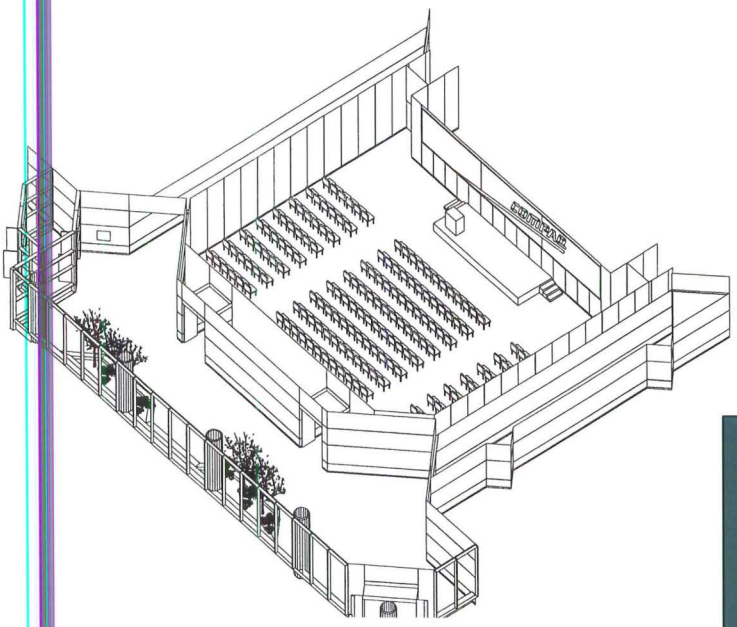
Design Studies

Once the parameters of a project are determined, it is possible to begin creating drawings in both 2D and 3D, allowing architects to explore a broader range of design solutions at an early stage of the process. In addition, the precision of CAD models ensures even that complicated projects, such as historic renovations, are handled with a high degree of accuracy.

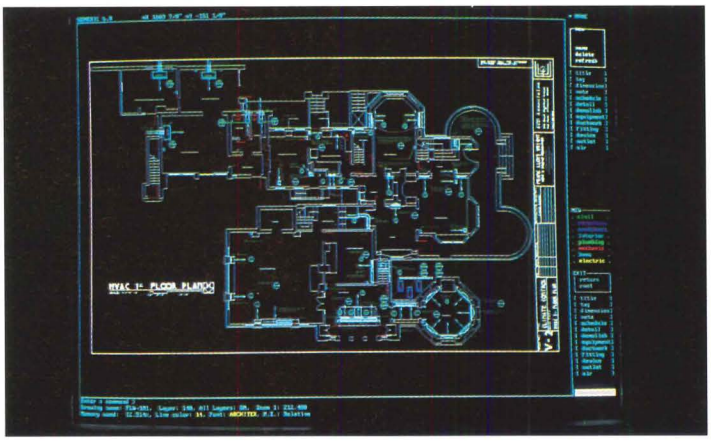


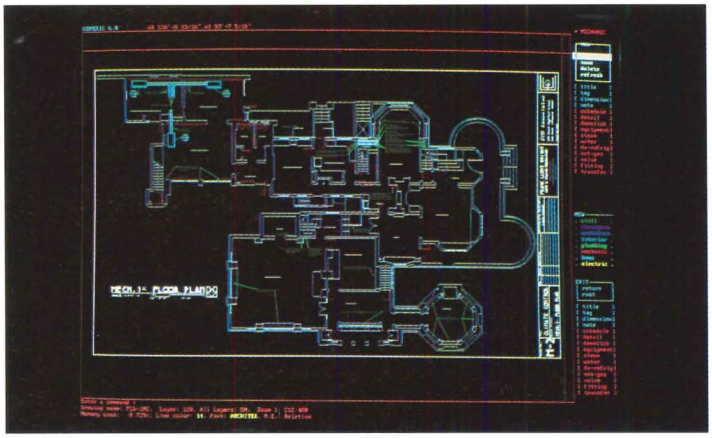
This conference center and prototype office study for Compaq Computer Corporation were created by Archimage, Inc., of Houston Texas using AutoCAD and 3D Studio. Using 3D at an early stage in the design process enabled them to communicate these concepts more easily to clients.

It's a myth that CAD is good only for production work. With the availability of 3D rendering software packages, design professionals are discovering that CAD is a flexible and powerful tool for exploring any number of design issues that affect a project, whether or not the project was initially developed with a CAD system.

"New visualization tools like 3D Studio create new opportunities for designers," says Richard Buday, AIA, president of Houston-based Archimage. The firm's staff of five CAD-trained architects uses a network of 486 PCs with AutoCAD Release 12, 3D Studio and Animator Pro, a 2D animation program, all from Autodesk. Their work has expanded from a traditional architectural practice to include computer graphics imagery for other architects, advertising executives and film producers. For a large interior design project for Compaq Computer Corp., Archimage created 3D models of the spaces with imported 2D AutoCAD files from the building's architects. Using AutoCAD and 3D Studio, Archimage worked with the client and consultants during several interactive design sessions to examine layouts, furnishings, fixtures, lighting and surface finishes, all in real-time. 3D models of the approved design become the starting point for 2D construction documents executed with AutoCAD.

James W. Larson, of Larson Architects, uses Generic 3D to study a project three-dimensionally that he developed from 2D drawings with Generic 6.0. If he's working on a house project for a client and he wants to look at the massing, any number of 3D massing studies can be generated from his original 2D drawings instead of building time-consuming and expensive physical mod-





ECD Associates of Oak Park, Illinois used Generic CADD to reconstruct the plan of the historic Frank Lloyd Wright Home and Studio so that they could design a mechanical system in the most unobtrusive way. ECD customized routines in Generic CADD by creating their own pull-down menus of frequently-used routines.

photo credit: Home facade, Frank Lloyd Wright Home and Studio, Oak Park, Illinois, by Don Kalec, courtesy of the Frank Lloyd Wright Home and Studio Foundation.

2D AND 3D

For basic 2D plans, sections, and elevations, the Autodesk Design Automation Series of products — AutoCAD, Generic CADD and AutoSketch — provides a comprehensive suite of drafting tools needed to quickly produce high-precision construction documents. AutoCAD's dimensioning and editing capabilities alone significantly increase a worker's productivity over traditional 2D drafting. Since it is easier to understand a design when it can be seen from different angles, designers may wish to preview their designs in 3D, and AutoCAD makes it easy to build models without alot of number crunching. Autodesk's Advanced Modeling Extension (AME) enhances AutoCAD's solid modeling capabilities. 3D solid models have precisely defined surfaces, an important feature that not only makes for more realistic renderings, but it also permits physical interference checking and precise data calculations such as usable square footage. Simple rendered 3D images can be created in AutoCAD using AutoShade, now part of Release 12, and more sophisticated renderings showing realistic textures and finishes can be generated by using Autodesk's 3D Studio.

els as he once used to. If the client has problems envisioning what the design of the house will look like or if they are put off by a drawing that looks like it was done on a computer, 3D Studio can be used to add photorealistic touches to the presentation. Larson, however, uses Generic 3D to produce a 3D wireframe model, which he prints out and uses as an underlay for a hand-drawn rendering. The final study has the accuracy of a computer-generated drawing, but the softness and subtlety of a traditional rendering that the client is more accustomed to seeing.

Using CAD can be surprisingly effective for renovation projects as well. Designing a new HVAC system for the revered Frank Lloyd Wright Home and Studio in Oak Park, Illinois presented a whole host of unique problems to Steve Glenn. Glenn, a principal of ECD Associates, an engineering consulting firm in Oak Park, faced the daunting task of having to design a mechanical system that could be inserted unobtrusively into the existing framework of the building. Easily customizing Generic CADD by adding special menus and macros for the tasks that the firm often uses, Glenn and his team were able to efficiently reproduce the old working and as-built drawings in the computer. According to Glenn, "we could not disturb original parts of the building." With the existing Frank Lloyd Wright building now part of their database, the firm produced accurate studies identifying possible locations of new risers and diffusers for review by the restoration committee. Modifications or requests for specific information by the committee were quickly addressed. Once the layouts were approved, the design study drawings became the basis for working drawings completed with Generic CADD.

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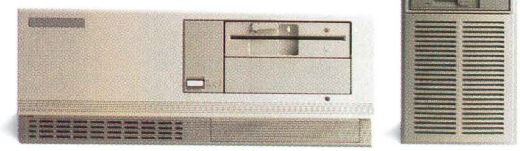

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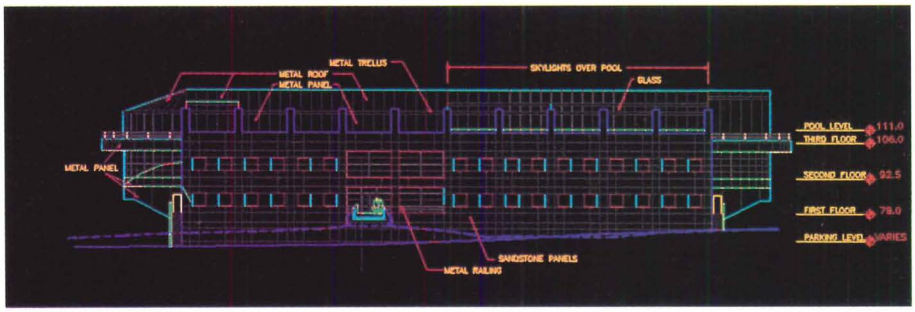
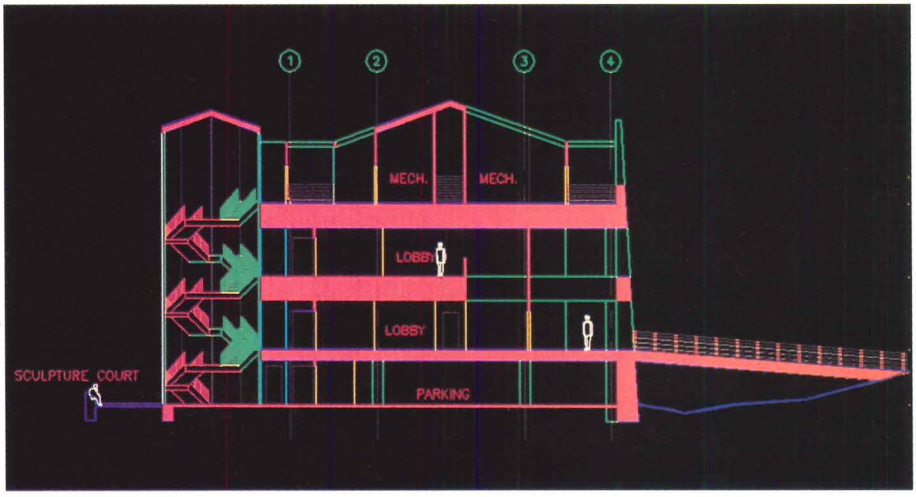
Design Coordination

Once the basic design concept has been accepted, schematic plans are developed. During this stage, the architect takes advantage of the extensive library of standard architectural symbols provided with architecture-specific third-party software. Concurrently, mechanical and structural engineers and other consultants begin to work on the project using AutoCAD-compatible software designed for their specialties.





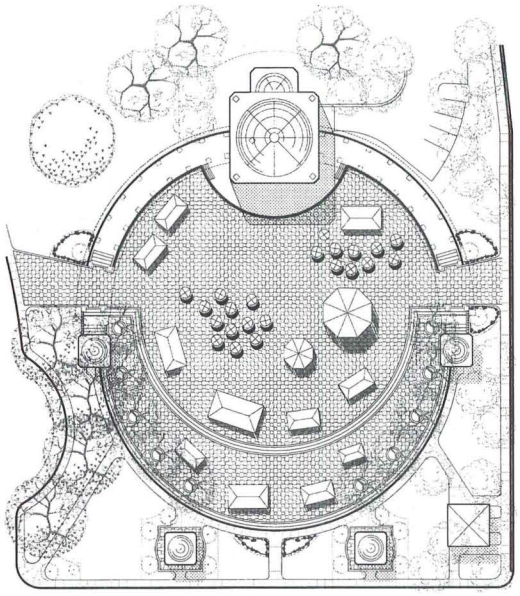
FMSM of Albuquerque, New Mexico, used AutoCAD, the CadPLUS Total AE System for AutoCAD and 3D Studio to study design alternatives for building massing, fenestration, and materials in this healthcare corporate office facility, as well as to create a dramatic architectural presentation.

As the complexity of a project increases, so does the need for the tools of CAD. Once the initial design sketches and studies have been done, the design professional begins to generate hard information about the nature of the project. At this point, it is often necessary to work with other disciplines.

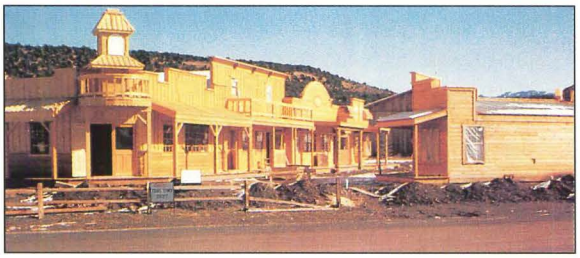
"In the old days before CAD, we would typically start our drawings from scratch after every stage in the process because so many changes had been made to the documents," recounts Tobias Flatow, principal with Flatow, Moore, Shaffer, McCabe Architects in Albuquerque, New Mexico. "Now there's no retooling between schematic design and design development." Flatow's firm now runs CadPLUS Total AE System on an AutoCAD platform. In projects like a corporate healthcare facility, explained Flatow, the use of AutoCAD, with its ability to be customized with other discipline-specific packages means that architects, clients, and consultants can all communicate. Many of their consultants are also using CadPLUS and that has meant significant increases in efficiency in the way they work since changes can be forwarded on diskette rather than redrawn. It also helps ensure that standards and conventions are consistently followed. Using CadPLUS has been especially advantageous because "it allows sections, elevations, plans, perspectives and reports to be generated without additional work after the original 3D model has been built."

Steve Cook is a landscape architect with the Pekerak Group in San Diego, California, a landscape architecture firm that does

Steve Cook, a landscape architect with the Pekerak Group in Oceanside, California, uses LANDCADD for projects like this piazza because it allows him to easily share files with architects and other consultants.



John Peters Associates used LANDCADD and AutoCAD to coordinate the work of their firm with consulting engineers on this project for Trail Town, a new development in Ridgeway, Colorado.



Sharing Files

The Autodesk family of software will soon use AutoCAD's internal file format — indicated by the .DWG file extension — which means that files will not require any conversion to go from one Autodesk application to the next. Autodesk's .DXF format, short for Drawing Exchange Format, has become the de facto industry standard CAD exchange file format, making it possible to import and export drawings among many different CAD packages. Other industry standard file exchange formats supported by AutoCAD include IGES and DXB drawing files, SQL databases, PostScript, and most common raster image file formats. The previous file formats of Generic CADD and AutoSketch will continue to be supported as .DWG becomes Autodesk's CAD family standard. The ease of file sharing among designers and consultants using different programs on a project allows for one database to serve multiple functions.

streetscape and park work – often with architects or engineers as consultants or clients. The Pekerak Group uses LANDCADD and AutoCAD software in all of their design and production work. LANDCADD is extremely useful, says Cook, because of the ability to create "cleaner documents" and "better, cleaner details." The ease with which symbols can be customized has meant that drawing conventions within the office did not have to be changed when they started switching from manual drawing six years ago. Cook also finds that most of the architects and engineers that his firm deals with use AutoCAD. Information is swapped back and forth using the AutoCAD .DWG format. This ensures a "smooth transition" between their disciplines; everyone gets into a project at the same time and changes to the scope of work are made quickly, uniformly and accurately.

Sharing CAD information across disciplines is becoming the industry rule, not the exception. John Peters finds that many clients come to him precisely because they can easily exchange computerized information. He is also at the point where he hires only those consultants who are working with CAD. James W. Larson finds the ability to translate drawing files critical at this stage in his own residential work since structural engineering issues always have to be considered in conjunction with architectural design. For Pete Hughes, at Perkins Eastman in New York, GEOCAD's layering system with AutoCAD saved him "untold hours of time and effort" in managing the numerous multidisciplinary drawings he has to deal with on a daily basis as CAD Manager.

New Technology Opens New Markets

The field of facilities management is in the process of being revolutionized by the emergence of CAFM (Computer-Aided Facilities Management). This new technology offers an unprecedented degree of control over facilities operations: instant access to data, a seamless link between drawings and a database, the ability to forecast various alternatives, and so on.

At the same time, however, this new technology poses new challenges to those in facilities operations. And this is precisely where an architect can step in, to offer expertise and services on a long-term or short-term basis.

> **"Providing CAFM services gives an extra advantage when bidding for architectural work. CAFM takes architecture more broadly into the realm of real estate analysis and planning and also into longer-range projections and forecast planning.**
>
> **"For our company, CAFM services gave us an opportunity to bid on architectural documentation at Hoffman La Roche, and the facilities work which we provided Hoechst has lead to multimedia and architectural opportunities."**
>
> **—Chris Keller, AIA**
> **Integrated Data Solutions, Inc., Newtown, PA**
> **—Jennifer Keller, AIA**
> **Design + Data P.C.**

Why Should You Include CAFM in Your Array of Services?

Computerizing architectural and facilities services can change the way you do business. Architects who have been working with computers, for years or for just a few months, say that not only has it made their job easier—speeding and simplifying their work—but it has also expanded the potential scope of their business. They can do more than they ever thought possible, with the result that their business is more stable and more profitable.

Technology Enhances Abilities, Makes Tasks Easier and Quicker

For years, architects have found that computerizing the design process gives them dramatic new abilities. However, in addition to aiding design, the technology also provides a new relationship to the people who manage the ongoing operations of the finished facility.

As Constantine Kriezis, an architect with Jung/Brannen Research & Development Corporation, notes, "The computer provides a perfect environment on which to model a building or a site both graphically and alphanumerically. That electronic model can be re-used over and over and is thus as important to the architect as to the facility manager."

Barbara Hendricks, Principal and Architect with Duvall/Hendricks, cites some of her new abilities: "We recently reconfigured 45,000 square feet in six weeks. We measured the space, input a space plan, inventoried the space plan, put the data in the Space Management module, reconfigured the floor plan, and generated reports. They were making changes up to the last minute, and we were providing an accurate configuration of what they would need up to the minute of the move. It's that flexible and accurate."

Unique Abilities Enhance Competitive Positioning

CAFM takes architecture away from initial design and more broadly into the realm of real estate analysis and planning, as well as facilities operations.

Chris and Jennifer Keller, both AIA, say that "Providing CAFM services allows an architect to combine architecture and computers in a field where professional facilities and design perspective is needed. Being able to combine two areas of expertise (computers and architecture) is rare, and provides a much better understanding of what a CAFM system can do."

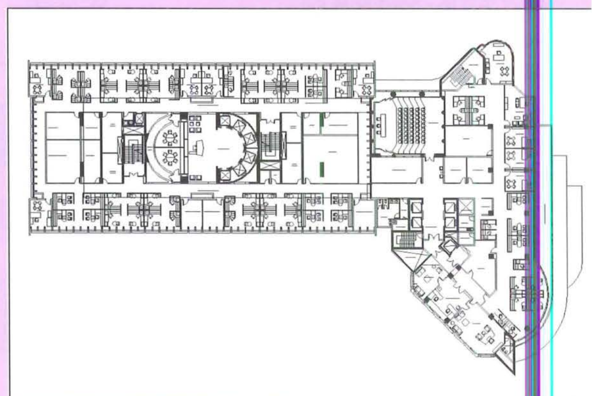
Moreover, using computers to accomplish certain tasks—such as chargeback and space planning—can take significantly less time and money than manual methods. Therefore, you can charge less for these services.

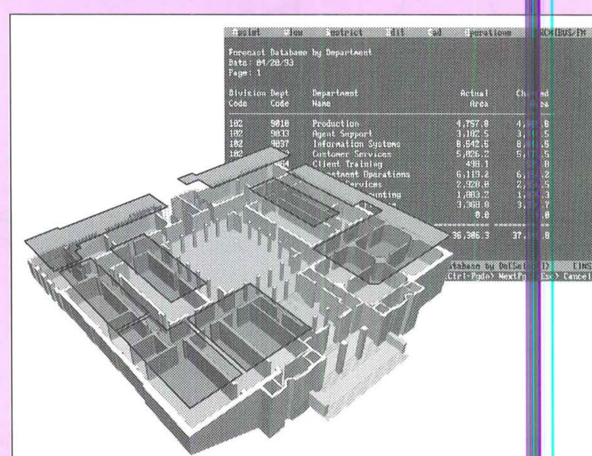
New Skills Enlarge Potential Client Base

Many architects are currently using their FM skills to appeal to new types of companies. They are expanding their focus from simple design and construction to ongoing FM tasks.

The Kellers cite such a case. "We used CAFM to complete a signage replacement project for Bristol-Myers Squibb. Using a CAFM database, we brought together, in a single drawing with attributed intelligence, the floor-plan illustrating where new signs were to be placed—with the actual signage text. We then output the drawing, with attached data, and used it as a list of text for manufacturing and printing and also as a drawing for installation.

"CAFM pared down the time required for the entire project, and allowed our company to win the contract and deliver the product in a timely fashion."

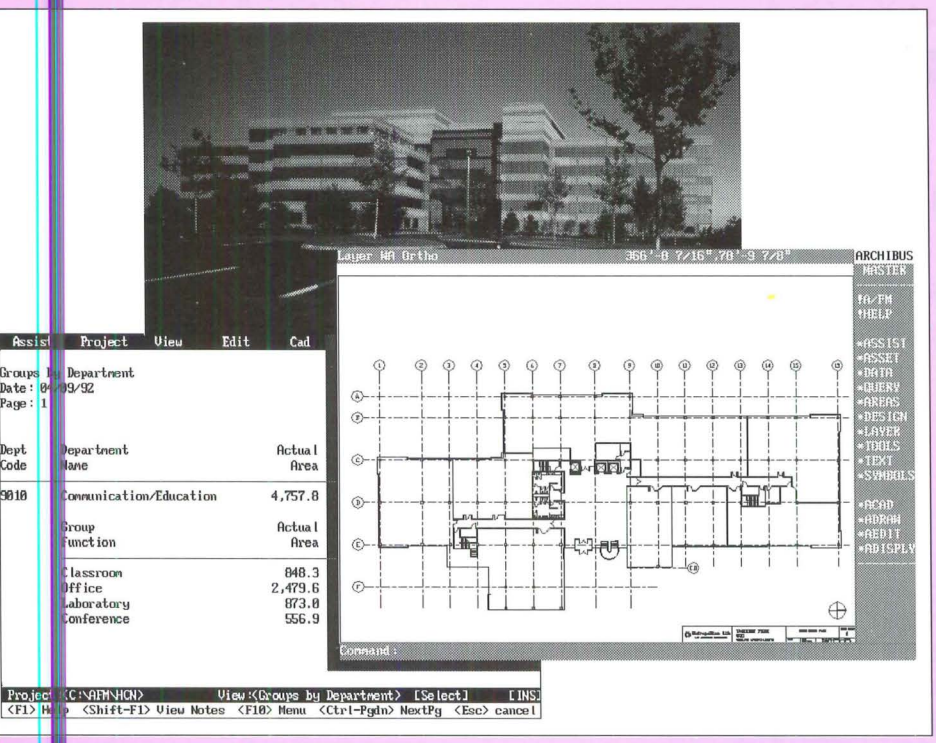




Speeds Drawings, Lays FM Groundwork

While a CAD package on its own can enhance an architect's abilities immensely, a good CAFM package will also offer new tools for designing.

Duncan Pendlebury, AIA, partner in Jung/Brannen Associates, is using CAFM on a new project. "We use ARCHIBUS/FM for all our area calculations, as it speeds up our work considerably. We completed the first plan for a new corporate headquarters in three days. The project consisted of 15 floors—all with furniture layouts, for 1200 people, in a space of



250,000 square feet. We transmitted drawings to the client yesterday, via satellite. They cannot believe the turnaround time we're delivering."

Access to Different Departments in the Same Organization

How a facility is maintained affects every department in an organization. Being able to enhance the operation enables you to work with people across every group.

As Barbara Hendricks notes, "We have been working with a client, restacking their spaces. We have been able to compare the impact of new standards with existing standards. They had been doing chargebacks to departments by hand. With ARCHIBUS/FM doing chargebacks, the process is now fairer, more logical, more accountable, and easier to maintain."

Constantine Kriezis says that "there is a great opportunity to provide related services, from design and construction, to master planning or feasibility analyses."

CAFM Services Vital in All Economic Climates

During economic growth, companies typically expand and change, and they need FM services to keep up. However, in hard times, companies need FM services just as much, to contract their operations.

Al Kraul, Facility Administrator with the CUMIS Group Ltd., notes how CAFM helped his company save money. "Essentially the bottom line in selling CAFM at CUMIS was the savings we could offer the corporation. Thus far we have cut the square footage for one of our leased locations in half, and next year we hope to eliminate it entirely... The cost savings related to facilities are immediate."

FM Services in Constant Demand

Providing FM services provides a more stable base for a business. As the Kellers say, "Traditional architectural commissions tend to be large, single instances of design service, whereas the day-to-day space moves and reshuffling/churn rate of corporations creates a smaller scale but steadier flow of work. Your bread and butter, if you will."

Choosing the Best CAFM System

Once you have decided to broaden your services to CAFM, how will you know which system is the best? The answer is simple: Go with the proven solution, the #1 CAFM system in the world: ARCHIBUS/FM.

ARCHIBUS/FM is the only Autodesk Strategic Developer for facilities, offering a seamless link between drawings in AutoCAD and data in the database.

ARCHIBUS/FM offers a wide variety of products, in a modular format: standalone or network, seven different application modules, DOS or UNIX, and more.

ARCHIBUS/FM is an open system that you can easily customize to your clients' exact needs. And it is currently in its sixth generation, a product of a company that spent the last decade pioneering CAFM techniques. Finally, ARCHIBUS/FM offers mainframe performance at a fraction of the cost.

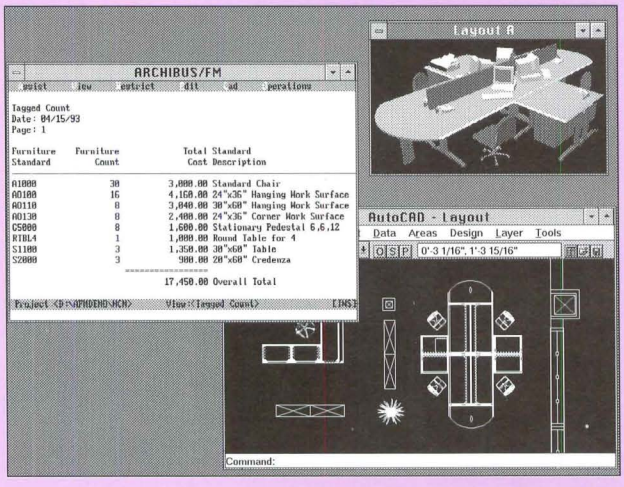
"ARCHIBUS/FM helped streamline our approach by enabling us to get information to our clients more efficiently and for less cost. It has distinguished us from other architectural firms because, with the additional FM services, we are a single point of contact for our clients. And it has enabled us to better understand our clients—we have an integrated approach to their spaces, furniture, design ideas, and their culture.

"We can provide services that other firms are unable to offer—programming, analysis of their present and future space needs, and more."

—Barbara Hendricks, AIA
Duvall/Hendricks Architects, Baltimore, MD

The Bottom Line

An investment in CAFM technology today can, very quickly, benefit your clients, your competitive position, and the future of your business.



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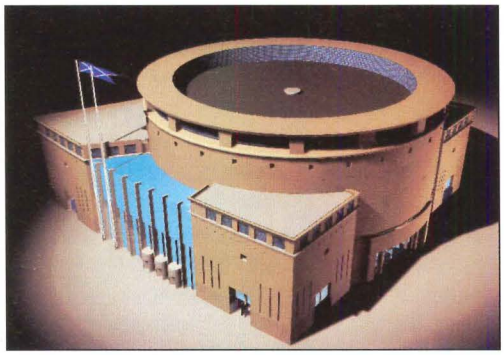
PRESENTATION

At this point in the project, the design is precise enough so that the architect can create rendered 3D models and event animations that give the client an excellent sense of what the finished building will look like. The client can also take these materials to help market the building to prospective tenants before it is even built.



A 3D Studio animation of a building complex in Edinburgh, Scotland won the bid for Magic Lantern of England. Shown here is the International Conference Center treated in three different ways: a bird's-eye view with simple materials and dramatic lighting (left); the same view and lighting with different materials (below); and a street-level view (opposite).

Visualization Tools

While 3D models can be built using AutoCAD alone, Autodesk 3D Studio adds the capability to create the kind of sophisticated renderings and animations that best illustrate the true potential of a design. 3D Studio is the industry-leading visualization tool for marketing architectural ideas. By precisely controlling lighting, shadows, textures, and reflections, a designer can create a photorealistic image of the building. Architects can also preview different lighting designs without hiring a consultant. Rendering effects, such as transparency, bump and reflection mapping, add convincing details to rendered image. In addition, 3D Studio's animation capabilities provide the architect with a tool to create walkthroughs and fly-bys from any angle. For instance, a view of the proposed CEO's office or a sequence of aerial views that emphasize the detailing at the top of a building can convey specific design ideas that are hard to get across using conventional architectural presentation techniques. Best of all, 3D Studio provides a variety of presentation options, including output formats for creating high-resolution color prints, 35mm color slides, and animations from live computer playback or videotape.

These two views of this yacht interior were created in 3D Studio by Autodesk's European CD-ROM development team, and refined by the company's Image Lab, as part of an animated walkthrough.

It's no illusion AutoCAD us
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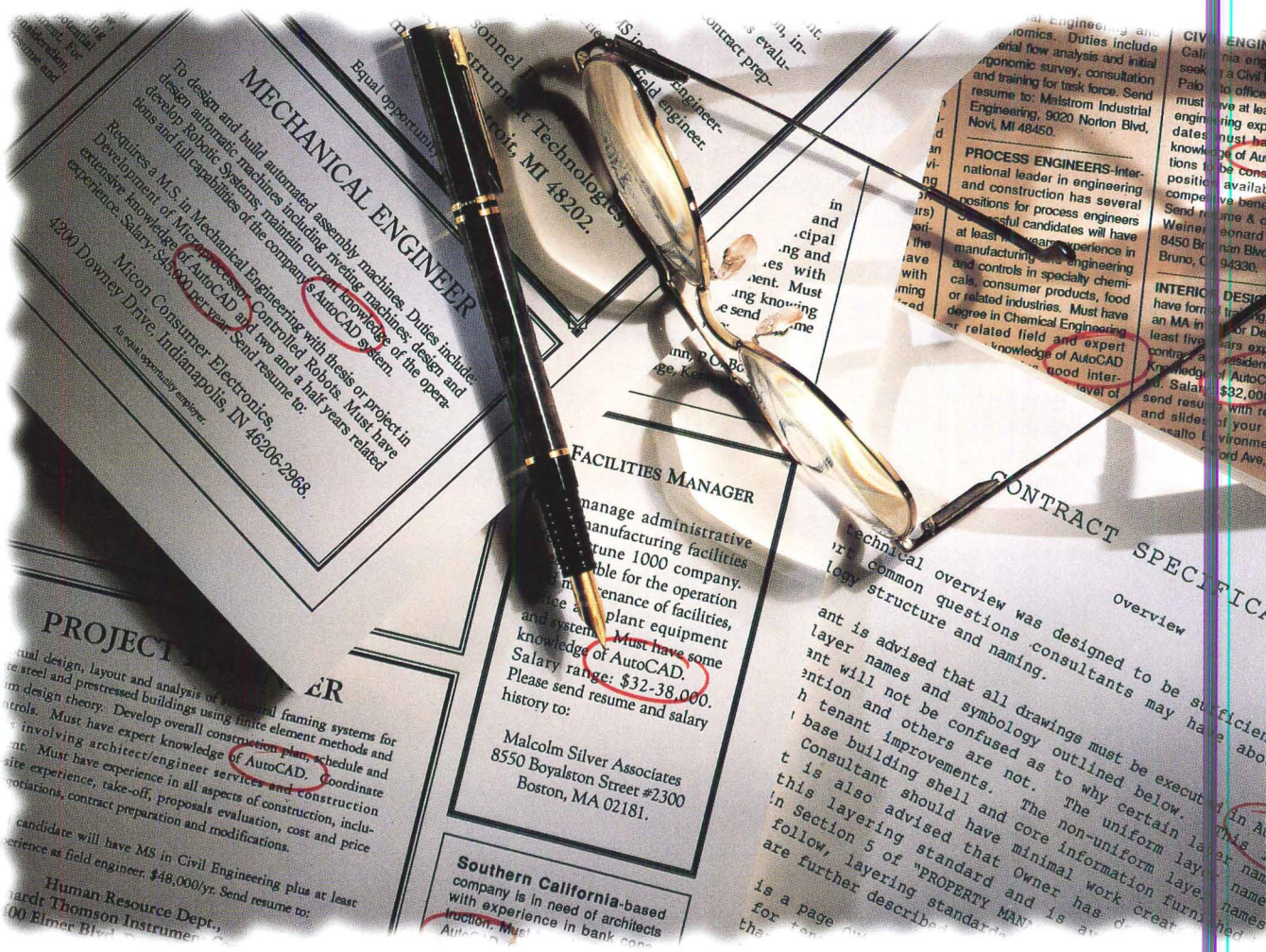

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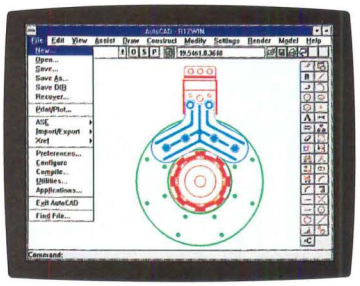

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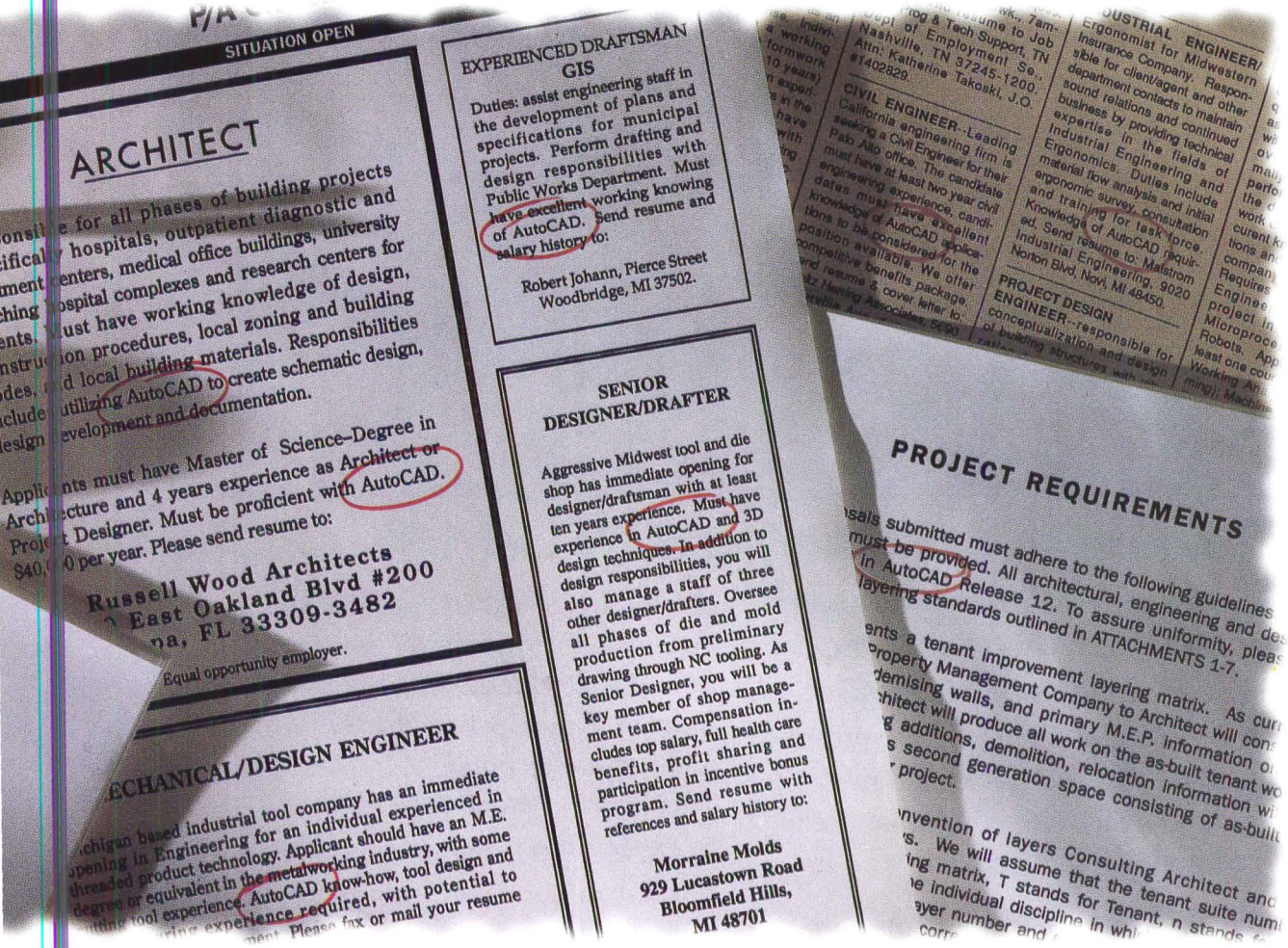

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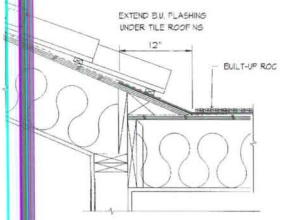
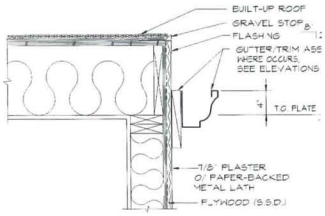
PRODUCTION

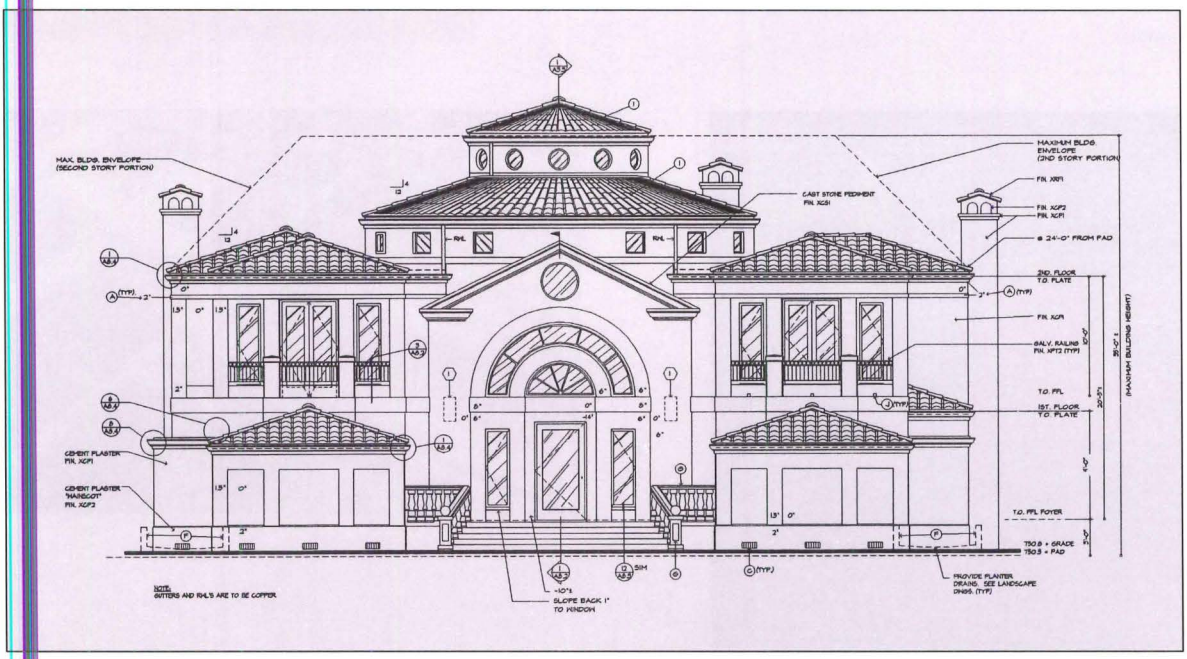
One of the greatest time-savers of CAD is the use of detail libraries to specify products and aid in the production of working drawings. The details are "smart" and automatically add cost, specification, and detail drawing information to a database for use later on, representing an enormous time savings over traditional methods.



Transtion From Sloping to Flat Roofing



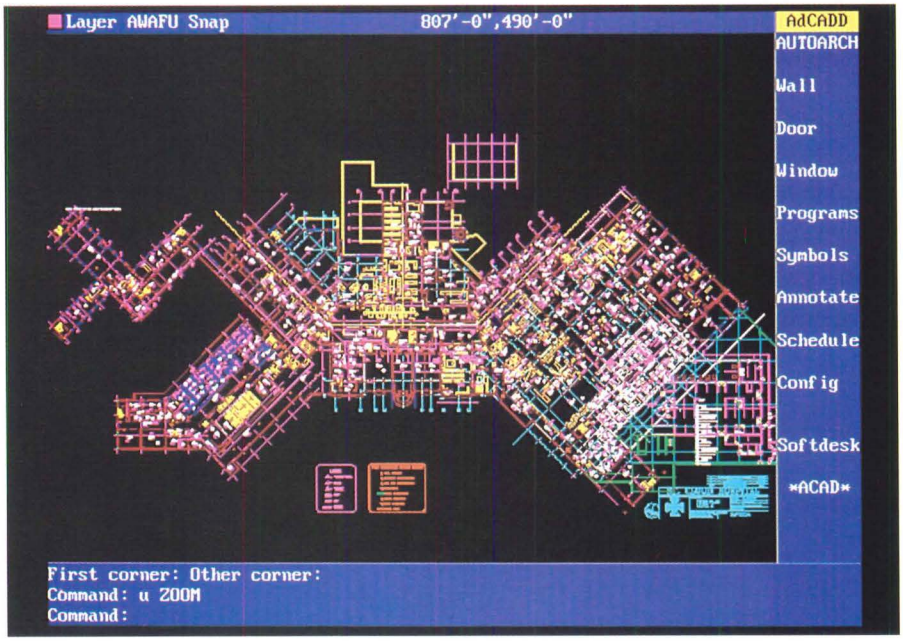
Eave @ Built-Up Roof



For the production drawings of this Newport Coast residence, Tom Clark of Neeley/Lofrano Architects in San Francisco, CA, used the Softdesk ASG Detailer to quickly generate construction details using a library of standard details.

At the production stage of a project, CAD now does better what it has always done best. Standardization and speed are critical to maintaining quality production and detailing work. With integrated software, design drawings become the foundation for production drawings and nothing has to be drawn twice. Accurate plans, sections, elevations, and details can be developed and coordinated as part of the design process and quickly finalized during production.

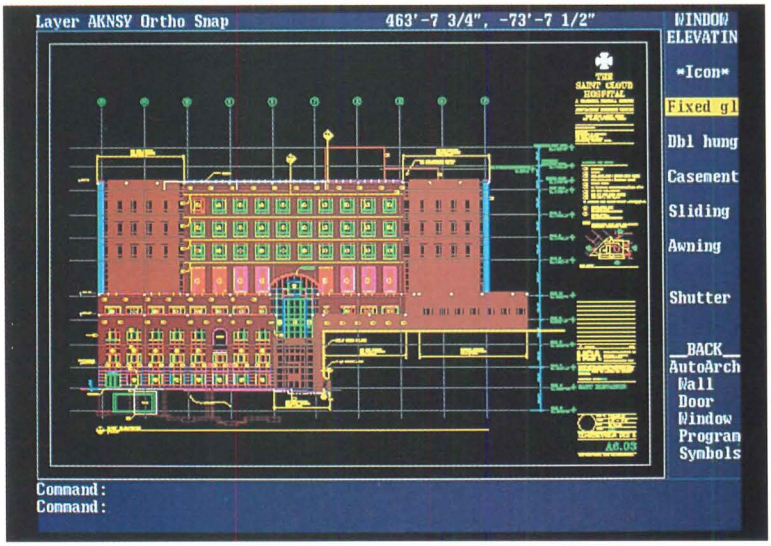
CAD "allows you to do a better job," says Tom Clark of Neeley/Lofrano Architects, a firm in San Francisco. For both their architectural and interior design work, his firm has been using Softdesk ASG detailing software with AutoCAD for all of their working drawings over the last two years. According to Clark, "you can create details very quickly," either by accessing them from the system's default library, or by modifying these same details and saving them as part of an in-house custom library. Details can be automatically referenced to CSI numbers or to an office's own conventions for easy retrieval. The versatility of the software package means that "it's quick and easy to make alternate details"; the architect doesn't have to rely as much on typical

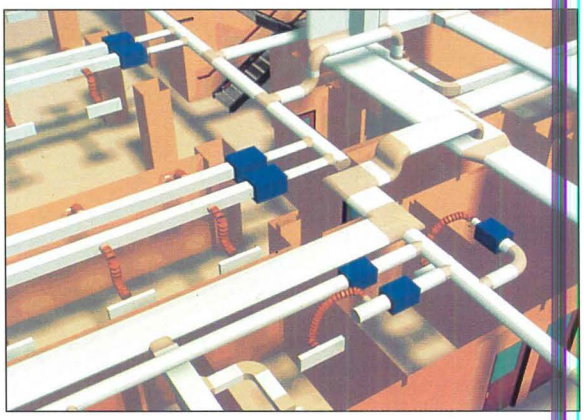


Using Softdesk's Auto-Architect and its integrated HVAC module, Hammel, Green & Abrahamson of Minneapolis, MN., created these drawings of the St. Cloud Hospital. HVAC systems can be modeled in 3D using Softdesk's add-on module.

Saving Time with Detail Libraries

To save time with repetitive elements that remain constant from project to project such as stairs, plumbing fixtures, windows, doors, and even graphic conventions, symbol libraries are included with most architectural software packages or can be purchased for just about any engineering, architectural or interior construction need in 2D and 3D. Manufacturers, such as Marvin and Pella Windows, often supply detail libraries of their products free of charge or at nominal cost. Detail libraries can be personally modified and tagged with user-defined attributes such as size, cost, labels, etc. This information can later be collected to generate everything from material cost estimates to door and window schedules.





details to cover all situations. At the same time, "it's very interactive — it allows you to get into detailing earlier on," explains Clark. "We can bring up a detail while the designer is working on the elevation." In the long run, it saves time and money. "It lets the architect recoup part of his fee," says Clark, by working faster and more efficiently.

Butch Wolf of Askew, Nixon, Ferguson and Wolf Architects in Memphis, Tennessee relies on AutoCAD and Softdesk's Auto-Architect to produce contract documents in a timely manner. Wolf, whose firm's work consists of a mixture of architectural and interior work for such clients as the U.S. Postal Service and the Tennessee Valley Authority, has been using AutoArchitect since 1990. It's a flexible, versatile tool that allows him to do everything from creating furniture layouts in 2D and 3D, to drawing walls with linked attributes that automatically generate partition types and material take-offs. Features such as stairs and plumbing fixtures can be inserted automatically, thus reducing computer drafting time. Window and door schedules can be created directly from plan drawn components, and customized drafting symbols and components eliminate guesswork and ensure accuracy.

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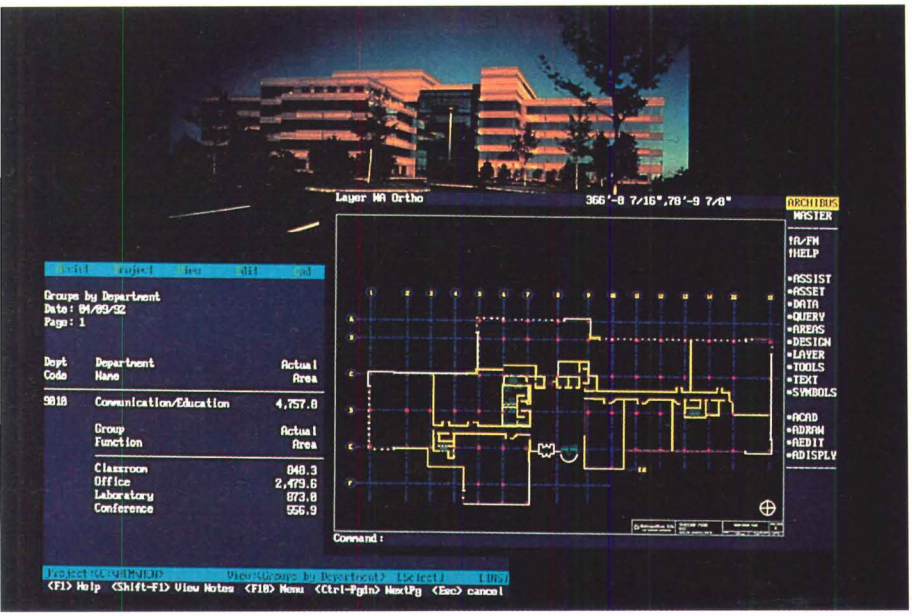
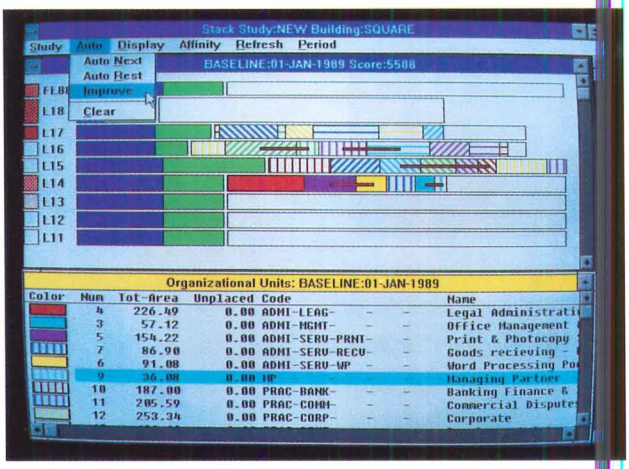
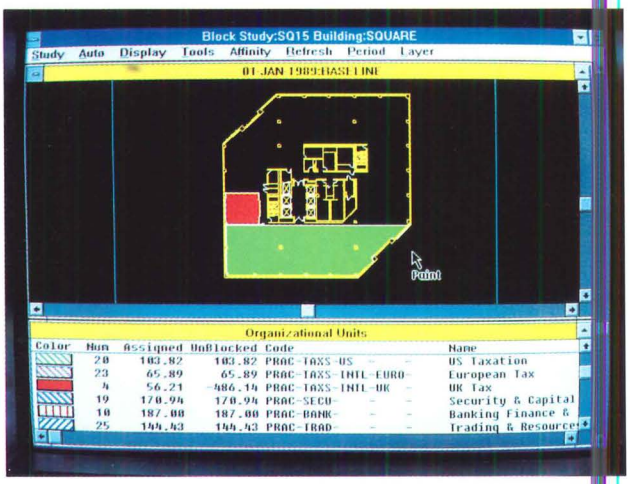
FACILITIES MANAGEMENT

When a project has been produced with CAD the architect's relationship with the client does not have to end when the building construction is completed. Because accurate drawings have been created in electronic form, they can now be used as the basis for a facilities management plan.







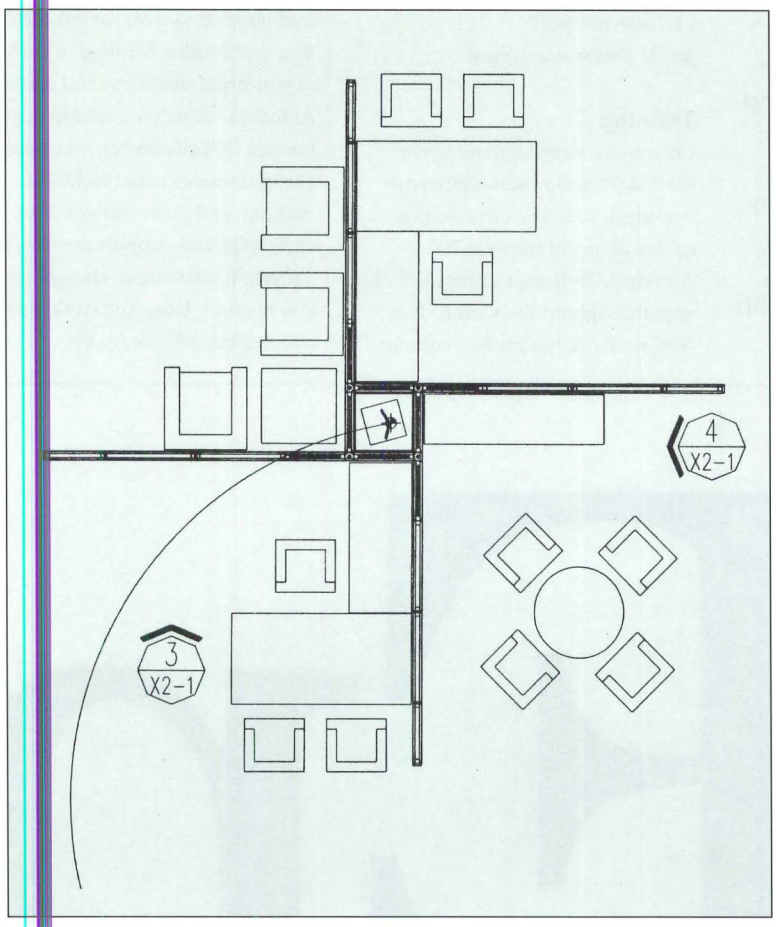
Architects can choose from a number of products to help them develop facilities management plans for their clients. Among them are ARCHIBUS/FM that allows architects to keep a visual database that includes AutoCAD drawings, database files, scanned drawings and photographs. CAPS Specs provide tools needed for creating space allotment plans and stacking and blocking diagrams, as well as allowing the user to export facilities information to Microsoft Word.

Client involvement for design professionals used to end when construction was complete. This no longer has to be the case. Facilities management software packages that work in conjunction with AutoCAD now offer the design professional the ability to do everything from tracking furniture inventories to monitoring repair and maintenance costs of entire buildings.

FIRST Systems, a subsidiary of Williams+Paddon/Architects+Planners in Roseville, California was hired by the Roseville Telephone Company to develop a furniture tracking program. As John Hansen of Williams+Paddon explained, "Not having up-to-date information on the company's furniture inventory was costing them money." The first step was to field measure eleven of their buildings and enter the graphic information into the computer using AutoCAD. At this point, using a bar-code asset tracking system, Hansen's firm was able to bar-code all of the furniture in the facilities and set up a database. Representational furniture symbols were then entered on the AutoCAD drawings. Archibus's FM software provided the link between a graphic view of all furniture items, showing their exact location within a building, floor or room on the AutoCAD

Giving the Client More

In recent years, architects have discovered that a slow economy means that they need to provide more competitive services to get and keep clients. Many AutoCAD users have weathered the storm — and prospered — by taking full advantage of the new automation tools to enhance the services they can provide at all stages of the design process. AutoCAD is not just for drafting anymore. It provides the powerful design engine for accomplishing a wide range of tasks, from preliminary design to construction, that are becoming even easier for the architect with the introduction of compatible Autodesk software applications. Furthermore, creating convincing presentations helps clients better understand and appreciate the role of the architect, and value-added services, such as facilities management, will keep the client coming back over the lifetime of a building.



TAG Architects of Northridge, California provide their clients, such as the Security Pacific Bank, with facilities managment plans that include views of standard furniture and fixtures in both 2D and 3D, so that they can be easily understood by non-architects. TAG gives clients facility management files on diskette to aid them in future planning.

drawings and their database descriptions.

Archimage used FM System's FM: Space Management facilities program for their project for Compaq Computer. According to Richard Buday, this program enabled the 2D construction documents produced with AutoCAD to be converted into facilities management documents. Turned over to Compaq's facilities manager, these documents provide a manageable database by which to monitor all facets of their operations.

For his work as Senior Facilities Project Engineer for the E-Systems Greenville Division in Greenville, Texas, Steve Seitz uses CadPLUS Total AE System software with AutoCAD. Integrated software modules for architectural, engineering and facility management work make it possible for Seitz and his division to manage all design, construction and inventory changes required for E-Systems in-house. This eliminates the need for outside consultants and ensures coordination among disciplines. Particularly important, explained Seitz, is the facility management functions of CadPLUS. The ability to generate furniture and equipment plans, and perform asset tracking is crucial for a company such as E-Systems with a large number of existing buildings.

Resources

For information about all Autodesk products and services, call 800-964-6432. For more information about specific products, circle the number provided on the reader service card and mail or fax in.

The Autodesk Commitment To Service

About Autodesk

Founded in 1982 by sixteen systems programmers, Autodesk has grown to become the world's sixth-largest PC software company and the leading supplier of desktop computer-aided-design (CAD) software. Autodesk develops, markets and supports a wide variety of drawing/CAD, scientific modeling and multimedia software programs currently used by over 1.8 million customers in 80 countries and available in 17 different languages. AutoCAD, its flagship product, is the worldwide CAD standard with over 800,000 users; its comprehensive and customizable 2D and 3D design tools have made it a favorite of architects, engineers and designers for design and visualization. Autodesk's multimedia software is the leader in PC animation with its two popular packages: the award-winning 2D paint/animation program, Animator Pro and the best-selling 3D visualization and animation package, 3D Studio.

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Autodesk's global presence is growing rapidly with subsidiary offices in Europe, Asia and the Americas and includes an extensive network of partners, including 3100 Authorized Autodesk Dealers, 1500 third-party developers and over 500 Authorized Autodesk training centers. Authorized Dealers not only sell software, but they can also help a firm select appropriate application software and find any training or hardware needed to create a complete AutoCAD system.
Call 800-964-6432 for the Dealer nearest you.

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Customers wanting to improve their skills and productivity with Autodesk software can attend a course at one of the over 500 Autodesk Training Center (ATC)® sites throughout the world. The ATC network has made a commitment to providing business and industry professionals with intensive, hands-on training of the highest quality. Many also offer on-site training; applications training such as AEC, GIS, Mechanical/Manufacturing; and Autodesk multimedia training for 3D Studio and Animator Pro. For a referral to an ATC location near you or to obtain an ATC brochure and listing, call 800-964-6432.

Education Programs and Services

Autodesk has established a specialized support system for the education community. Through a variety of education programs and services, Autodesk offers partnership opportunities (K-University), grant programs, in-service and technical training, and other initiatives to encourage and support the use of Autodesk software in classrooms and research labs. Autodesk also offers special discounts on

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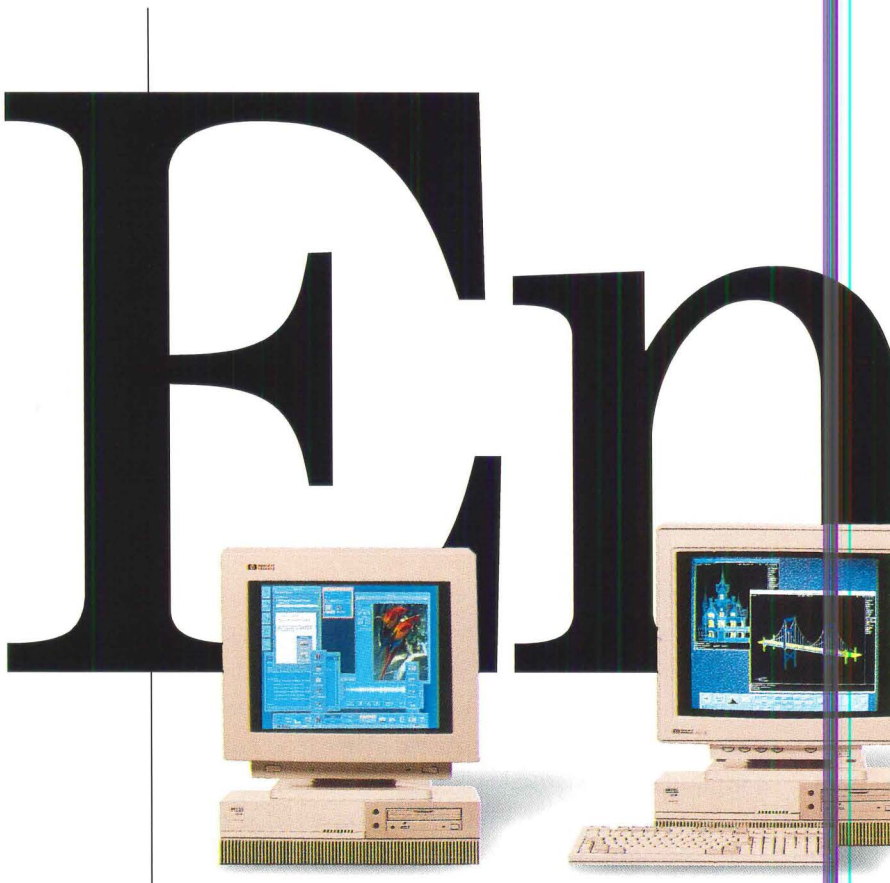

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Autodesk software to students, faculty, staff, and educational institutions. You can learn more about Autodesk's education efforts and the use of our software in education by becoming a subscriber to "Education by Design." To request a copy for review, call 415-491-8836.

AutoCAD Certification

Certification is now available for AutoCAD users. Certification provides a consistent and fair standard against which you and your employer can evaluate your abilities. The AutoCAD Certification exam is designed to test your level of proficiency with AutoCAD, knowledge of the features of AutoCAD software and AutoCAD drawing skills. Anyone that uses AutoCAD in the workplace, whether as a designer, engineer, drafter, CAD manager, or recent graduate should take the AutoCAD Certification exam. Businesses may also want to implement a certification requirement for new and current employees to ensure that their staffs have up-to-date skills. For more information about AutoCAD Certification or to register, call 800-995-EXAM.

Autodesk University

This annual event, which will be held for the first time October 11-15 at the Bill Graham Civic Auditorium in San Francisco, will feature hundreds of hours of technical instruction, along with tutorials, lectures, product demonstrations, more than 125 exhibits, and other unique learning opportunities. Call 415-905-2354 for a course catalog.

On-Line Support and Information

The Autodesk Forum on CompuServe offers direct on-line support to customers through three specific forums: Autodesk AutoCAD Forum, Autodesk Software Forum and Autodesk Retail Products Forum. To connect, log on to Compuserve and type GO ACAD. For more information, the Autodesk Forum System Operator can be reached at 415-332-2344, ext 2403.

Telephone Support

Autodesk supports AutoCAD by providing unlimited phone calls to a toll-free telephone number for those who purchase a Direct Support Contract.

User Groups

Local independent chapters of AutoCAD user groups that exchange tips on using the software more effectively can be contacted through the North American AutoCAD User Group (NAAUG). The NAAUG, sponsored by Autodesk, organizes a variety of activities, newsletters and meetings.

Publications

Filling in the gaps where support and training leave off, dozens of textbooks and other periodical publications provide even more customer training and support. For a listing of publications covering AutoCAD and related products, request the brochure "Autodesk In Print" by calling 800-964-6432.

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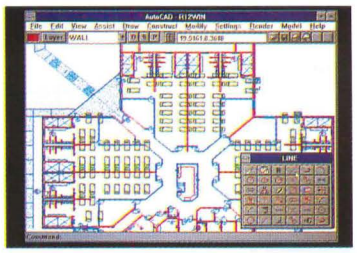
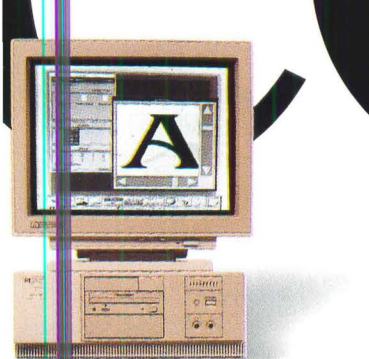


AutoCAD Release 12

This is the latest version of the industry-standard software for computer-aided design and draft-

core.



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ing software. A new graphical user interface, additional rendering features, and faster drawing regenerations are just a few of the added features in the latest version. The versatile program allows for seamless 2D and 3D integration and is available for DOS, Windows, Unix and Macintosh platforms.
Circle 400

AutoCAD IGES Translator Version 5.1
This AutoCAD utility exchanges drawings from a variety of other CAD platforms more efficiently and accurately than ever before. Options for configuring and translating data, single and batch file processing, and geometric translation are some of the improved features.
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Advanced Modeling Extension® (AME) Release 2.1
An optional AutoCAD module AME provides 2D drafting and 3D solid modeling enhancements.
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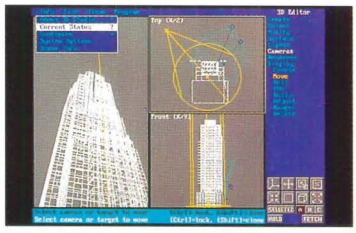

Autodesk 3D Studio Release 2
This comprehensive graphics software package is the industry leader for creating high-resolution 3D models, renderings and animations on the PC platform. Included is a 500 megabyte CD containing 3D objects, textures and animations. This powerful program works with AutoCAD and requires a 386/486 PC.
Circle 403

Autodesk Animator Pro Release 1.3
This award-winning 2D paint and animation software is especially well-suited for desktop video playback and for working in conjunction with 3D Studio.
Circle 404

Visual Link
A new utility allows users to take advantage of 3D Studio's image-creation tools while working in AutoCAD. Making a photorealistic image from an AutoCAD drawing is now easier than ever before.
Circle 405

Autodesk 3D Concept for Windows
A basic, easy-to-use 3D program.
Circle 406

AutoSketch Version 3 / AutoSketch for Windows
This 2D computer-aided sketching package has an intuitive drawing interface. The simple-to-use program is perfect for both conceptual and working drawings and is available in separate versions for DOS and Windows.
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Generic CADD 6.1 / Generic CADD for Macintosh
This is a low-cost, 2D computer-aided drafting and design program for personal or stand-alone use. Increased compatibility with AutoCAD.
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A computer-based tutorial for AutoCAD's menus and interface, this package provides an effective program for corporate training and classroom use.
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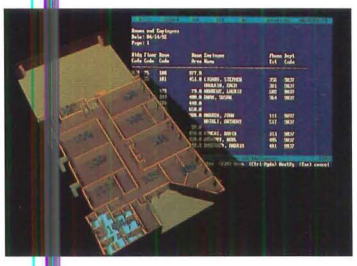

ARCHIBUS/FM Design Management

ARCHIBUS/FM is one of a range of products that provides tools for 2D, 3D and database management tools for facilities management applications. Software modules include Building Management, Design Management, Furniture & Equipment Management, Lease Management, Space Management, and Telecommunications and Cable Management.
ARCHIBUS,
617-482-2299/800-541-ARCH
Circle 414

Architectural Power Tools

A powerful, intuitive architectural drafting program designed by architects that works within AutoCAD to help architects do everything from stair routines to 3D animations.
Eclipse Software Inc.,
206-676-6175.
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Ketiv Technologies offers four software packages for architects: ARCH T, a complete CAD package that runs with AutoCAD Release 12; ARE-24, an advanced rendering extension with animation capabilities; Ketiv editor, an ADS text editor; and a 2D and 3D architectural block library.
Ketiv Technologies, Inc.,
503-252-3230
Circle 416

Softdesk ASG Architectural

This design/drafting package designed especially for architects including a library of 3D symbols, runs on all Autodesk platforms. Softdesk ASG also offers Mechanical-HVAC and Mechanical-Plumbing, as well as the Vertex Detailer which automates the production of construction details. Libraries of pre-drawn details and manufacturer-specific detail packages are also available. ASG Core is a separate software package that integrates other products and provides automatic layering, bill-of-materials, drawing notation, and other useful utilities. Softdesk ASG, 415-332-2123.
Circle 417

Auto-Architect

This architectural 2D/3D design and drafting package comes from the largest supplier of technical solutions for Autodesk. With integrated applications for all CAD professionals, including architecture, civil engineering, surveying, structural engineering, facilities management, and GIS/mapping, Softdesk ASG provides excellent tools for

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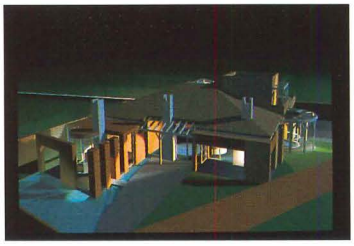

interdisciplinary work.
Softdesk, 603-428-3199.
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CADapult

Tools for facilities management provided by CADapult includes an area database, and an object database with a link to bar-coding. The CADapult Menu System provides a link to a relational database for managing space vacancy and creating reports.
CADapult, 302-594-9416.
Circle 419

CADKit Design Kits

CADKit's Basic Design Kit, a 3D interior program provides the resources to design kitchens, baths, offices, labs, garages, etc. Other AutoCAD applications by CADkit include Custom Cabinet Kit for 3D cabinet design, Photorealism Kit for applying life-like textures to surfaces, Pricing Kit for creating cost estimates based manufacturer's catalogs for specific product, and Production Kit that creates materials lists and cost estimates from CAD drawings.
CADKit, 303-455-0123.
Circle 420

CadPLUS Total AE System

The Total AE System provides all the tools needed to take an architectural job from conception to facilities management. Extra modules available include Civil Electrical, Mechanical/HVAC, Plumbing, and Structural software packages. The latest release of Total AE now integrates a special set of tools designed specifically for the design and management of healthcare facilities.
CadPLUS Products Co.,
505-265-1504.
Circle 421

CAPacad

This facilities management program from the the makers of the Electronic Sweets Catalog provides a link between CAD graphics and electronic catalogs of office furniture.
CAP Electronic Sweets,
616-454-0000.
Circle 422

FM: Space Management

A fully integrated facilities management database, FM: Space Management works within AutoCAD to create FM plans and reports.
FM: Systems, 919-870-9800.
Circle 423

PhotoCAD

PhotoCAD allows designers to measure spaces by digitizing photographs and importing true-scale measurements into AutoCAD.
Desktop Photogrammetry Inc.,
415-574-4225.
Circle 424

ARCHITEXT

ARCHITEXT is a set of nine AutoCAD fonts that replicate an architect's hand lettering or provide stylish text to drawings.
Digital Architect Software,
816-795-7333.
Circle 425

Architectural CAD Menu

This package provides a 2D front-end to AutoCAD to create AEC drawings in both metric and standard formats.
Interface Architectural Software,
514-487-2938.
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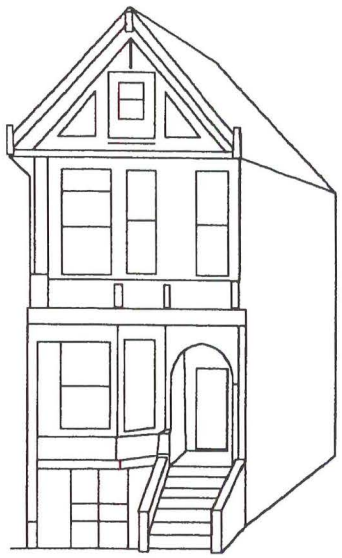
Before.



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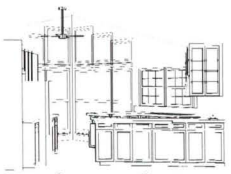

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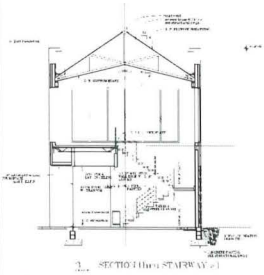

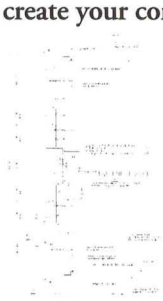

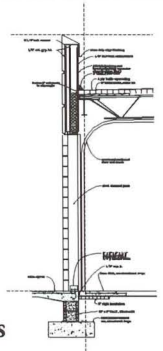

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Created by Rudolph Horowitz Associates Architects, GEOCAD is a 2D architectural design and drafting package that uses a tablet with flip-up templates rather than on-creen menus for the input of commands. GEOCAD 4.0 is compatible with Release 12 and includes more than 100 new or improved features. GEOVUE, is a one- and two-point perspective generator that works with GEOCAD.
GEOCAD Inc., 914-764-4072
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LANDCADD International, 303-688-8160.
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Plump and Stripper

Plump, Plump RX and Plump Professional are plot spooling softwares. The Stripper translates .DWG and .DXF files for earlier AutoCAD releases.
Eclipse Software Inc., 206-676-6175.
Circle 429

Spellcheck and CADmagic

Spellcheck contains a full architectural dictionary to catch misspellings on drawings, and CADmagic provides an inexpensive set of editing utilities for AutoCAD including a text editor, file manager, and parametric calculator.
Haestad Methods Inc., 800-727-6555.
Circle 430

Milgard Windows

This software package provides electronic details and specifications of a line of Milgard windows.
Milgard Windows, 206-926-7748.
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Pella DESIGNER CAD Library

This free 2D/3D parametric design program helps users detail and specify Pella windows and doors within AutoCAD.
Pella Windows and Doors, 515-628-6070.
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PowerNote

This automatic notation system, created by TAG Architects, is based on CSI's MasterFormat and AIA's ConDoc Methods of organization.
TAG Architecture, Inc., 818-954-8944.
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Squiggle

Squiggle transforms AutoCAD drawings so that they look as though they were hand-drawn. Architects can choose from several pre-defined styles, including "napkin," which looks like it was drawn by felt tip marker on a napkin.
The Premisys Corp, 800-878-7736/312-828-0034.
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3 Design

This AutoCAD application contains hundreds of block and AutoLISP routines that help architects generate building elements.
Quail Technology, 919-493-3050
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The AutoCAD Resource Guide

For a more complete listing of more than 3,000 independent applications that can tailor your AutoCAD software to specific design needs, consult the AutoCAD Resource Guide, included with AutoCAD or available from your dealer or directly from Autodesk.
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Architects and Power

[The following letters respond to the last three essays in P/A's Architects and Power series: "Power, Knowledge, and the Art of Leadership" by Sharon Sutton (May 1992, p. 65), "The Natural Market for Architecture" by Robert Gutman (December 1992, p. 39), and "Toward a New Architectural Practice" by Weld Coxe and Mary Hayden (March 1993, p. 62). The next installment in the series will appear in the September 1993 issue. –Editors]

The Problem in Studio Education

Ms. Sutton's article stimulates me to write in support of her idea that the profession of architecture requires an explicit knowledge base to advance its interests. I fully agree with Ms. Sutton about the importance of the architectural schools, but I disagree with her criticism of the design studio. The problem is not the studio. The problem is its limited focus and unstructured content. Why is it that we are still debating design (meaning good form) vs. content ? The one implies the other. The beautiful, good form, and aesthetic meaning will always remain functions of architecture. Both form and content should be well articulated in the studio.

Over my many design teaching years, I find students fascinated by how the world works and by all the marvelous detail involving architectural development, building, and how the goals and personalities of the client and potential users affect the direction of a design. Interestingly, students master pragmatics (especially economics and costing) more easily than design. Indeed, my experience is that students consistently have the greatest difficulty learning about form, its symbolic aesthetics, and its manipulation. Increased content makes it easier for them to learn design and its processes. Also, since I know most graduates will not be the designers in offices, that students have a diverse range of interests and skills, and that practice involves team work, my studio requirements entice students to design in teams. Not only do students who have weak "design" skills learn more from the students with more "design" talent, but they learn that there are important design tasks in which they can excel. Needless to say, this approach to the design studio has met resistance from many of my peer design faculty.

But this is just a small problem in comparison to the larger one – faculty's refusal to accept contemporary practice. Most believe practitioners are sellouts to business – that practitioners have lost the will to fight clients to make a beautiful world. Yes, even that they in the castle of academe must protect the Holy Grail (the seed of true architecture) from the world's bestialities.

Our architectural schools inculcate ideologies into students. They want students to become members of an exclusive aesthetic culture. Schools strongly believe that all students must do well in aesthetic design. As with the AIA, they believe in the concept of the architect as generalist – that aesthetic design is the most basic and essential commonality through all architectural activities. Still, we know that less than 10 percent of graduates have the role of "the designer" in offices.

Schools argue that an intense general design background is essential. God forgive, giving knowledge about clients would be perverse. It is commonly accepted in the design studio crits and reviews that clients, by insisting a design should meet a cost budget, prevent architects from making beauty. Schools do have courses on practice and construction, on management and development, and sometimes on environmental psychology or user needs. They are all unrelated to the requirements – the grading – of design in the studio. As well, most of the faculty teaching these courses are not respected by the elite design faculty. They are infrequently invited to design crits and juries. When they are, they are frequently ignored. Thus the student implicitly learns that these subjects are not important to design. Students are not taught that design has a direct relationship to the structure of the development and construction industry. As a rule, they do not learn the roles architects have in practice and how much they earn. Nor do they learn how to coordinate consultants and manage teamwork, or anything about the larger political and economic institutional framework within which our particular form of architecture is created.

Current educational policy serves a particular power structure. Most faculty have neither interest, nor skills, in day-to-day practice. Of those who do, most magically transform themselves in the studio. Suddenly, all the messy stuff that gets in the way of making "a really good design" is forgotten (at least in the presence of the students). These studio practitioners act as though they are frustrated by an inability to accomplish beauty in their practice. Therefore, schools teach design as an aesthetic end

Practice Points

Those firms looking for consultants and partners may want to purchase or become listed in *A/E TeamBuilder*, a database of firms' Standard Form 254 entries. A listing costs $50 and the database costs between $175 and $395 depending on the number of regions of the country included. For more information contact the Society for Marketing Professional Services, 99 Canal Center Plaza Suite 320, Alexandria, VA 22314 (703) 549-6117.

***A Design Firm Management & Administration Report* (DFMAR) survey of firms' participation in bid/price competition found that the number of architectural firms participating in bidding dropped from 58 percent in 1991 to 50 percent in 1992. According to DFMAR clients are putting fewer projects out for bidding.**

The Missouri Court of Appeals recently decided that a design firm involved in a public project must obtain a payment bond to cover the services of other design firms it retains in carrying out its design obligations, according to Schinnerer Management Services. This decision may serve as a precedent for other states.

***Modern Healthcare* predicts that healthcare construction is likely to be hurt by upcoming healthcare reforms. The magazine's 14th annual survey of healthcare design and construction found that outpatient care will likely be the most promising post-reform construction area.**

"We want what the rest of the civilized world, as politely as it can, is telling us we cannot have."

and not as a process with content. The problem is a lack of individual faculty and school accountability for a student's learning and for conveying knowledge – the complexities of its scope and the consequences of its application – about actual professional practice and design responsibilities.

As important as individual contributions are to this search for the creation of a social architectural knowledge base and increased professional performance, my experience is that institutional policies are more powerful. Many institutions would have to agree on the usefulness of the kind of knowledge base Ms. Sutton, others, and I are suggesting.

To name the most commonly known institutions in this country needed to provide the necessary intellectual and financial underpinnings: American Institute of Architects (AIA), National Council of Architectural Accrediting Boards (NCARB), American Council of Schools of Architecture (ACSA), National Science Foundation (NSF), the Environmental Design and Research Association (EDRA), and obviously important, those of the other planning and design professions.

Without a radical change in their institutional attitudes towards knowledge and the ways it is related to practice, research, and education, we shall continue to experience a loss of stature, less financial remuneration, and decreased influence, control, and power over decisions concerning the built environment.

Louis Sauer, FAIA
Director of Urban Design
Daniel Arbour & Associés
Quebec, Canada

Unrealistic Expectations of Power

Professor Gutman's assessment interestingly identifies the essential quality of the architect as the designer, and advocates the unabashed advocacy of design as the natural market of the architect. The accommodation of the utilitarian architect, as Professor Gutman accurately, even understatedly, conveys is a role claimed by many allied professionals and trades. The competition on the utilitarian level is both prevalent and competent.

The argument then follows that architects as designers do share the fate of other fine and dramatic artists, namely oversupply. But Professor Gutman contradicts his own argument against utility when he says, "Architects are actually somewhat better off than other artists, because the medium through which they achieve expression and form links their art to function and usability."

The argument that the relative or perceived absence of power within the profession of architecture is based in oversupply is economically plausible. The comment that institutions of architectural education participate in the oversupply of nascent professionals is also plausible, but " ... the schools are baffled when such questions [oversupply] are posed to them: they do not even have the concepts for grasping the problem."

We find much of Professor Gutman's comment interesting and reflective of our experience. We do not agree, however, with the thesis that there is a fundamental problem or, given a problem, that there is a rationally based solution. The internal conflict of the argument revolves around the mutually exclusive expectations that (1) architects want and/or deserve increased influence, respect, remuneration, and power as compared to other licensed professionals and/or trades and (2) architects are essentially only distinguishable from competent engineers, construction managers, and interior decorators in their capacity to design complex structures in a manner deserving the term Art. The problem defined by Professor Gutman is exacerbated by the number of applicants to architectural schools, but the essential problem lies in the inevitable contradiction of the profession's self-proclaimed expectations.

The issue and relationship of the education industry to a professional issue is, indeed, baffling to the schools inasmuch as there is no fundamental connection between the selling of architectural education and the selling of architectural services. The issue of supply and entry is derivative simply and solely of an open market operating openly. More bright, energetic people want to practice architecture than the profession can absorb at any rate of remuneration. Unlike medicine and possibly law, restricting access may not result in increased power and per capita remuneration. Reduction in the number of architects may result only in increased use of competing trades and services, further eroding the public's perceived value of the profession.

The essential problem lies not in the stars but in ourselves. If Professor Gutman's thesis is representative of the attitudes of the profession, we and we alone are the source of our distress. We want what the rest of the civilized world, as politely as it can, is telling us we cannot have. The reality, whether we accept the consequences or not, is that architecture is a pleasant, respectable, clean, honorable, and creative pursuit. Many more people share that perception and aspire to the satisfaction of the profession than can be absorbed; however, decreasing the numbers by whatever drastic (and probably illegal if not immoral) means available will not result in eliminating the self-imposed and fundamental dichotomy of utility and art nor the perceived lack of appreciation of what we do. The problem exists only because we say it does.

Stephen Kieran, James Timberlake, Samuel Harris
Kieran, Timberlake & Harris
Philadelphia

The Other 95 Percent of Architecture

Anyone who has been in the profession of architecture for several years can attest to the loss of economic power and the loss of control suffered by the profession. These losses have been well documented in the professional press and felt personally by all of us. This lack of power over our professional lives starts in school.

Educated by a faculty that is underpaid even by campus standards, we are taught, through hard work, long hours, and endless juries, to be submissive to the outside world. Anyone who is not totally dedicated will not consent to this and will leave somewhere in the process. After completing school we find low-paying jobs in firms that hire only the best and the brightest. If we are lucky we work in the design department; what we do is copy, and "clean up" the work of others. If not in design, we work on construction drawings, something that most schools only mentioned in passing. If our luck holds we work for the firm for several years, waiting for the time when we can take the professional exam.

Nothing in our schooling or training has prepared us for this four-day marathon. Two thirds of the written exam covers areas of engineering we haven't seen since school. Other sections cover contracts and other documents that the boss won't even let us see. And of course there is the design section.

The design section of the exam is the same as school only different. For many of us this is the first design we have done since leaving school. We have hours instead of days or weeks. We aren't allowed to present our design, to talk of its merits, explain how well we know the solution. The jury, this time a group of professionals holed up in a hotel over a long weekend, spends only 10 or 15 minutes to decide if we are to be architects.

"Design is the least important part of our work to all those who are not architects."

How different other professions are. Most of the other professional exams are given at or near graduation from school. This is when the information is fresh, the studying skills sharp. Without the pressures of job and family these other professions take their exams, and enjoy a much higher success rate.

Our friends in engineerlng start their careers actually doing engineering. The senior engineers then check their work. The drafting in engineering firms is done by technicians hired to be draftsmen. Others graduating in business or accounting also work in their field, as manager in a restaurant or digging through records as part of an audit. Even new doctors and lawyers start doing what they went to school for, even if they work in the emergency room on a 24-hour shift or combing the law library for cases to support a position in a brief. The point is: they are doing what their profession does from the very start.

We have bred into our profession a level of passivity that is unique in the professions. Others outside of the profession – contractors, engineers, even interior designers – have seen this and acted on it, to their profit and our loss.

As Robert Gutman points out, architecture's natural market is limited to "great seminal monumental buildings" and "this market may constitute only 5 percent of buildings." I, like most of the profession, am not accomplished enough as an artist to do this type of architecture. After ten years in the profession I don't possess the portfolio I would need to compete in this area. For architecture to move in this direction I, as well as many others, would be forced out of the profession.

I propose an agenda, instead, to start taking back the 95 percent of the building and design profession that Professor Gutman so easily abandons. This action, really a series of steps for every unemployed/underemployed architect to take, will start to reverse the loss of power by the profession.

- Design is the least important part of our work to all those who are not architects. The general public, (and thus our clients) cannot differentiate "form" from "function." When asked anything about style of design the closest anyone can get is "make it look like (or not look like) that building." Design almost always becomes a matter of the client's taste. As anyone who has observed how people dress, the public's taste will often prefer "bad" design.

This being the case, what is left? Professor Gutman's group has the natural market of the top 5 percent. To recapture the other 95 percent we must reinvent ourselves, each individually, to serve that remaining market. Our construction, engineering, and design/build competition has learned this; we haven't. Once we are back in control we can begin again to have greater influence in the design of buildings.

- Architecture is a business and is subject to the same rules as all other businesses. Most architects assume that "marketing" means, "getting work." Of course what it really means is: study the market, pick your target in the marketplace, "package" your "product" for the market you selected, and go out and sell it. Every architect or firm in practice today should look at the firm's experience, pick the one area that is still generating projects, and do just those projects. Become the experts, develop the niche. Stop chasing projects that you aren't the best qualified architect to do. Start chasing every project in which you are the best qualified. Clobber the competition.

Reorganize your office to serve this niche market. Drop the partners/staff who don't fit the market. If done right and completely, this effort will leave you and your firm lean, mean, and ready to win back part of that 95 percent of the building market.

Are you a sole practitioner, who has been a generalist all your career? Steal a page from attorneys' play book. Small firms, when faced with this situation, should organize together in a suite of offices and build on their combined strength. Anyone who has ever called an attorney whose phone was answered with "Law offices," has run into this kind of relationship. In this setting attorneys share resources, costs, and help each other to market themselves. Ten architects looking for work are going to, by predictable odds, find more work faster than one guy looking alone.

Can you imagine a group of five to ten architects working together in this type of relationship? Can you see the architect who secured the project surrendering any of it, even to a colleague who is better qualified to do the work? Because of ego, everyone loses.To fight the erosion of work done by the profession, here is a brief list of things that any architect can do:

- Check the local building departments for "plan stamping". This is work you could have drawn.
- Check local and state laws covering plan review. If builders and interior designers can submit plans for a permit without a seal, get the law changed. Reclaim that work. And don't plan-stamp.
- Read a book that has nothing to do with architecture, something from Tom Peters or Peter Drucker.
- Take one thing from the nonarchitectural book and put it to use.
- Stop going to AIA meetings. Start going to BOMA, HBA, the Real Estate Board, etc. That's where the projects are.
- Check back with the building department. How are fire damaged rebuilds handled? Do they need plans, or a seal? Why not?
- Have you talked to your insurance company? They own a lot of real estate now. And they oversee those future rebuild projects.
- Have you talked to your bank? They own a lot of real estate now too. And they have to get it leased and/or sold. Who is doing the work?
- Go through all those back issues of P/A. Find an out-of-town firm that has the niche experience you need to get a local project. Do a joint venture with them.
- Find an ADA advocacy group in your area. Help them find and enforce ADA violations. Work with them and they will get you work.
- Don't do any more free work. When asked to do this, tell them you'll take the same deal that the attorney has, right down to the hourly rate. And get it in writing!
- Do more free work. Find a charity group in your area and become their architect for free. Charities have boards that are full of business leaders you want to know.
- Track past clients to their new jobs. Take them out to lunch when they are still looking for work. They will appreciate it.
- Find those past clients new jobs. They will really appreciate it.
- Volunteer to talk to any group that will listen. Tell them what architects (you) can do for them. There is only so much construction being done today and there will be less tomorrow. Every day must work to make yourself, your firm, and the profession more competitive. It's a simple world right now. Either you eat or your competition eats; not both. Don't believe me? Ask IBM, or Pan Am.

I am not overly optimistic about the future of our profession. Reforms, real reforms, will be slow to come and in the end will be watered down at best. Most of the real issues, like the education and training system, will be ignored altogether.

Most of all, the types of

changes I ask for will require a change in habit and attitude on the part of large numbers of architects. Most of this passive group of individuals will find trying any part of this plan impossible. They will instead sit alone in their offices and dream of a "qreat seminal monumental building" that will never come.

I, like them, find personal change difficult. I have fought to be an architect for as long as I can remember. At every step along the way there were the nay sayers who told me I could not do it. I am where I am today not by talent. I know no other way but to fight. And I, and my partners, will be out there every day aggressively marketing, taking the fight to our competition. In doing so we will take back our profession, one step at a time.

Ted Thomas
Arcorp Ltd.
St. Louis

Take More Responsibility

A few comments on Weld Coxe and Mary Hayden's thought-provoking essay on the European versus American practice of architecture: the client "shopping" today in the architectural boutique is looking for one of two types of "merchandise": signature design or reliable service. Those few architects who are in the signature design business have nothing to complain about in terms of their status or power. Those in the majority who are not in this category have a lot to worry about. If they want to obtain status and power, they have to excel in the "reliable service" field just as much as their colleagues are excelling with signature design.

As in boxing, the fighter against a stronger opponent with a larger reach has only one defense – to get closer, where the mighty jab cannot hit with full force. The one who pulls back will be knocked out. The architect who shies away from responsibility and leadership will lose status and power. When the client finds the architect's service indispensable, he or she will reward it with confidence, compensation, and respect.

For this reason our practice is developing from the traditional "architectural service" to full control of the entire construction/development process. This means combining architectural design and production with construction management – not as contractors, but as consultants who deliver a completed project for a fee and absolve the client of the headaches and miseries of the process. Yes, it makes us assume more responsibility, but it also provides "power" to deal with the consequences of that responsibility.

A person looks for professional help in the legal or medical field in the belief that he or she alone cannot solve a particular problem. If the same were true in connection with the architectural/construction process, the person would seek out the guidance of the architectural professional as well. This perceived need alone – and the trust that goes with it, without the cultural, stylistic, or political mumbo-jumbo – will elevate the architectural profession to the level where its practitioners want to see it.

Laszlo Papp, FAIA
Papp Architects
White Plains, New York

Fewer Manifestoes, More Leadership

The cyclical construction/real estate markets again show that architecture (as in the mid-1970s and early-1980s) can bust as well as boom. As the profession flails around for a response, two possibilities present themselves: 1. we can concentrate on being the best damned architects we can be, or 2. we can broaden ourselves into sociology and economics and politics and the environment and materials and technology, becoming "more active in related fields."

With regard to the first, it risks marketing myopia, that is, working diligently to improve on the vacuum tube while the future really lies in transistors. But I seriously question the profession's will and ability to carry out the second option.

Talking of "reinventing" the profession and "issuing new manifestoes" on architectural practice every time the going gets tough is pathetic. To say we must "move toward a new order" and "discover new expressions and forms appropriate to our changing civilization" is nebulous cheerleading.

In the 1980s, when construction was booming worldwide, was anyone in architecture looking ahead and thinking of potential problems on the horizon? A decent course in economics would have shown what was coming in time to do something. Now it may be too late. As one of my faculty peers says, "We may be preparing students for a future which does not exist."

Architecture's "unique strength is the generation and execution of ideas." Boy that's deep! Nobody else does that. And if architects must "promote these skills, which are particularly useful in times of change," then in these times of change why are so many architects out of work?

There is also the distinct tendency for architects to fight the last war. Let's "lead and work with others in the political realm." The political realm has had it. The financial markets will increasingly make the decisions for the hamstrung politicos.

O.K. then, let's assume "greater responsibility for the myriad inputs that are required to carry their work to completion." Sounds good. But how can accepting broader responsibility be the solution when the problem is one of narrowing responsibility? That's like saying the way to get out of poverty is to make more money.

We can also opt for "more research" or "commission a study." (These are quotes right out of just a single issue of P/A in case you hadn't noticed. And wait; there's more.) Should we remain "consummate artists" or go with "necessary change?" I'll tell you, that's a tough one. Is anyone outside architecture reading this stuff? They must be laughing their shorts off. Let's flip a coin at the next AIA Convention in Chicago: heads we'll be artists and tails we'll go for the change option.

Like rats confined in too tight a cage, the practitioner snipes at academia, saying it has its head in the clouds, while academia thinks practitioners care only for profits and glory, the result being that we all, teachers and those in the offices, represent a profession with our heads up our collective wazzoos.

On the positive side, if we can: A. "celebrate our limitations" in the practice arena and indeed be the best architects we can be; B. while looking to professors of architecture to add to our "breadth," maybe something could come of it.

Also, I have a feeling we are desperately in need of a strong and forceful leader with vision and the ability to communicate. Is there a Frank Lloyd Wright crossed with a Ronald Reagan out there somewhere?

William Voelker
Associate Professor of Architecture
University of Illinois
Champaign/Urbana

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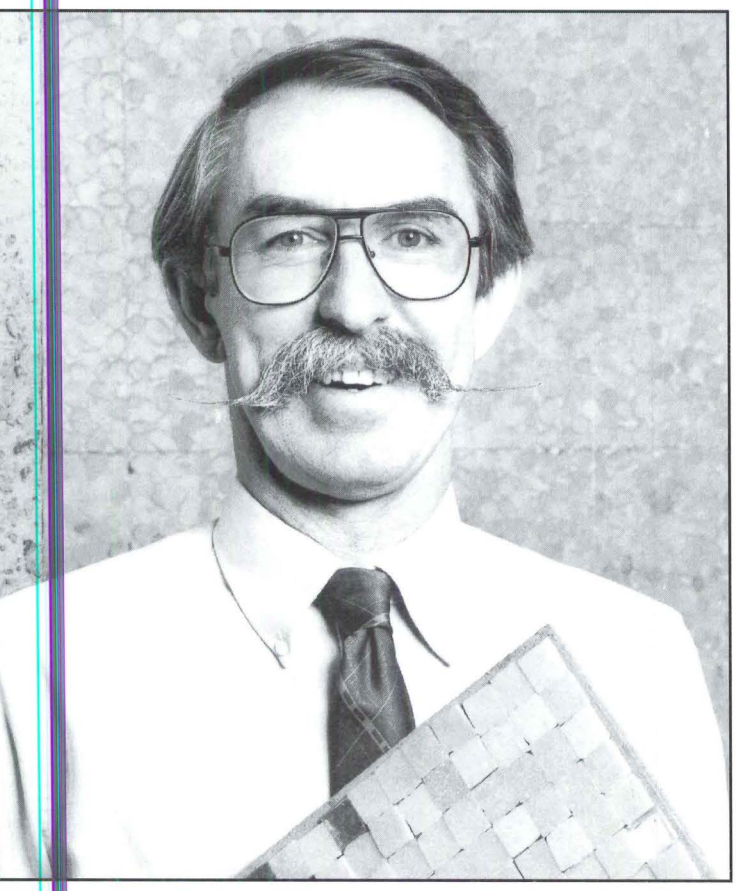

om Zartl is principal of Heaton/Zartl & Associates, a 44-year-old architectural rm based in Pasadena, California. He has been president of the Pasadena and oothill Chapter of the AIA and is a director of the California Council of the IA. We value our relationship with his firm and appreciate his willingness to lk to you about us.

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41st Annual P/A Awards

Progressive Architecture announces its 41st annual P/A Awards program.

The purpose of this awards competition is to encourage outstanding work in architecture and urban design before it is executed.

Awards and citations will be designated by a jury of distinguished, independent professionals, basing their decisions on the overall excellence and innovation.

In an effort to address the broader concerns of the profession, P/A is encouraging the 41st P/A jury to take into account various considerations in addition to qualities of form: response to program and context, management of the design and construction process, technical solutions and details, social and economic contributions. Potential entrants are urged to interpret the call for "outstanding work" as broadly as possible, consistent with the awards program's limitation to specific projects that have been accepted for execution.

The judging will take place in October 1993, and winners will be notified, confidentially, by October 31. Public announcement of the winners will be made in January 1994, and winning entries will be featured in the January issue of P/A. Clients, as well as professionals responsible, will be recognized. P/A will distribute information on winning entries to national, local, and specialized media.

Deadline for Submissions: September 10, 1993

Jury

Andres Duany, AIA, Town Planner
Andres Duany & Elizabeth Plater-Zyberk, Architects
Miami, Florida

Christine Killory, RIBA, Assoc. AIA
Principal, Davids Killory,
San Diego, California
Lecturer, School of Architecture,
University of California, San Diego

M. David Lee, FAIA
Partner, Stull & Lee,
Architects and Planners,
Boston, Massachusetts
Adjunct Professor, Harvard
Graduate School of Design

Mary McLeod
Associate Professor of Architecture,
Graduate School of Architecture,
Planning and Preservation,
Columbia University,
New York, New York

William J. Mitchell, FRAIA
Dean, School of Architecture and Planning, and Professor of Architecture and Media Arts and Sciences,
MIT, Cambridge, Massachusetts

Dr. Sharon E. Sutton, AIA
Associate Professor of Architecture and Regional Planning,
University of Michigan,
Ann Arbor, Michigan

Rafael Viñoly, FAIA
Rafael Viñoly Architects
New York, New York

Eligibility

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

2 Real Projects. All entries must have been commissioned, for compensation, by clients with the authority and the intention to carry out the proposal submitted. In the case of design competitions, the proposals eligible are those the client intends to execute.

3 Architectural Design Entries. Entries in Architectural Design may include only works of architecture scheduled to be completed after January 1, 1994. Indicate anticipated completion date on Project Facts page (see item 11, below). Prototypical designs are acceptable, if commissioned by a client.

4 Urban Design Entries. Entries in Urban Design must have been accepted by a client who intends to base actions on them. Implementation plans and anticipated schedule must be explained in entry.

5 Research Behind Projects. While research in architectural and urban design will no longer be judged as a separate category, P/A encourages the submission of research that has been done in support of specific architectural or urban design projects. P/A is making other plans for coverage of generic research studies; see future issues.

6 Verification by Client. The jury's decision to premiate any submission will be contingent on verification by P/A that it meets all eligibility requirements. To that end, P/A will contact the clients of projects the jury selects for recognition. P/A reserves final decision on eligibility and accepts no liability in that regard. Please be certain your entry meets the above rules.

Publication Agreement

7 Providing Graphics. If the submission should win, the entrant agrees to make available further graphic material and information, as needed by P/A.

8 First Publication. P/A is granted the first opportunity among U.S. architecture magazines for feature publication of winning projects upon their completion.

(additional rules and entry form on the following page)

Entry form: 41st P/A Awards Program

Please fill out all parts and submit, intact, with each entry (see paragraph 14 of instructions). Copies of this form may be used.

Entrant:
Address:

Credit(s) for publication (attach additional sheet if necessary):

Entrant phone number:
Project:
Location:
Client:
Client phone number:
Category:

Entrant:
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Project:

I certify that the submitted work was done by the parties credited and meets all Eligibility Requirements (1–6). All parties responsible for the work submitted accept the terms of the Publication Agreement (7–8). I understand that any entry that fails to meet Submission Requirements (9–20) may be disqualified. Signer must be authorized to represent those credited.

Signature _____

Name (typed or printed): _____

Fees:

Subscriber, $90 ☐ Non-subscriber, $125 ☐ Entry plus one-year subscription, $125 ☐

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Submission Requirements

9 Binders. Entries must consist of legibly reproduced graphic material and text adequate to explain it, in English. All entry material must be firmly bound in binders no larger than 17" in either dimension (9" x 12" preferred). Avoid fragile bindings. Supplementary documents such as research reports or urban design appendices may be bound separately to avoid unwieldiness, as part of the same entry. Occasional fold-out pages are permissible, but unbound material in boxes, sleeves, etc., will not be considered.

10 Documenting the Process. It is desirable for entries to document the design process, as well as its result: entrants are encouraged to include copies of preliminary sketches, alternative preliminary schemes, information on context and precedents for the design and excerpts from working drawings.

11 Project Facts Page. To assure clear communication to the jury, the first page in the entry binder must list PROJECT FACTS under the following explicit headings: Location, Site characteristics, Surroundings, Zoning constraints, Type of client, Program, Construction systems, Funding, and Schedule. Give hard data (square-footages, costs, specific materials) where possible. All Project Facts should fit on one page. Paragraphs amplifying this data, covering design philosophy, etc., should be included on subsequent pages.

12 No Original Drawings. Original drawings are not required, and P/A will accept no liability if they are submitted. No models, slides, or videotapes will be viewed by the jury.

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

14 Entry Forms. Each submission must be accompanied by a signed entry form, to be found on this page. Reproductions of the form are acceptable. Fill out the entire form and insert it, intact, into an unsealed envelope attached inside the back cover of the binder.

15 Entry Categories. For purposes of jury procedure only, please identify each entry on its entry form as one of the following: Educational (including any campus buildings), House (single-family), Housing (multifamily), Commercial, Cultural, Governmental, Health-related (including nursing homes), Industrial, Recreational, Religious, Urban design. Mixed facilities should be classified by the largest function. If unable to classify, enter Miscellaneous.

16 Copies of Key Pages. To provide P/A with basic information on your entry, even if it is not premiated by the jury, please include xeroxes of six or more key pages (including Project Facts page), stapled separately and slipped inside the back cover of the binder.

17 Entry Fees. Entry fee must accompany each submission. Fee is $90 for P/A subscribers, $125 for non-subscribers. (Non-subscribers can choose to subscribe at a special rate of $35 per year and pay the $90 entry fee; see entry form.) Make check or money order payable to Progressive Architecture. Canadian or Mexican offices must send drafts in U.S. dollars. Fee must be inserted in unsealed envelope with entry form (see 14, above).

18 Entry Receipts. P/A will send a receipt before October 1, which will indicate an entry number to save for your reference.

19 Return of Entries. P/A intends to return all entries by January 1, by U.S. Mail. P/A assumes no liability for loss or damage.

20 Entry Deadline. Deadline for sending entries is **September 10, 1993**. All entries must show some date marking as evidence of being in carrier's hands by September 10. Address is printed below. Hand-delivered entries must arrive at P/A's offices (address below, 6th floor reception desk) by 5 p.m., September 10. In order to assure arrival in time for the jury, P/A recommends using a carrier that guarantees delivery within a few days.

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- **The competition is open to firms in Mexico, as well as the U.S. and Canada (Rule 1).**
- **Entries are limited to the categories of architectural design and urban design (Rules 3, 4).**
- **P/A encourages submission of research reports supporting specific projects and intends to inaugurate a series of features on generic research (Rule 5).**
- **Entrants are urged to include information on the design process (Rule 10).**
- **Entries must include a Project Facts sheet (Rule 11).**
- **Extra copies of at least six entry pages must accompany each entry (Rule 16).**

Address entries to:
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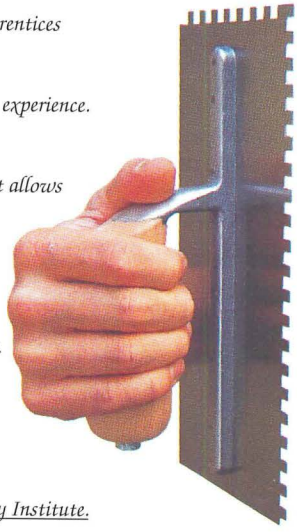

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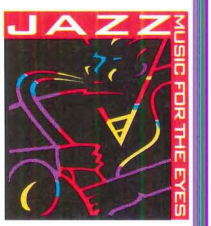

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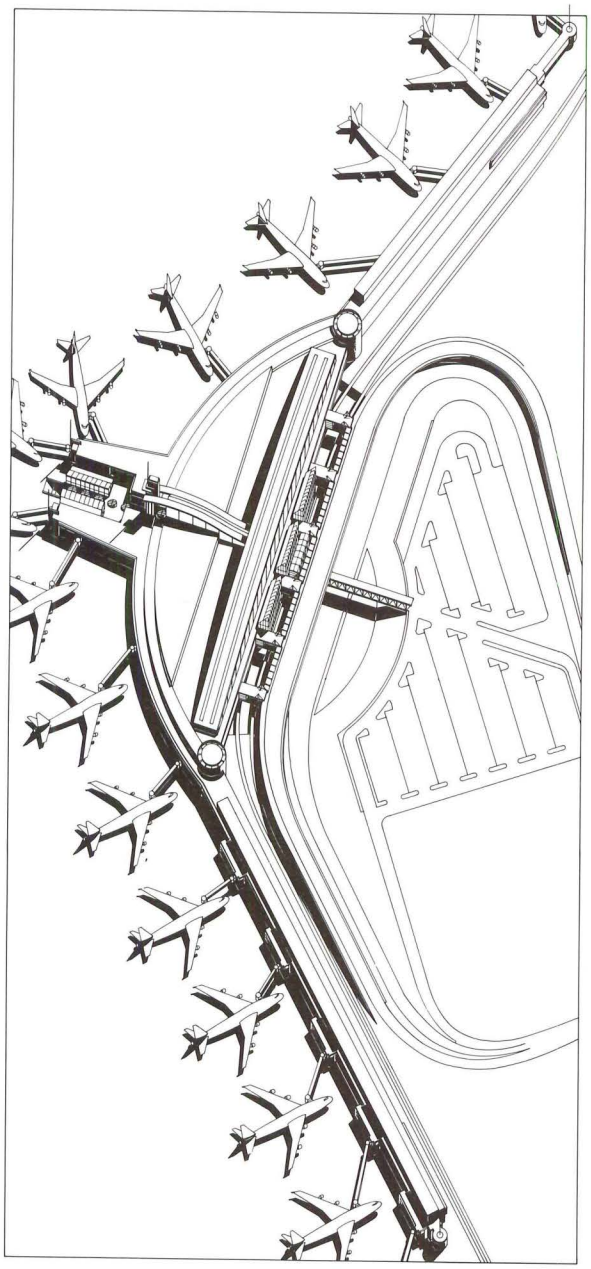


Axonometric of the International Terminal at Chicago's O'Hare Airport by Perkins & Will.

Now A

O'Hare's new International

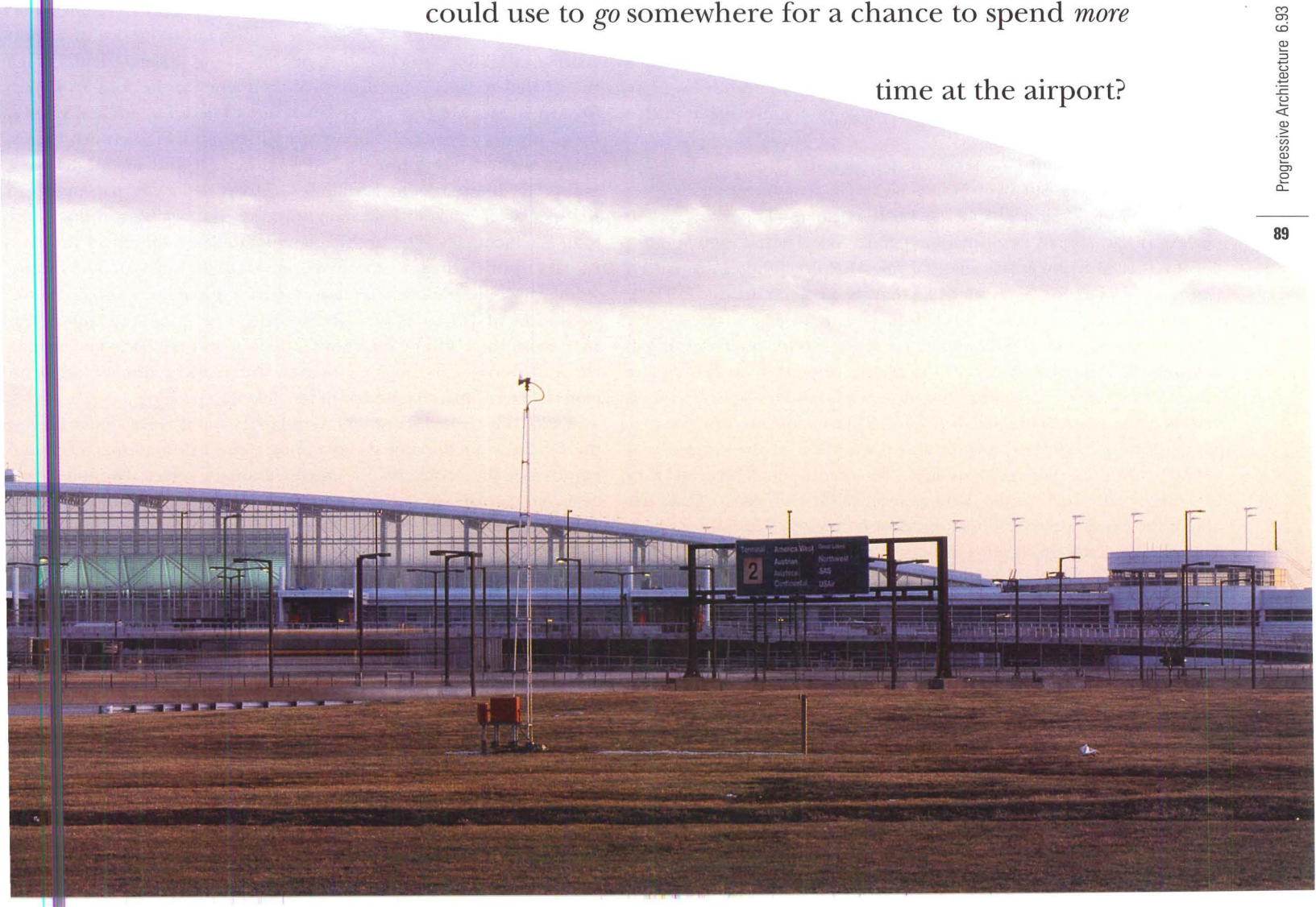
Terminal by Group One Design is both

rational and romantic, both transparent and

transcendent.

rriving

One of the most charming pieces of junk mail I've received recently came from United Airlines, telling me that they were auctioning off "private backstage looks" at five of their airport facilities; they would accept bids of United frequent-flyer miles. I had to wonder how many bids they're going to get; would you trade in miles you could use to *go* somewhere for a chance to spend *more* time at the airport?



The fact is, airports are enormously complex facilities, but travelers don't need to be exposed to that complexity. We need them to seem as clear and simple as possible. Such simplicity, combined with a crisp yet romantic vocabulary of images, is displayed in the new International Terminal at Chicago's O'Hare International Airport. From its vaulted steel-and-glass ticketing pavilion – the building's most visible feature – to its hold rooms, the building displays the earnest Modern clarity and optimism of its principal design architect, Ralph Johnson of Perkins & Will.

The terminal, designed by Group One Design, a joint venture of Perkins & Will, Heard & Associates, and Consoer Townsend & Associates (all of Chicago), is the last major piece of a two-billion-dollar, 12-year expansion of the airport. When it opens for arrivals this month, it will provide 21 gates for international carriers, and Federal Inspection Services (Customs, Immigration, etc.) for the entire airport. Shoehorned onto a leftover site near the airport entrance, the terminal also functions as a new architectural gateway for O'Hare. (At night, the ticketing pavilion will be a kind of gateway from the air, too, a lantern reminiscent of Minoru Yamasaki's air terminal in St. Louis.)

While many hands went into this design, the one that is most apparent visually is that of Ralph Johnson. He employs here the vocabulary of previous projects such as the Orland Park Village Center (P/A, Oct. 1990, p. 65) and the Morton International Building (P/A, July 1991, p. 94): circles punched out of ceiling planes, slender towers, exaggerated horizontals. It is in part the language of Willem Dudok, the 20th-Century Dutch Modern architect Johnson admires. But here he has also been influenced by the airport itself – not so much the Miesian Modernism of the original O'Hare buildings, but the off-the-shelf quality of the many hangars and generic buildings on the site. This shows up particularly in the choice of materials: steel, glass (transparent where possible) and metal and laminate fascias. "The ticketing pavilion is as much in the language of engineering as in that of architecture," he says.

By the time Group One received the commission for the building in 1986 (winning out over Harry Weese & Associates, Skidmore, Owings & Merrill, and I.M. Pei & Partners), many important design decisions had already been made. O'Hare Associates, a joint venture led by C.F. Murphy & Associates (now Murphy/Jahn) had written "project books" for each of 140 separate projects in the O'Hare Development Program, which had begun in 1981. (James W. Stevenson of Perkins & Will, who was project director on the terminal, was general manager of O'Hare Associates from 1981 to 1988.) The program called for increasing the airport's land-side capacity, which had become severely overtaxed in the 1970s, by moving runways and taxiways to allow for expansion and renovation of the "prime real estate" within the circle of terminals. The International Terminal project originated when United Airlines successfully lobbied to obtain the site of the existing international terminal for its new flagship terminal, an acclaimed steel and glass structure by Murphy/Jahn (P/A, Nov. 1987, p. 95). To accommodate United, the site was cleared and international flights moved to a retrofitted parking garage.

The project book for a new International Terminal established a site and floor levels for the building, and a basic parti that was fairly typical for modern airports: a two-level roadway, departures on top, arrivals below, and baggage handling in between, at ground level. Because the terminal would be separated from the tight ring of existing terminals, the Development Program also called for a light rail Airport Transit System (ATS) to connect the new terminal and a long-term parking lot with the existing airport. O'Hare Associates determined the location of the ATS tracks; furthermore, the carriers who were to use the terminal wanted the train to stop inside the building.

The ever changing and ever tightening needs for security and for more efficient Federal Inspection Services (the umbrella term for Customs, Immigration, and other Federal agencies concerned with arriving air passengers) also played an important role in the form of the terminal. The decision by security officials to have only one checkpoint for departing passengers, for example, ruled out the "flow-through" check-in used at the United Terminal and helped establish a symmetrical plan. "We had a preconception that because the site was asymmetrical, the building should be," says Ralph Johnson. "But it turned out that the function was symmetrical." As the architects worked through the program in the design concept phase (facing page), that symmetry and centrality became more apparent.

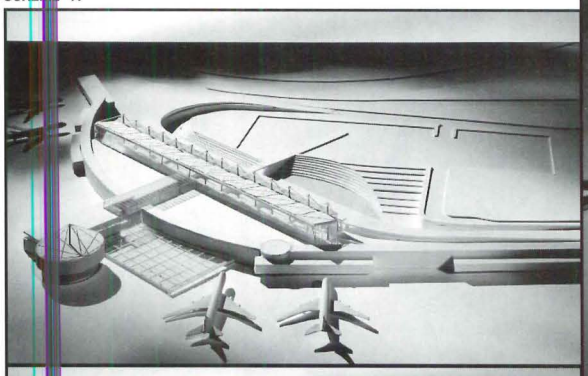
Security concerns have also had a negative impact on some aspects of the building. FIS requires arriving passengers to pass through "sterile corridors" on their way to inspection. That once meant merely that they could have no physical contact with outsiders. FIS now frowns on visual contact as well, meaning that all windows in sterile corridors must be translucent. This is too bad, since transparency and views are a major architectural theme here, starting with the seeming transparency of the ticketing pavilion. (It is only "seeming" because the air-side glass is fritted to keep glare out of pilots' eyes; this requirement did as much to frustrate the building's transparency as FIS.)

Locating the Architectural Rewards

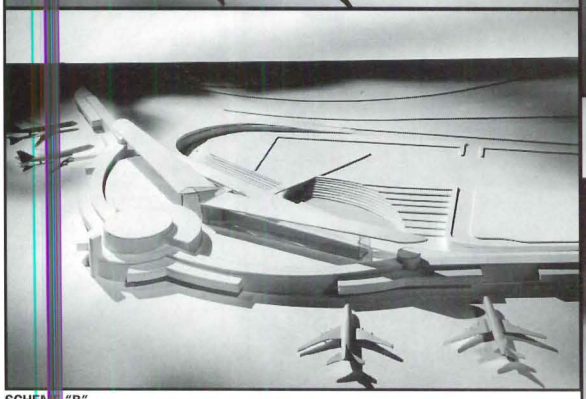
Because of their proximity, comparisons between this terminal and Murphy/Jahn's United Terminal are inevitable. As Cheryl Kent points out (page 96), United reversed the traditional sequence of airport spaces, ennobling the concourse instead of the ticketing hall, on the theory that travelers spend most of their time in the former. Group One spent more energy on the latter, in part because, unlike United's, theirs is truly a terminal, not a place for transferring between flights. (Many users of the United terminal never set foot in the ticketing hall.) The International Terminal will treat departing passengers to the spectacular ticketing pavilion and very comfortable – though very long – concourses. The architects mitigated the length of the concourses through the use of a curve for part of their length, and by providing views out in both directions. Arriving passengers, subject to the suspicion of Customs and Immigration, are treated much less humanely: their "sterile corridors" are long and relatively unarticulated. And none of the major spaces in the arrival sequence offers an experience comparable to that of the ticketing pavilion.

While the United Terminal emphasizes the vertical dimension in the felicitous sections of its concourses, the International Terminal emphasizes the horizontal, to equally dramatic effect. The long arms of the concourses, clad with horizontally ribbed metal panels, seem to go on forever as you drive by them, and inside, a rectangle two feet high and ten feet wide is the module for windows and wall panels. The exception, with vertically oriented mullions, is the ticketing pavilion, which by contrast seems to soar, although it rises only 50 feet.

The International Terminal is far from a generic or even minimal design when compared to the original O'Hare terminals. Such idiosyncrasies as the heroic, axially placed control tower (which serves only the terminal's own taxiing aircraft) and the curving ceilings in the inspection area and in the meeters and greeters lobby are welcome but decidedly un-Miesian conceits. Still, in its general commitment to clean lines and clear function, this terminal is an appropriate successor to C.F. Murphy's originals. **Mark Alden Branch** ■



SCHEME "A"



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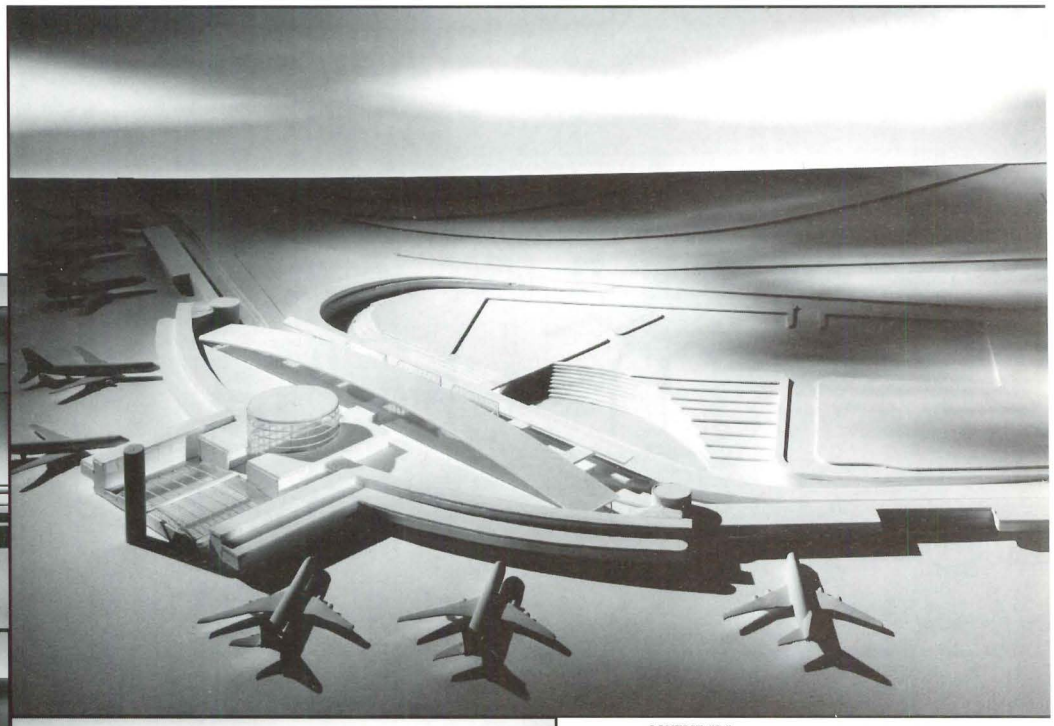

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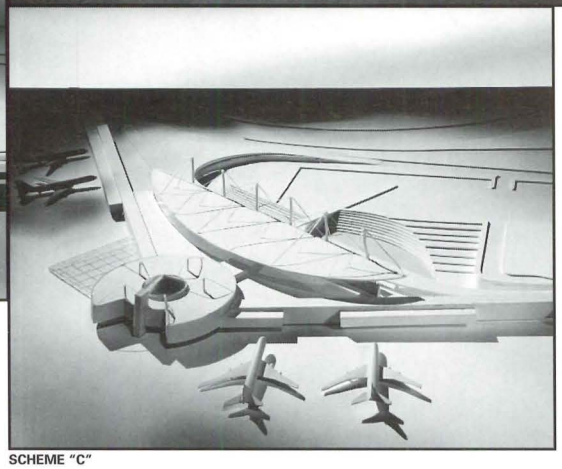


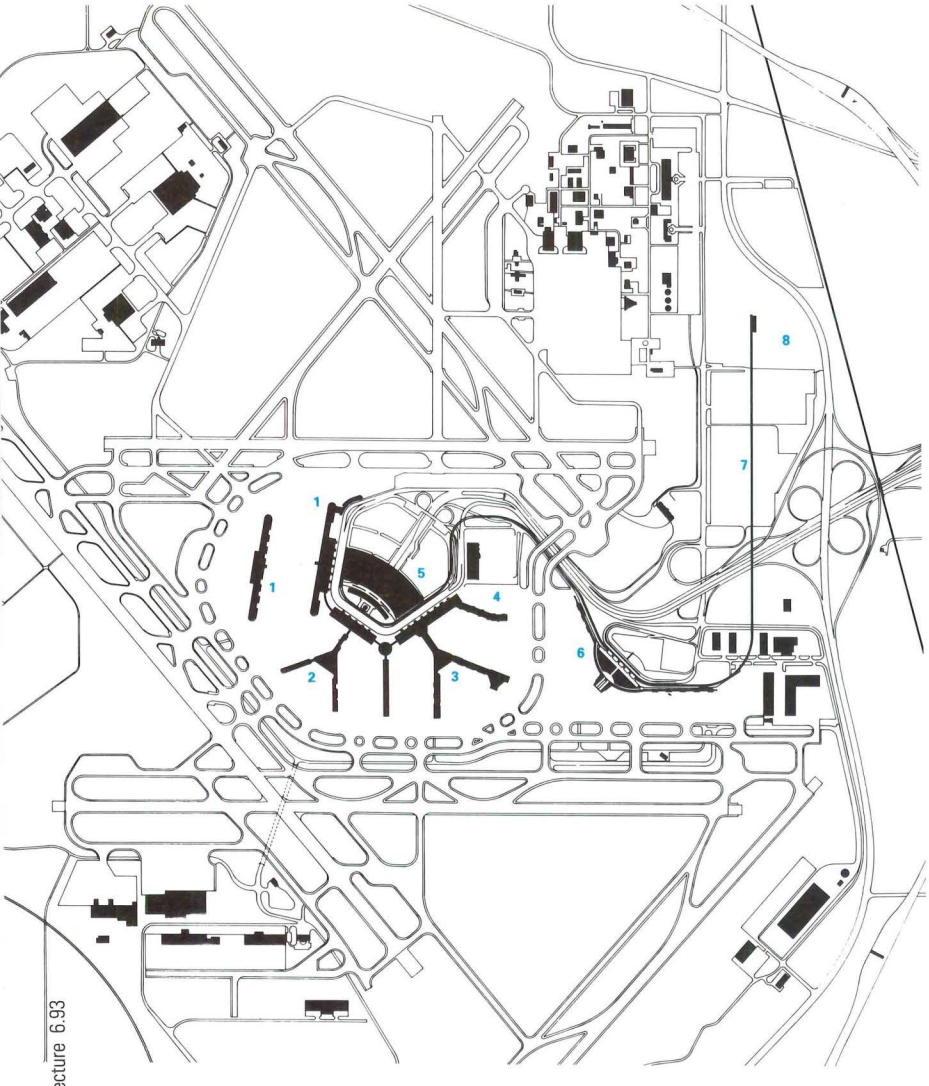
SCHEME "C"

Design Development

By the time Perkins & Will arrived on the scene, the International Terminal was already beginning to take shape as a result of decisions by the planners, O'Hare Associates. Some of these were viewed as inevitable: the configuration of the taxiways and approach road defined the site, and the placement of the transit system was fixed. The footprint was a triangle, from which extended two asymmetrical arms. "The flexibility was in what happened in the triangle," says Ralph Johnson. The "project book" developed by O'Hare Associates indicated a hollow center for the triangle, but a push from the city to increase concession space (and thus revenue) led to the idea of filling up the triangle with a concessions court.

Before moving into the schematic design phase, the city asked Perkins & Will to produce three different schemes for review. Scheme "A," an asymmetrical design with a round, mast-supported set of hold rooms, treated the ticketing pavilion as an undifferentiated space, suggesting a flow-through departure arrangement. Scheme "B" was more centrally arranged, with the ticketing pavilion divided into two winglike structures converging on a central concessions court. (Besides the flight imagery, the tapering wing shape was thought to be functional, as less circulation space is needed toward the ends.) Scheme "C," with its bow-shaped plan, begins to reconcile the flow-through ticketing system with one central security checkpoint and passage to the departure area.

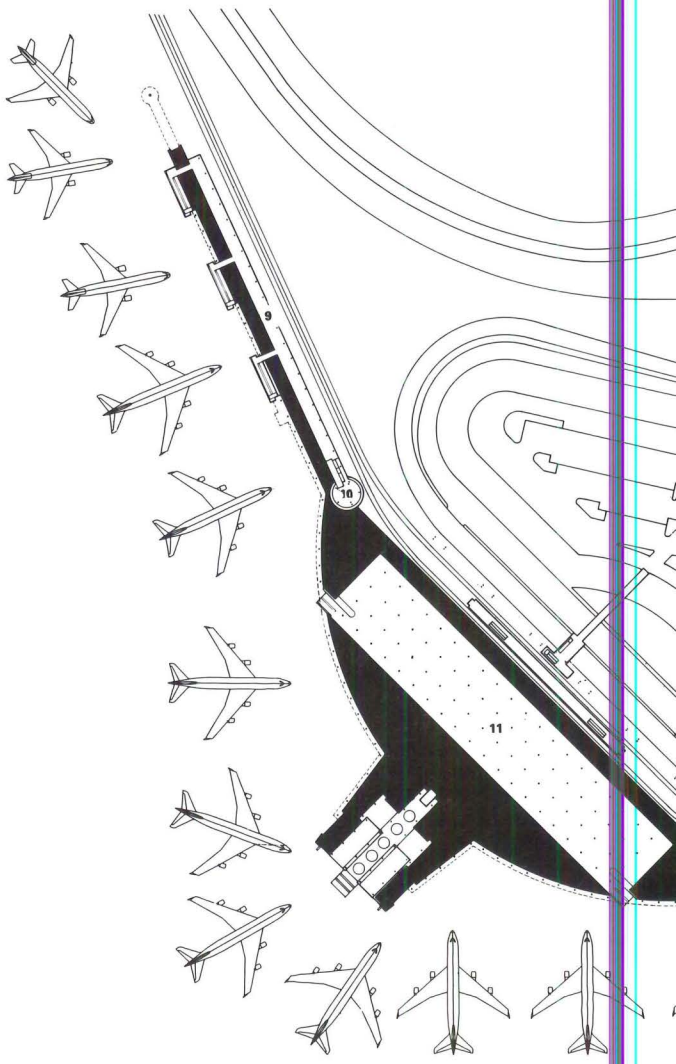
The design team evaluated these three approaches and, before presenting them to the city, developed a fourth scheme incorporating the strengths of the first three. Scheme "D" in essence became the final design for the terminal; in it, the bow of scheme "C" moved from plan to elevation, expressing the centrality and symmetry of the program. Here, too, the control tower first took a central role. At this point, the concessions court was in a glass rotunda. (A slightly later version toyed with a Tatlinesque skewed glass tower.)



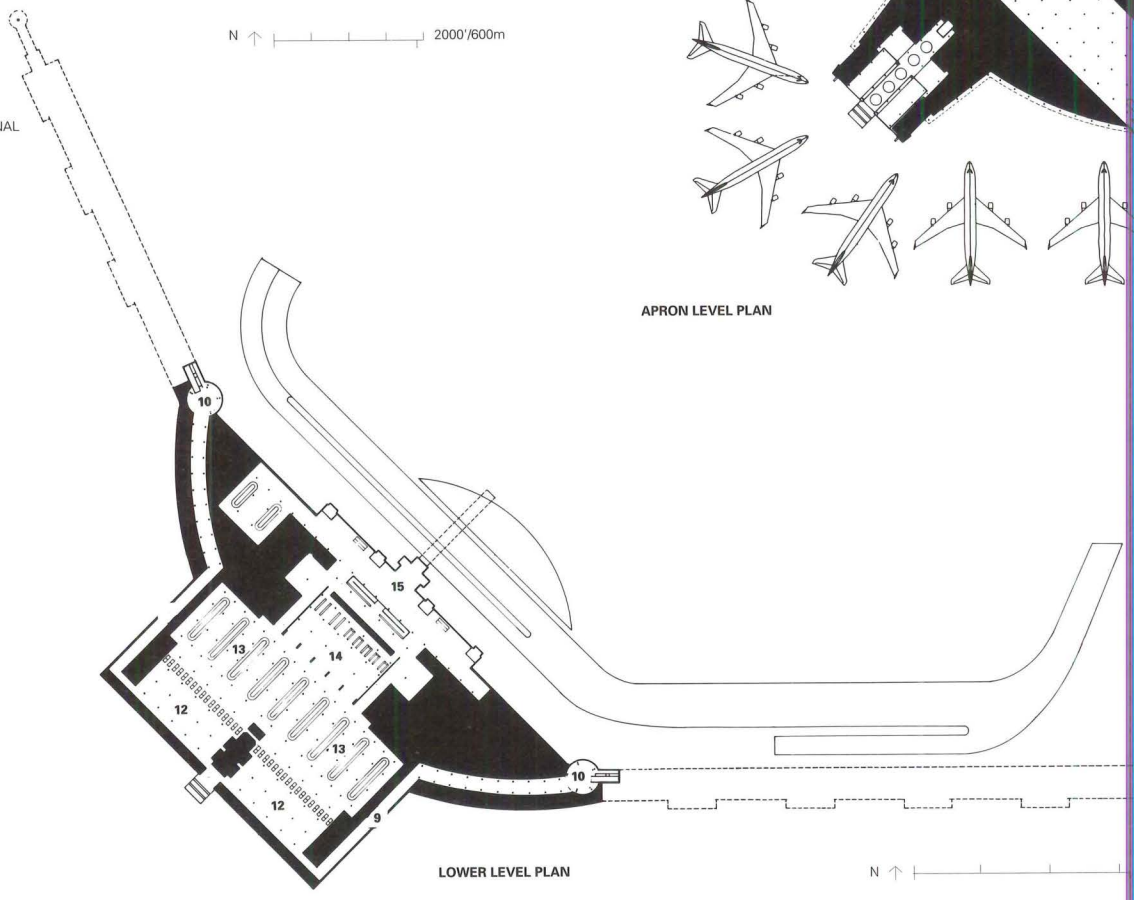
AIRPORT PLAN

1 UNITED AIRLINES TERMINAL
2 SHARED-USE TERMINAL
3 AMERICAN AIRLINES TERMINAL
4 DELTA AIRLINES TERMINAL
5 PARKING GARAGE/TEMPORARY INT'L TERMINAL
6 INTERNATIONAL TERMINAL
7 AIRPORT TRANSIT SYSTEM
8 LONG-TERM PARKING

N 2000'/600m

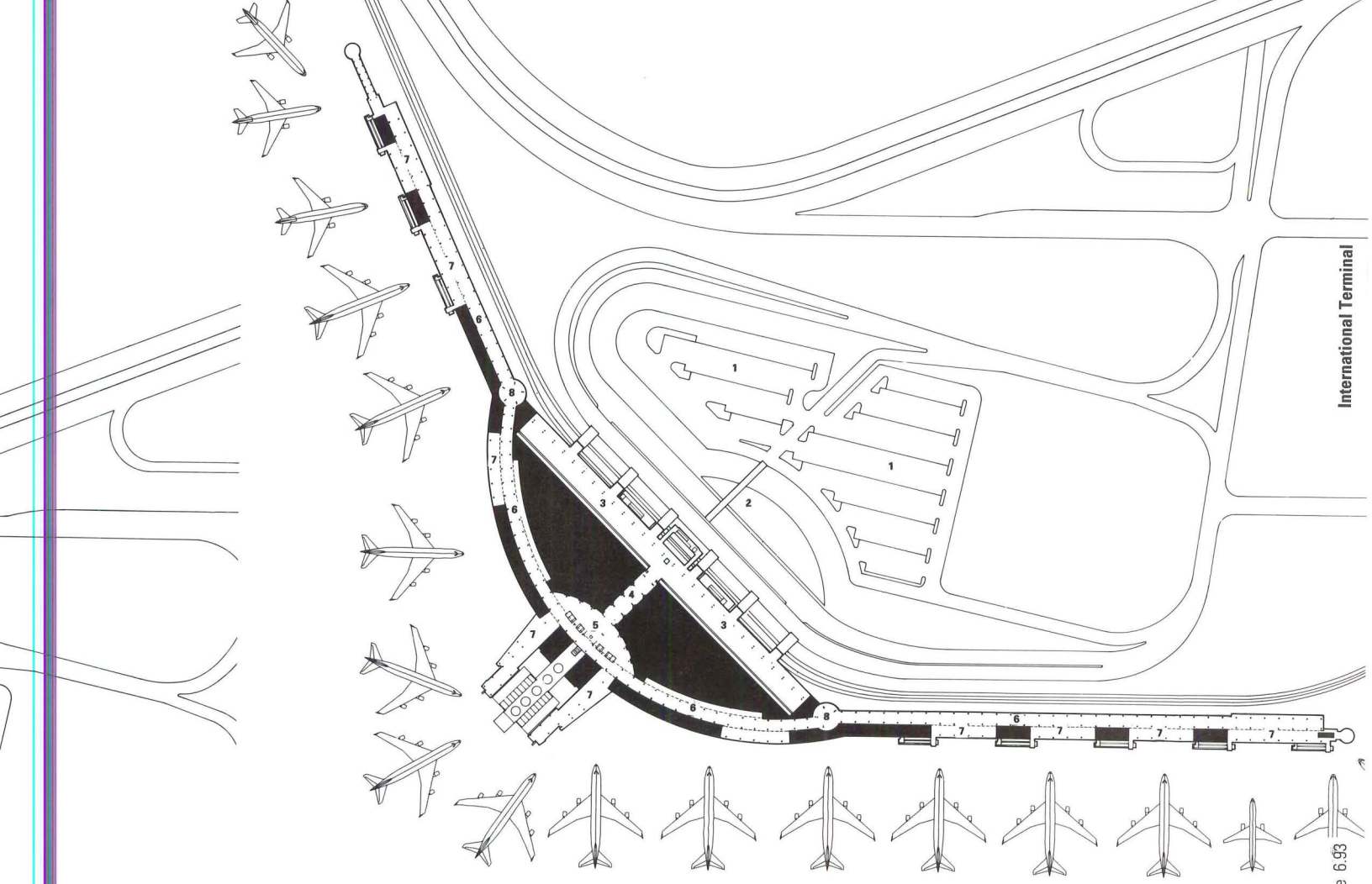


APRON LEVEL PLAN

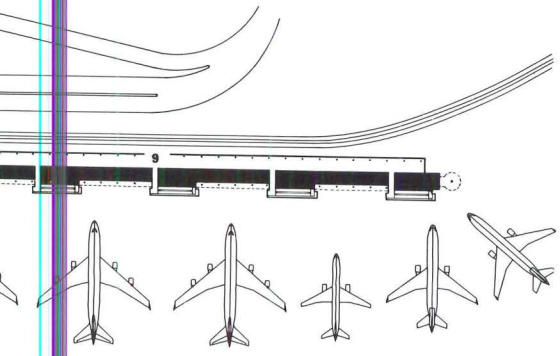


LOWER LEVEL PLAN

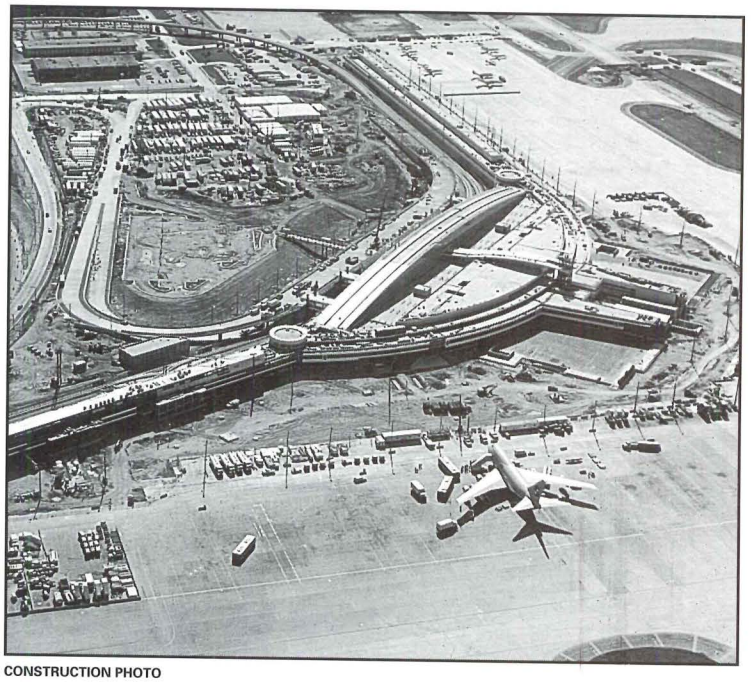
N 300'/100



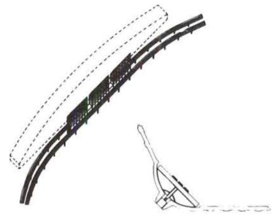
UPPER LEVEL PLAN



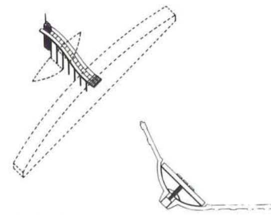
1 SHORT-TERM PARKING
2 PEDESTRIAN BRIDGE
3 TICKETING PAVILION
4 GALLERIA
5 CONCESSIONS COURT
6 DEPARTURE CORRIDOR
7 HOLD ROOM
8 DEPARTURE ROTUNDA
9 "STERILE" ARRIVAL CORRIDOR
10 ARRIVAL ROTUNDA
11 BAGGAGE HANDLING
12 PASSPORT/CUSTOMS CHECK
13 BAGGAGE CLAIM
14 SECONDARY CUSTOMS INSPECTION
15 ARRIVAL HALL



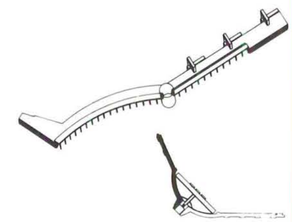
CONSTRUCTION PHOTO



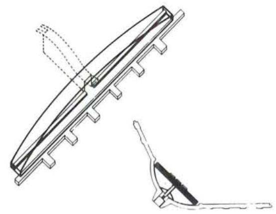
ATS STATION



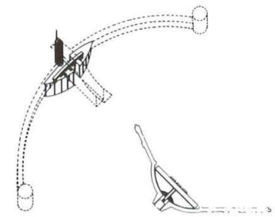
GALLERIA



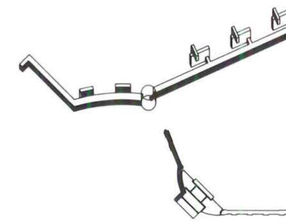
DEPARTURES CONCOURSE



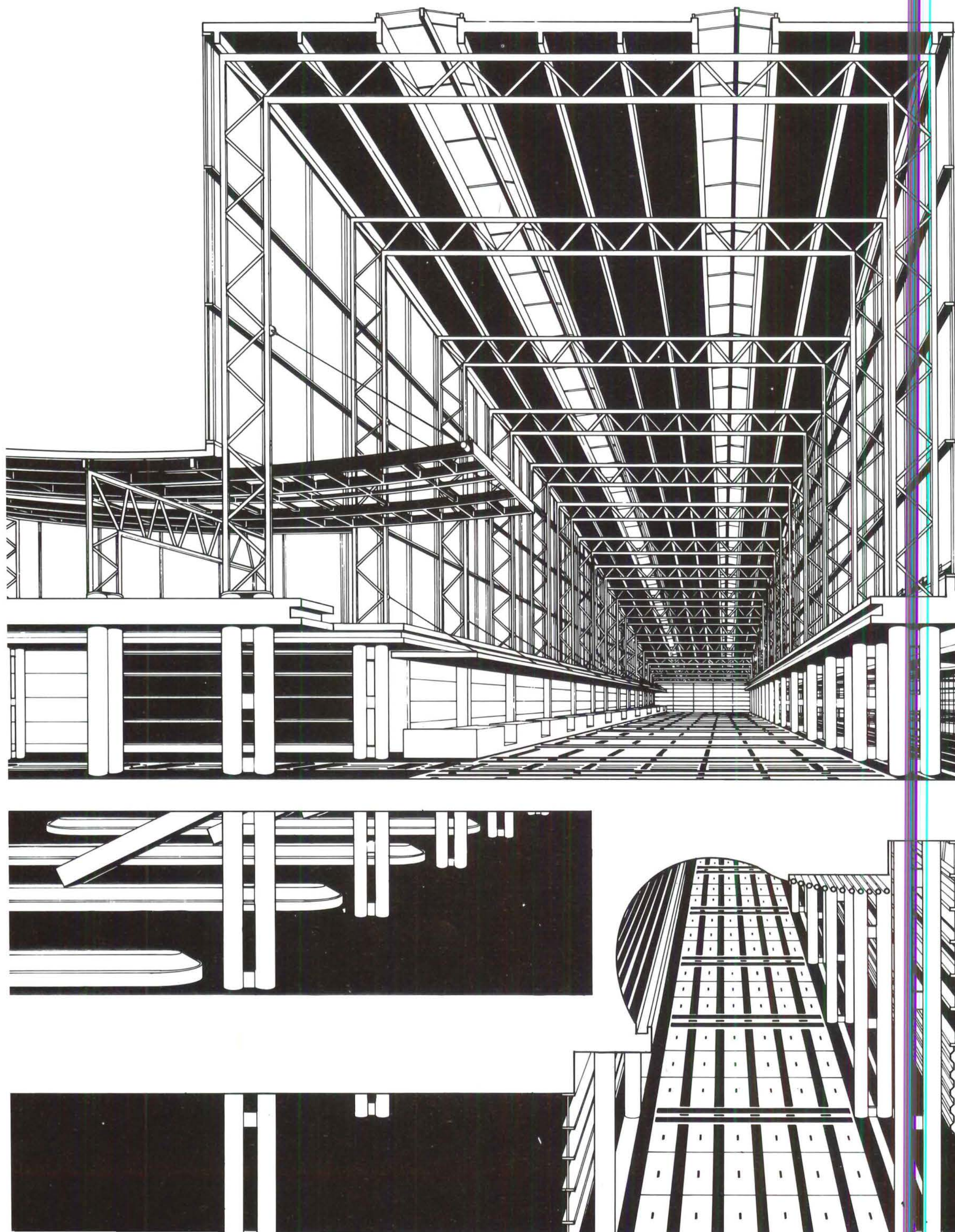
TICKETING PAVILION

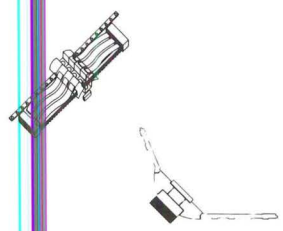


CONCESSIONS COURT

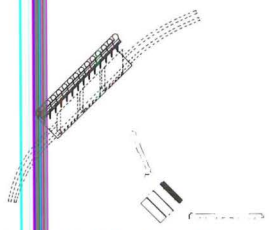


ARRIVALS CONCOURSE



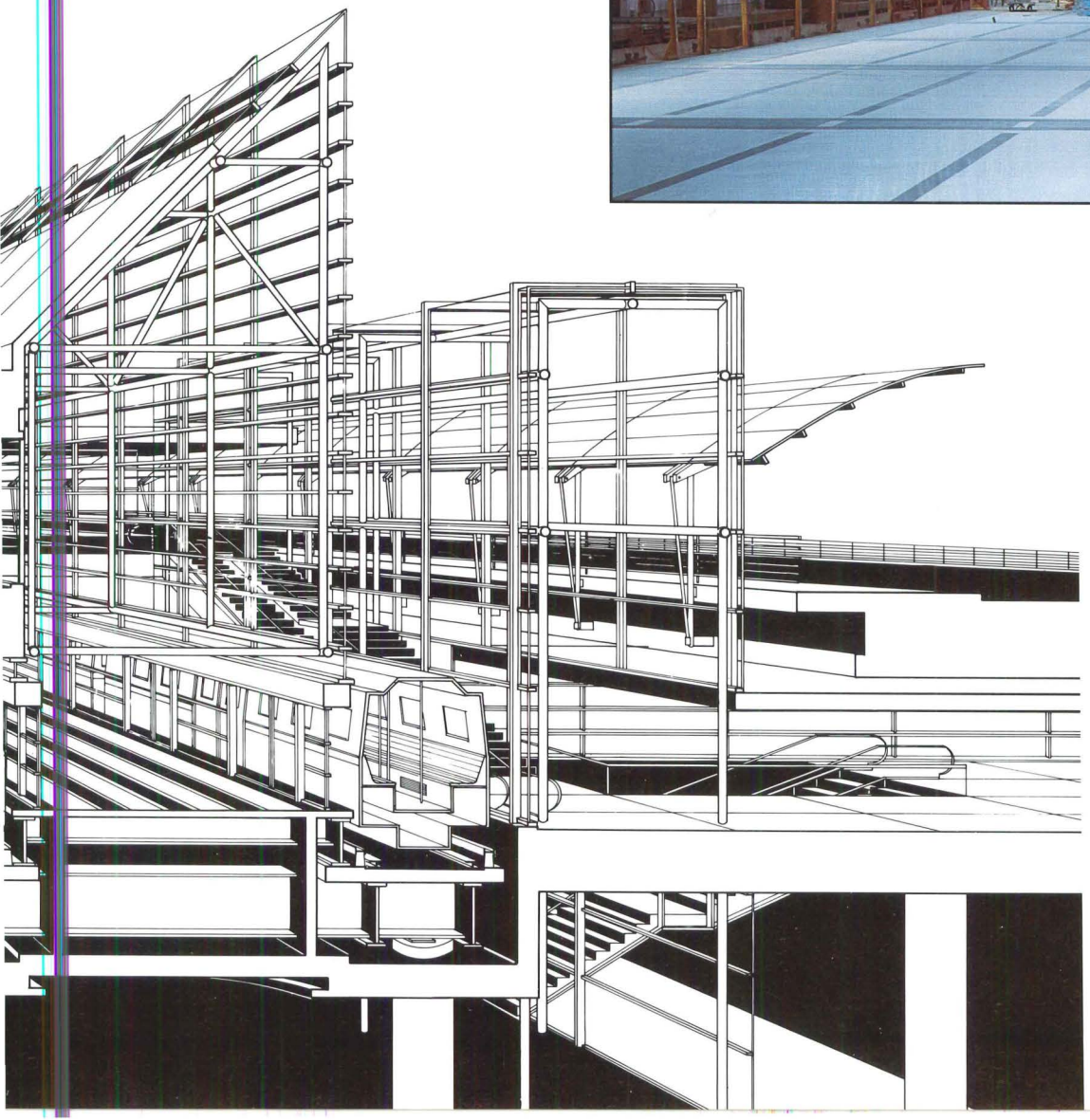


FIS HALL



MEETERS AND GREETERS LOBBY

SECTION THROUGH TICKETING HALL AND ATS STATION



As the ticketing pavilion nears completion (above), the cool color palette becomes apparent. Floors here are terrazzo, but in the concourses, a similarly patterned carpet was substituted to save money. A perspective section (left) describes the entry sequence and the transit station embedded within it. Diagrammatic drawings (above left) illustrate the sequence of eight public spaces in the terminal.

Aviation Evolution

Cheryl Kent recounts O'Hare's adaptation to changes in flying and in architecture.

For decades, O'Hare International Airport has yielded with comparative grace to pressures for change by an industry growing and changing past all expectations. The airport's nearly completed ten-year, two-billion-dollar expansion program – of which the United (P/A, Nov. 1987, p. 95) and International terminals are both a part – has changed the nature of change at O'Hare. No more is design continuity prized. Rather, the celebratory, robust – and, to some degree, idiosyncratic – designs of the United and International terminals are encouraged.

Hedrich-Blessing

One of O'Hare's domestic terminals, by Naess & Murphy, 1962.

O'Hare was designed to support flexibility when all that could be said with certainty about aviation's future was that radical change was imminent. In 1956, when huge civic jobs could be dispensed with Medici-like largesse, Chicago Mayor Richard J. Daley gave the airport commission to Naess & Murphy (later C.F. Murphy Associates, then Murphy/Jahn). The firm would act as consulting architects into the 1980s, overseeing additions and ensuring that what was built was compatible with the original Miesian scheme.

Air travel was still youthful when O'Hare was being designed. More people went by passenger bus than plane, because flying was expensive and airlines did not reach the small towns and rural areas. There were no formulaic solutions to airport design. A well-respected "airport consultant" of the day had started out as a ticketing agent in a small Midwestern airport. The first plan for O'Hare was laid out by an engineer in a pinwheel with runways converging on one another. (The architects' plan for modified parallel runways corrected the obvious dangers of that scheme.) In 1959, while O'Hare was under design, what many said would never happen did happen: the jet was introduced for commercial flight, prompting the awarding of contracts and the first serious work on O'Hare. (Before that, the airlines had stalled, contentedly using Midway Airport on the South Side despite conditions so strained as to verge on peril.) The architects had incorporated runways of a suitable length in their design, but others had not. Idlewild (now Kennedy), which was under construction at the same time as O'Hare, could not take jets when it was finished.

"Everything was in flux, so we had to accommodate everything," says Carter Manny, project manager for O'Hare, and a retired partner from Murphy/Jahn. That meant everything from incorporating different baggage-handling systems for different airlines to docking planes of varying heights, scale, and manufacture at uniform gates.

At first, the architects worked from a penthouse on top of the Railway Exchange building, which Daniel Burnham had constructed so he could see Chicago's lakefront spread before him as he laid out the 1909 Plan for Chicago. Before long, the O'Hare team had grown to such a size that they took a floor in a building across the street. Many of the team members came from Skidmore, Owings & Merrill, where work on the Air Force Academy was winding down. Naess & Murphy – anxious to emulate the structure and scale of SOM while staying closer to the Miesian architectural model – welcomed their new colleagues, among them Stanislaw Gladych, who had worked on the Air Force Chapel and became chief designer for O'Hare.

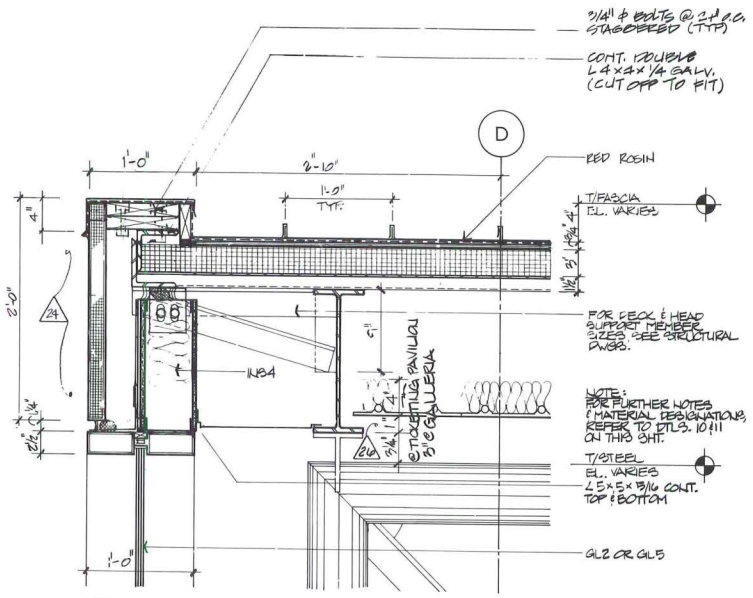
The team worked from one-half-inch scale models. The size of the project was such that organizational innovations were nearly as important as design innovations. The 7,200-acre site was laid out on a grid so that any point could be located by its coordinates. Composite drawings showed the location of all underground cables, fuel pipes, heating and cooling lines, and tunnels. Project blueprints were produced to permit legibility when reduced to half size. To make the bidding process manageable, those competing for the 70 contracts awarded during the life of the project were given half-size drawings.

The five-foot concourse module permitted varying configurations depending on the airlines' needs while maintaining a proportional standard. The concourses retained their coherence through alterations dictated by changing needs and tastes over many years.

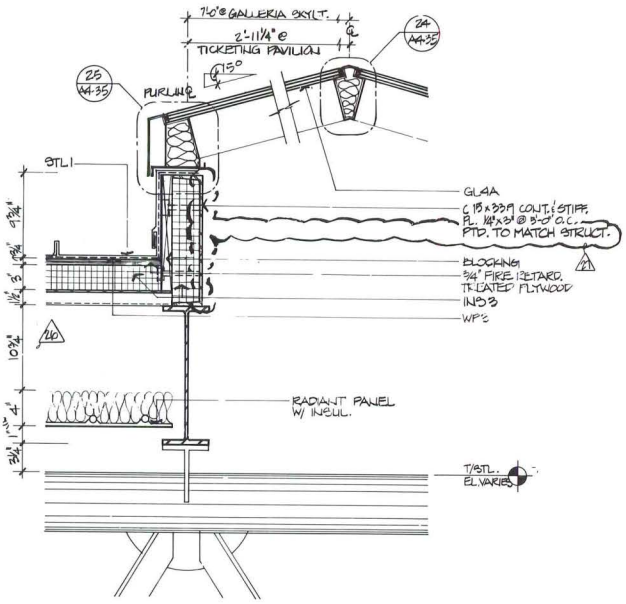
The terminals were O'Hare's signature spaces. Their light, buoyant forms – visible from the approach roadway until they were blocked by a hotel and parking garage completed in 1973 – were O'Hare's emblem. Still, Gladych had doubts at the last moment. Fearing the mullions were too fragile for exterior expression, he considered pulling the columns outside the curtain wall. With foundations already in place, it was too late and the change was not made.

The terminal was detailed to last, and it has, with an enviable elegance. There were not enough experienced workers to lay the ten acres of terrazzo required in the concourses and terminal building. Craftsmen were brought in from Cuba to get the job finished on schedule. The seating system commissioned for O'Hare from Charles Eames at Herman Miller is still in place, and has become ubiquitous in airports around the world. Ticket counters and telephone booths were designed by the architects. Airline logos were restricted by consistent parameters, and advertising was forbidden. While O'Hare is not entirely free of the accretion of detritus found at most airports, it is freer than most.

O'Hare adapted to much – to wide-body jets and more – but the change it could not accept gracefully came in the late 1970s when the terminal was rendered virtually obsolete. Security checks brought on by hijackings, and made stricter in 1990 by the *(continued on page 158)*



14 DETAIL-SECTION @ FASCIA/WNDW. HEAD
1 1/2" = 1'-0"



10 DETAIL-SECTION @ SKYLIGHT
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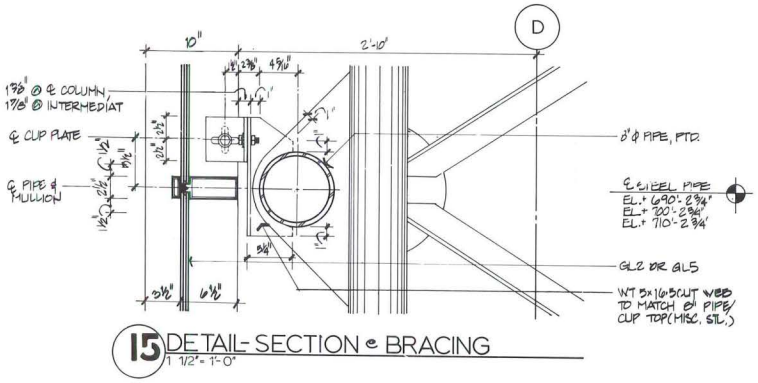
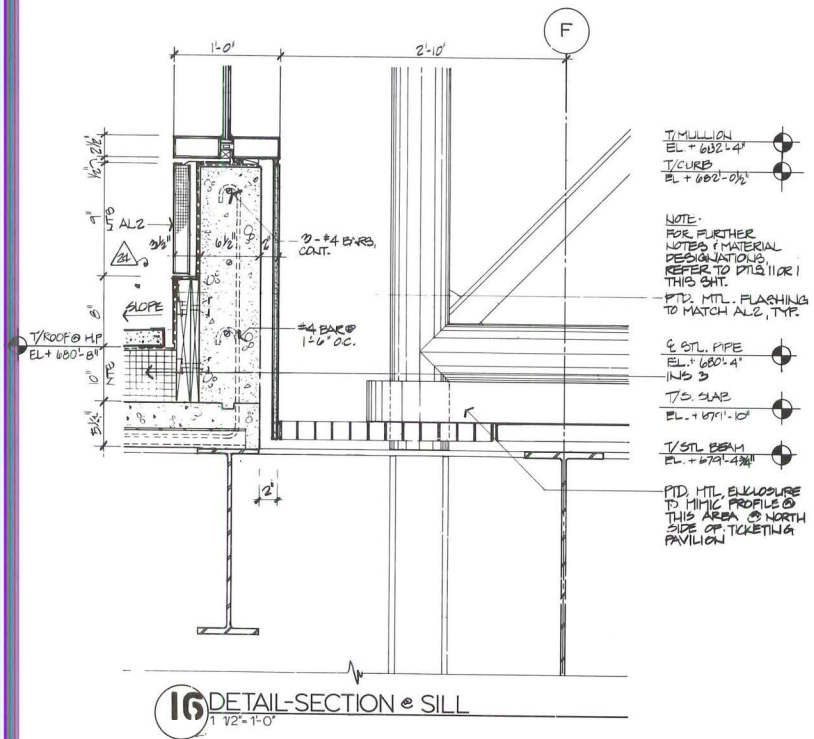


15 DETAIL-SECTION @ BRACING
1 1/2" = 1'-0"

DETAILS: TICKETING PAVILION

1'/.3m



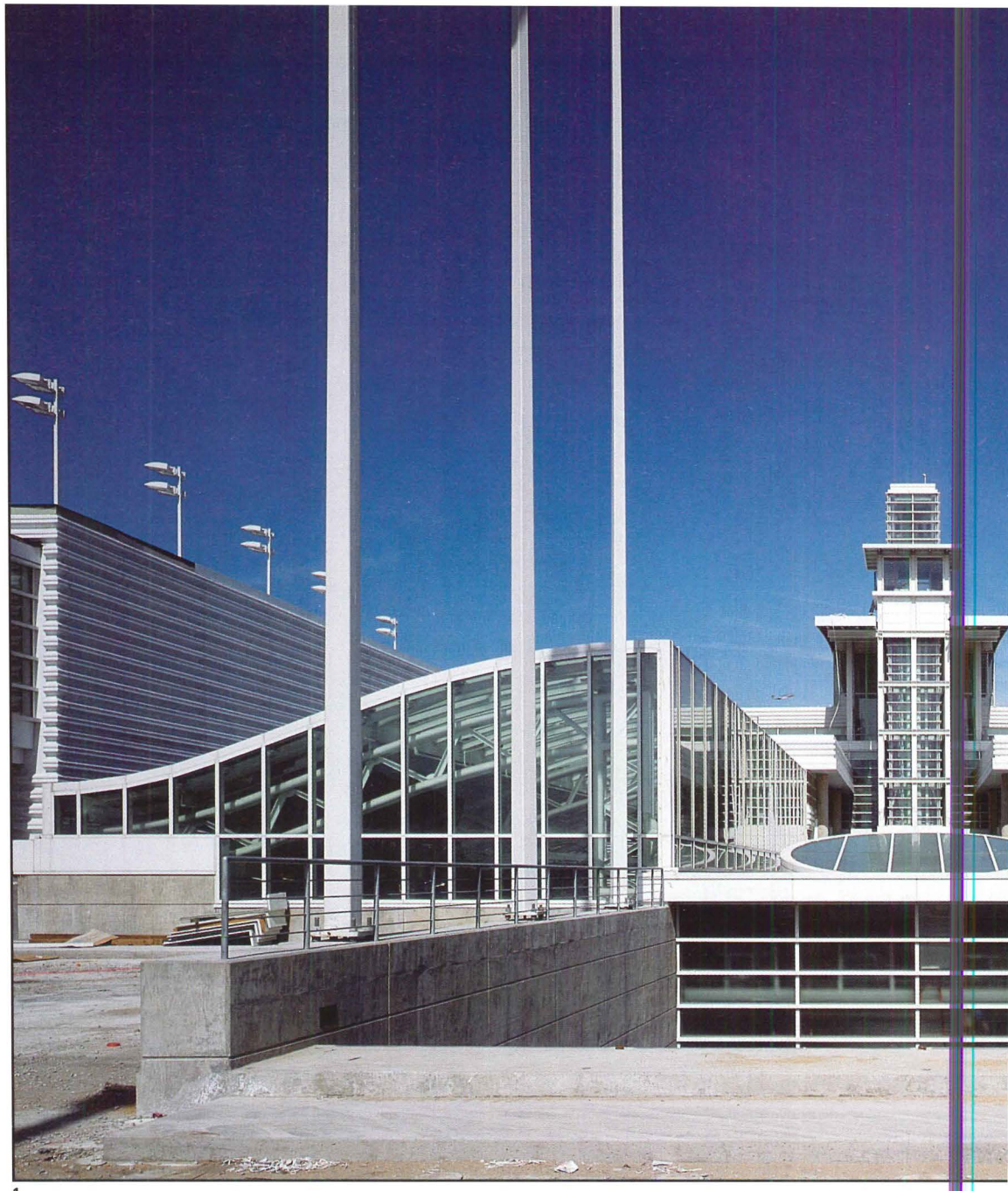
16 DETAIL-SECTION @ SILL
1 1/2" = 1'-0"

Details: Ticketing Pavilion

The most prominent space in the airport is the ticketing pavilion, an 800-foot-long steel-and-glass structure with a curving roof that gently rises from 14 to 50 feet (photo, p. 99). Project designer August Battaglia of Perkins & Will says the room was intended to evoke the light exposed structures of turn-of-the-century railway stations. Toward that end, the room's light, standing seam metal roof is held up by 28 steel tube frames, on 30-foot centers, spanning the 50-foot width of the room. Each is composed of two six-inch pipes with double angle web members. The paired pipes provide adequate structure while allowing light to pass through.

The frames rest on double concrete columns that rise from below the floors below, stopping about 11 feet above the floor of the ticketing pavilion. Each frame was built in three pieces off site; the spanning members are joined to the column members with a welded slip joint (not shown).

The steel pipe shown in section (detail, center left) acts as wind bracing, and connects the frames to each other. Mullions are placed behind these bracing members to avoid visual clutter.



1

Project: *International Terminal (Terminal 5), O'Hare International Airport, Chicago.*

Architects: *Group One Design, a joint venture of Perkins & Will Group, Heard & Associates, and Consoer Townsend & Associates (James M. Stevenson, project director; Thomas A. Kamis, Jr., director of construction administration; Ralph Johnson, design principal; August Battaglia, project designer; James N. Economos, project manager; Mark Romack, project architect; Larry D. Robertson, MEP technical coordinator; Fred Antonelli, airside/landside terminal building technical coordinator; Joe Pullara, terminal building technical coordinator.*

Client: *City of Chicago, Department of Aviation, represented by Terminal Five Team of the O'Hare Development Program (Richard M. Daley, Mayor; David Mosena, Commissioner, Department of Aviation; Patrick Harbour, Terminal Five Team Project Director).*

Site: *100-acre triangular tract within existing airport boundaries, bordered by taxiways, runways, and the entrance roadway.*

Program: *1.1 million-sq-ft terminal to accommodate foreign-flag departures and all international arrivals, with 21 gates, ticketing pavilion, concessions, support facilities, transit station, and Federal Inspection Services.*

Structural system: *composite steel beam framing on concrete belled caissons; steel pipe frames in ticketing pavilion.*

Major materials: *glass curtain wall, glass skylights, single-ply sheet roofing, metal panel siding, fluted metal siding, painted concrete block, plastic laminate, painted gypsum board, metal panel ceiling, acoustical tile ceiling, aluminum and glass storefront, precast terrazzo tile, carpeting.* *(see Building Materials, p. 161)*

Mechanical system: *12 heat exchangers with hot water provided by H & R plant; secondary hot-water pumps radiating to air-handling units, fan coil units, unit heaters, and radiant panels.*

Consultants: *Avila & Associates, surveying; Restrepo Group, civil engineering; Carol Naughton & Associates, signage; I. Robinson & Associates, interiors; Wells Engineering, structural; Rolf Jensen & Associates, fire protection and codes; Duignan-Woods, fire protection and plumbing; Thompson Consultants, programming and planning; Hanscomb Associates, cost estimating; David A. Mintz, lighting; R. Lawrence Kirkegaard, communication and acoustics; Harco Technologies, cathodic; Air Terminal Consultants, concessions; Berling Consultants, SMS; Black & Vestch, hydronics; Engineers International, soil/geotechnical; Janssen, Spaans & Associates, roadway engineering; Clad Tech, USA, curtain wall; Rowan, Williams, Davies & Irwin, snow and wind; Lerch Bates & Associates, building maintenance equipment; Hansen Palmer Associates, Ltd., MEP engineers; Wiss, Janney, Elstner Associates, consulting engineers.*

General contractors: *Gilbane Building Company; UBM, Inc.; Globetrotters Engineering Company; d'Escoto, Inc.; Rubinos & Mesia Engineers, Inc.*

Cost: *$618,000,000.*

Photos: *James Steinkamp/Steinkamp Ballogg.*

A control tower and skylights for the below-grade FIS space (3) form a symmetrical air-side gateway (1). Curved corridors and a rotunda help break up the long departure corridors (2). Ramps that begin the "sterile" arrival sequence are articulated as separate pavilions along the apron (4).

2

3

4

CRITIQUE

VILLAGE, NOT

THE UNFULFILLED PROMISE OF YALE'S PSYCHIATRIC INSTITUTE

Michael J. Crosbie

What has happened to the Yale Psychiatric Institute in New Haven, Connecticut, since its completion in late 1989 is a revealing case study in how changing theories in psychiatric care and a factor as remote from the architect's design considerations as health insurance can have a direct and substantial effect on architecture.

The building was designed in the mid-1980s as a long-term-care facility for emotionally disturbed adolescents. The product of a collaboration between Frank O. Gehry & Associates and the New Haven firm of Allan Dehar Associates, YPI was intended as the last, best hope for patients who could not receive the treatment they needed at short-term-care facilities.

Aware of the fact that such a complicated and sensitive building program would call for more expertise than a star architect with no experience in designing psychiatric hospitals could muster, Gehry teamed up with Dehar, who had a track record of experience with the Yale medical school, and chose as programing consultant Barun Basu Associates of New London, Connecticut, who had experience with YPI on facilities planning.

The 76,000-square-foot institute occupies a one-acre site adjacent to Yale's medical center and on the edge of one of the city's most crime-ridden neighborhoods. The building is broken into three blocks – two bland brick wings north and south sandwiching a sculptural middle wing that faces onto a courtyard.

The exterior materials have held up very well. The brick shows some small areas of efflorescence, which is not uncommon in this climate. The copper cladding is beginning to patina into a dark brown as expected, and the lead-coated copper looks as crisp and stain-free as when the building opened. The cream-colored exterior insulation finish system has retained its pigment, shows no damage and little wear, except in the courtyard, where patients smoking in secluded nooks under the fire stair have stubbed cigarettes into the EIFS.

The exterior bears virtually no signs of graffiti, which is surprising given the building's tough neighborhood. This may be credited to the fact that the local community was included in design reviews of the facility. The original design for the courtyard wall was of solid brick, but the community complained that the blank wall would make them feel "excluded." So Gehry and Dehar opened the wall with a metal fence to allow views in and out.

This openness may account for the building's acceptance by the community, and the lack of graffiti, but it has caused other problems. Shortly after the building opened, the fence proved easy to surmount. It was anchored with exposed bolts along the sides, which provided easy footholds, so sloped metal plates were welded over the bolts.

Early in the design Gehry consulted a number of psychiatrist friends as to which of his completed buildings might be a good model for YPI. They suggested the sculptural, village-like composition of the Loyola Law School in Los Angeles as a starting point. The concept for YPI evolved into a "therapeutic village" that would offer long-term patients a community in miniature in which to recover. The notion was to translate the progression of the recovery process into discrete building forms that the patients could identify and strive to reach. Patients were admitted in the north wing, known as Congress Place, and then were housed in the south wing, Washington Square. Recreation areas and more independent living quarters were found in Liberty Village (the east wing), while work-adjustment therapy would take place in a small wing northwest of the courtyard, where a door opens directly onto the street. Thus, this small village would slowly lead the patients, whose stays would normally run six to nine months or more, from a delusional, self-contained world back into society and the larger world. This concept was reinforced by large expanses of glass throughout the building, which offered views between rooms, from one part of the village to the other, and captured the skyline of New Haven and the larger world.

But from the day YPI opened, Gehry's "village" concept was in trouble. Pressure from the health insurance industry was cracking down on extended care. As insurers whittled down the period of treatment they would cover, the patients' length of stay steadily dropped. Today, YPI patients stay for an average of 16 days. The institute admits patients (who now range in age from adolescents to the aged) when they are sickest, gives them intensive, focused treatment, and then releases them for out-patient care. Thus, there is little opportunity for patients to appreciate the building as a progression of spaces leading to better mental health. "I don't think the patients perceive the building as a village," says Dr. Thomas McGlashan, YPI's executive director since 1990. "The approach to care that the building was designed for no longer has any currency." Paul Haeberle, YPI's head administrator, observes that the building design would have been more successful if it had been flexible: movable walls to expand and contract patient areas, for example. I heard this criticism from a number of people during my visit. But the architects were not asked for a flexible building. In fact, a rigidly structured environment was sought because it would provide the stability that patients need for recovery. Haeberle admits that "the architects gave us what we asked for. We just didn't know what to ask for."

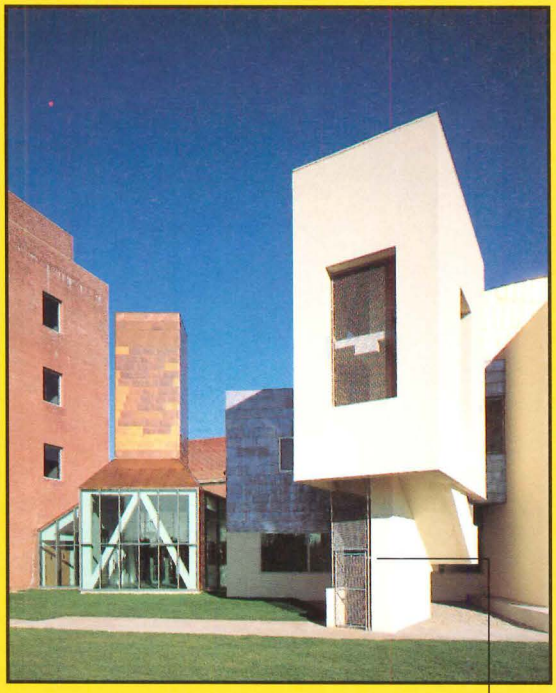
Although an important element of the village concept, the building's glassy nature has been problematic for other reasons. While the large windows are generally appreciated by the staff, therapists report that patients feel passersby are looking in on them, and they fear being recognized. Interior windows in conference rooms and offices have made therapy difficult to conduct. "It's very hard to run a therapy group in a room with windows while other patients walk by and make faces, pressing their noses against the glass," reports one staff member. As a result, blinds have been installed on windows throughout the building at a cost, according to YPI's associate administrator Margaret Smith, of between $50,000 and $75,000. "There were no blinds when we moved into the building," says Smith. "We've spent a fortune to maintain privacy."

There are also acoustical breaches in privacy. A common complaint among therapists is sound transmission through doors in their offices. "There's no confidentiality when you talk about patients in your office," says one therapist. "Patients sitting in the next room can hear every word. I know, because they've repeated conversations back to me." As a remedy, homasote panels have been installed on the doors, along with threshold seals.

The glassed-in nurses' stations on the second and third floors of the Washington Square wing do

The courtyard is a popular place for relaxation – and a gymnastic challenge to those who have scaled the fence. The courtyard's nooks and crannies were criticized because they make it difficult for a staff member to monitor patients.

WEST-FACING COURTYARD

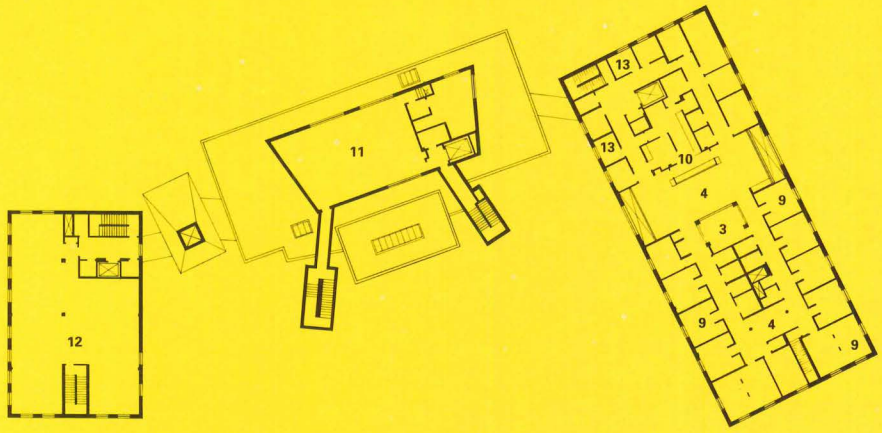


"CHIMNEY"-TOPPED ENTRY AND SYNTHETIC STUCCO-CLAD FIRE STAIR

The fire stair's controversial chain-link fencing apparently does not conjure images of institutional restraint, as some feared it would. Most staff members I spoke with, however, appraised the stair as "ugly."

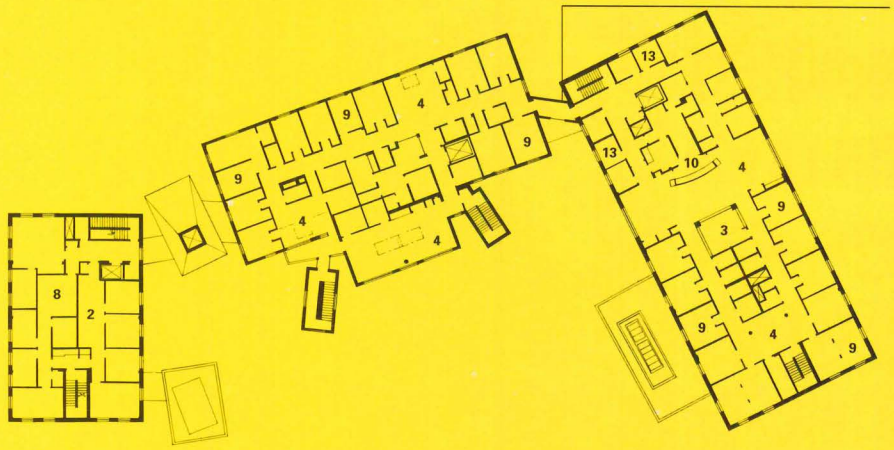
The street level of the north wing was intended as commercial space, but has remained unoccupied since the building's completion. The neighborhood's high crime rate and remoteness from downtown are blamed for the commercial failure. Plans currently call for a university-related function to occupy this space.

BRICK BLOCKS DEFINE INSTITUTE'S NORTH AND SOUTH EDGES



THIRD FLOOR

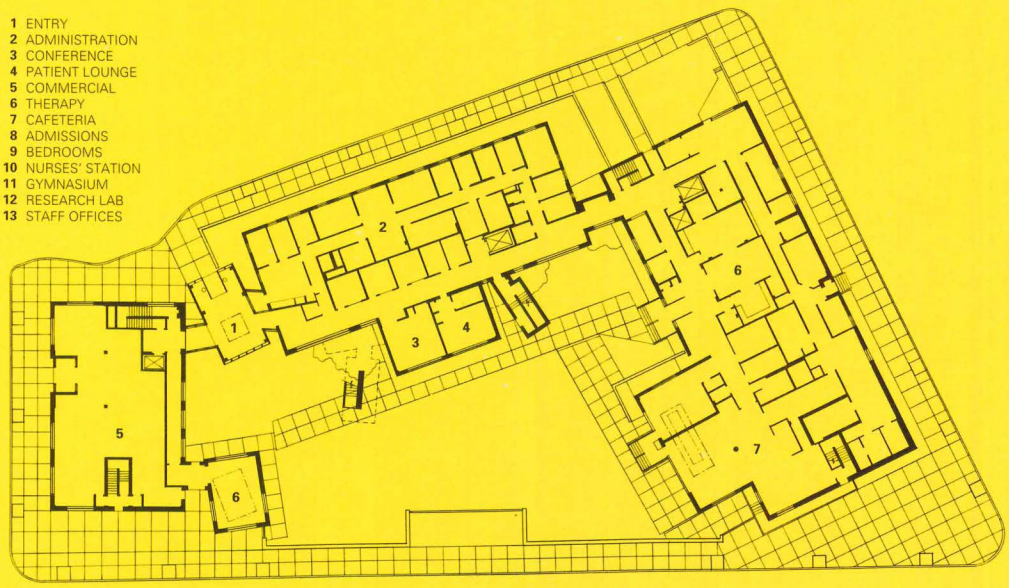
The glass-enclosed nurses' station on the third floor of the south wing does not offer acoustical privacy because it is open below the skylight. The glassy conference room in the photo's background is typical of many such spaces that have been fitted with blinds.



SECOND FLOOR

The plan's arrangement of connections between building blocks is praised for its ease in patient and staff orientation. But because of the number of keys needed to move between blocks, the layout has proved difficult when locks on secured areas are changed.

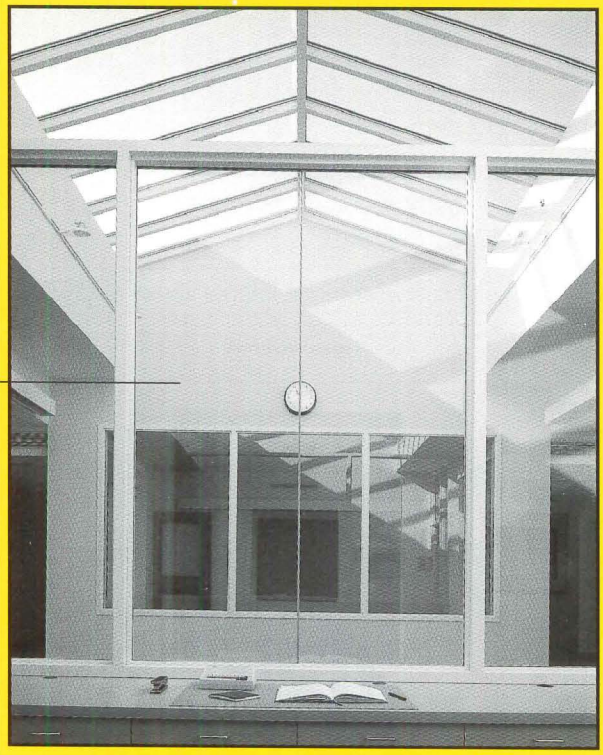
1 ENTRY
2 ADMINISTRATION
3 CONFERENCE
4 PATIENT LOUNGE
5 COMMERCIAL
6 THERAPY
7 CAFETERIA
8 ADMISSIONS
9 BEDROOMS
10 NURSES' STATION
11 GYMNASIUM
12 RESEARCH LAB
13 STAFF OFFICES



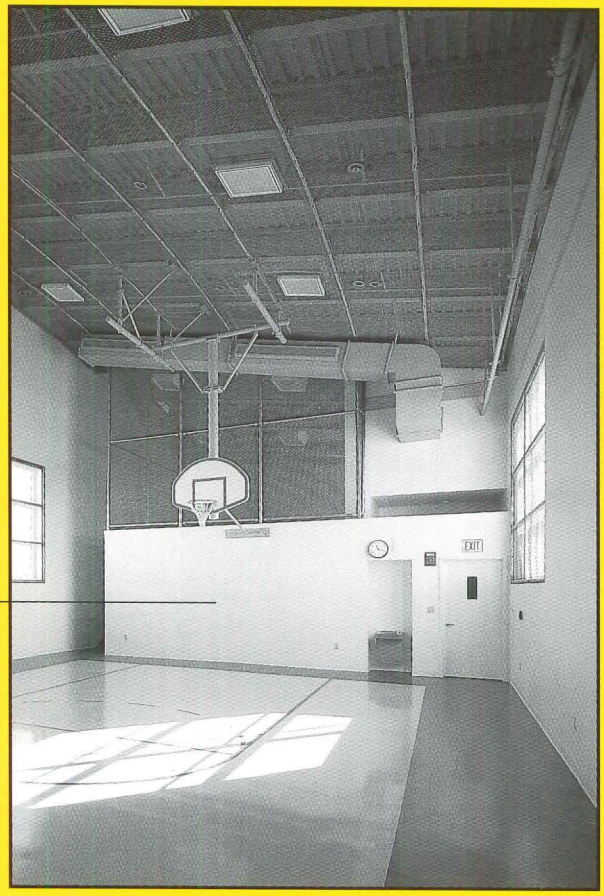
FIRST FLOOR

N 40'/12m

The gymnasium on the third floor is one of the building's most popular spaces. On the first day of use, a patient jumped onto the water cooler and through the void over the door; the opening was later fenced. The exercise mezzanine above the gym is not accessible to wheelchair users, who need it most.



THIRD FLOOR NURSES' STATION



GYMNASIUM WITH EXERCISE MEZZANINE

allow some acoustical privacy, although the third-floor station is topped with a skylight that transmits sound into patient areas. The skylight has also drawn fire: it tends to overheat this space in the summer. In general I heard numerous complaints about the HVAC system.

The design of the nurses' stations was a bone of contention between Gehry and the staff. The nurses wanted them glassed; the architect wanted them open. In fact Gehry envisioned them as

> **While the large windows are generally appreciated by the staff, patients feel that passersby are looking in on them, and fear being recognized.**

soda-fountain counters, where staff and patients could sit and shoot the breeze. I didn't find one staff member who thought the glassed stations were a mistake. In fact, nurses and therapists are desperate for private space where they can relax. There are no closed staff lounges and no private outdoor spaces. On the basement level, adjacent the loading dock, a makeshift terrace (known as "the moat") is the staff's only outdoor retreat. It is not wheelchair accessible and is in fact not even supposed to be occupied because it is surrounded by walls of lead-coated copper, a material kept out of reach throughout the building.

In defense of the architects it should be pointed out that it was the client's decision to cut staff amenities when the budget got tight. This also resulted in small staff offices, which are a constant source of frustration and an impediment to therapy. Family sessions are difficult to conduct in them.

Another space open to criticism is the reception lobby, housed under the tall copper-clad "chimney" element between the north and east wings. This space has always been perceived as "cold," according to the staff members I spoke with, and it is a rather uncomfortably proportioned space to stand in. A receptionist behind a thick plate-glass window admits visitors through a door to an inner waiting area that has no visual connection to the receptionist. To remedy this, plans call for new windows to be installed in the wall between the receptionist space and the waiting area. The thick plate glass will be replaced with a sliding glass window, which will be a bit less impersonal.

Other complaints have been few. Gypsum board surrounding steel columns in remote patient areas didn't last long. "The patients had a contest to see how fast they could kick holes through it," notes Margaret Smith. "We replaced it, and they had another contest." Smith finally enclosed the columns with curved, fiber-reinforced lightweight concrete blocks.

Despite these shortcomings and the failure of the village concept, YPI's architecture is appreciated. I noticed lots of photos of the building framed and hung in offices, like trophies. Staff and patients alike laud the building's spaciousness and its ample sunlight. One therapist notes that, "on a sunny day, it's glorious." Patients refer to YPI as "the hotel." McGlashan says that he likes the building's angles and views, and that family members and other visitors react very favorably to the architecture. "They are positively touched by it," observes the director.

Even though Gehry's hope for the institute's architecture to be an integral part of the therapeutic process has gone unfulfilled, YPI has nonetheless proven a stimulating and challenging setting for treatment. ■

Project: *Yale Psychiatric Institute, New Haven, Connecticut.*
Architect: *Frank O. Gehry and Associates, Santa Monica, California, in collaboration with Allan Dehar Associates, New Haven, Connecticut.*
Facilities consultant: *Barun Basu Associates, New London, Connecticut.*
Structural engineer: *Spiegel & Zamecnik, New Haven, Connecticut.*
Mechanical & electrical engineer: *Luchini Milfort Goodell & Associates, Wethersfield, Connecticut.*
Landscape architect: *Rolland/Towers, New Haven, Connecticut.*
Photos: *Jeff Goldberg/Esto.*

Now You See It

Three temporary structures – in Los Angeles, Paris, and London – are visionary examples of an unsung building type.

In the first, Hodgetts + Fung did their homework for an interim library at UCLA.

POWELL LIBRARY STAGING FACILITY

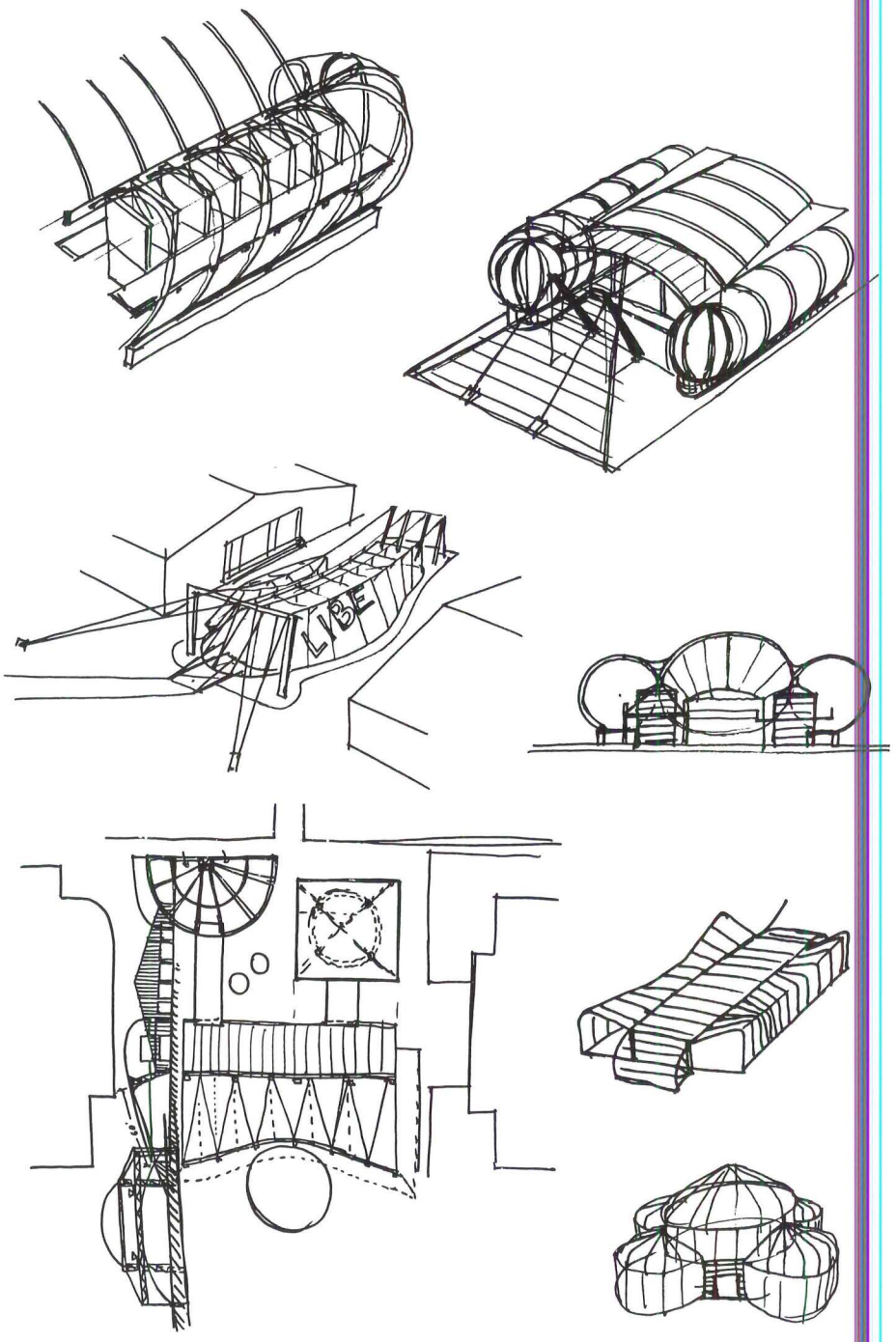
In 1972, Craig Hodgetts, with two other architects, won a P/A First Design Award for a mobile theater designed to be transported by ten trucks and trailers to communities located far from cultural centers. Like the utopian visions of Archigram, Ant Farm, and many others, the theater responded to the dynamic nature of human needs and desires.

Twenty years later, Hodgetts and partner Ming Fung have designed a temporary structure to house the activities of UCLA's undergraduate library for a five-year period while its permanent building is being seismically upgraded. In both process and product, the temporary Powell Library reflects the ideal of a participatory architecture investigated more than two decades ago. "It's assumed," says Fung, "when you design a permanent building, that the user will never change or evolve. But that's not true. Everything is temporary."

Sited on a grassy quad bordered by the men's gym, the dance building, and a service road, the new library is an alien yet perversely contextual presence among the brick façades and tiled roofs of the campus. It aspires to be nothing but temporary, an honesty defined by its tent-like features.

The prefabrication of the steel frame, aluminum ribs, and fabric relied on quick and accurate communication among architects, consultants, fabricators, and contractors. The ribs and tensioned fabric were produced simultaneously, each traversing the country to be extruded and fabricated.

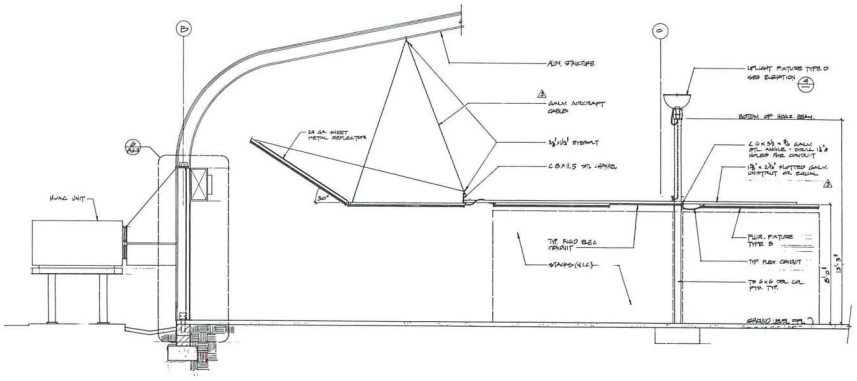
The lack of preconceived notions of design and construction freed the designers and consultants to experiment and exchange ideas. Fastening the fabric to the ribs was an agonizing process for the general contractor until the electrical engineer suggested that his winch be used to raise the fabric into position; installation speed increased from one to eight panels per day. "It was a unique experience; it broke down the old guild boundaries," says Hodgetts. The architects also remained open-minded. "While we always tried to make an architectural solution, sometimes there was a more expedient way to do things." The glazing, for example, is sealed with "more silicone then we had hoped," admits Hodgetts. ■



CONCEPTUAL SKETCHES

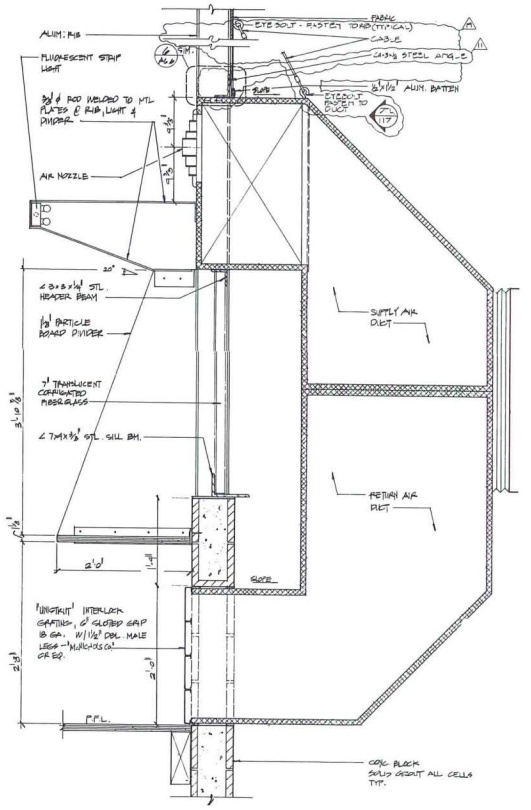
An aerial view (1) shows UCLA's temporary library in the context of the campus and Los Angeles. A construction photo (inset) shows the curved profile of the aluminum ribs.

Photos: Craig Hodgetts (insert); L.A. Aerial Photography (right)



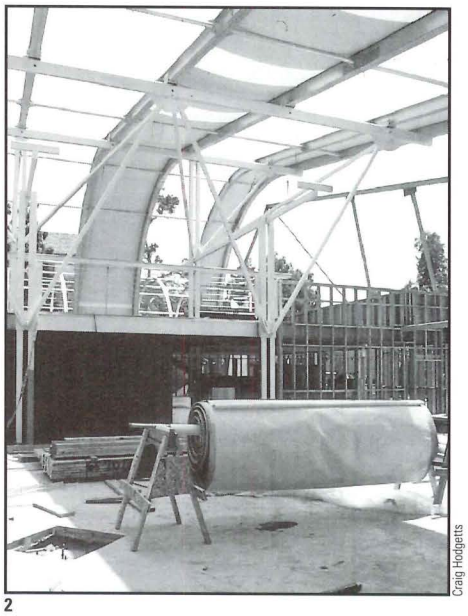
MAIN LIBRARY HALL SECTION

10'/3M



WALL SECTION AT DUCT AND STUDY CARREL

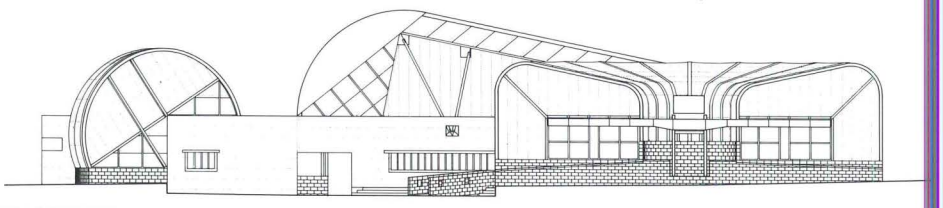
2'/.6M



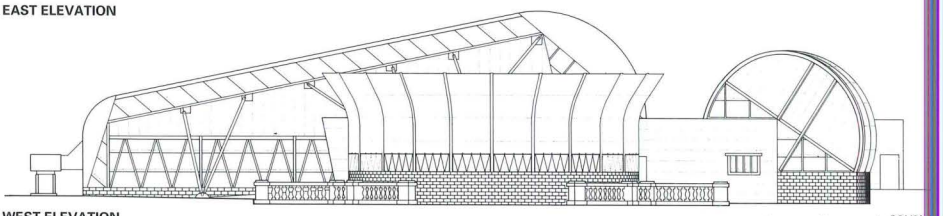
2

Craig Hodgetts

The temporary Powell or "Towell" as it is referred to by students, with a few fabric panels in place (2) and day and night views of the completed library (3). Hodgetts + Fung cite Joseph Paxton's Crystal Palace as a source for their design. "We needed to provide a large space and had to find a way to break it down into small components so as not to overwhelm the quad." Stacks are located on the ground floor and mezzanine level (4). Students study in the east reading room (5).

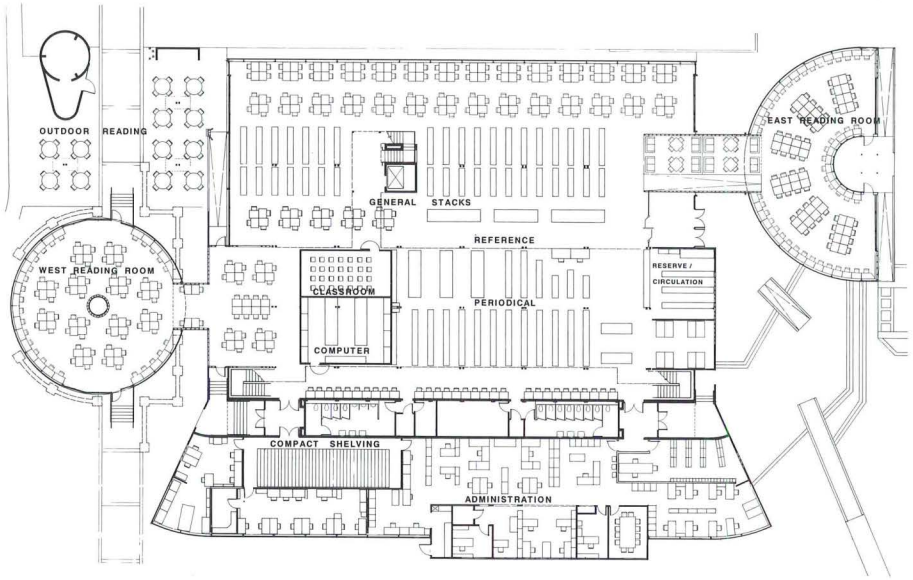


EAST ELEVATION



WEST ELEVATION

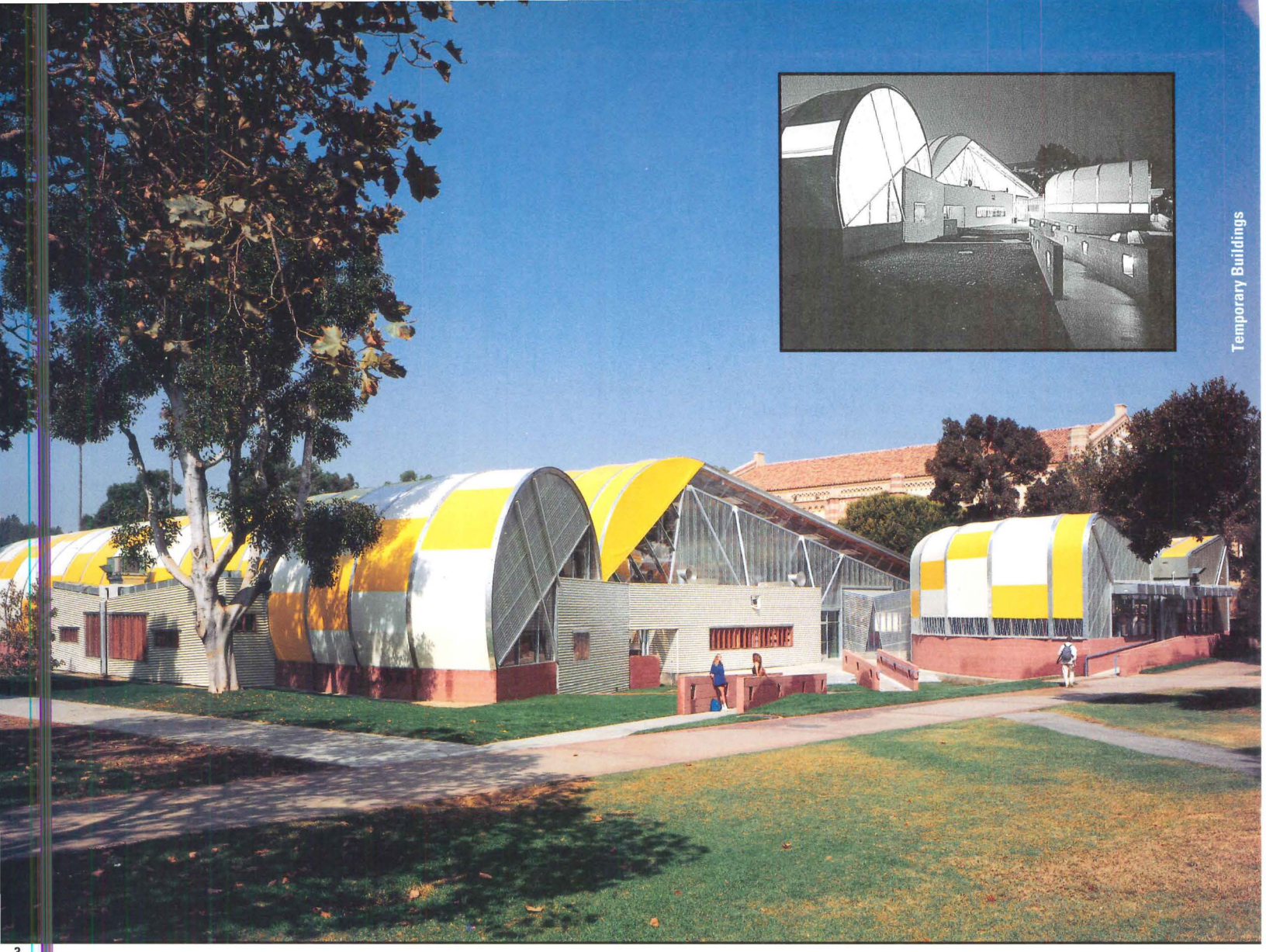
20'/6M



FLOOR PLAN

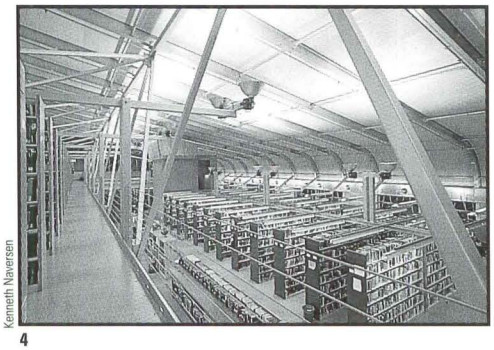
N

40'/12M



3

Photos: Tom Bonner (above); Kenneth Naversen (inset, above)



Kenneth Naversen

4

Tom Bonner

5

Project: *Powell Library Staging Facility, University of California Los Angeles.*
Architects: *Hodgetts + Fung Design Associates, Santa Monica, California (Craig Hodgetts, Ming Fung, partners-in-charge; Lynn Batsch, Rob Flock, project architects; William Martin, Jr., Peter Noble, Michael Swischuck, project team).*
Client: *UCLA Capital Programs (Sarah Meeker Jensen, project director).*
Site: *A quadrangle between the men's gymnasium and the dance building.*
Program: *36,000-square-foot temporary facility with reading rooms, stacks, administrative offices.*
Structural system: *Extruded aluminum ribs with fabric panels, unit masonry perimeter wall and foundations, and tubular steel mezzanine and seismic struts.*
Major materials: *Polycarbonate glazing; vinyl-coated, woven polyester tent fabric; fiberglass panels on metal stud curtain walls; heavy timber; oriented strand board.* *(see Building Materials, p. 161).*
Mechanical system: *Water-source heat pumps with gas-fired boiler, prefabricated fiberglass cooling towers.*
Consultants: *Robert Englekirk, Inc., structural engineers; The Sullivan Partnership, Inc., mechanical engineers; Patrick Byrne & Associates, electrical engineers; A.C. Martin & Associates, civil engineers; Patrick Quigley & Associates, lighting consultant; Rubb Building Systems, Inc., tent structure.*
General contractor: *American Constructors California, Inc.*
Cost: *$3.1 million.*
Photos: *As noted.*

TEMPORARY AMERICAN CENTER, PARIS

Nasrine Séraji-Bozorgzad

seizes the day with a temporary building for

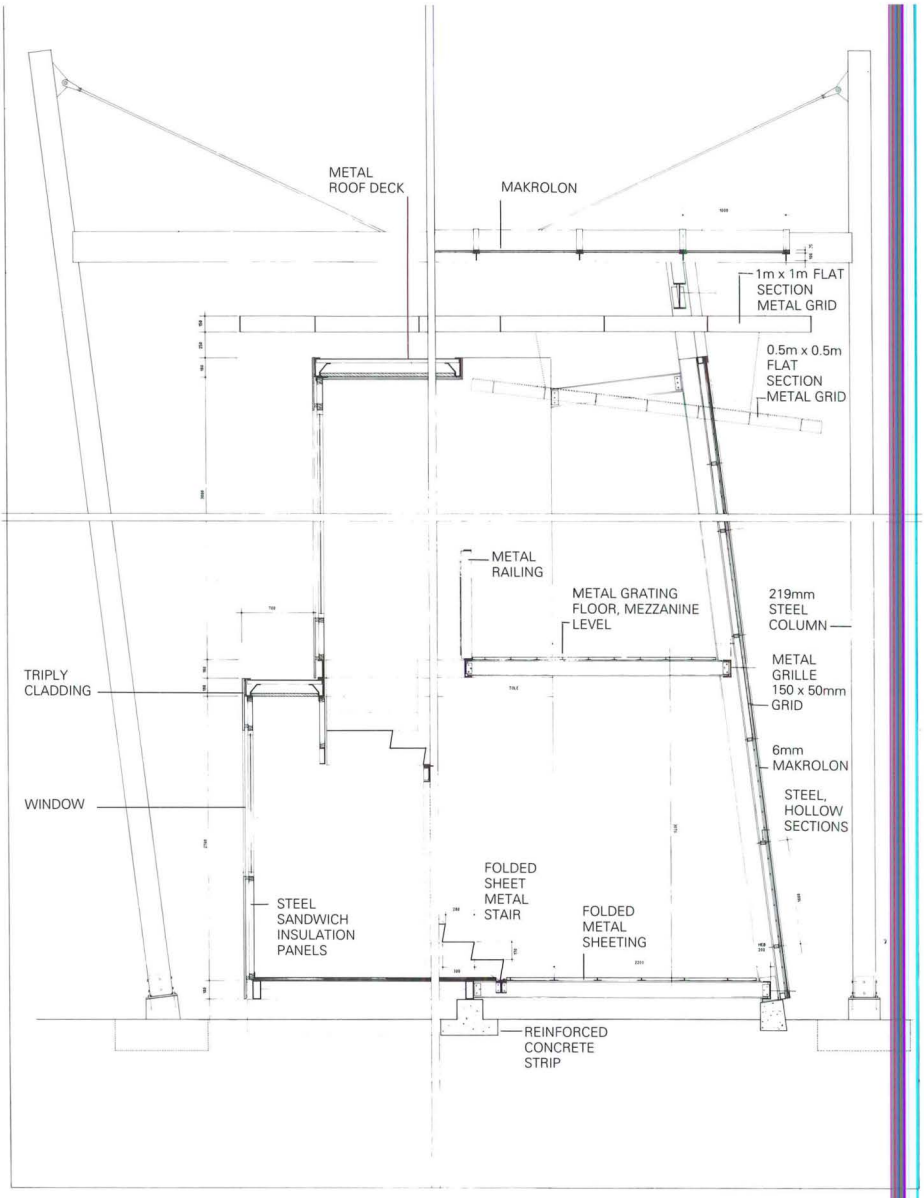
the American Center in Paris.

As a prelude to Frank Gehry's monumentally scaled permanent headquarters for the American Center in Paris, the multidisciplinary arts organization held a limited competition for a temporary building for the center's activities during the construction of Gehry's building. The winning scheme by Nasrine Séraji-Bozorgzad, a young Iranian-born architect with a practice in Paris, is an appropriately unorthodox composition. Sited on a wedge-shaped piece of land on loan from the City of Paris, Séraji-Bozorgzad's structure is just a street's width away from Gehry's building in the Bercy section of the city.

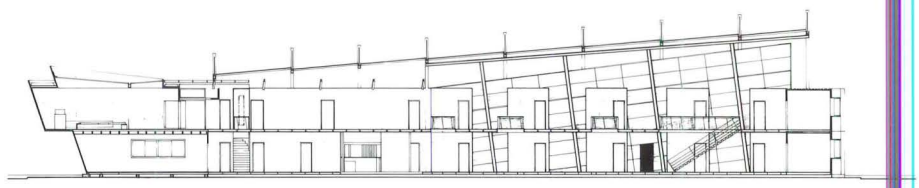
Séraji-Bozorgzad viewed site restrictions, a limited budget, and a fast-track program as forces more liberating than limiting. The building is constructed of prefabricated modules of varying sizes and shapes, and clad with square chipboard panels. The center's chiseled profile is softened and enriched by an undulating roof canopy, supported by a series of steel columns. The columns also carry assemblages of polycarbonate panels and metal grillework on the building's long elevations.

The juxtaposition of steel, polycarbonate, and chipboard continues inside the building. The two-level, open-air interior, housing offices, classrooms, workshops, and an exhibition space, has an urbanistic appeal, with a street-like configuration of metal-grate stairs and mezzanine-level flooring; an open clerestory formed by the roof canopy and walls; and a row of linden trees. (The trees, like the two rows along the site's perimeter, had to be left intact as a requirement of the loan from the City of Paris.)

The temporary American Center is a materials-driven design; lenient fire codes and the client's willingness to accept components not guaranteed for long life gave Séraji-Bozorgzad the latitude she needed to use nontraditional materials. She envisioned a translucent cladding with an undulating profile for the façades and roof canopy; after some research, Makrolon, a two-layer polycarbonate with rigid fins for the passage of air and moisture, was found to have the desired effect. She had originally wanted to clad the building with a marine plywood, but it was too costly. Remembering the chipboard used on inexpensive houses in the U.S., Séraji-Bozorgzad had a sample of the American product polished by a French manufacturer, who, upon seeing the results, suggested a chipboard called Triply as a cheap and readily available alternative. It offers a quick and simple clue to the building's interim duty. ■



TRANSVERSE SECTION DETAIL A-A



SECTION B-B

GROUND FLOOR PLAN

1 ART STUDIO AND EXHIBITIONS
2 STUDIO
3 OFFICE
4 CLASSROOM
5 MEETING ROOM

N

1

2

The temporary American Center from the southwest (1) and a model showing materials and stair configurations (inset); the interior "street" (2) with trees.

Project: *Temporary American Center, Paris.*
Architect: *Nasrine Séraji-Bozorgzad, Paris (Nasrine Séraji-Bozorgzad, architect; Jean-Paul Djalili, associate architect; Leith Adjina, assistant architect; M. Brunstein, C. Bristow, M. Draghici, E. Pilade, J.-L. Simion, assistants).*
Client: *SCI American Center.*
Site: *A triangular public park with three rows of trees bordered by Rue de Pommard and Rue de Bercy (across the street from Frank Gehry's American Center).*
Program: *A 1,035-square-meter (11,000-sq.-ft.) temporary building with offices, meeting rooms, classrooms, workshops, and exhibition space.*
Structural system: *Steel and prefabricated modules made to measure.*
Major materials: *Anti-rust coated steel, polycarbonate panels, chipboard, aluminum-framed windows, steel-framed doors with security glass.*
Consultants: *Bureau d'Etudes Techniques Dupont Setece.*
Contractors: *ATEMCO, CNSE, Marande et Fils, STDE, Paris Charpente, SMAC.*
Cost: *5 million francs ($943,396).*
Photos: *Jean-Marie Monthiers.*

MOMI TENT

Future Systems pitches a tent alongside the River Thames.

The MOMI Tent, a glowing tubular structure erected for brief stints under London's Waterloo Bridge, replaces a "miserable canvas tent" used by the British Film Institute for parties and receptions. Amanda Levete and Jan Kaplicky of Future Systems, London, received the commission for the tent after suggesting to the BFI's director that they could design a demountable structure for a cost comparable to tent rental fees accrued over a ten-year period.

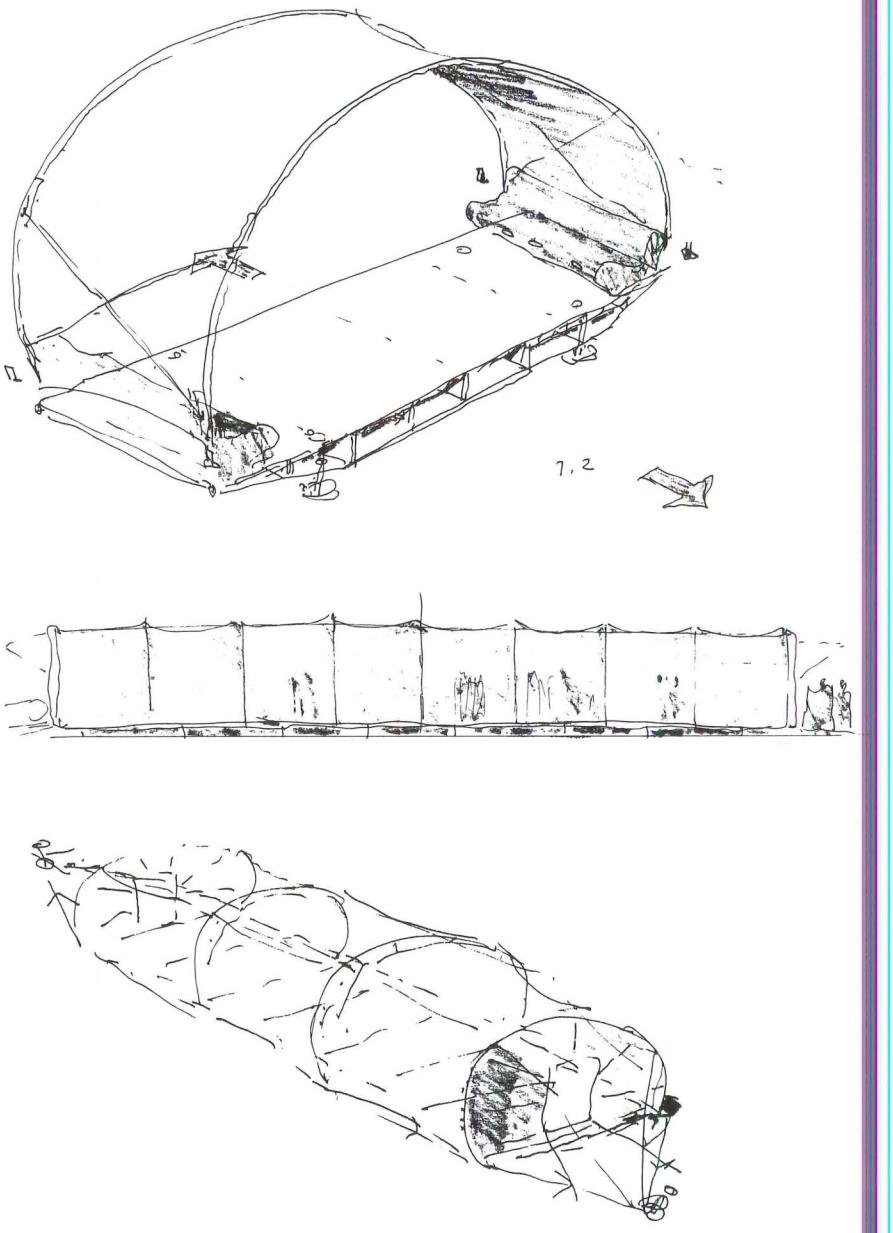
From day one they worked closely with Peter Rice (the noted structural engineer who died last fall) and engineers at Ove Arup & Partners. The most important design requirement was that the tent be demountable and transportable. The tent's simplicity of assembly (it is erected in two days) and ability to withstand mounting and demounting make its delicate pieces seem incongruous. The structural components fit into two trucks and the fabric is folded into a one-cubic-meter box.

The architects' first idea for the tent was based on the logic of a concertina, where the ends pulled out from the middle of the structure; Rice quickly vetoed this idea, saying that it would be too complicated and expensive. They then began to think about using a series of ribs with "absolutely minimal connections." They "wanted to capture a sense of fragility and leave the tent's structural logic as a bit of a mystery," says Levete. Pairs of inclined fiberglass rods braced in an arched geometry with a system of stainless steel props and cables become rigid only when tensioned against the fabric membrane; two outward-leaning steel end arches braced against the steel-edged floor beam provide lateral stability.

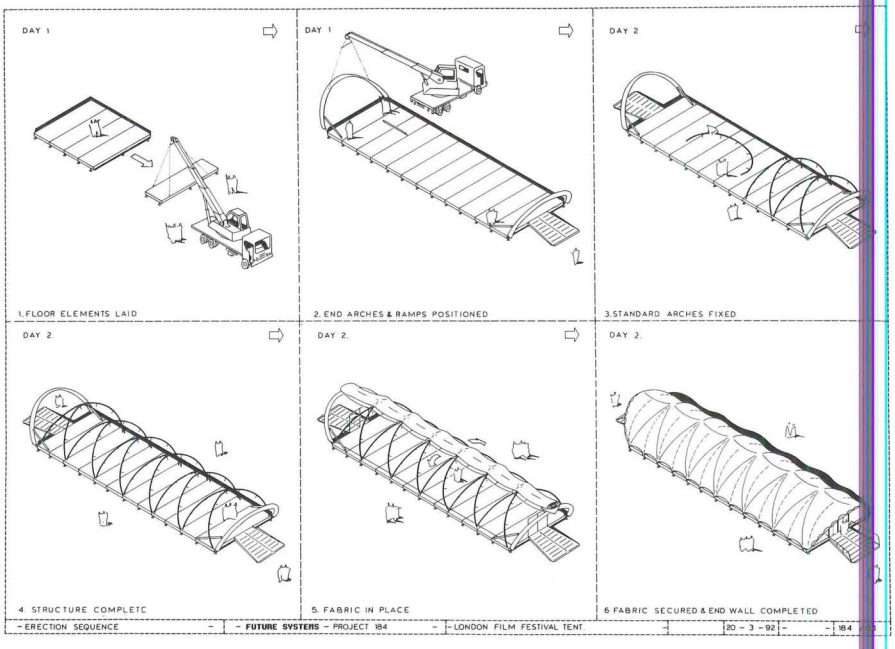
The desire to use a translucent fabric that could release light for an intense night-time glow led the architects to specify Tenara, a PTFE fiber similar to the coating in a nonstick pan. It is 60 percent light-permeable as opposed to the more commonly used PVC fabric which is 20 percent light-permeable.

With a capacity of 400 people and the potential for stale air to accumulate in the tent's mid-section, an effective ventilation system had to be devised. Industrial fans positioned along the perimeter allow half intake and half extraction of air; the tent is also cooled by air collected from beneath the raised platform floor.

The otherworldly imagery of the MOMI Tent, hovering near the Brutalist forms of the South Bank cultural center, recalls Archigram's Plug-In City and Instant-City projects (as well as Hodgetts's mobile theater), with the notion that buildings or functions can be injected, temporarily, into the existing cityscape. **Abby Bussel** ■

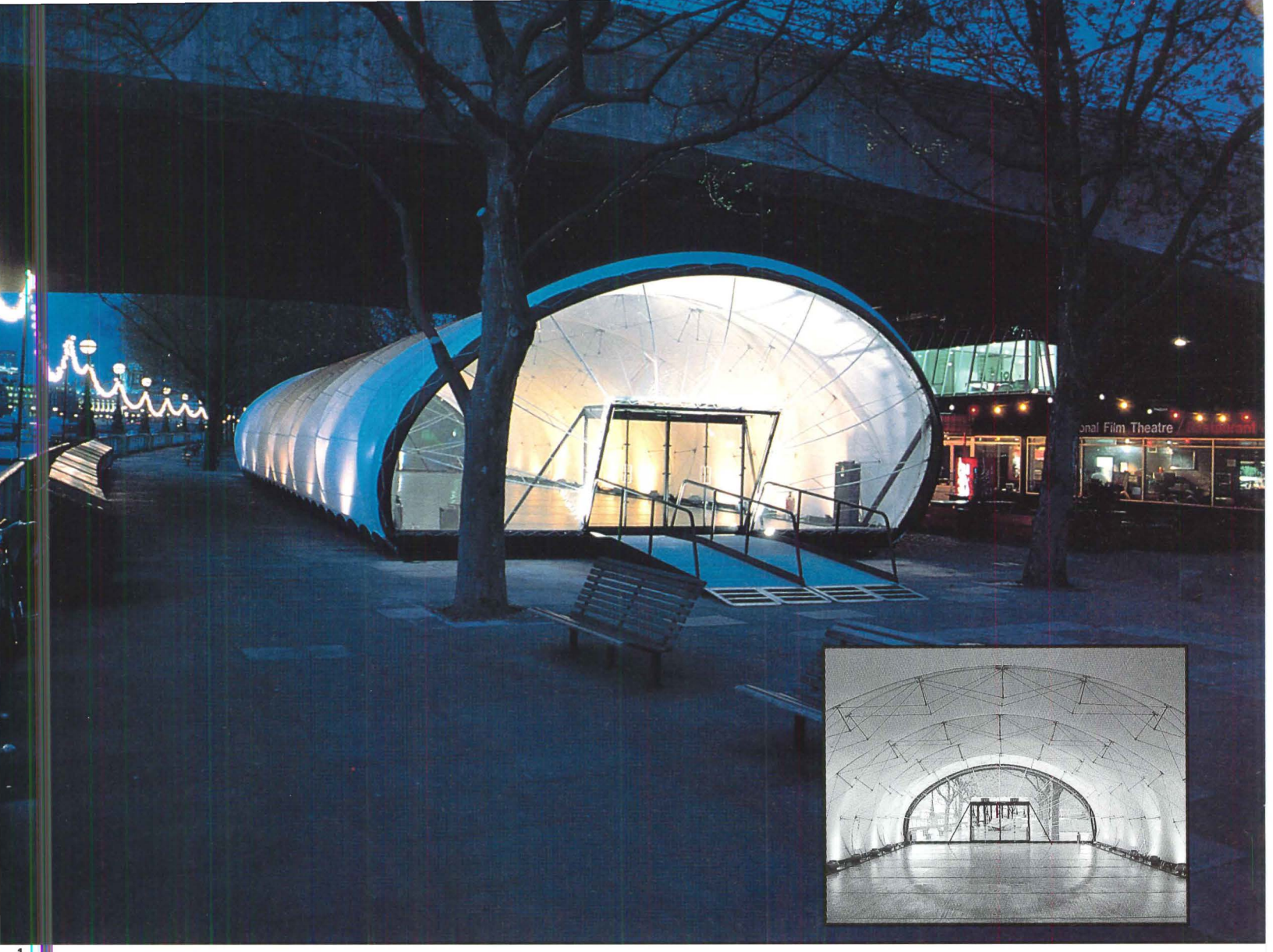


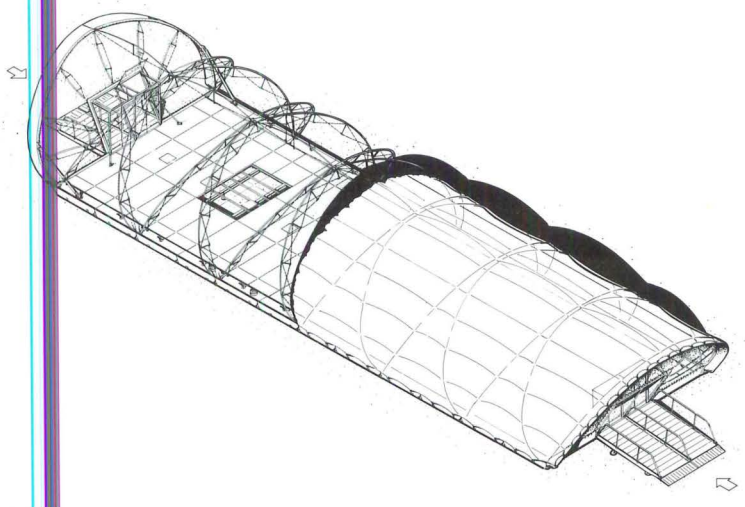
CONCEPTUAL SKETCHES



MOMI TENT, ERECTION SEQUENCE

1

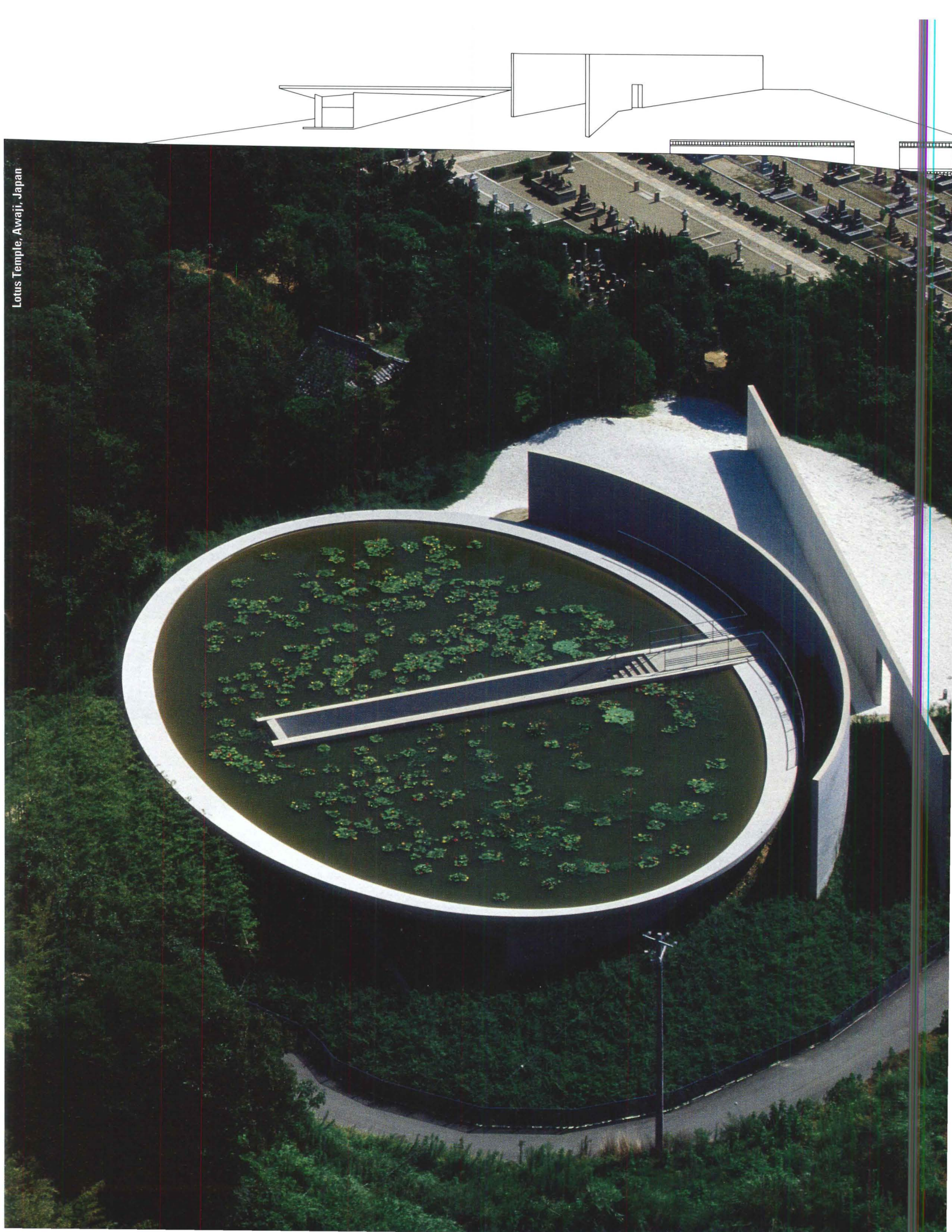




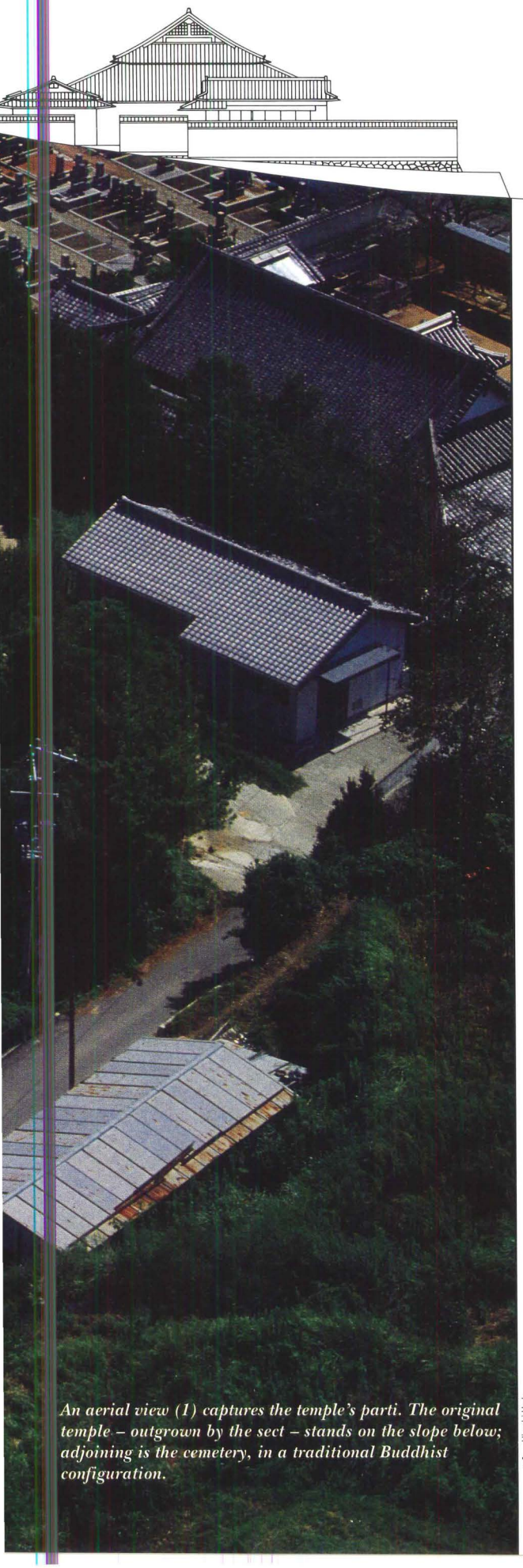
ISOMETRIC

The long low profile of the MOMI Tent at night (1) and the interior photographed during the day (inset).

Project: *MOMI Tent, London.*
Architect: *Future Systems, London (Jan Kaplicky, Amanda Levete, Mark Newton).*
Client: *Museum of the Moving Image.*
Site: *A public promenade under Waterloo Bridge on the South Bank in front of the National Film Institute; the tent was designed to be mounted on any site.*
Program: *A 3,000-square-foot demountable tent for receptions, parties, and other events with a 400-person capacity.*
Structural system: *GRP rods, stainless steel props, and cables; steel end arches, steel edge beam of the floor.*
Mechanical system: *Uplighting and air supply and extract fans are located along a raised perimeter zone.*
Consultants: *Ove Arup & Partners (Peter Rice, Brian Forster, Alistair Lenczner; structural), structural engineers; Ove Arup & Partners, (Mike Beavan, Andy Sedgwick) service engineers.*
Contractors: *Koit High-Tex, fabricator; Littlehampton Welding, steelwork.*
Cost: *Withheld.*
Photos: *Geoff Beeckman.*



Lotus Temple, Awaji, Japan



An aerial view (1) captures the temple's parti. The original temple – outgrown by the sect – stands on the slope below; adjoining is the cemetery, in a traditional Buddhist configuration.

Hiroshi Ueda

1

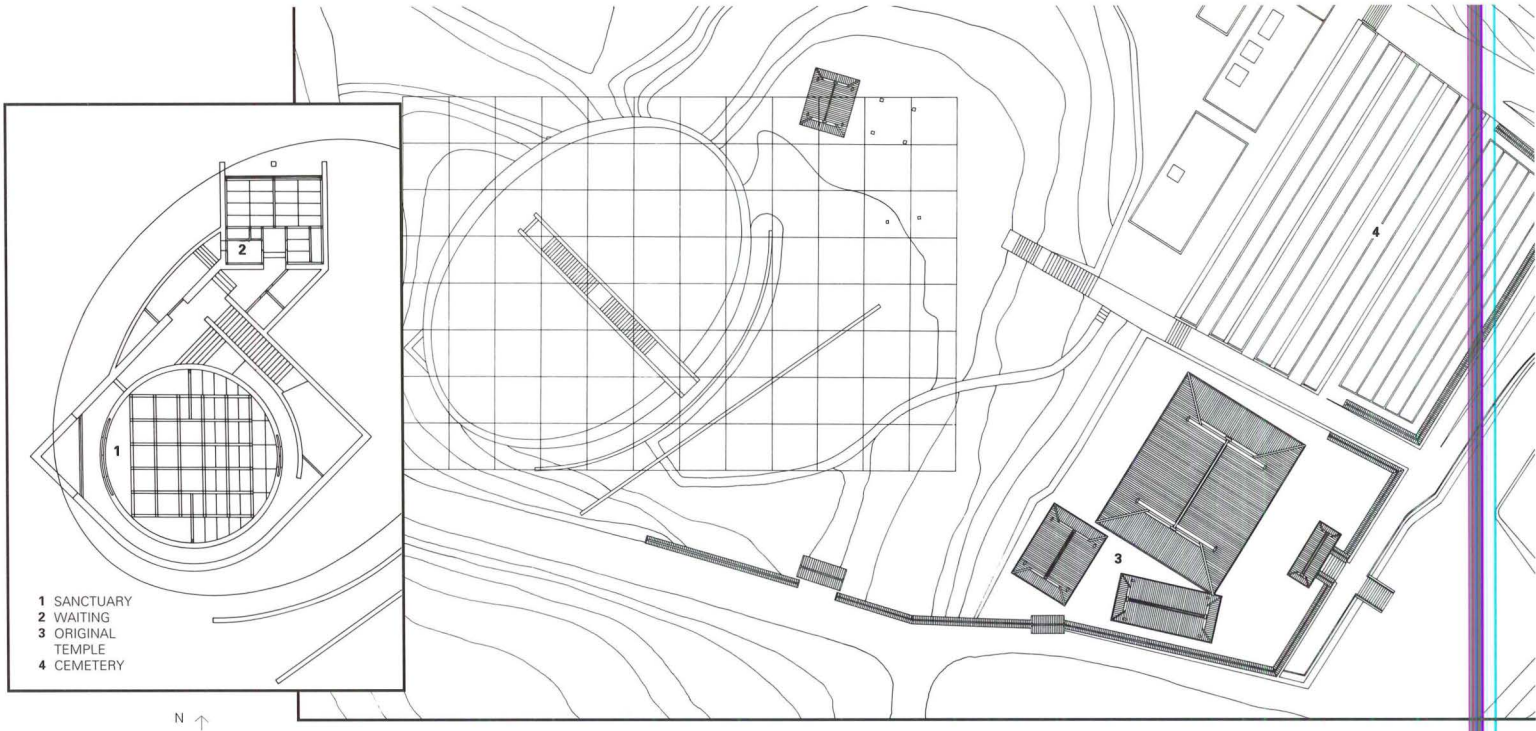
ENLIGHTENMENT BELOW

A RECENT BUDDHIST TEMPLE BY TADAO ANDO, SUBSUMED BY EARTH AND WATER, IS SYMBOLICALLY SHELTERED BY LOTUS BLOSSOMS.

To understand the Lotus Temple, imagine that Le Corbusier's Pilgrimage Chapel at Ronchamp was completed not in 1955 but in 1220, the same year Chartres Cathedral was finished. The impression of the chapel on medieval Catholic priests in France would be like the impact of Tadao Ando's temple on contemporary Buddhist monks in Japan.

Few of Ando's projects better represent the challenges and comforts this architect offers to Japanese culture than his recently completed temple on the island of Awaji in Japan's Inland Sea. Less a building than a series of shaped sensual experiences, the Lotus Temple is a radical challenge to centuries-old conventions governing temple design in Japan.

In form, materials, and processional sequence, the Lotus Temple is utterly unlike the wood structure typical of the traditional Buddhist temple. The lasting image one takes away – not of a building at all – is an elliptical concrete pool with floating lotus blossoms. Image, symbol, and meaning are



united, for in Buddhism the lotus is an important symbol signifying the enlightened soul rising from the world's corruptions, represented by the brackish water in which the flowers grow.

Ando's strategy of gradual disclosure and surprise begins to unfold in the long approach to the temple. After ascending a hill, one arrives at a freestanding concrete wall with a doorway cut through. This is the first introduction to the temple and one of the few opportunities to admire the refined concrete for which this architect is known. A complex sequence that follows, by deferring expectations, erases assumptions about what is ahead. First there is a 90-degree turn, a distant framed view of the sea, then a 180-degree turn, and the pool comes into view.

The pool is militantly distinct from the overgrown hills, the cultivated fields and ramshackle farm buildings set below it. Surprise is the effect Ando wants to achieve. Strong architectural intervention, he believes, makes the awareness of nature more acute. Unlike Christianity, Buddhism permits multiple belief systems. Still, Ando is more disposed to Shintoism and its worship of nature than to Buddhism. He has said he wants to invest his buildings with emotion by bringing nature into them. He means to create the sense of standing in the air, through the unexpected admission of light and the construction of shadows, devices he employs with exceptional deftness. He obliquely suggests his impatience with the particularities of religion, but he is entirely sympathetic to the larger, overarching principle of spirituality. It is on this foundation that he bases all his designs.

The temple's sanctuary lies embedded in the hillside and is reached by a stair slicing through the pool. The visitor steps below the level of the water: an original experience that is more than an inversion of the ascent to a conventional temple. The fractured compositions typical of Ando's work have been inverted. Geometric forms are nested within one another, suggesting harmony rather than the resolved imbalance implied in his other works. The shape of the pool is carried below as the building's defining form. Roughly half the ellipse contains a circular temple sanctuary formed by a wall of tightly lapped Japanese cypress boards painted vermillion, a traditional Buddhist color. This is the first use of strong color in Ando's heretofore monochromatic architecture, and it creates the illusion of a red volume where the air seems saturated with color. Natural light is admitted behind the shrine through windows in the exposed support wall where the hill falls away. The improbability of finding light after descending below the pool magnifies the sense of drama and mystery.

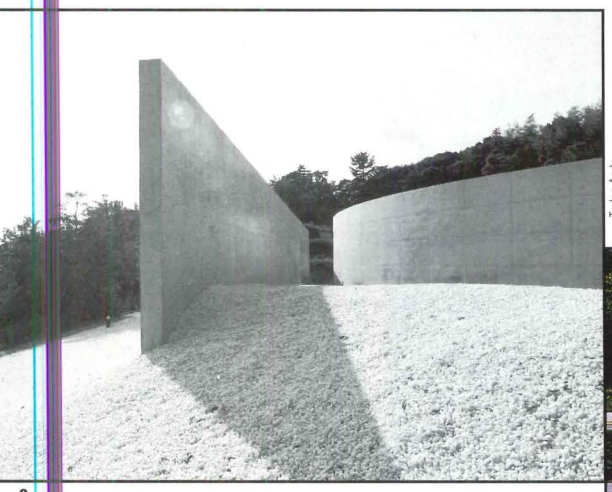
Only Ando's teahouses demonstrate as compellingly as the Lotus Temple how this architect attends to cultural expression without copying traditional forms. Ando says his "reductivist aesthetic" is characteristically Japanese, allowing him to deviate from tradition even as he draws from it. Not everyone sees the work that way. The temple concept was not easily accepted. One monk said Ando's two Christian chapels (P/A, February 1990, pp. 89–97) were "sacred," but the forms were "humanist," and the religious symbols were "applied." Even with Ando's persuasive powers, the temple would never have been realized without a powerful congregation member who championed it.

The Lotus Temple is imbued with a spirituality consonant with its religious function. This transcendent quality redeems the temple for some who find the design difficult. Others surely continue to see it as a disfigurement of the traditional temple.

For all its sensitive connotations, the Lotus Temple's implications are not confined to Japan. Together with the rest of Ando's work, the temple poses a challenge to architects everywhere. His work is a passionate answer to questions plaguing contemporary architecture. While plainly within the Modernist tradition, Ando's architecture is a nonreactionary critique of Modernism's failures. Filled with surprise and warmth, his buildings avoid the coldness, redundancy, and economic formulism that drove Modernism into decline. The architect "resists the homogenization of the world," as he says, and seeks to express history and culture without denying the 20th Century.

How Ando will translate this into built work outside Japan is yet to be seen. His Vitra Seminar House is in construction near Basel, and construction of the Bennetton Research Center near Venice is planned. The architect's first international jobs, the Japanese Pavilion at Seville (P/A, July 1992, p. 94) and a gallery in the Art Institute of Chicago's Asian wing have not tested the architect on his terms. These commissions asked him to express Japanese culture outside Japan. A tougher task – surely not long in coming – will challenge him to design for another culture and context with the same grace and skill he has shown in the Lotus Temple. **Cheryl Kent** ■

The author is P/A's Chicago correspondent.



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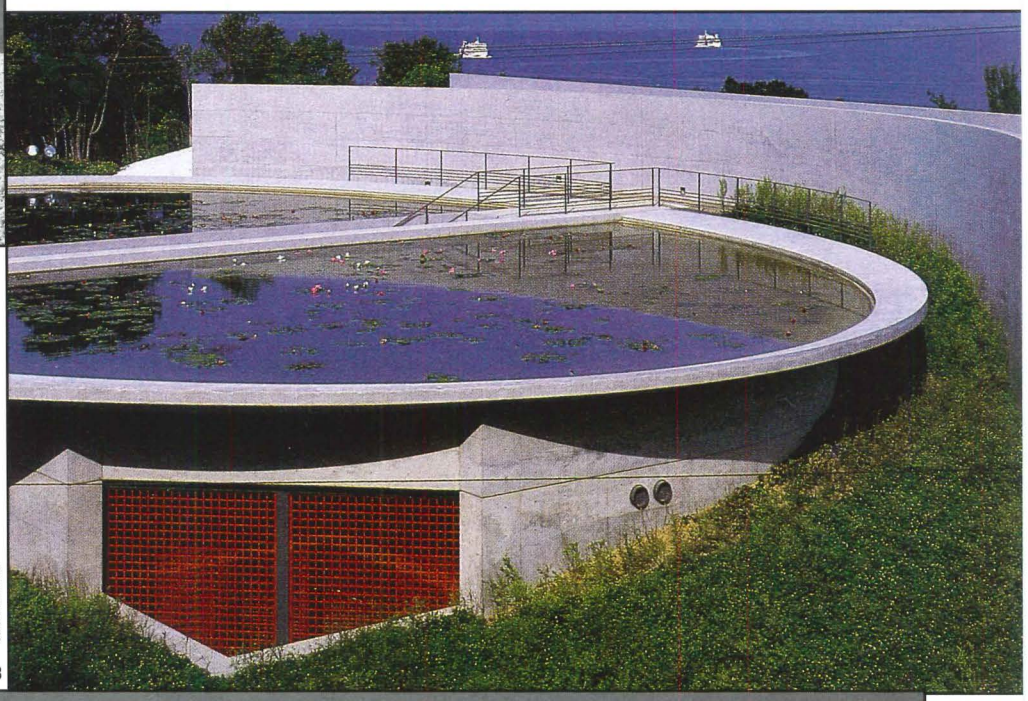
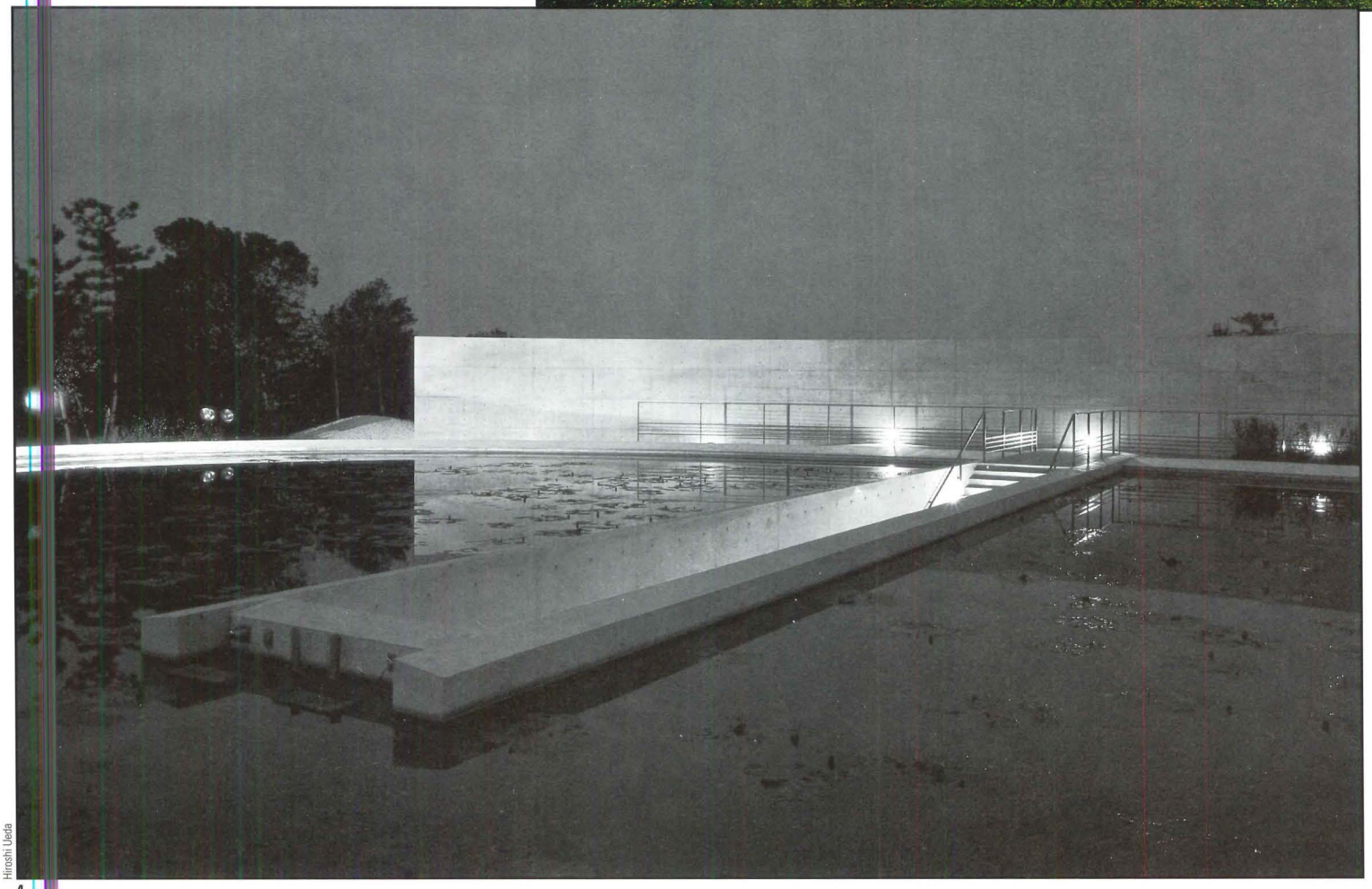
Tadao Ando



Satoru Mishima

3

A freestanding wall on a bed of brilliant white gravel (2) is the first introduction to the temple. Natural light is admitted to the sanctuary beneath the pool (3) through a grilled window. A complex entry sequence (4) brings one to the lotus pool.



Hiroshi Ueda

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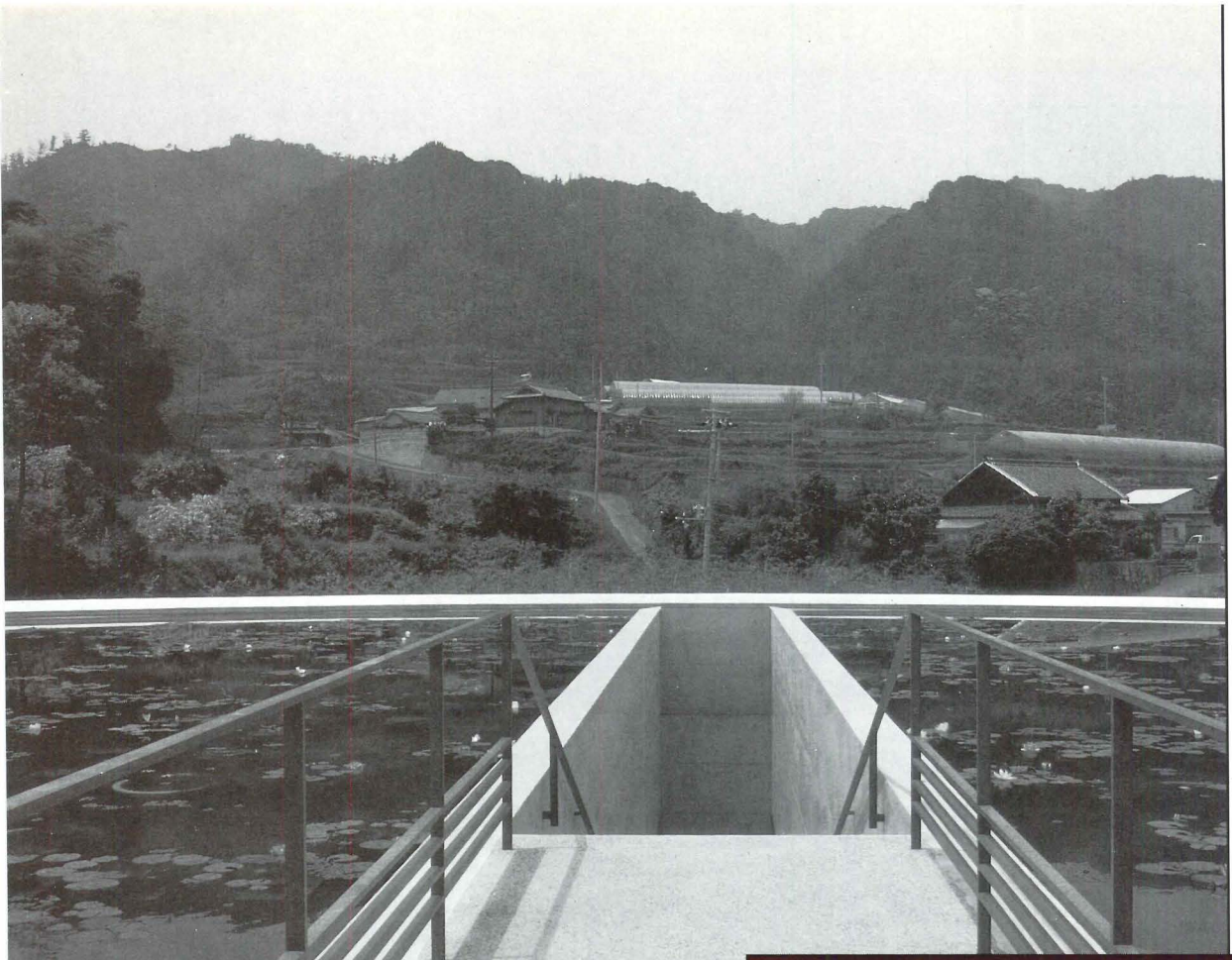

Photos: Tadao Ando (5,7)

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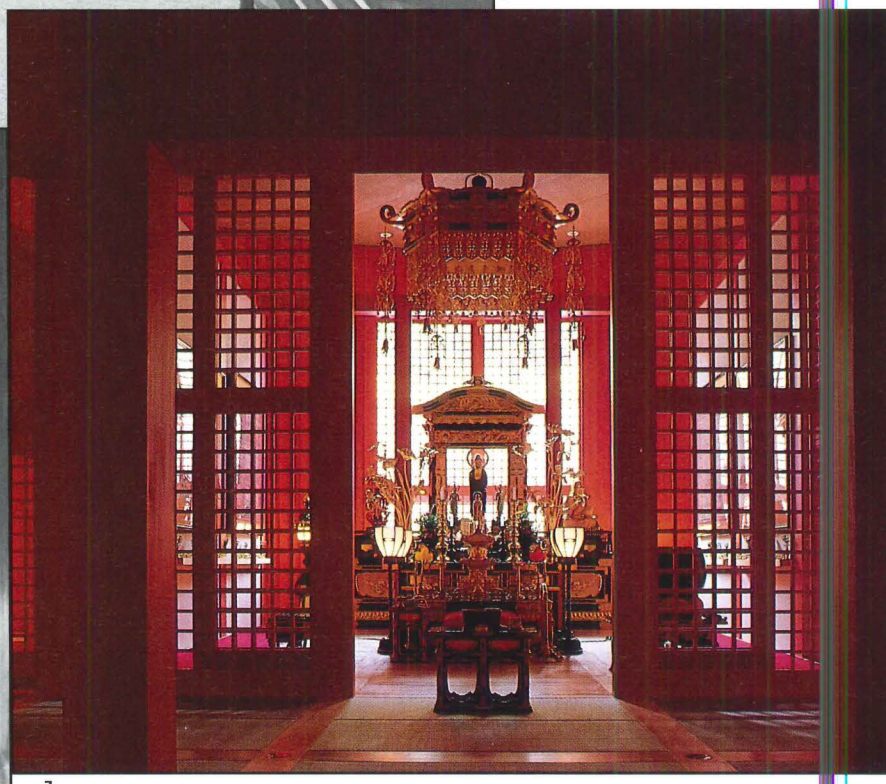

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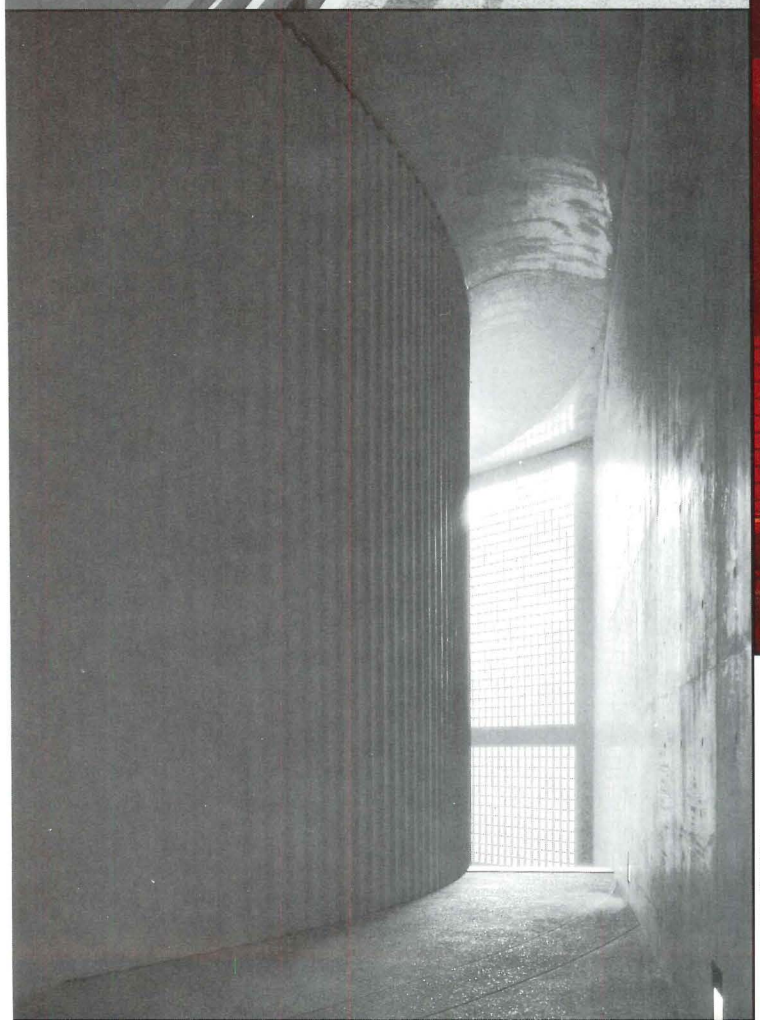


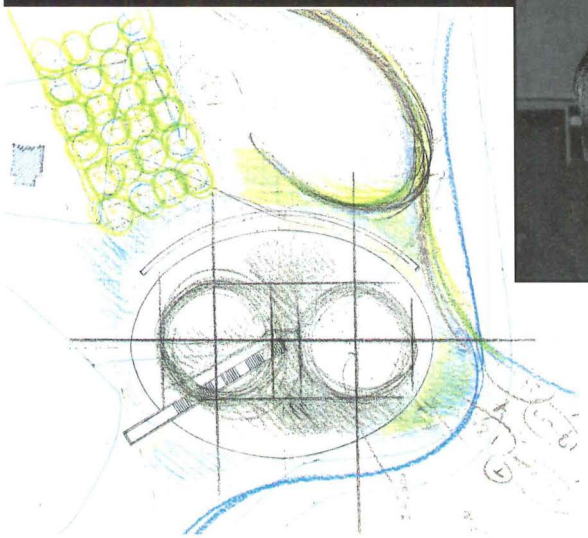
Hiroshi Ueda

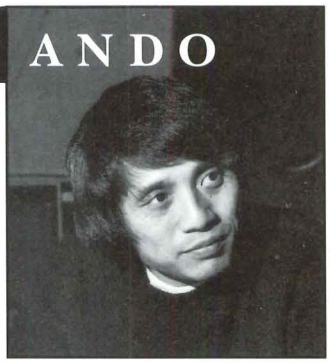
6

The passage concludes with a descent beneath the level of the pool's surface (5) to the sanctuary, which is contained in the vermillion drum (6). The shrine (7) can be approached only by monks, and is contained by red gridded screens.

A TALK WITH ANDO

Tadao Ando took an unconventional path to become an architect. Without formal training in the discipline, he educated himself during travels in Europe, the United States, and Africa in the 1960s. He opened his own office in Osaka in 1969, never having worked for another architect. He continues to practice from Osaka, the city where he was born in 1941. Ando had a brief career as a boxer, a fact that could be overlooked were it not for the genially combative nature of his personality that seems so much in keeping with his past profession and is the animating force of his present one. Before traveling to Japan to see his work, I met Ando in Chicago. He had just received the Carlsberg Prize in Denmark, one of many awards he has received over the years. He was greeted by his fans in Chicago with only a little more reserve than Mick Jagger might have been accorded, and our interview was conducted under trying circumstances. "I'm always like this," he assured me. Despite the many distractions, he brought a startling intensity and emotional honesty to the conversation that are, I think, evident here. Our conversation was translated by George T. Kunihiro, a New York architect. Cheryl Kent ■





Courtesy of Tadao Ando

Tadao Ando and an early sketch of the Lotus Temple.

CK: Will it be difficult to be an international architect when your work is so concerned with regionalism and culture? As you build outside Japan will those concerns be compromised?

TA: There is a contradiction. The earth is getting smaller: culture is becoming universal partly because of Modernism and technology. You can have any architectural material anywhere in the world. But regionalism makes the world big again. With different features unique to each region, the world expands.

CK: Your usual material is concrete – a hard, Modern material that you have made very beautiful and expressive. The craftsmanship and the level of quality and detailing you get are extraordinary. You don't see that in the United States.

TA: But one should attempt to challenge these craftsmen and contractors. Saying that it doesn't exist in America is not fair to America.

CK: But you didn't try it in Spain. I wondered if you had made the Japanese Pavilion in Seville out of wood because the material is more forgiving, because there is more tolerance for error.

TA: To describe Japanese culture was best done with the traditional Japanese material. The idea was to create everything in prefabricated parts and to make it possible to assemble it efficiently on site with just nuts and bolts. The materials and technology were brought in from various countries – materials from Canada, and assembly in different parts of Europe. Although it was the Japanese Pavilion, the construction and realization of the project were truly an international effort.

CK: Can you talk about the influence of Modernism on your work?

TA: With Modernism's technology came this utopian ideal that every man's life would improve. But what was built were simple boxes that didn't fulfill the manifestoes. That wasn't utopia, and there was a revolt. Post-Modernists looked to the decorative aspects of historicism. Basically, they made the same simple Modern box and added appliqué. My architecture is about making the box rich in its own way, by restructuring it with my own methodology.

CK: And that methodology is?

TA: It is still a simple box, but richness is added through the use of light, darkness, and incorporating nature. That is my declared fight. The architects of my era gave up on making the box rich. They felt the box was inevitable because of technology and economic constraints. But, instead of being trapped in the box, I seek freedom in it.

CK: Is this what you mean when you say you want to invest the box with human emotion?

TA: Human emotion was missing from the Modern boxes. I have to find ways to capture one's emotions. It's important to disturb people. Modernism rejected all that. It tried to make ideal situations – utopia.

CK: What did you mean when you wrote that you try to "betray expectations in buildings"?

TA: When you do something new, people resist. One has to overcome that first unexpected encounter. But people's hearts and spirits are attracted by foreign experiences. Most architecture is predictable. It's efficient economically and technologically. And it's dead. It's boring because it doesn't come out of a battle. It's based on government regulations and budget needs, not on a fight between existing conditions and the architect.

CK: The Ise Shrine has to be rebuilt in exactly the same way every 20 years because it's wood. It is eternal and new at the same time. The Japanese view of a religious building is very different from the Western view.

TA: Right, it's very spiritual; it's not a physical thing. Eternal things are impossible physically – like Ise. The only eternal things go from heart to heart, like the stories people tell their children. Architecture should be eternal. It has to remain somewhere and the question is where. To me, it should remain in the heart and spirit of the person who is experiencing it.

CK: Do you imagine your chapels and temple standing for eternity?

TA: No. It doesn't matter as long as they stay in people's hearts.

CK: What is architecture's biggest challenge?

TA: It's becoming too convenient. The office is a place to work and the house is a place to live. There's no place for the spirit to rest.

CK: And that's what you're trying to address?

TA: Yes.

CK: I heard a story that goes like this: you were visiting a site and a worker threw a cigarette butt into the mix. Your background as a boxer came out and you had a fistfight with the guy. Is that true?

TA: It's happened more than once. If you were caring for your son and someone abused him it would be natural to get upset. If you don't get upset, it's a little funny. One job superintendent heard he would be working on one of my jobs and he got scared. He started jogging for 30 minutes every day to train in case I attacked somebody. I'll quit architecture when I lose that emotion. You've got to really fight. ■

CIVICS LESSON

1976. Lincoln West: planning by Rafael Viñoly and Gruzen & Partners: 8.3 million sq. ft. (7.3 million approved by city); 4,300 apartments; 500,000 sq. ft. retail; 1 million sq. ft. offices; 22-acre waterfront park.

1985. Television City, by Helmut Jahn of Murphy/Jahn for Donald Trump: 15 million sq. ft.; 7,600 apartments; 1.3 million sq. ft. retail; 2 million sq. ft. offices; 14 acres open space; central 150-story tower.

1988. Trump City, Trump's second scheme, by Cooper Robertson: 14.25 million sq. ft.; 7,600 apartments; 1.5 million sq. ft. retail; 3.6 million sq. ft. offices; 750-room hotel; 21 acres open space.

Large-scale urban development proposals seem to lead increasingly to irreconcilable conflict, resulting either in endless stalemate or dismal compromise. A promising alternative process has been tried on Manhattan's West Side, where an overwhelming proposal by developer Donald Trump, itself whittled down from a truly outrageous earlier scheme, was transformed into a responsible plan, replete with public amenity.

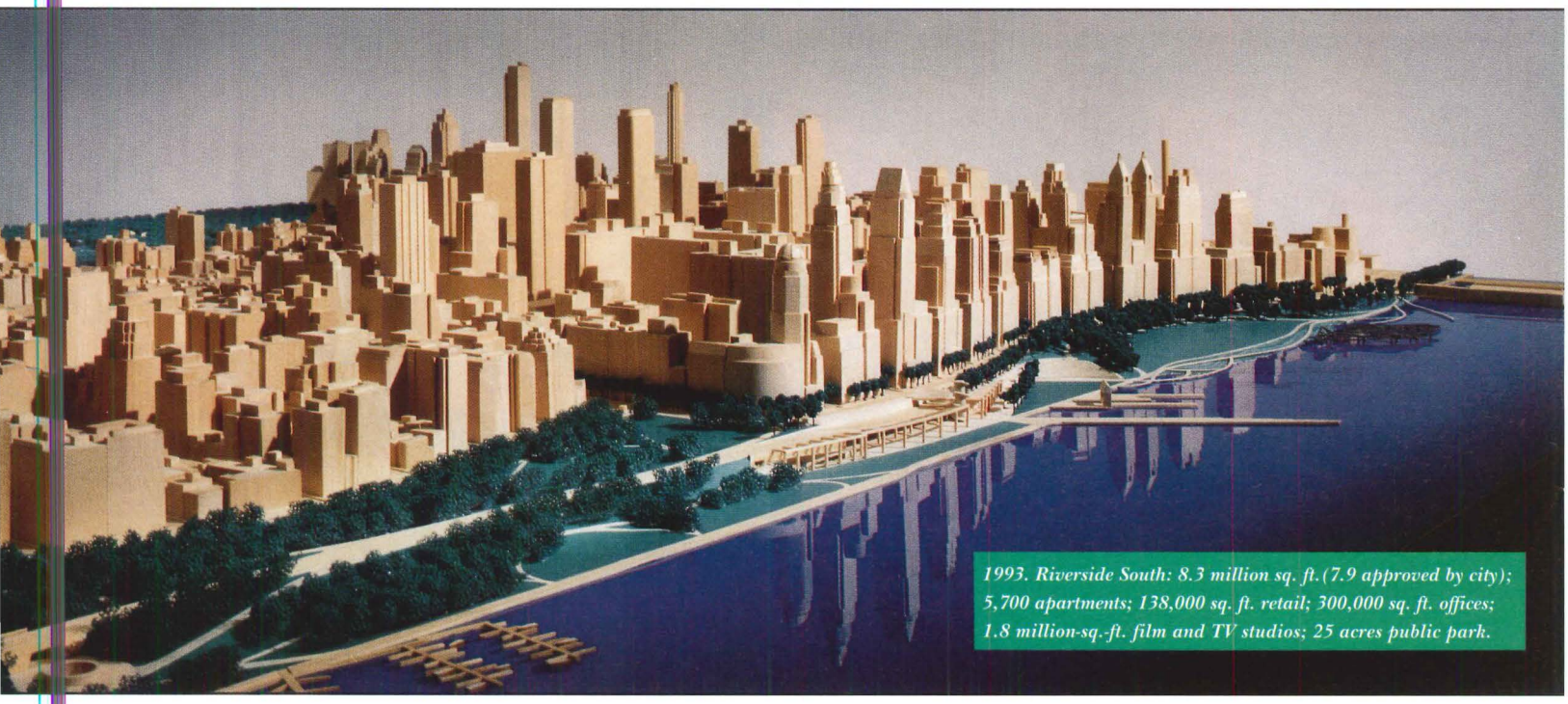
Most encouraging of all is that the transformation was based on a concept volunteered by an architect, Paul Willen, with environmental consultant Daniel Gutman, which grew out of their work with local organizations, including the AIA chapter. It won the backing of civic groups, then the support of Trump himself. A unique public-private corporation was established – representing six nonprofit organizations plus Trump – which commissioned the immensely detailed design by Skidmore, Owings & Merrill and Paul Willen. Although approved, with some modifications, by the city, the current plan may yet be blocked in court by some neighborhood groups that never bought into this remarkable process.

The setting for this civic saga is a 56-acre tract along the Hudson between 59th Street and 72nd Street, at the doorstep of Midtown Manhattan, one of many prime urban tracts all over the world that were saved from earlier development by their use as a railyard. For decades, various owners had been proposing plans for this unbuilt acreage. Trump acquired the land when he was riding high as the developer of flashy retail, residential, and casino properties; he even owned Trump Airlines, and his love life was making national headlines. You couldn't ask for a more appealing target for the fury that New York's civic and community groups can direct toward any development scheme.

Trump aroused just about everyone's ire in 1985, when he proposed a scheme by Helmut Jahn, with the world's tallest tower (150 stories) flanked by several 72-story structures on one great superblock, for a total of 15 million square feet of mixed uses; the inclusion of television production space – adjoining the area where the city's network offices and studios are already concentrated – gave the project its name "Television City." Nearly universal condemnation led to a somewhat less ambitious scheme by Cooper Robertson, envisioning 14.25 million square feet, with less extravagant towers.

By 1990, it looked as if this second Trump scheme would win city "certification" – a term that in New York merely signals a period of attack by opposition groups followed by strategic trade-offs. For any project not covered by as-of-right zoning, the city's adversarial review process virtually invites inflated schemes, so that every politician and neighborhood spokesman can take credit for a cutback or for a trade-off such as transit improvement dollars, and Trump's scheme appeared replete with goodies (baddies?) to sacrifice. Back in 1976,

On New York's West Side, a big-time developer's over-reaching plans have been transformed by civic collaboration into the instructive proposal for Riverside South.



1993. Riverside South: 8.3 million sq. ft.(7.9 approved by city); 5,700 apartments; 138,000 sq. ft. retail; 300,000 sq. ft. offices; 1.8 million-sq.-ft. film and TV studios; 25 acres public park.

after all, the Lincoln West proposal for this site had been approved, after so many costly trade-offs and concessions (final size: 7.3 million square feet) that the banks would no longer back the scheme.

Some West Siders, of course, opposed any new development on the site as threatening intolerable congestion and air pollution – an overworked claim, even if accurate in some cases. To some residents of the adjoining 5,050-apartment Lincoln Towers development, the abandoned railyard is seen as an ideal neighbor, with no adverse impact on traffic, transit, or river vistas.

Beyond its sheer size, prime location, and vehement neighbors, this site had a special focus for controversy: the Miller Highway, a dilapidated but essential elevated roadway running along its waterfront. The only surviving fragment of a much longer West Side Highway, this portion stands only because there is no surface road through the yards on which to divert its traffic. North of here, this highway becomes a parkway, threading through miles of Riverside Park, a century-old urban amenity (damaged but not destroyed by the parkway) that has been the inspiration for many other waterfront parks and proposals. The possibility of extending Riverside Park south through this tract was therefore a popular vision for this site. The proposal outlined by Willen and Gutman showed the highway bowing inland – onto Trump's land – and diving below an extension of the drive; highrise apartments lining this route looked like those along Riverside Drive itself; lower structures to the east would line streets that extended the Manhattan grid.

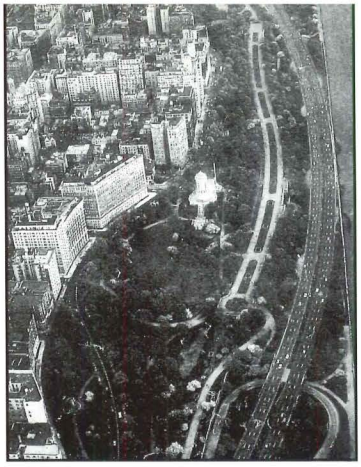
With Trump's massive proposal on the brink of city certification, the state began moving toward rehabilitation of the seriously deteriorated Miller Highway. An alternative plan that could win public support was sorely needed, and that scheme filled the bill.

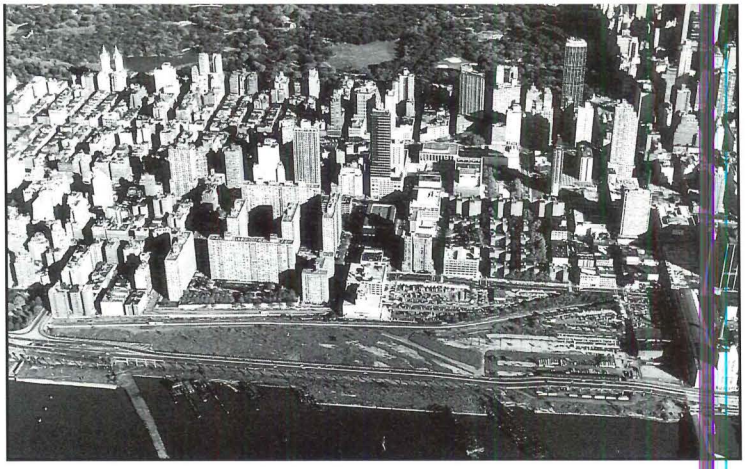
A Unique Collaborative Corporation

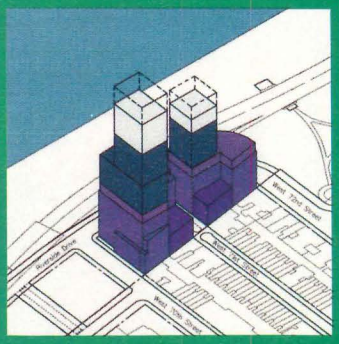
The pressure to present a better alternative cemented a coalition of civic-improvement organizations with various scales of concern – the Riverside Park Fund, the Parks Council, the Municipal Art Society (a much more comprehensive watchdog group than its name implies), the Regional Plan Association, and the National Resources Defense Council – with one community group, Westpride. Involved initially were other neighborhood groups, including the city's official overview group for this area, Community Board 7, which could not, in principle, collaborate on a proposal.

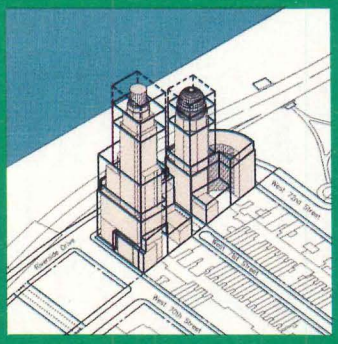
The incredible early accomplishment of this coalition was to enlist developer Trump himself as part of their group, as the seventh member of what became the Riverside South Development Corporation. As the price for joining, Trump had to agree to some major reductions in square footage (the Willen/Gutman scheme proposed 7.3 million square feet), the elimination of most of his proposed 3.6 million

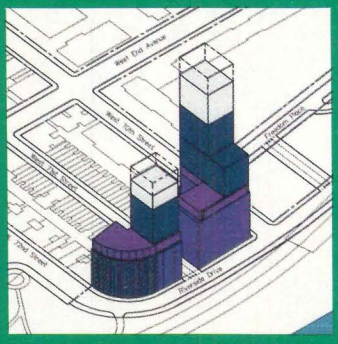
The existing Riverside Drive (right), shown here in a view south from about 94th Street, has a variegated wall of apartments facing Riverside Park; the grade-level parkway though it forms a most appealing highway, but separates residents from the water. The Riverside South site (far right) is a largely abandoned railyard; an active Amtrak right-of-way through it must be retained. The surviving portion of the elevated West Side Highway overlooks ruined piers.

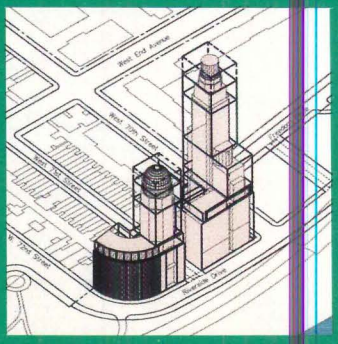












Apartment towers would form a street wall along the new Riverside Drive South, rising a consistent 150 feet above the drive before setting back for towers (a reduction by the city from the proposed 165-foot street wall). Maximum tower heights would rise to 18 stories at 59th Street to 41 between 63rd and 64th Streets, dip to 18 stories at the widest part of park, then crest at 49 stories at 70th Street and drop to 15 stories at 72nd Street. To the east, where they will adjoin a variety of existing buildings and open spaces – new and existing – the buildings are broken into smaller blocks. Zoning drawings for parcels between 70th and 72nd Streets show (left to right): building envelope diagram, viewed from southeast, indicating limits for lower floors, intermediate levels, and towers, with distinct controls for lowrise portions abutting low existing buildings; illustrative building diagram showing hypothetical actual construction, with floor area limits that would not fill defined envelopes; views of same diagrams from northwest.

square feet of office space, a sharp reduction in parking capacity, and the elimination of his 1.5-million-square-foot shopping mall. He also had to fund the planning corporation (up front, so that he could not withdraw if he was outvoted).

Why would the developer buy into such a reduced version of the scheme the city was probably about to "certify"? And why accept a decision-making structure he could not dominate? He no doubt realized that the unpopular scheme he had in hand could face years of costly debate and compromise. Then too, by 1990 the real estate market had slumped, and Trump's debt position was getting precarious; with low demand for office and retail space, why fight to defend these features? With a new consensus plan, Trump could anticipate quicker city approval, which would reassure his creditors and allow him to sell off parcels, thus enhanced, to other developers. And, notwithstanding his earlier glitzy output, Trump had gone to very reputable architects, even for his grandiose earlier plans for this site. Meanwhile, each of the organizations could join only after internal debates as to whether collaboration with Trump represented a kind of sell-out.

The new planning corporation was to be directed by Richard Kahan, who had been chairman of the Battery Park City Authority and CEO of the state's Urban Development Corporation, and was experienced in private development as well. To draw up the new master plan, the corporation retained architect Paul Willen, whose speculative scheme had been a touchstone for the coalition (and who had been involved in the 1976 proposal, as a member of Gruzen & Partners); then they chose S.O.M. as the large firm needed to collaborate on the highly complex design.

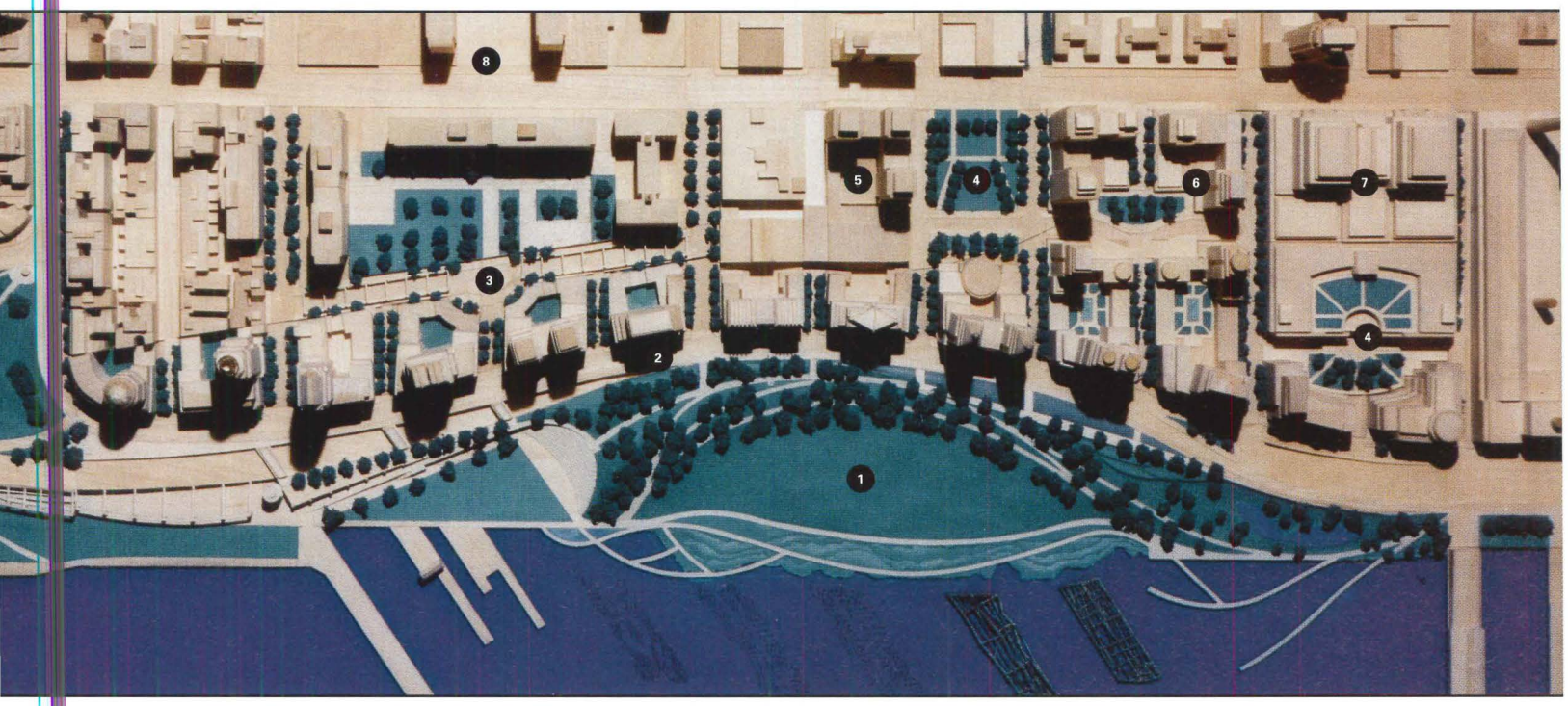
In March 1991, the corporation and the city announced a preliminary agreement for the project that envisioned 8.3 million square feet of construction: 6.2 million for residential units, 300,000 for office space, 138,000 for retail, and 1.8 million for the television/movie studios that Trump hopes to attract; 25 acres were reserved for park.

Artists as Collaborators

One departure in the design process was the participation of four visual artists in the design of the open spaces. These artists – Mel Chin, Joyce Kozloff, Mary Miss, and Fred Wilson – were not asked to propose specific art works, but to collaborate with the architect/planners (and landscape architects Michael Van Valkenburgh, succeeded by Thomas Balsley) on the overall shaping of open spaces. (Kahan had involved artists extensively, but in a less radical way, at Battery Park City.) With these artists, a scheme was developed that devoted the center of the park to a great arc-shaped lawn, sloping gradually to a soft edge at the river, with tidal grasses. Some remains of old piers were to be treated as found art, just offshore.

As soon as the open space plan underwent city review, and Parks

A model of the scheme submitted to the city for approval shows principal features of the plan.
1. The 21.5-acre extension of Riverside Park would feature a large sloping lawn at the center of the waterfront. (See page 123 for park particulars.)
2. The new Riverside Drive South would partially cover a relocated West Side Highway and would be lined with apartment towers (see facing page).
3. Freedom Place, a broad and virtually unused existing street, would get widened sidewalks, pergolas, and arcades to accommodate outdoor cafés – and mitigate the forbidding flank of the Lincoln Tower garage to the east. Commissioned art works would commemorate the martyred Freedom Riders of the 1960s, for whom the street was named. Details of this refurbishing remain to be resolved – with city and community input.
4. Two new squares totaling 3.5 acres would be created along the east edge of the tract – assets that tend to be overlooked in discussions of the project. In part they would reconcile Riverside South to two enclaves of projected development along this boundary (5 and 6, below).
5. The ABC site includes one building already completed for the network, plus possible housing and ABC expansion.
6. Manhattan West, a separately owned site, is to be developed according to a city-approved plan, with 950 apartments.
7. A TV and film studio complex proposed for the southeast corner of the development has not gotten city approval.
8. The existing Lincoln Towers development includes over 5,000 apartments.



Department concerns were factored in, modifications were required (see pages 122, 123). So disturbing were these changes to the artist members of the design team that they withdrew as a group from the project. Architects – for better or worse – are conditioned to compromises.

Before the city council's vote on the project, the Manhattan borough president's office reviewed the scheme very conscientiously, taking into account objections voiced in some 600 public meetings. Borough President Ruth Messinger asked for, and got, some significant changes. Overall square footage was reduced from 8.3 million to 7.9 million; streetwall heights (to the first mandatory setback) along the new drive were reduced from 165 feet to 150 feet. At Messinger's insistence, at least 20 percent of all apartments must be subsidized units for low- or moderate-income residents (assuming government subsidy programs continue; without support, the requirement is 12 percent); in contrast to the comparable Battery Park City development at the tip of Manhattan, these units must be on-site, not off in another borough. She got guarantees on the timely phasing of park construction, increases in agreed-upon contributions to the upgrading of nearby subway stations, and modifications of the park to accommodate games. The apparent willingness of the corporation and its planners to accept these concessions – except for the clearly resented changes in park design – could arouse suspicions of prearrangement behind the scenes.

The designation of one parcel for 1.8 million square feet of television studios was not approved, but was held over for later consideration, in part because the city is supporting development of studio facilities in the borough of Queens; in many respects studios seem an ideal use for their southeast corner of the site, compatible with adjoining commercial functions and generating relatively little traffic. Knowledgeable observers say that if any television company wanted to locate here, the city would not hesitate to approve.

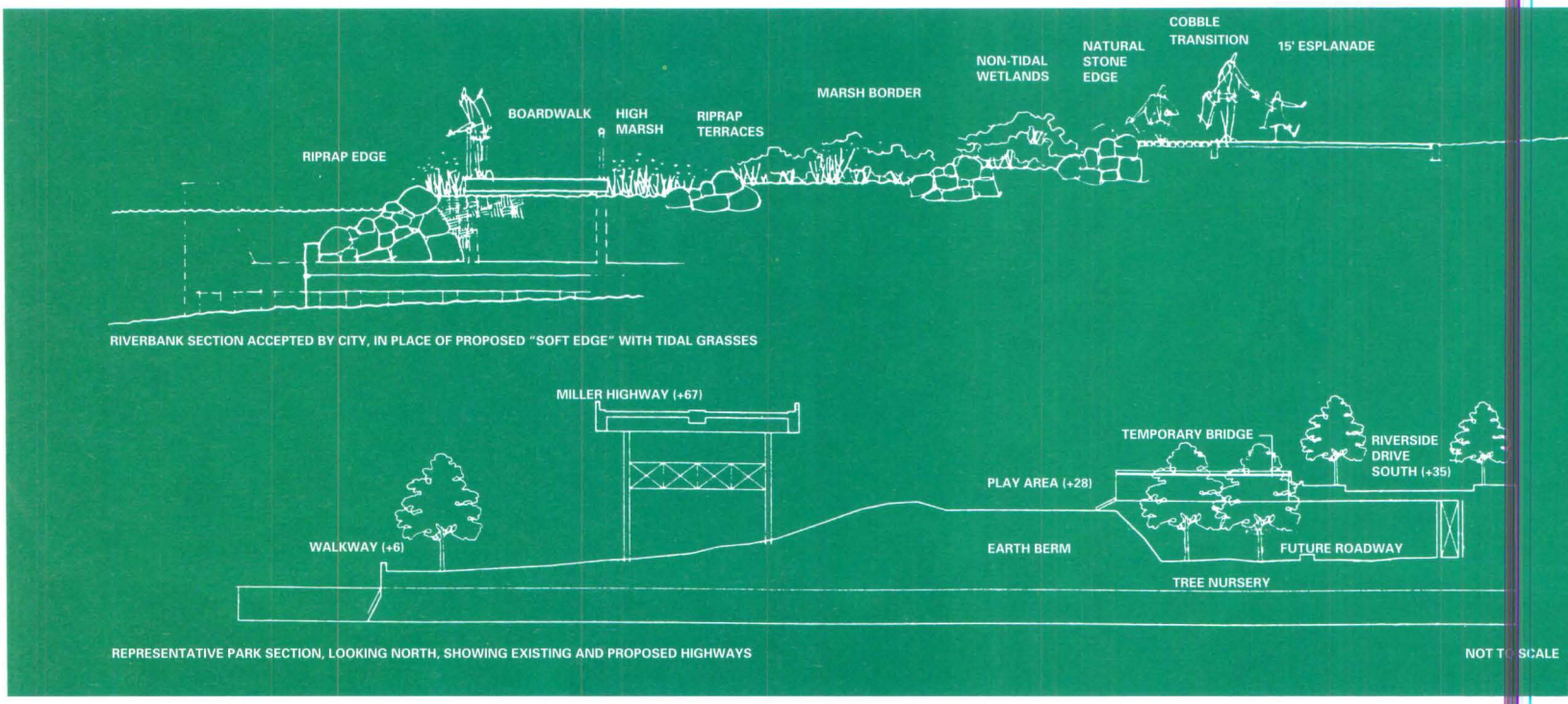
As the city insisted, planning for the waterfront park would make it viable even if the elevated highway were not to be demolished for decades. For it is one of the ironies of this development saga that, even though planning proceeded swiftly and even though the rerouting of the roadway has already won approvals and allocations up to the Federal level, the state is now carrying out a $62-million emergency rebuilding of the highway. (This repair "is not an irony, but an outrage," claims Kent Barwick, director of the Municipal Art Society.)

Approved But Not a Sure Thing

Once amended to meet the Manhattan borough president's approval, the plan won the mayor's support and the city council's approval with relatively little debate. It is by no means acceptable, however, to Community Board 7, on whose turf it would rise, or to the vociferous Coalition for a Livable West Side.

Riverside South Credits

Architects: *SOM/Paul Willen (Skidmore, Owings & Merrill; Paul Willen/Daniel Pang & Associates). Design partners: David Childs (SOM), Paul Willen. Administrative partner: Donald Smith (SOM). Urban design partner: Marilyn Jordan Taylor (SOM). Project Manager: Tony Vacchione (SOM). Senior urban designer: John Gerber (SOM). Senior designers: Jim Czajka (Willen), Shiming Tam (Willen), Roger Duffy (SOM). Senior urban designer: Lois Mazzitelli (SOM).*
Client: *Riverside South Planning Corp. Chairman: Richard Kahan. Vice President: Catharine Cary. Board: Richard Anderson, Regional Plan Association; Kent Barwick, Municipal Art Society; Frances Beinecke, Natural Resources Defense Council; Linda Davidoff, Parks Council; Bruce H. Simon, Westpride; Donald J. Trump, The Trump Organization; Peter Wright, Riverside Park Fund.*
Client consultants: *Housing Futures, Inc., project management; Daniel Gutman, environmental; Steven Robinson, architectural.*
Professional consultants: *Thomas Balsley Associates, landscape architect (Michael Van Valkenburgh in earlier design phases); Philip Habib & Associates, transportation engineers; HNTB, civil engineers.*
Developer: *The Trump Organization.*
Model maker: *Tenguerian Models, Inc.*
Model photographer: *©. Brian Nolan.*



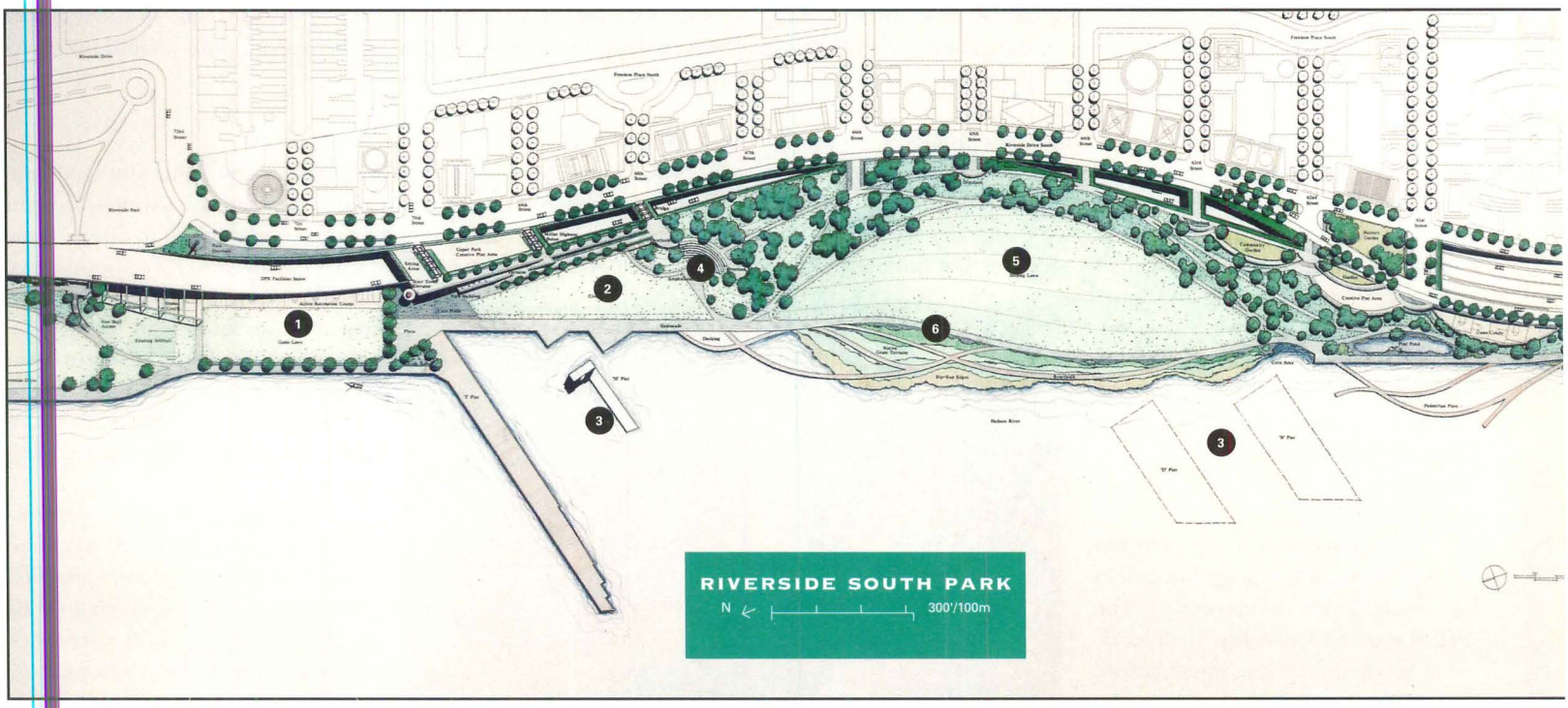
One knotty issue stressed by the neighborhood opponents is how sewage from the site will be treated. This area should be served by the new North River sewage plant some 60 blocks to the north, but that plant, despite its NASA-scaled budget, has been producing smells that infuriate its neighborhood, so making large additional demands on it is politically unacceptable. The corporation has expressed willingness to process its own sewage on site, but some city officials insist this isn't necessary, and the subject remains unresolved.

Sewage is only one concern cited by Community Board 7 in its resolution rejecting the plan. Acknowledging that during the planning process the Riverside South Corporation had engaged in "continuous frank exchange of information and opinion among planners, the community and the ... Department of City Planning," the board nevertheless declares many of their concerns unresolved. While several of their key demands were embodied in the city-approved scheme, they list dozens of others. They maintain, for instance, that there should be no more than 6.9 million square feet (5.5 million residential); the assertion that more area is needed for economic viability is, they say, not supportable in the absence of financial data (which Trump has not made public). They seek to transfer all control over park construction from the developers to the city (apparently forgetting how Trump swiftly rebuilt the Central Park skating rink after bungled reconstruction by the city had kept it closed for years). Some of their objections seem intentionally onerous, e.g., requiring pedestrian bridges over recessed portions of the highway to be the 60-to-80-foot width of city streets. A requested study of the long-unused railyards as a "trailer-on-flatcar" terminal seems no more than an obstructive tactic.

The Coalition for a Livable West Side is less polite in its objections than the community board, going beyond issues of density, air pollution, and sewage disposal to cite "increased costs to taxpayers" for construction of infrastructure, although the corporation says it will pay for all streets and utilities, at an estimated cost of $342 million. Also decried are "costs" of tax abatement programs, which have not been offered, but would probably apply to the affordable housing required in the project. The Coalition joined other groups last December in a lawsuit to prevent sewage from this site from being processed at the "overloaded" North River plant. Those involved in the planning note that Coalition members are concentrated in Lincoln Towers, whose apartment slabs now enjoy sweeping river views. It is apparent that earlier schemes for the railyard site showed a dip in building heights in the view corridor from Lincoln Towers, as if to placate these neighbors.

The plan seems to have acquired too much support now to be totally defeated, but it could be seriously impeded by lawsuits. The weakness of the economy could prove a greater obstacle for the construction of buildings that would carry the burden of street and park construction, transit improvements, etc.; ironically, the requirement

The final, city-approved plan includes several changes to the park proposal submitted by the corporation. The scheme before these changes can be seen in the model photo on page 121.
1. A games lawn for informal games of soccer, etc., was inserted near the north end of the park; extending under the relocated highway nearby are courts for basketball, handball, etc.
2. A 1.5-acre area of flat lawn adjoining the proposed park café.
3. Ruins of former piers (seen in photo, page 120), proposed for retention as relics of barge-to-rail transfers that once took place here, will be removed. One 750-foot pier, as proposed, will be rehabilitated for recreational use.
4. The proposed amphitheater was reduced in size after Parks Department review and turned slightly so that the park is not so sharply divided by it; seating was transformed into grass-covered terraces that will be inviting between programmed events.
5. A crescent of sloping lawn four blocks long would be the centerpiece of the park.
6. The proposed soft, "toe-in-the-water" river edge, with tidal grasses, was rejected by the Parks Department as a maintenance headache and replaced by "non-tidal wetlands" above stone rip-rap (drawing, facing page). Boardwalks looping out over the tidal river have been retained.



to include subsidized housing – which would have been a heavy liability in the 1980s – could be an asset in funding this project. And the development is large enough to become a factor in that economy, a fact not lost on construction labor unions, whose support has helped offset neighborhood objections. The key element of the highway relocation (another potential economic stimulus) may never actually take place, despite approvals from Washington on down; it would be ironic indeed if the shadow of the elevated road were never to be eradicated from the dearly-bought riverfront park.

Even if all goes as planned, what will we be able to say of the accomplishments of the architects, planners, and consultants in shaping this development? It is hard to quibble with the impulse to extend Riverside Park and its wall of bold yet genteel façades into yet one more sweeping S-curve. With the specter of Trump's earlier megashafts only a few years behind us and the need to placate the community, this essentially nostalgic image seems hard to question. A more recent precursor for the architecture contemplated in this plan's zoning and design controls is Battery Park City (a model attributable in large part to Alexander Cooper who, ironically, did the last discarded scheme for this Trump site). If the building design controls here are even tighter than those of Battery Park City, that is because, Kahan points out, there will be no semipublic authority in charge here, with powers of design review; all controls must be in writing. As Marilyn Taylor of SOM points out, glass-clad prisms and "tongue depresser" balconies are ruled out, but material choices are less restricted than at Battery Park City, being limited only to "masonry" for most exterior walls, although there are numerous qualifications for distinct treatment of entrances, building corners, window-to-wall proportions, etc.

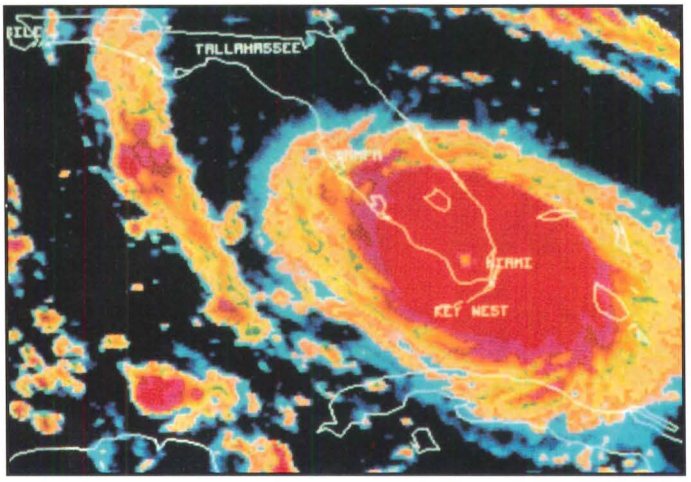
While Riverside South's buildings and open space show exceptional skill in dealing with spatial and political realities, one does have to wonder whether such strict design control is constructive. In a city that has nurtured such diverse talents as Raymond Hood, I.M. Pei, Gordon Bunshaft, and Richard Meier, must we only replicate architectural amalgams of Central Park West and Riverside Drive in their prime? Those old exemplars did generate a very civilized streetscape, as complements to adjoining parks. The design of the park here, too, has an Olmsted-derived romantic quality, notwithstanding the efforts of four artists on the design team; for a former industrial site just north of some working piers, something more daring might have been attempted. I am by no means sure that any Modernist or NeoModernist options would have produced a more habitable or uplifting, not to mention marketable, environment. But simply raising the question makes it quite clear that only formal evocations of the Good Old Days would have stood a chance in the political struggle that enmeshes America's urban design today. **John Morris Dixon** ■

Perspectives | Blown Away

Thomas Vonier reports from Dade County on the aftermath – and the lessons – of Hurricane Andrew.

Hurricane Andrew lumbered across Florida's Atlantic coastline near Miami early in the morning of August 24, 1992. By the time the giant had blown into the Gulf of Mexico four hours later, more than 80,000 homes were ruined, leaving 175,000 without shelter. At least 22 people were dead and scores more were injured.

Millions had no electricity, fuel, water, telephones, or transportation. Schools, stores, hospitals, and public utilities sustained stunning damage. The destruction was so vast that life remains badly disrupted today, despite the largest relief effort in U.S. history. Also in Andrew's wake were claims for insured losses totalling $18 billion and more than 700,000 cases, seven times more than for any other disaster. Direct losses may surpass $25 billion; beyond that, estimated lost economic output is nearly $3 billion for one year.



Andrew's eye over Dade County.

How Bad?

As shattering as it was, Andrew ranked only fifth among hurricanes to strike Florida in this century. The worst ever, on Labor Day 1935 (tropical storms were unnamed before 1950), was maximum-rated V on the scale of the National Hurricane Center (NHC); Andrew rated IV, packing peak gusts of at least 169 mph. Some believe that sustained winds hit 160 mph with peaks above 200 mph. Questions about sustained wind speeds may be argued technically for some time as courts seek to determine whether buildings had been constructed to meet the 120 mph sustained speed in the South Florida Building Code (SFBC).

Whether Andrew went off the charts or remained within the range of predicted weather events, its power was sufficient to damage key NHC wind measurement instruments. The strongest winds were at the storm's eye, a circle ten to twelve miles in diameter; many observers reported that tornadoes swirled around its edges.

Developed southern Dade County has always kept pretty much within limits of a corridor several miles wide, extending to either side of the Dixie Highway (U.S. Route 1) as it runs from Miami south to the Florida Keys. Moving perpendicular to this corridor, the storm cut like a mammoth router; the eye passed some 25 miles south of Miami, over the towns of Homestead and Florida City, wrecking almost everything in its path beyond repair.

Because the stricken areas were mainly residential – and most tragedy befell people who lost homes – much of the forensic aftermath has been about houses. Recent Dade County houses were mainly single-story wood frame slab-on-grade construction, with gable roofs framed from preassembled wood trusses sheathed in various wood sheet products and covered with asphalt shingle; Some two-story houses had first floors of reinforced concrete block, with wood-framed second floors and wood-truss roofs.

What Failed?

The incredible scale of the destruction – and the outraged residents who believed homes should have survived the storm – brought swarms of product manufacturers' representatives into south Dade County to assess the wreckage. Industry groups dealing with fasteners, roof coverings, siding, sheet lumber, and preassembled wood framing components (the main constituents of the stick-built housing industry) reached very similar conclusions about what went wrong most often and why.

Connections. Violations of fastening provisions in the SFBC were major culprits. Improperly attached shingles and sheathing materials were lost rapidly. Nails (or, more often, pneumatically-driven wire staples and nails) were missing, poorly driven, and spaced irregularly or too widely; many failed to connect adequately with structural members.Wood-industry calculations suggest that wind uplifts probably exceeded those anticipated by the SFBC at interior and exterior corners of typical houses. Also, improper uplift connections clearly failed to carry wind loads continuously to foundations, allowing entire sections of houses to separate at weak points.

Gable end-walls. The ubiquity of truss-formed gable roofs was closely matched by the extent of their failures. Wood trusses blew over from one end to another like rows of dominoes, often because lost roof sheathing robbed the assemblies of bracing and diaphragms. Gable-roofed second stories sheared off or bent like hinges from the top plates of ground-level end-walls, leaving roofs like hats blown askew. Also, the widespread use of suspended gypsum board ceilings (hung from metal lathe affixed loosely to the bottom chords of roof trusses) eased interior drywall finishing, but robbed truss assemblies of diaphragms formed by more securely attached gypsum board ceilings.

Envelope integrity. Large "picture" windows, French doors, and double entry doors – and especially doors on garages attached to living spaces – simply shattered or blew out. Field surveys found lost window frames, glazing intact, that had been anchored by only a few nails barely driven into framing. Debris pierced flimsy shutters and garage doors. Wind-driven projectiles shot easily through exterior walls made

of moisture-resistant gypsum board covered with siding. Only CMUs and securely nailed 3/4-inch-thick plywood sheathing resisted the hail of objects.

Nonresidential buildings. The storm also smashed through miles of commercial strip development, devastating concrete block, precast concrete, and preengineered metal frame buildings. Displacement of prestressed double-tee concrete structures was explained in one analysis as a result of the tees' being made "nearly weightless" by unpredicted wind uplifts that erased dead-load moments needed for stability.

Conceding that metal wall panels were blown off many warehouses and commercial buildings, a metal-building engineer said fasteners had not performed as expected and smaller framing members had bent, creating envelope breaches. But he also asserted that no primary structures had collapsed, because panels gave way. "What's worse?" he asked. "Losing some skin, which can be repaired or replaced, or losing the whole enchilada?"

A representative of a metal-building-system company said many damaged metal buildings were not properly designed, their components having come from a variety of sources rather than from a single supplier. He, too, warned that upgrading codes to strengthen secondary framing components – purlins and girts – could heighten risks of primary frame displacement or total failure: "Walls that are too rigid may work like sails, not giving way, but pushing everything over."

Also under fire: retail stores with three exterior walls in masonry, a steel-bar-joist roof and a fourth wall mostly of glass. "In every case I saw," said one architect, "glass-and-mullion systems gave way." Another advocate of stricter controls on display-window glass made the same point: "A showroom for a rental furniture company called 'Rooms-to-Go' really went. The glass end-wall popped and the roof took off like a big kite. With the roof gone, down came the walls." While others say protected glass curtain walls will readily withstand hurricane-force winds, the evidence was clear that such assemblies rarely emerged intact.

Tom Low

Elizabeth Plater-Zyberk

Tom Low

Typical failures.

Menacing Mobiles

People have agreed universally on one point: mobile homes did terrible damage. "They're evil," was how one P/A editor summed up the evidence he saw and heard. Countless investigators – many of them engineers, architects, and builders – are certain that homes would have suffered far less damage had they not been struck by huge sections of flying house trailers (and in one case by an entire unit blown off its site).

Subdivisions seeking to ban post-storm mobile homes had such steps challenged as technically unwarranted (units can be anchored, manufacturers insist) and discriminatory toward low-income groups. Prefabricated trailer homes could again become a leading form of low-cost housing in the region.

Not Just Buildings

Andrew also devastated native and imported plants. One architect remarked that the giant royal palm trees flattened at the Fairchild Tropical Gardens (as seen on *Miami Vice*) and live oaks felled in Coral Gables were architectural and urban treasures of greater merit than many lost buildings. "Trees take longer to grow back," she said, "and we will miss them more."

Trees also caused great damage. Obvious tradeoffs are involved; the tropical foliage possible in Florida is essential to livability, but newly-planted gardens may follow storm-inspired guidelines:

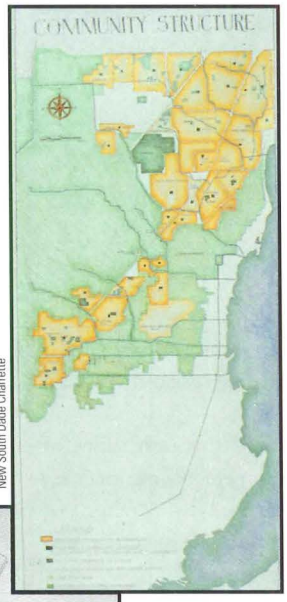
- Keep large trees away. Some houses were damaged first – often not very seriously – by falling trees and limbs. All wounds can give powerful storms a foothold for worse damage. Even if large trees are not kept entirely out of falling range, take care in planting.
- Plant young and small. Allow plants to develop full root systems in place; these are much safer than the truncated versions often found with larger transplants. Root balls confined to pockets carved in limestone spun out and ruptured at the trunk base, probably because roots were not allowed to develop extensively. A number of 90-year-old trees with large root systems lost limbs and suffered snapped trunks, but had good prospects for recovery.

Was the Code Sufficient?

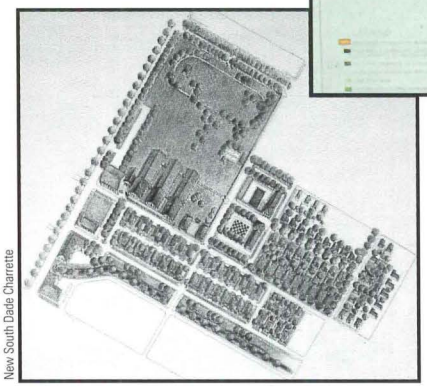
Hurricane provisions in the SFBC are said to be the most stringent in the country. The National Forest Products Association (NFPA) – while asserting that most houses built in strict accordance with the code performed well – concluded that certain provisions needed strengthening, while others should be added.The NFPA stressed bracing of gable end-

walls, urging the use of continuous, balloon-style framing and stronger uplift connections along top plates. Their calculations also revealed that "withdrawal loads [on sheathing and shingles] appear to have exceeded ultimate withdrawal capacities for many fasteners."

An independent engineer, saying he found the SFBC "weak on pressure coefficients and gusts," said only hammer-driven, round-headed nails should be used to attach sheathing and shingles. "The code must require nails every four inches along sheathing panel edges and six in their fields, driven directly into framing members," he concluded.



New South Dade Charrette



New South Dade Charrette

The New South Dade charrette identified 28 distinct communities in its study area (top). Community centers like Caribbean School (above) were proposed to strengthen these communities.

What Might Have Helped?

Andrew-inspired changes are certain to be made in residential construction details and building codes for hurricane-prone areas. But differences of kind, not just degree, also need to be considered. Lessons may lie in history.

Dade County's buildings circa 1900 reflect the region's unique "frontier" past. Typical examples of "frame vernacular" include plantation houses and utilitarian buildings for agriculture and railroads. Features typical of such buildings helped many to weather the storm quite well, and could be applied to new homes and other facilities:

Heavy-timber-style woodframes and joints. Balloon framing (with continuous members from foundation to roof, rather than discontinuous platform framing), let-in braces, pinned mortise-and-tenon and rabbet joints bolstered overall strength and resistance. These techniques were stronger (or at least more reliable) than the hurricane straps and fasteners used in platform-style wood-frame construction. Flexibility inherent in frames built by older methods probably helped them to endure sustained heavy winds. They were willows that bent, not rigid boughs that broke.

Roughly square floor plans and small rooms. Strength is inherent in the squat, approximately square floor-plan forms of pioneer-era buildings. Such strength is buttressed by interior non-loadbearing framing for relatively small rooms. Some blame faddish large living spaces for inherent structural weaknesses. "What I call 'California Design' got wrecked," said a Florida architect after touring hundreds of smashed residences. "Typical Coral-Gables-type houses, a hybrid of tropical and mission styles, with masonry, small rooms, low-slung hip roofs, and courtyards, did much better."

Hip roofs. These did better than gable roofs in part because they provide self-bracing and add triangulation to overall building form. Hip roofs also present an inclined but low profile to direct winds, minimizing huge air pressure differentials that can build above both flatter and steeper roofs.

Small overhangs. Despite its tropical climate, intense sunlight, and heavy rainfall, Florida's older buildings had almost no overhangs (not to be confused with widely-used verandas or porches). This denied key places for strong wind uplifts to peel back roof corners.

Heavy roofs. Did hefty ballast from terra cotta tiles resist roof liftoff better than asphalt shingles? Maybe, but such tiles were used on many roofs that failed completely; ballast is probably useless (and maybe a disadvantage) if framing is weak and roof forms are improper.

Raised foundations. Many older wood-frame buildings were simply set atop limestone or coral blocks, with frames weakly tied (if at all) to foundations. But open spaces between ground and building may have provided vital relief for exterior wind pressures. Raised foundations also kept interiors dry (when envelopes were not otherwise penetrated) in flooded areas.

Storm shutters. Openings covered by sturdy, well-anchored, unslatted shutters resisted both wind and projectiles, preventing excessive pressurization (or evacuation) of interiors. Louvered shutters were too weak, while those not anchored by strong hardware secured to structural frame members simply blew off. Unreinforced plywood nailed over openings gave no benefit; most boards became destructive projectiles after quickly blowing off. One architect's reinforced folding plywood shutters, mounted on preinstalled bolts anchored to exterior walls, worked very well.

Venting. A well-battened house need not be airtight. Leaky buildings, as older ones tend to be, as well as newer ones with balanced (and waterproof) air intakes and outlets, withstood the storm better than those whose airtight envelopes were suddenly breached by debris or frame displacement.

Porches and side-builds. When well anchored and sturdily made, shed-style appurtenances added strength. Some were pushed into their "host" structures, but similar buildings without such features were often destroyed totally.

Braced interior walls and partitions. Even if they play no structural role normally, well-braced interior walls help structures resist racking under intense wind loads. Removal of interior partitions in some older frame structures may have weakened them measurably.

Architects and Emergency

Architects immediately helped with recovery. Local AIA chapters and the University of Miami established an Architecture Recovery Center to provide toll-free telephone lines staffed by volunteers, seminars, and lists of professionals available for news interviews and appearances. Bulletins and excerpted codes gave official statements

"Rebuilt houses are every bit as lamentable as those destroyed – maybe worse."

on the types of work allowed without permits. They advised on dealings with contractors and showed typical details. They also helped to avoid worse damage (for example, by describing how best to dry interior woodwork) and covered electrical and mechanical system safety.

Next Steps

Efforts to rebuild southern Dade County have outstripped the pace of construction practice reforms and code reviews. "The first things back in shape here," said a claims adjustor," were fast-food outlets, liquor stores, and strip joints to serve all of the 'carpenters' who arrived driving every pickup truck south of the Mason-Dixon Line."

He and others fear that the quality and hurricane resistance of rebuilt houses are every bit as lamentable as those destroyed – maybe worse. Construction techniques and materials pegged (unjustly, say some) as the big offenders – pneumatically driven staple fasteners, oriented strand board, compressed particle board – are now banned, but many repairs are uninspected, and hasty jobs are rarely of good quality. There is also the problem that insurance policies pay only to replace what existed at comparable value – not to upgrade or comply with new codes.

"Builders, developers, inspectors, craftsmen, and insurance companies are the heavies in the press," said an architecture professor, "but purchasers deserve blame, too." He says buyers were uncritical, seeking design features clearly unsuited to South Florida's climate and the certainty of severe weather. If buyers demanded houses more appropriate to the region – perhaps incorporating traditional house features described above – builders would be inclined to produce them, he says. "Maybe a lesson has been learned," the professor concluded: "If you don't pay now for the few extra costs involved, you will surely pay later and pay more."

Some structural engineers say all home designs should be reviewed professionally for hurricane resistance. "Only 1 percent of the damaged buildings involved an engineer," said one. He estimated review by a licensed structural engineer would add about 3 percent to the total cost of a single-family residence. "If necessary," he said, "fees should come from architects."

One architect rejected this idea, noting that "most buildings weren't designed by anyone," but agreed on the need to design better hurricane-resistant details and said architects lack knowledge of severe wind behavior. Stiffening prescriptive codes would help, he said, but would not necessarily cover unusual structural configurations or nonstandard uses of materials.

Once hurricane-resistant designs exist, however, everyone agrees the key lies in construction quality – and that only careful, frequent, on-site inspections can assure it.

Planning for the Future

Supported by the Knight Foundation and others, the University of Miami has conducted a series of post-hurricane design charrettes and conferences. Sessions have drawn up plans for new centers that could be rebuilt in 28 communities over an area of 140 square miles – where even before Andrew there had been no real centers.

"The American suburb broke down totally," said a Miami architect. Even if undamaged, cars could not move and people had no way to cope. "Physically," he said, "there were no real 'communities.' " Like others, he saw Andrew's aftermath as an opportunity to reverse antiurbanism, to recover not only from disaster but also from the "illness" of distant suburbs by reintroducing new urbanizing principles. Now, proposals abound to integrate retail, residential, and public buildings, breaking existing patterns of vast housing developments separated by great distance from shops, schools, fire and police protection. But such schemes require changes in policies, development rights, and even ownership.

Are residents prepared for major change? "People aren't always up to social experiments after an ordeal like this," said a sociologist at a post-storm seminar. But he then quoted a Colombian earthquake survivor: "If we are just to live as we did before, why the earthquake?"

Architects hope people will live differently from before; a new master plan for Florida City ("accepted in principle," according to its authors) would create an urban center and mix commercial with institutional and residential uses, including public buildings specially hardened against disaster. New regional plans would restore ecological zones damaged by prior developments.

While the authors of such schemes remain committed to sounder urban planning principles and are enthusiastic about their prospects, they also acknowledge that past mistakes are being repeated, although records from 1900 onward document six years as the longest interval between hurricanes in Florida. They insist that Miami and other high-risk areas had better learn from misfortune in order to weather it better next time.

Yet even if the boldest reforms are not finally implemented, Hurricane Andrew will have lent new vigor, insight, and urgency to debates on patterns of suburban and exurban life. The storm has elevated the level of planning and regulatory deliberations, as well as sensitivity to small-scale design decisions – not only to prepare for the next storm, but to improve the quality of life until then. **Thomas Vonier** ■

The author, P/A's correspondent in Washington and Paris, traveled to Miami for this article.

Acknowledgments

Thanks to the University of Miami School of Architecture (Roger Schluntz, dean; Rocco Ceo, Jorge Hernandez, Thomas Spain, Denis Hector, and Jaime Correa, faculty members) and to Andres Duany and Elizabeth Plater-Zyberk Architects, the National Forest Products Association, the U.S. Department of Agriculture Forest Products Laboratory, the National Institute of Standards and Technology, and the American Forest and Paper Association.

Perspectives | The Roads to Rome

Donald Prowler reports on foreign study programs

Increasing numbers of American architecture students are seeking an opportunity for structured study abroad. According to the 1993 edition of "Special Programs," an annual survey published by the Association of Collegiate Schools of Architecture (ACSA), more than 75 architecture schools currently offer foreign study programs. This number has risen significantly from the 40 schools listed in the first ACSA survey of such programs in 1983.

Of the 29 countries listed in the 1993 survey, Italy is clearly the most popular destination. The Italian programs offered by American institutions differ dramatically. Many are summer traveling programs, featuring bands of itinerant faculty and students. Others occupy temporary premises that change from year to year. Still others, most notably the University of Washington's program, are housed in permanent facilities with a year-round staff. "Each year it seems more schools are investing in long-term facilities, transforming traveling programs into full-fledged bases," reports Richard McCommons, ACSA Executive Director. "Another trend is that schools are also going off to non-traditional, non-Western destinations; Japan is increasingly popular, and there are now programs in India and Thailand as well."

Most of the multidisciplinary American schools with permanent bases in Italy are loosely affiliated through the Association of American Collegiate and University Programs in Italy (AACUPI). Its mandate is largely administrative; it helps its American affiliates find their way through the Machiavellian maze of Italian bureaucracy.

To avoid the inevitable hassle, many American schools choose to rent space from established programs rather than develop their own. For example, studios in the University of Washington's newly renovated apartments in the Palazzo Pio in Rome were rented during the 1992-1993 academic year to Rensselaer Polytechnic Institute, the University of Miami, Ohio State University, and University of Oregon for one or more semesters. Typically, each school provides its own faculty and curriculum, although the services of guest lecturers or visiting scholars are occasionally shared.

Since many schools charge a premium for foreign study that may range from several hundred to over a thousand dollars per semester, most universities do not make foreign study a requirement for graduation. Penn State University's Florence-based program, however, is a B.Arch. undergraduate requirement. Of the programs based in Rome, only the University of Notre Dame insists that its architecture students spend a full academic year in residence as a professional degree requirement. More typical is the Temple University program housed at the Villa Caproni near the Piazza del Popolo. Study at the center is an elective offering open on a competitive basis to about a dozen well-qualified students each semester.

Most schools indicate in the ACSA "Survey" that their foreign study programs are open to students from other institutions. Some are also open to practitioners seeking a structured sabbatical experience. However, schools do not generally advertise these opportunities, so interested practitioners call individual schools for information. (The survey is available as a starting point.) Initial inquiries should be made at least one year in advance, and should take into consideration that established programs in popular European destinations are usually well-subscribed, with waiting lists the norm.

While students share the foreign milieu, their academic experiences are quite varied. Some of the schools offer highly structured curriculums, with courses, deadlines, and formal review schedules. Others are more laissez-faire, based on the assumption that students can best experience and interpret their new environment on their own terms. In Rome, the divergent pedagogical philosophies are typified by the programs run by the University of Washington and the Rhode Island School of Design (RISD). Both programs are venerable, with the University of Washington in place for over 20 years and RISD recently celebrating its 25th anniversary.

In the two-semester RISD program, architecture students are a minority (there were only three this year) in a studio dominated by painters, sculptors, and graphic artists. Reflecting this emphasis, Friedrich St. Florian, faculty member in residence this year, discouraged his architecture students from drawing buildings during the entire first semester, and encouraged freehand sketching and independent studies. "There will be time for buildings later," St. Florian argues.

The University of Washington program has been guided from its inception by Professor Astra Zarina, considered by many to be the *grande dame* of Rome programs. A forceful and committed educator, Zarina has similarly strong views on architectural education. "I am totally disinterested in free form," she asserts. "Our students need challenging, creative discipline." Consequently, the 15 to 18 students selected on a competitive basis for the program each semester are subject to a rigorous and tightly choreographed curriculum of language study, site visits, documentation of archaeological and historic sites, field trips, and lectures. The semester culminates in individual presentations of a design project drawn in a prescribed format in pen on mylar.

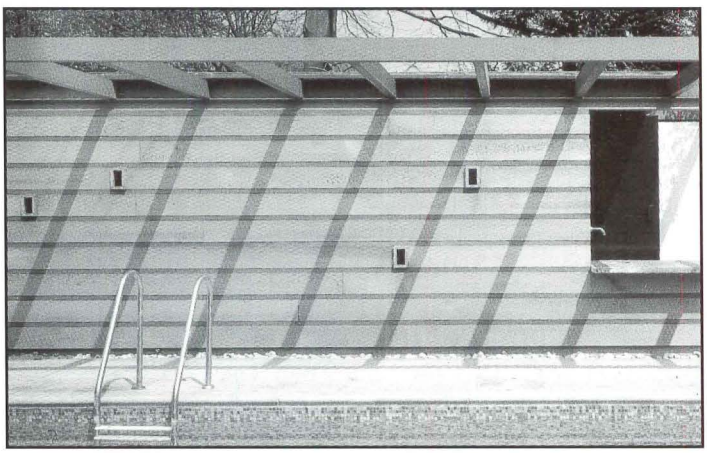
The rigor was not lost on one of Zarina's prominent former students. "Astra is an exceptional teacher with profound insight," says architect Steven Holl. "My studies with her in Rome in 1970 helped me form the elements of my architecture philosophy, which I carry on in my work today. Her insights allowed me to think of New York as our Rome – a surrealistic city with a similar rusting capacity to provoke thought and wonder."

Regardless of the particular academic approach, there is no doubt that the benefits of foreign study are enormous. What is less clear, however, is how American architecture schools will be able to sustain its premium cost, given financial pressures and escalating demand for student aid. **Donald Prowler** ■

The author, an architect who teaches at the University of Pennsylvania, is PA's Philadelphia correspondent.

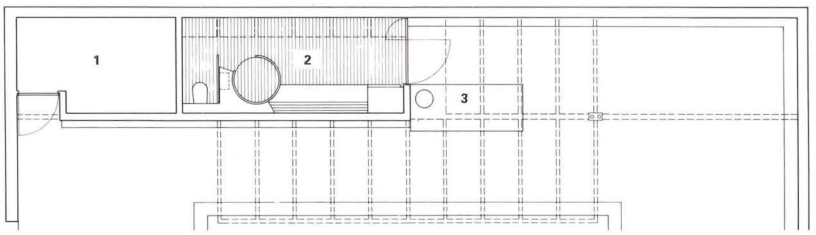
HAMPSTEAD POOL HOUSE

This poolside structure is testimony that tiny buildings can go hand in hand with expansive concepts. Designed by Tim Ronalds, a London architect, it has the simplest of programs: storage space and a changing room occupy a narrow slot of space between a pair of garden walls. Seen from the pool, the wall clad in cedar and mahogany seems like a freestanding object, sensuous and hermetic, like something from Japan. It is set in front of the brick wall, finished in stucco, that marks the lot line (the pool is in one of London's garden suburbs). Joists span the changing room within; their spacing and length is matched by those cantilevered over the patio. Refined in concept as well as execution, the structure is a modern pergola, elongated to imply a horizontal flow of space. Ronalds's efforts harmonize with the client's motive for the poolhouse – to make his pool more amenable for family gatherings. His new structure, its modesty notwithstanding, implies a sense of largesse – the attributes of a gracious host. **Philip Arcidi** ■



Photos: Charlotte Wood

Seen on the long axis (above), the pool house is an open-ply structure of walls and joists. The poolside view (left) offers a minimalist wall of cedar and mahogany.

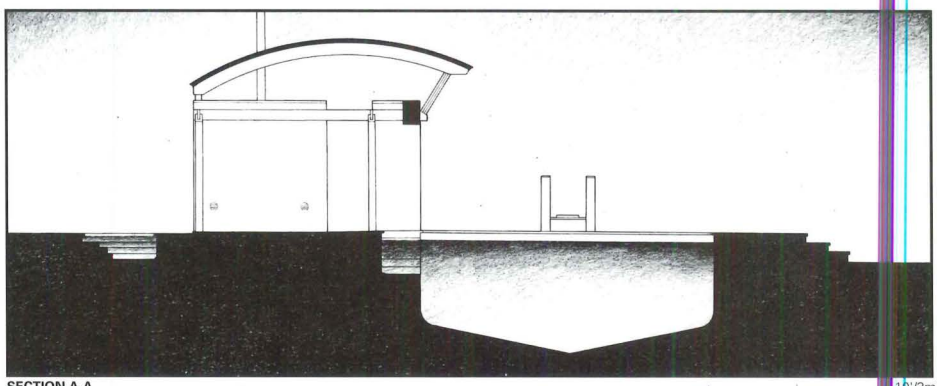


FLOOR PLAN **1** STORAGE **2** CHANGING **3** PICNIC BAR N 10'/3m

TWO POOLHOUSES / ONE CLIENT

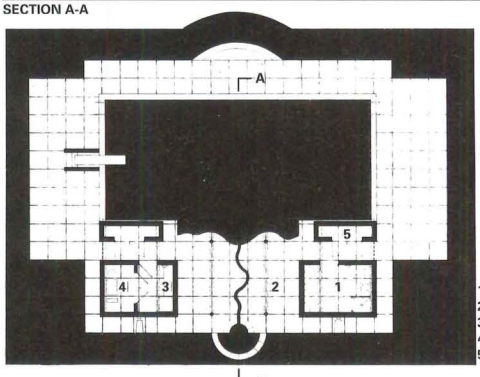
It is a rare client who gives an architect complete design freedom. But that is what Ford, Farewell, Mills & Gatsch encountered with these two poolhouses, one in northern New Jersey and the other on Fisher's Island, New York, both for the same client. "She asked us to do something special with the first one," says Michael Farewell, "and with the second she gave us free rein."

Such freedom can be debilitating, so Farewell and his project team imposed restrictions on themselves, resulting in two disciplined, but very different designs. The New Jersey project, designed first, is a symmetrical and highly rational structure, with two stuccoed blocks (one containing the changing room, the other a bar and an equipment room) on either side of an open-air breezeway. Above these spaces arcs a metal-clad wood roof supported on curved, laminated wood beams. The volume of the pavilion matches that of the pool, says Farewell, "as if we excavated the pool and built the poolhouse of it." This idea of positive/negative continues in the contrast between the poolhouse's formality and the



SECTION A-A

10'/3m



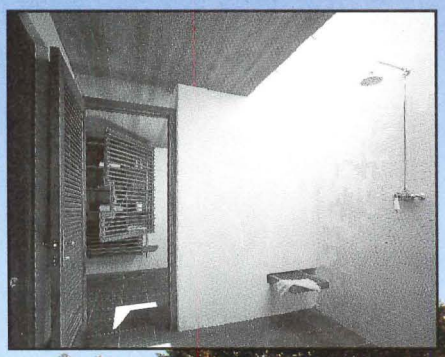
PLAN

N

20'/6m

1 CHANGING
2 BREEZEWAY
3 BAR
4 EQUIPMENT
5 STORAGE

The edge of the New Jersey pool curves in under the poolhouse roof (photo above). The building itself stands as an isolated object in the backyard (top right).



Album

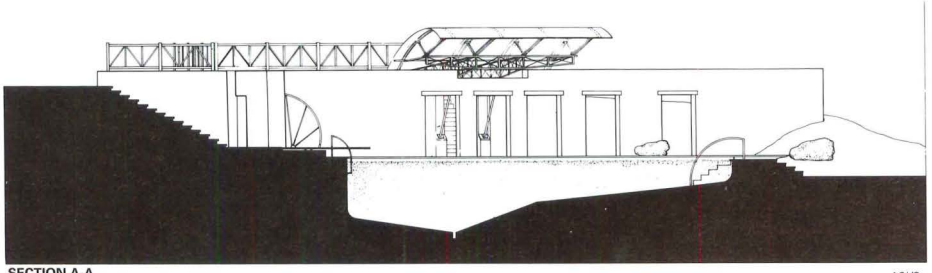
asymmetry of the nearby ranch house. The poolhouse "is almost anti-contextual," says Farewell, "floating dreamlike out in the backyard."

If the New Jersey building is rational and aloof, the one on Fisher's Island is like a ruin, rooted in the earth. Its thick granite retaining walls look as if they once were the foundations of some archaic structure, and its changing and shower rooms are dug into the ground like a cave.

The poolhouse's granite-faced concrete walls recall those of the adjacent house, and its wing-like fabric sunshade, supported on curved teak beams, evokes the sailboats and airplanes that connect the island to the mainland. And its plan is "more ritualistic," says Farewell. The main access stair, for example, is cut into the hillside and is on axis with the diving board and the view out over Long Island Sound. Likewise, the long walls, with their multiple openings, seem like a stageset in a Surrealist play.

A poolhouse is not the sort of commission many architects receive, and given the fiscal austerity of the 1990s, it may become even less common. But these two projects show how much room there is, within this building type, for formal exploration.

Thomas Fisher ■



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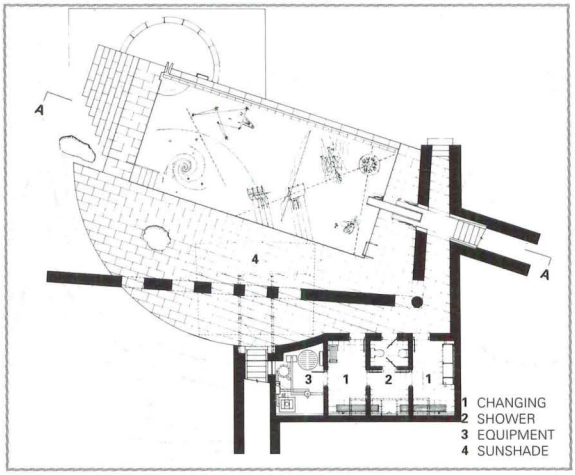
10'/3m



PLAN

N

20'/6m

The stone walls of the Fisher's Island poolhouse double as retaining walls (top), with skylighted changing rooms buried in the earth (top right).

Books

Russian Recovery

Western scholars of Russian architecture are an intrepid but small brigade.

Anatole Senkevitch, Jr., reviews three of their latest books.

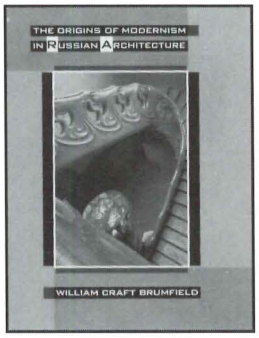
Books of Note

Miami: Architecture of the Tropics *edited by Maurice Culot and Jean-François Lejeune, Center for the Fine Art, Miami, and Princeton Architectural Press, New York, 1992, 190 pp., $39.95.*
Historic and contemporary Miami offer an abundance of vernacular traditions. The book was published for a traveling exhibition by the Fondation pour l'Architecture in Brussels.

Frank Lloyd Wright's Hollyhock House *by Donald Kaufman, Dover Publications, New York, 1992, 118 pp., $10.95.*
The Hollyhock House (1920–21) is analyzed from the perspective of the "turbulent" relationship between the architect and the client, Aline Barnsdall.

Czech Cubism: Architecture, Furniture, Decorative Arts *edited by Alexander von Vegesack, Princeton Architectural Press, New York, 1992, 344 pp., $65 cloth, $39.95 paper.*
If you want to be enlightened about a little-known aspect of Modernism, see this book. It is an extensive and well-crafted document published in conjunction with a traveling exhibition.

Barragán *edited by Isabelle Bleecker and Andrea E. Monfried, Rizzoli, New York, 1992, 167 pp., $45.*
Barragán's architecture, a serene synthesis of Modernist and indigenous Mexican traditions, is thoughtfully documented by essays, project descriptions, and Armando Salas Portugal's lush photos.



Reshaping Russian Architecture: Western Technology, Utopian Dreams *edited by William C. Brumfield, Woodrow Wilson International Center for Scholars and Cambridge University Press, New York, 1990, 222 pp., $59.95.*

The Origins of Modernism in Russian Architecture *by William C. Brumfield, University of California Press, Berkeley, 1991, 343 pp., $75.*

Le Corbusier and the Mystique of the USSR: Theories and Projects for Moscow, 1928–1936 *by Jean-Louis Cohen, Princeton University Press, Princeton, New Jersey, 254 pp., 1992. $49.50.*

The Western historiography of Modern Russian architecture may gradually be coming of age: not long ago, it would have been impossible to review books like the trio assembled here. All three probe, with varying degrees of success, the dynamic factors that shaped the manifold venues, values, and agendas of the Russian architectural scene.

Some preliminary remarks will help place these works in perspective. *Le Corbusier and the Mystique of the USSR* is a translation of a major work by the French architectural scholar Jean-Louis Cohen. *The Origins of Modernism in Russian Architecture,* the first English-language monograph devoted to the Russian avant-garde of the turn of the 20th Century, is by William C. Brumfield, a scholar of Russian literature and thus outside the discipline of architectural history and criticism. Brumfield also edited *Reshaping Russian Architecture,* a compendium of scattered discoveries and insights by scholars from different disciplines, united by a desire to examine the forces that accompanied Russia's industrialization. The heterogeneity of this material is due to the authors' divergent approaches, values, and lines of thought. But it is also partly due to the scarcity of Western architectural historians specializing in Russian architecture. This shortage, not surprisingly, has served to attract a handful of specialists from other disciplines – from Russian literature to Russian social, cultural, and political history – to fill the void. If the results are not always what one would expect in the more developed areas of architectural inquiry and historical scholarship, it is because the American academic community has not provided the support needed to produce more substantive results. Although faculty positions have justifiably been created in departments of art and architectural history around the country for the study of Islamic, Chinese, Japanese, Near Eastern, and other cultural traditions, no such positions have yet been established for Russian art or architecture, despite the growing interest in and demand for scholarship on the subject. Works by individuals in other disciplines, often lacking a firm grounding in architectural discourse and historical analysis, thus perform admirable yeoman service in helping to fill glaring gaps in our literature on the subject.

Reshaping Russian Architecture: Western Technology, Utopian Dreams, grew from presentations at the Kennan Institute for Advanced Russian Studies. Despite its unevenness, it provides a useful matrix for examining the development of 20th-Century Russian architecture and the transformation of imperial Russia into an industrialized Soviet empire. Blair Ruble's initial article, "From Palace Square to Moscow Square: St. Petersburg's Century-long Retreat from Public Space," discusses competing Russian notions of urban space advanced successively in the planning of St. Petersburg/Leningrad; these range from the recurring propensity to express state power in the 1830s and again in the 1930s and 1940s to the more innovative desire to create progressive new cultural and financial ensembles at the turn of the century. Ruble's second piece, "Moscow's Revolutionary Architecture and Its Aftermath: A Critical Guide," offers a tour of individual Modernist structures. He suggests that the effort to create an avant-garde architecture in Moscow was doomed because it could not satisfy the social demands generated by 1930s industrialization.

Brumfield's first essay, "Russian Perceptions of American Architecture, 1879–1917," provides a valuable glimpse into prerevolutionary Russia's fascination with the American urban architectural scene, particularly the skyscraper. His second contribution, "Architectural Design in Moscow, 1890–1917: Innovation and Introspection," is, in significant measure, an informed distillation of Evgenia Kirichenko's many published studies detailing the building activity that took place in Moscow at the turn of the 20th

(continued on page 158)

Circle **No. 327** →

New Products and Literature

New Products and Literature

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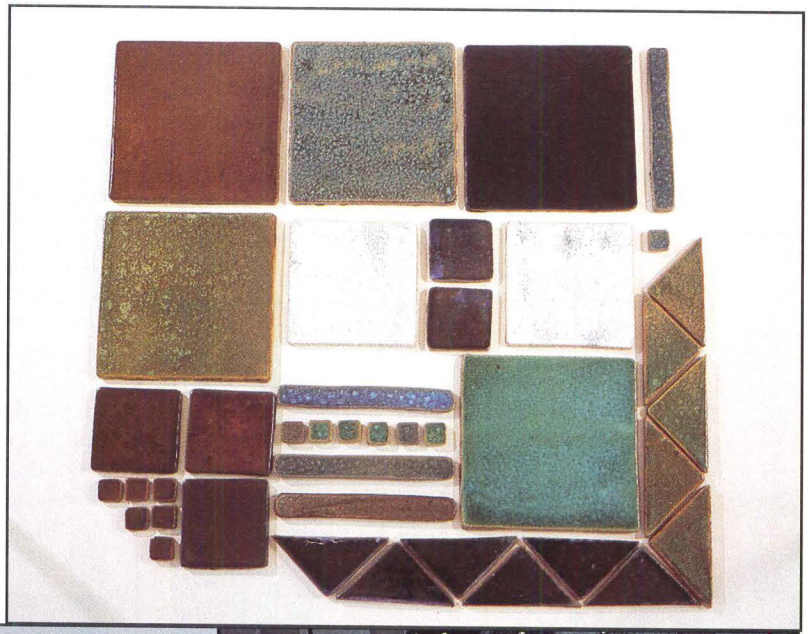

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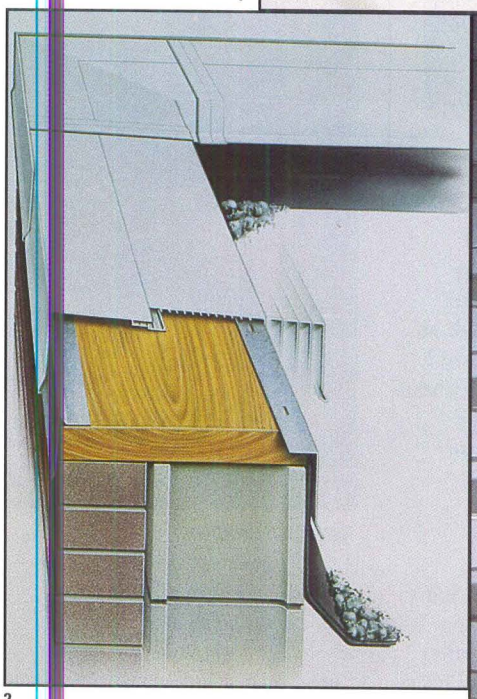

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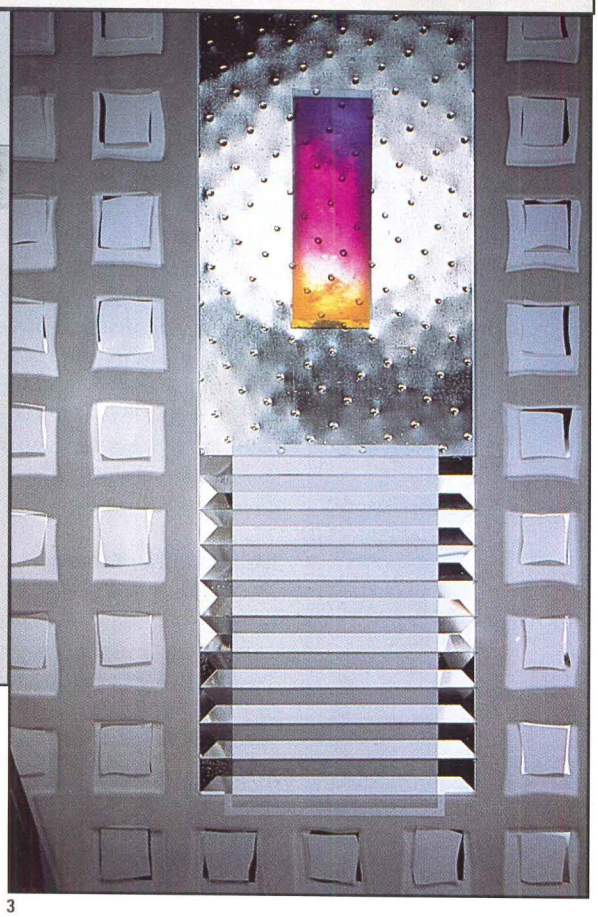


3

1 Richly Colored Tiles

This collection of glazed and unglazed tiles includes a wide range of sizes, shapes, and colors. Special shapes, such as bars and rectangles, and special sizes such as 1" x 1" and 1" x 8" can be ordered. They are designed to be extremely durable and can be used for floors, countertops, shower stalls, and other applications. Harbor Farm.

Circle 100 on reader service card

2 Adjustable Coping

The "E P Coping" system is a new, fully adjustable engineered plastic coping product for roof parapet walls. It is extruded from "Geon" rigid vinyl from B.F. Goodrich. The coping fits brick, precast concrete, synthetic stucco, or insulated metal panel-clad parapet walls from 7 3/4 inches to 16 1/2 inches thick. It has a Factory Mutual I-90 classification (with locking strips) for weather and wind tests. Southern Aluminum Finishing.

Circle 101 on reader service card

3 New Decorative Glass

"INNER-LITE" is a new multilayered, tempered glass product that can be installed into standard mullion systems. Hand-blown, beveled, or textured glass is laminated to the inner layers of an insulated glass unit. Light is captured and diffused through colored and translucent decorative elements. "INNER-LITE" is suitable for interior and exterior applications in commercial and public buildings, healthcare facilities, and residences. Architectural Glass.

Circle 102 on reader service card

(continued on next page)

Circle **No. 320** on Reader Service Card

(continued from previous page)

New Products and Literature

Waterproofing Brochure

Four waterproofing systems are described in this brochure including "System 1000 Loose Laid Membrane System," "System 2000 Adhered Membrane System," "System 3000 Loose Laid Membrane System with Containment Grids," and a system for foundation walls. The brochure describes geotextiles, thermal insulation, drainage and protection layers, expansion joints, membrane, and flashing components for each system. Sarnafil.

Circle 200 on reader service card

ADA-Compliant Outdoor Drinking Fountain

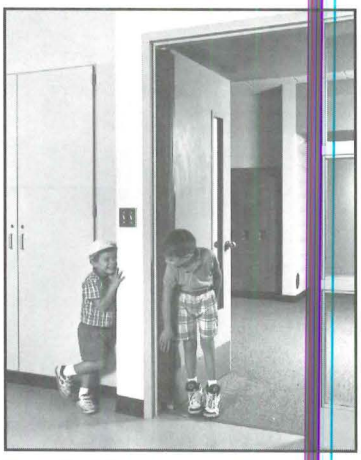
The "3300 Hi-Lo" pedestal-mounted outdoor drinking fountain is designed to meet ADA requirements. It has dual-height fountains and recessed push-button valves, and is vandal-resistant and lead-free. The fountain has a green polyurethane enamel finish. Haws.

Circle 103 on reader service card

Radiant Barrier Coatings

"SNUG" is a new acrylic radiant barrier roof and wall coating. It is a two-ply system that combines "SNUG BLUE" – a thermal barrier base coat that prevents heat absorption – and "SNUG WHITE" – a high titanium top coat that reflects up to 60 percent of solar heat and minimizes thermal build-up in the base coat. The "SNUG" system is designed to insulate, seal leaks, and protect exterior surfaces from air pollution, oxidation, and ice and water damage. Chem Link.

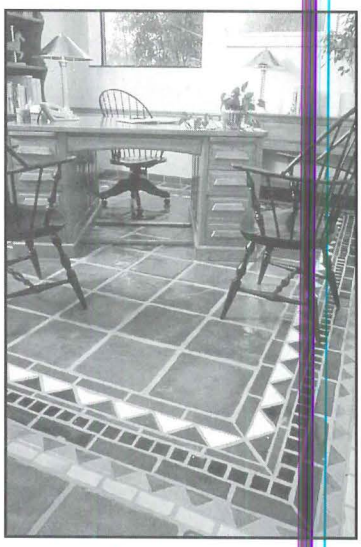
Circle 104 on reader service card



Door Guard

The LCN Safety Guard covers the opening between the interior edge of the door and the frame's hinge edge to prevent hand injuries. It is suitable for use in schools, restaurants, nursing homes, and other public facilities. LCN Closers.

Circle 105 on reader service card



New Tile Shapes

The "Intricates" tile collection includes triangular and miniature rectangular tiles. The tiles are handmade and can be combined with several existing collections. Epro.

Circle 106 on reader service card

(continued on page 147)

TURN ORDINARY WALLS INTO GRANSTONE® WALLS. FROM THORO.

Nara Shoka College, Nara City, Japan
©1992 Thoro System Products

Now concrete, masonry, EIFS, and scratch-and-brown walls, either exterior or interior, can have the look of solid granite at a fraction of the cost. It's easy with Thoro's **Granstone® Finish System**. This architectural finish system can be applied quickly to create the appearance of natural stone. It is available in 12 standard colors and allows the ultimate in design flexibility.

Use Granstone to rejuvenate an entire exterior, or just to accent architectural details. A Granstone finish resists mildew, fungus, freeze-thaw cycles, wind-driven rain and airborne pollutants. It is eligible for Thoro's limited material and labor warranty.

Find out how you can turn ordinary walls into Granstone walls. Call **(800) 327-1570**. In Florida call **(305) 597-8100** or write to:

Thoro System Products,
7800 N.W. 38th Street,
Miami, Florida 33166.

THORO SYSTEM PRODUCTS

A Part of ICI Specialties

See Us In Sweet's Catalog.

Circle **No. 328**

COPPER ROOFING

AS NATURAL TO THE EYE AS BLUE SKY

The rich tradition of copper roofing makes a bold new debut… Prestige, by Tegola Canadese.

Italian designed and manufactured… a subtle compliment to important architectural commissions.

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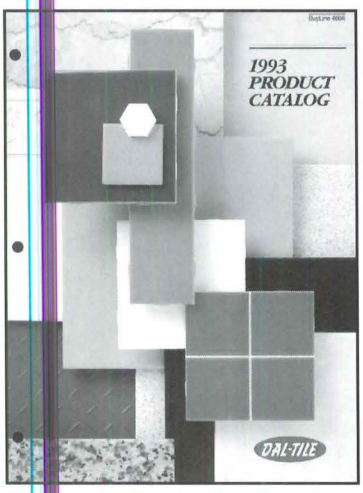
Circle No. 338

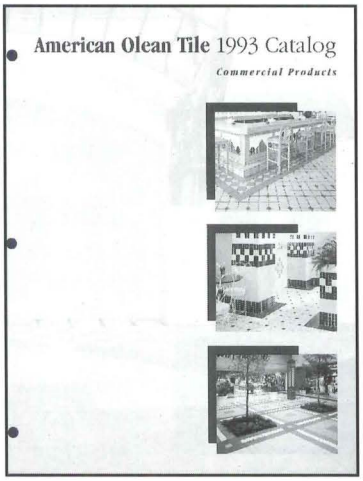
(continued from page 144)



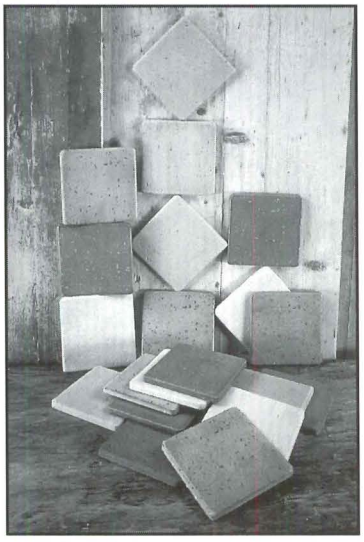
Commercial Tile Catalog
This 48-page, full-color catalog for 1993 is a reference guide for the selection of ceramic tile. Specification, size, color, trim, and application information is provided. Installation photos are also included. Dal-Tile.
Circle 201 on reader service card

Detectable Warning Tile
The new "Assurance Detectable Warning Tile" is a resilient rubber flooring tile with permanently molded grooves designed to meet ADA requirements. It is part of a complete flooring system that includes matching tiles, risers, stringers, and safety stair treads. Eight colors are available. Flexco.
Circle 107 on reader service card

Circle **No. 331** on Reader Service Card



Commercial Tile Catalog
This 1993 product catalog of commercially rated ceramic tiles provides size, color, technical data, and installation photographs for the company's complete line. The catalog includes several new products such as a 4" x 4" modular wall and floor system of color-coordinated glazed wall tile and ceramic mosaic floor tiles called "Combinations" and a two-inch octagonally shaped tile. American Olean.
Circle 202 on reader service card



Porcelain Tile
The "Old Stone Series" is designed to have the appearance of traditional urban pavers and natural stone; it has a dimpled surface and variations in its shading. The tiles are offered in six-inch squares and in triangles. They are ½-inch thick and are suitable for indoor or outdoor use for floors and walls. Buchtal.
Circle 108 on reader service card

French Doors
This new five-light French door is constructed of Douglas Fir or Western Hemlock and is available in 6'8", 7', and 8' heights and 2' and 3'6" widths. The dual-glazed door can be specified with argon gas between panes of low emissivity glass. Simpson.
Circle 109 on reader service card

(continued on page 149)

Porcelain Pavers From Summitville: There Are No Equals.

Five new porcelain pavers with water absorption rates of almost 0%. And breaking strengths that double the ANSI standards.

An impervious body built to last under any conditions. The perfect tile for exterior cladding, tunnels, signage or any area where freeze/thaw exposure is a concern.

At Summitville, the word is new. New pavers, new techniques, a new approach for the tile industry innovator.

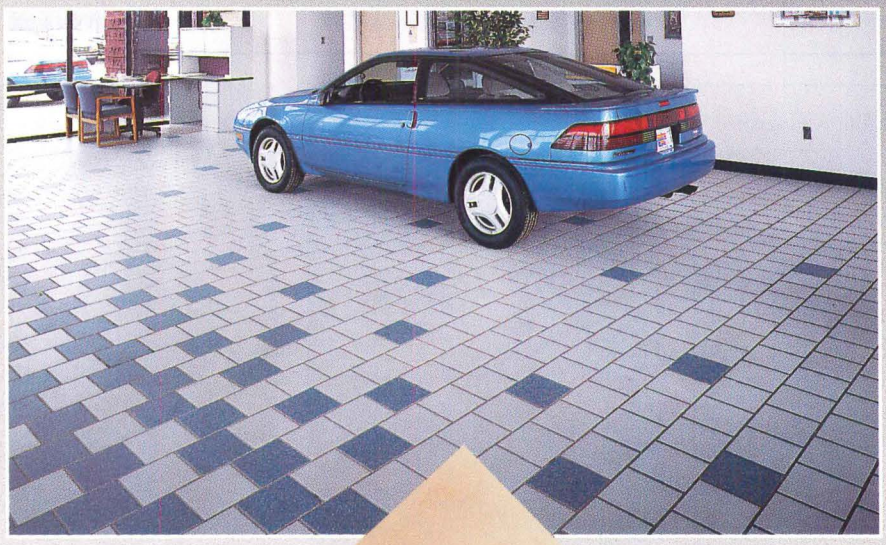
A fresh approach highlighted by a new breed of impervious glazed porcelain pavers. Pavers unequalled on the world tile market for quality, versatility and durability.

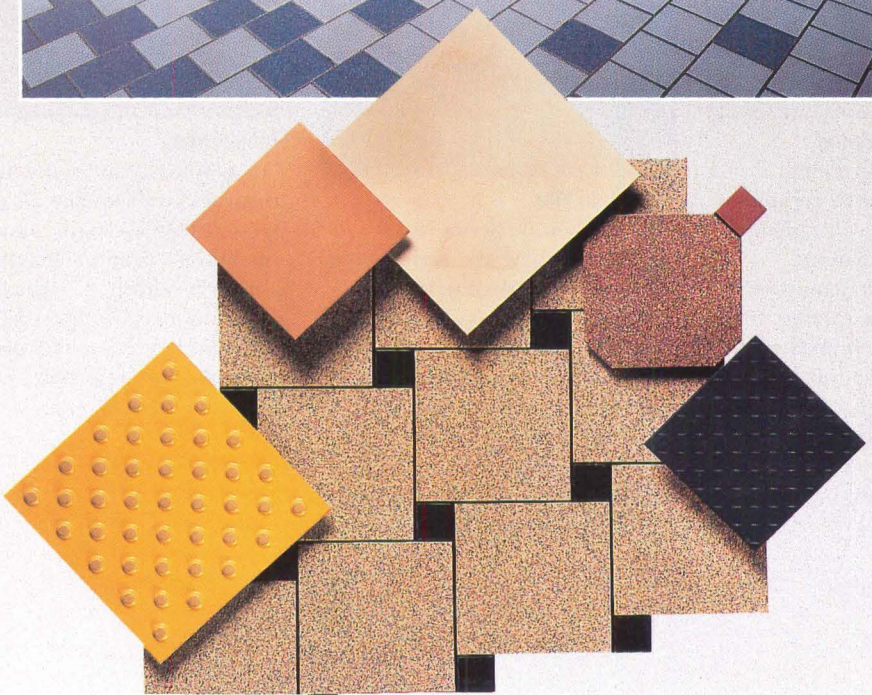
All Summitville porcelain pavers, including our new tread tiles—Summit-Tread and Tactile-Tread—are impervious and virtually eliminate freeze/thaw failure.

Each Summitville paver is made from recycled waste products from the feldspar industry in a new high-tech facility. This tradition of respect for our environment has been a part of Summitville since 1912.

To learn more about Summitville's new porcelain pavers, complete the reader service card and get all the facts from full-color product information.

When you're searching for porcelain paver solutions, turn to Summitville. The tile industry innovator.





Summitville®

Summitville Tiles, Inc., Summitville, Ohio 43962
FAX 1-216-223-1414

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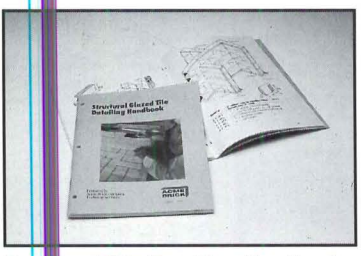
MADE IN USA

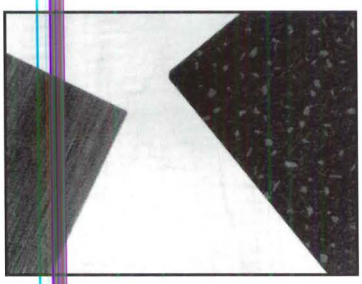
MEMBER TILE COUNCIL OF AMERICA INC.

(continued from page 147)



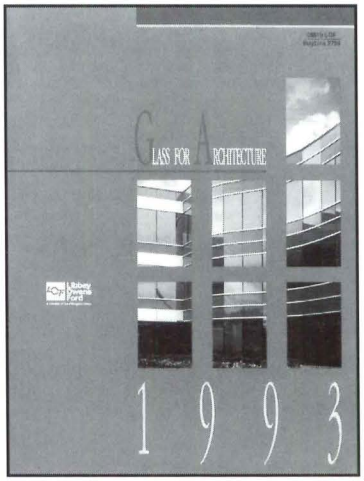
Structural Tile Detailing Handbook
This 98-page handbook includes dimensional measurements for standard wall configurations of more than 90 standard shapes of Elgin-Butler glazed structural tiles. It is intended to be a guide to preliminary planning. Elgin-Butler tiles have a nonporous surface that is resistant to chemicals and abrasion. Contact Marketing Dept., Acme Brick Company, PO Box 425, Ft. Worth, TX 76101 (800) 932-2263. Cost: $5.

Epoxy and Grout Brochure
This full-color manufacturer's brochure covers an extensive selection of "Hydroment" tile grouting and installation systems. "Hydroment Color-Poxy," a 100-percent-solid, epoxy setting and grouting system available in 34 colors and "Hydroment 476 Crete," a high-performance latex admixture for thin-set applications are among the products described. Bostik.
Circle 203 on reader service card

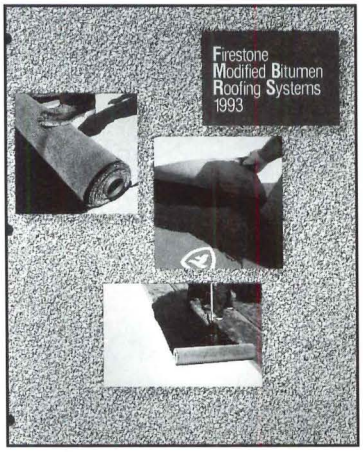


New Decorative Laminates
Three new decorative laminates were recently introduced. "Illusion Series" combines pearlescent gold lines and squares with "interface color" pigments; the "Lustre Series" is designed to have a brushed metal appearance using pearlescent pigments; and "Architectural Maple" has a soft-colored, subtly grained appearance. Laminart.
Circle 110 on reader service card

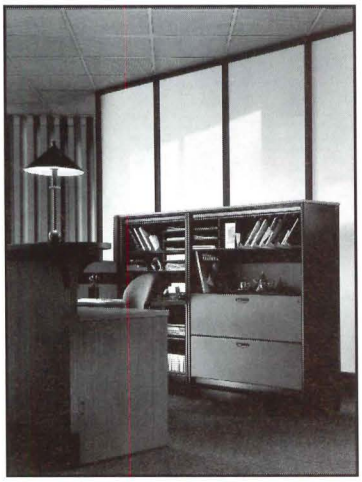
Circle **No. 332** on Reader Service Card



Glazing Products Brochure
This 24-page brochure provides performance and technical data for LOF products such as "Ever-Green Glass," "Energy Advantage Low-E Glass," "Eclipse Reflective Glass," "Mirropane E.P. Transparent Mirror," and a range of clear and tinted float glass products. Libbey-Owens-Ford.
Circle 204 on reader service card



Modified Bitumen Manual
The *Modified Bitumen Sweet's Manual for 1993* includes extensive product information for the full line of torch-applied APP and mop-applied SBS modified bitumen membrane roofing systems. The 24-page, full-color manual offers general design recommendations for application and flashing procedures, common uses, application methods, product size, weight, and coverage, code certifications, and installation details. Firestone Building Products.
Circle 205 on reader service card



New Cabinet System
The "Liaison" cabinet system, to be introduced at NeoCon® this month, features a customizable storage system, cable management and distribution, and structural flexibility. It can be integrated into existing systems if connected to "Action Office Series 3" panels, or can be used as freestanding furniture. Herman Miller.
Circle 111 on reader service card

(continued on page 151)

"Catch the new wave in Waterproof Membranes"

LATICRETE® 9236 Waterproofing Membrane
for ceramic tile and natural stone installations.

- ❑ Thin and Flexible
- ❑ Interior and Exterior use
- ❑ 500% Elongation
- ❑ Safe, no solvents; water cleanable
- ❑ Easy to spread on walls or floors

Also for Crack Suppression!

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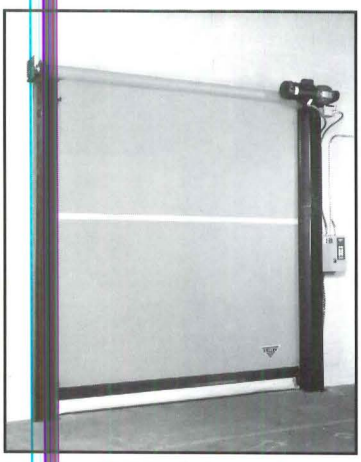
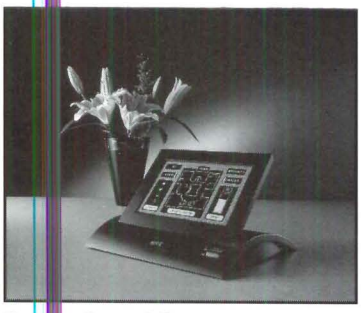
(continued from page 149)



Low-Cost Roll-Up Industrial Door
The "RT-500" roll-up industrial door, available in sizes from 6' x 6' through 10' x 12', is suitable for interior or exterior applications. A PVC-coated woven polyester-seamed panel material and a flexible bottom beam are designed to absorb minor impacts. Kelley.
Circle 112 on reader service card



Remote Control System
A new version of the "Touch Panel" remote control system to manage electronically operated equipment has been introduced. For control equipment used in board rooms, training centers, teleconferencing rooms, and luxury houses, "TiltScreen®" provides angle adjustment of the display screen for personal viewing convenience and the elimination of glare. It has an 8" x 5" electroluminescent screen with a touch-sensitive overlay. AMX.
Circle 113 on reader service card

Perforated Metals Pamphlet
The Industrial Perforators Association has published a new pamphlet illustrating various applications, patterns, fabrication techniques, and available finishes. Industrial Perforators Association.
Circle 206 on reader service card

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The Total Performer.

CUSTOM LIGHTING – BUILT TO LAST
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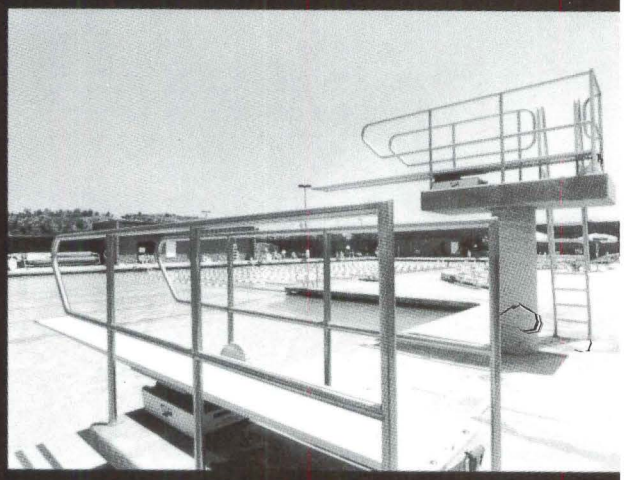
Transform Your Concepts into Reality With
PARAGON
Swimming Pool Deck Equipment



COMMUNITY POOL, CITY OF POWAY, CA

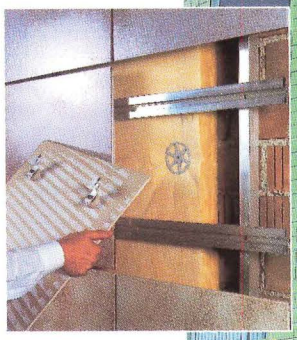
Paragon
KDI Paragon Inc.
Detailed Literature on Request or See Us in Sweets 13152/KDI
P.O. Box 256, Pleasantville, NY 10570 • 914/769-6221 Fax: 914/769-0670

Circle **No. 315** on Reader Service Card

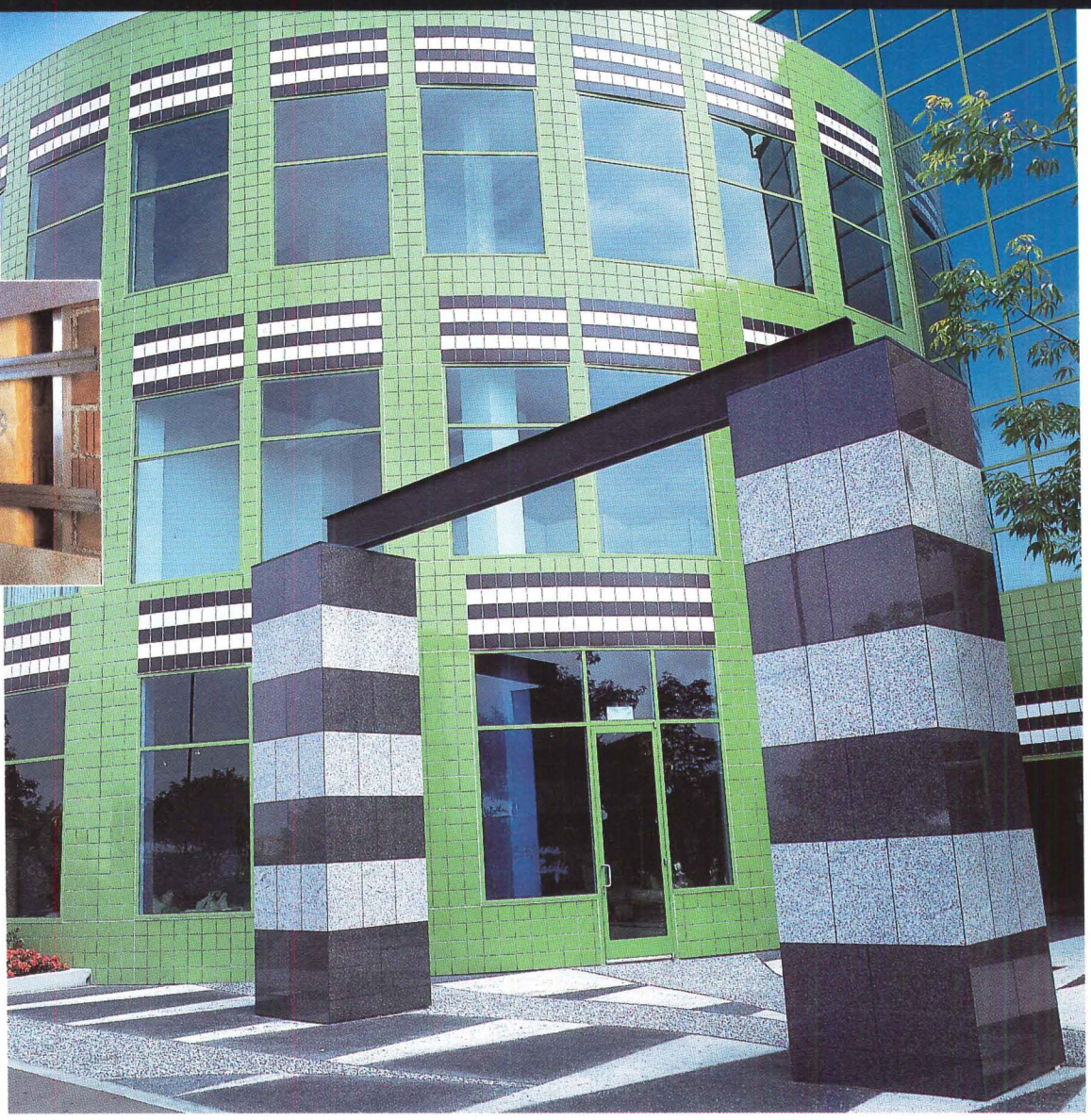
CERAMIC COMPOSITIONS

WITH CHROMA® GLAZED TILE

In addition to the conventional method of tile installation used in the project shown here, Buchtal offers a new prefabricated system, Keraion-Quadro, which invisibly fastens large format tile to metal grids on



new or existing substrates. So when you're looking for an innovative sequel to your last facade, call us for more details.



Photographer: Bob Shewach

At Buchtal Ceramics, we choose our words carefully. Much like an architect chooses a building material. That's why when we say Chroma® offers the designer the most extensive palette of modular sizes and colors in glazed ceramics, you can believe it's true. ◆ With over 60 colors and sizes from 2×10 strips to two-foot square panels, dramatic design statements are inevitable with Chroma. Architects like you have been using Chroma all over the world for dozens of applications. In banding, to identify spaces and define circulation patterns. As colorful medallions to punctuate a never-ending wall. Or to fully expose an entire facade. ◆ And Chroma's performance attributes take the mystery out of specifying glazed tile. Chroma is frost-proof, acid-resistant, and colorfast. And offers high bond and breaking strengths. ◆ With Chroma, we wrote the book on glazed ceramic tile. ◆ Chroma glazed ceramic tile is featured in our catalog in Sweet's File 09300/BUC. Or contact Buchtal Ceramics directly at 1325 Northmeadow Parkway Suite 114 Roswell, GA 30076 (404) 442-5500 Fax: (404) 442-5502. ◆ In the meantime, every picture tells a story.

BUCHTAL CERAMICS

San Diego Design Center, San Diego, CA
McKellar Development, La Jolla, CA

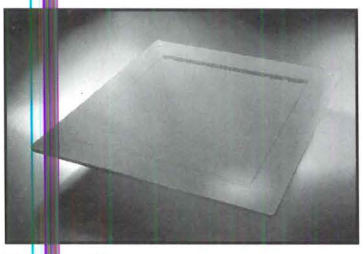
Architect: Johannes Van Tilburg & Partners, Santa Monica, CA
Product: 6×6 700 Glacier White, 6×6 717 Brilliant Black, 6×6 740 Isar Green

Circle **No. 329**

Computer Products

Centris 610 & 650

Apple has released its new line of mid-range personal computers, the Centris 610 and Centris 650. These machines use the Motorola 68040 chip previously available only in the Quadra line. This processor offers speed comparable to the Intel 486 chip used in PC compatibles – available for about half the price of previous Quadras. This new range replaces the Macintosh II line.
Apple Computer.
Circle 114 on reader service card



DrawingSlate

CalComp's new low-cost cordless digitizer tablets are aimed at PC and Macintosh users who have previously used only a mouse for input. The A- and B-size tablets are approximately 1/8-inch thick and have an accuracy of +/- 0.010 inch with a resolution of 1,270 lines per inch. Buyers can choose between a cordless 4-button cursor, 16-button cursor, or pen. A cordless pressure-sensitive pen is also available. The tablets can be programmed to switch between digitizing and mouse modes without reconfiguring. CalComp.
Circle 115 on reader service card

GEOCAD

This architectural AutoCAD application has been updated with the release of version 4.0. The new version is compatible with AutoCAD release 12 for both DOS and Windows environments. Notable among the new features are customizable schedules, expanded parametric detailing routines, and new architectural hatch patterns. GEOCAD.
Circle 116 on reader service card

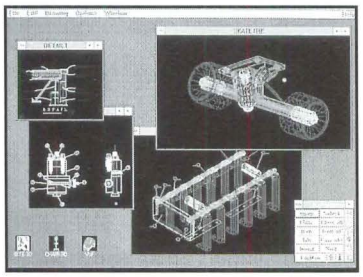
I.C.G., modeled by Tito Brown, design by Johannes von Tilberg & Partners

Builders CAD

Version 4.0 of this integrated design/build software contains a custom panel framing enhancement that allows the user to frame walls of virtually any arrangement. This feature is integrated with a materials quantity reporting function for take-offs.
Integrated Computer Graphics.
Circle 117 on reader service card

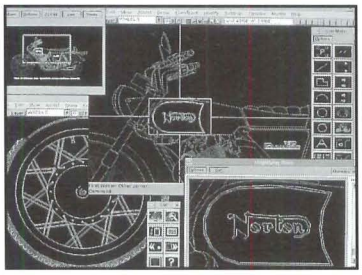
AE Tools

This product is a complete architectural application overlay for ISICAD's CADVANCE CAD program. With the application, an architect can set up an environment including plan views, architectural scale, and AIA-standard layers. The program also contains a library of 600 standard symbols.
A/E Technologies.
Circle 118 on reader service card



AutoManager Classic

This AutoCAD file-viewing program is available in both DOS and Windows versions. The Windows version allows users to manage drawings outside of AutoCAD and to share information with other Windows applications via the Windows clipboard.
Cyco Software.
Circle 119 on reader service card



AutoMate/PRO

This program accelerates the performance of AutoCAD release 12 for Windows. Depending on the graphics hardware, the manufacturer claims the program delivers up to a 500 percent increase in pan, zoom, and redraw speeds versus AutoCAD alone. Tools and features of the program include a user-configurable icon menu, magnifying glass with real-time pan and zoom, movable bird's eye view, and a view forward/view backward utility.
Vermont Microsystems.
Circle 120 on reader service card

PostScript Plotter

The Xerox 8812 laser plotter is the first CAD desktop output device equipped with Adobe Systems' PostScript software. The plotter is intended for documents that combine CAD drawings, text, and/or graphics. The 400 dpi resolution plotter comes bundled with 51 resident typefaces, font scaling software, and print drivers to support both Macintosh and Windows platforms.
Xerox Engineering Systems.
Circle 121 on reader service card

HP DraftPro Plus

Hewlett-Packard's new line of low-end pen plotters features D- and E-size versions. Speed and memory have been increased over previous versions. Plot quality has been improved with the use of new curvature algorithms.
Hewlett-Packard.
Circle 122 on reader service card

ScreenStar

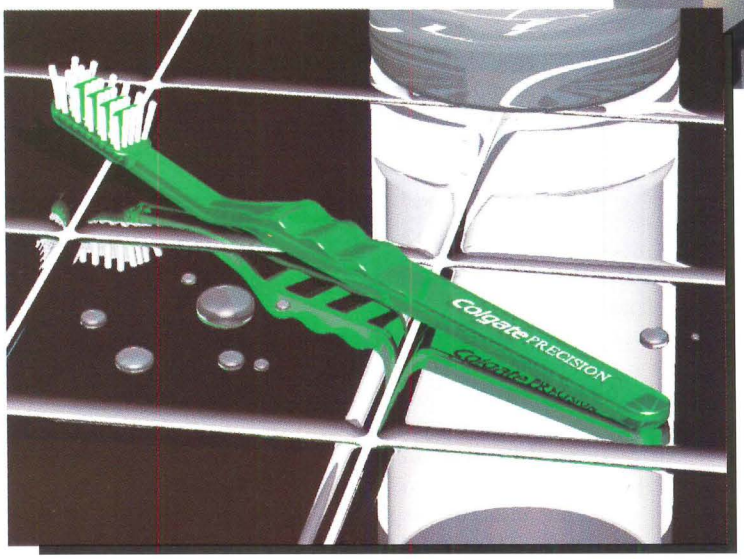
Although the resolution of LCD displays in portable computers has improved dramatically, they are still limited in size. BitWise Designs has addressed the problem with this Intel 486 based PC compatible with a 21.3 inch diagonal gas plasma screen (resolution 1280 x 1024). The computer offers up to 32 MB of RAM and up to a Gigabyte of hard disc capacity. BitWise Designs.
Circle 123 on reader service card

(continued on page 161)

DON'T TRANSLATE. JUST RENDER AND ANIMATE.

Modeled with AutoCAD • Rendered with ModelView

Modeled with MicroStation • Rendered with ModelView



Modeled with EMS • Rendered with ModelView

You use CAD every day to design projects. Now you're ready to spice up your presentations with rendering and animation.

ModelView accepts 3D CAD files *directly* from Intergraph's MicroStation, AutoCAD, and EMS, Intergraph's solid modeling software. Or from other CAD packages through DXF. This means no unnecessary translations and no hassles with your CAD model.

Sophisticated raytracing. Visual material editing. Photomontaging. A toolbox for touchup, special effects, and animation. ModelView offers all the features you desire — plus an interactive renderer for real-time review of color, pattern, and texture. All at a very enticing price — $2,500.

What's more, Intergraph offers the broadest range of CAD applications for Microsoft Windows NT and the best customer support in the industry.

ModelView runs under Microsoft Windows on PCs and under Windows NT on Intergraph's Technical Desktop Series and other Intel-architecture workstations. For more information and a free demo disk, call 800-345-4856.

MODELVIEW

MICROSOFT WINDOWS COMPATIBLE
32-Bit Application

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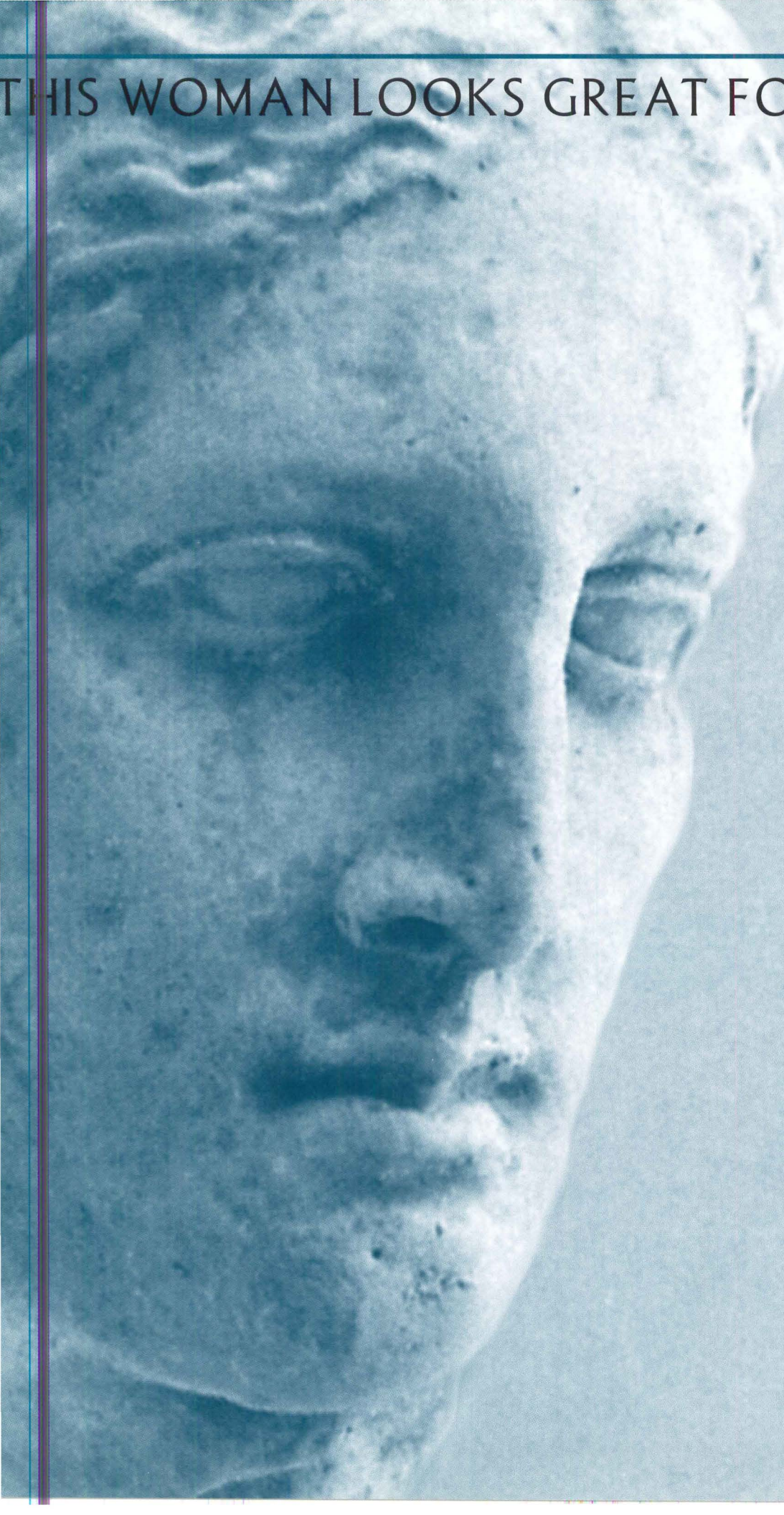

THIS WOMAN LOOKS GREAT FOR HER AGE.

HER NAME IS APHRODITE, AND SHE IS THOUSANDS OF YEARS OLD. HER BEAUTIFULLY SCULPTURED FACE AND BODY ARE TOTALLY CRAFTED OF MARBLE FROM GREECE. THE ENDEARING AND ENDURING ANCIENT ORIGINAL THAT HAS CONTINUOUSLY BEEN USED AROUND THE WORLD FOR THE FINEST ARCHITECTURAL INSTALLATIONS.

MARBLE FROM GREECE IS AVAILABLE THROUGHOUT THE UNITED STATES IN EXQUISITE COLORS AND STRIKING PATTERNS. COLORS AND PATTERNS YOU MAY NOT EVEN BE AWARE EXIST. TO FIND OUT ALL THE NEW THINGS ABOUT ONE OF THE OLDEST ARCHITECTURAL DESIGN MATERIALS THAT HAS EVER BEEN USED, GET RE-ACQUAINTED WITH MARBLE FROM GREECE.

COME TO MCCORMICK PLACE BOOTH #1551 DURING THE AIA CONVENTION IN CHICAGO JUNE 18-21.

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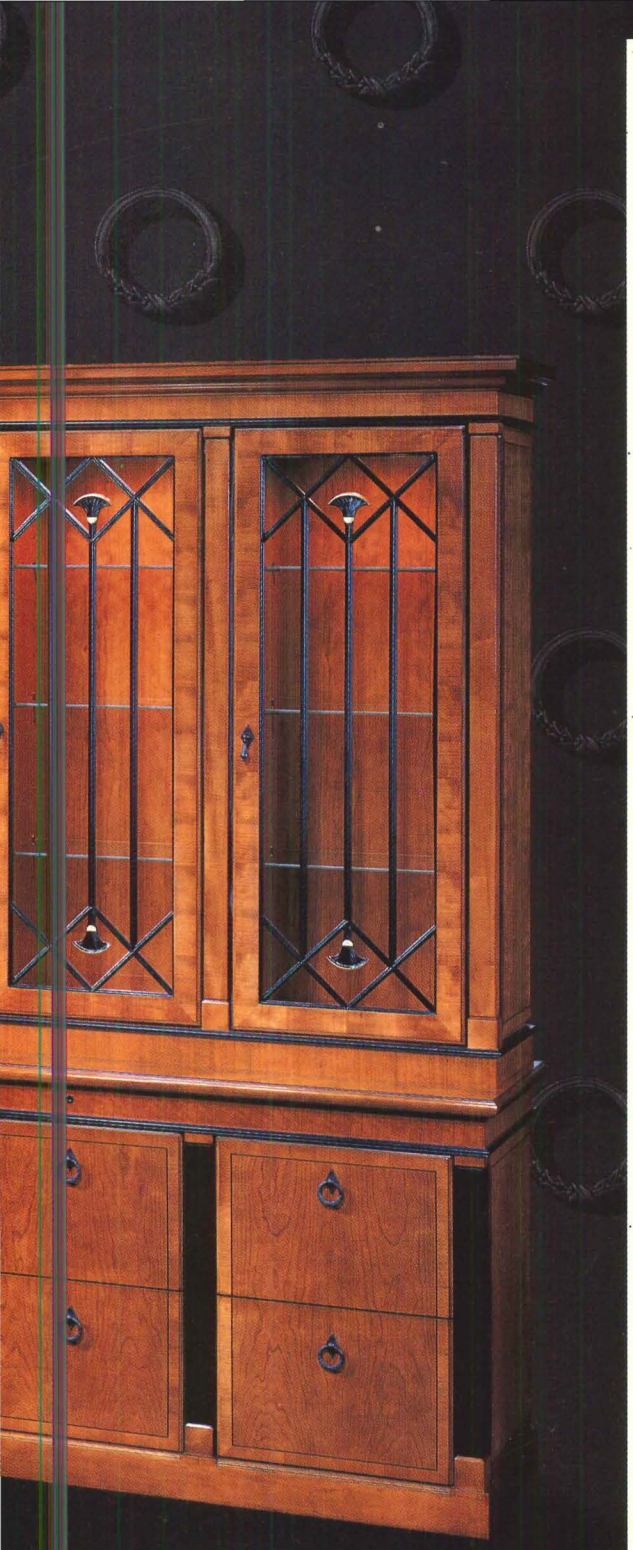

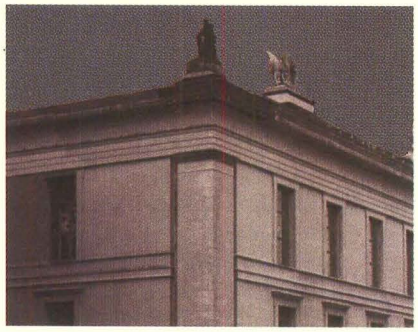

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Books *(continued from page 132)*

Century. Brumfield rightly points out that, despite a significant decline in planning controls, the resulting building boom still created an impressive new urban environment that survives today as the core of Moscow's Central Business District.

Milka Bliznakov's essay, "The Realization of Utopia: Western Technology and Soviet Avant-Garde Architecture," revisits earlier findings that make clear how the Soviets relied on Western technology. At the same time, she offers fresh and fascinating evidence about the ways Soviet utopian visions of architecture were inspired by literary works of science fiction, as well as by exhibits and journals sponsored by Soviet and Western avant-garde architectural groups.

In "Foreign Architects in the Soviet Union during the First Two Five-Year Plans" Anatole Kopp examines the activity of a large number of foreign architects and technicians who went to work in the USSR, envisioned as a land of advanced design, social idealism, and reconstruction. Although much of the article is a review of earlier findings, Kopp brings important new information to light concerning Albert Kahn's extensive work and involvement in the Soviet Union.

In *The Origins of Modernism in Russian Architecture,* William Brumfield focuses on the transformation of Russian architecture from the 1880s to the 1917 revolution. The work shows how Russian architects and critics from various theoretical and ideological camps searched avidly for a "unifying idea" that would define a new architecture. Brumfield also examines the various styles of this prolific period, with emphasis on the *stile moderne,* Russia's variant of Art Nouveau. Although it disappointed those who believed it would lead to a new urban environment, the *stile moderne* proved nonetheless to be an extraordinarily vital and multifaceted phenomenon in Russian architecture. Brumfield also endeavors to account for the diverse styles of Russian Modernism by analyzing the theoretical debate about them: the relation between technology and style, the obligation of architecture to society, and the role of architecture as an expression of national identity.

Blumfield's obvious enthusiasm for turn-of-the-century Russian architecture finds an engaging and welcome voice in this book. And yet, though it helps fill a major gap in English-language literature on the subject, its treatment is far from definitive. To be sure, Blumfield's architectural criticism has matured a good deal since he wrote *Gold in Azure: One Thousand Years of Russian Architecture* in 1983. But his writing has yet to transcend the historiographical scope or methodological strictures of the studies by Moscow's leading authorities on the subject. Most of the photographs of surviving buildings are Blumfield's own. His photographs of Russian architecture now constitute an important resource for historians in the permanent collection of the Photographic Archives of Washington's National Gallery of Art.

The most important and compelling of the books under review is Jean-Louis Cohen's *Le Corbusier and the Mystique of the USSR.* An expanded and significantly revised English-language version of the 1987 French edition, the book places Le Corbusier's brief but intense relationship with the USSR in the late 1920s and early 1930s in an important new light.

In October 1928 Le Corbusier arrived in the Soviet Union to present his winning design for Centrosoyuz, as if to compensate for the rejection of his entry in the League of Nations competition the year before. Yet in the course of this and his two ensuing visits to Russia in the next few years, he met with disappointments that surely exceeded the sting of the League of Nations debacle: Soviet authorities rejected his urban plan for Moscow, which laid the groundwork for the *Ville Radieuse* (1930); they also renounced his entry in the 1932 Palace of Soviets competition for its preoccupation with an aestheticized technology. The vicissitudes of Le Corbusier's four-year Soviet adventure are the subject of Cohen's pithy book, which brings to light a whole cycle of transformations in Le Corbusier's role as a leading exponent of the "new architecture." It was the USSR, Cohen justly maintains, that supplied Le Corbusier with one of his greatest sources of artistic inspiration and with an ideological pretext for the extraordinary and often frenzied assertion of his ambitions.

Cohen provides admirably detailed accounts of the Centrosoyuz and the Palace of Soviets episodes, with a thorough treatment of their cultural and political context and their critical reception in Moscow. He also discusses the relationship between Le Corbusier's theory and those of the Russian avant-garde, including his avid supporters (the Constructivists Moisei Ginzburg and Alexander Vesnin) and detractors (El Lissitzky and Karel Teige). As Cohen makes clear, the Russians' attitude toward Le Corbusier varied widely, reflecting the different ideological and theoretical postures advanced within the Russian avant-garde itself. Unfortunately, Cohen's discussion of these tendencies and theoretical positions is mired in vague generalities.

Cohen's book is bolstered by reproductions of hitherto unpublished drawings and texts; the composite gives a new dimension to Le Corbusier studies. At the same time, it facilitates a broader, more discerning understanding of the Russian avant-garde within the context of their Western counterparts. Not least, it sheds important new light on a major, but hitherto obscure, episode in the formation of the Modern Movement. Indeed, one of the most admirable and enduring effects of this book – and this is far from a shortcoming – is that it makes clear how much more needs to be done. We need to delve further into Cohen's areas of inquiry as well as into the legacy of the Modern Movement as a whole. **Anatole Senkevitch, Jr.** ■

The author is a specialist in Russian and Modern architecture and a professor of architectural history at the University of Michigan, Ann Arbor.

Cheryl Kent *(continued from page 96)*

FAA after the Lockerbie bombing, have reversed the spatial emphasis in American airports. Passengers are pressed to pass through security toward concourse holding rooms where they wait for their flights.

The change is evident in Murphy/Jahn's scheme for United, where the ticketing pavilion is minimal and the concourse is a grand, vaulted, sun-filled space with strolling room, concession stands, and views of the runways. It was also in United that O'Hare deviated from its International Style vocabulary for the first time, building an arched steel-and-glass structure that principal designer Helmut Jahn says is meant to recall turn-of-the-century railway stations. Perkins and Will's International Terminal matches United's exuberance.

With the completion of O'Hare's expansion program this spring, the airport is likely to remain as it is for some time. A scheme by Murphy/Jahn in the 1980s, which would have tied the new buildings to the old with an undulating red canopy, was rejected by the Chicago Aviation Authority, which oversees the airport for the city. Another development that could have had huge implications for O'Hare has been stopped: plans for a third airport were revived last year, but died when it was decided that the need was not great enough and that the airlines -- which would have had to pay for it – could not afford it.

In scale and complexity, O'Hare is like a city. And, as in a city, coherence and uniformity may ultimately be too much to expect. What O'Hare does exhibit is rich and complicated if not always beautiful: architecture's changing conventions responding to aviation's changing needs. **Cheryl Kent** ■

The author, P/A's Chicago correspondent, is writing a book on the Harold Washington Library competition.

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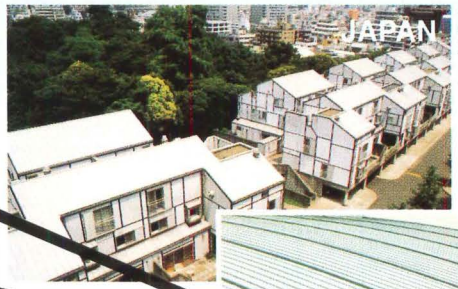

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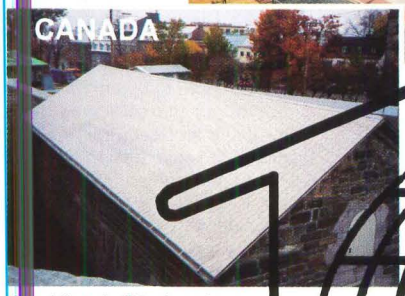

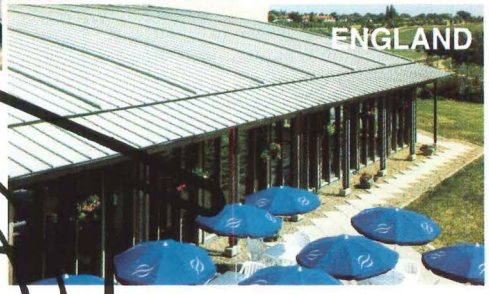

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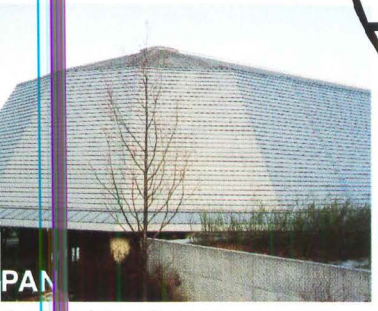

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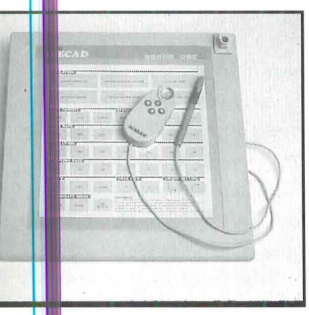

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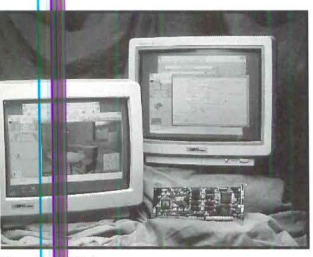

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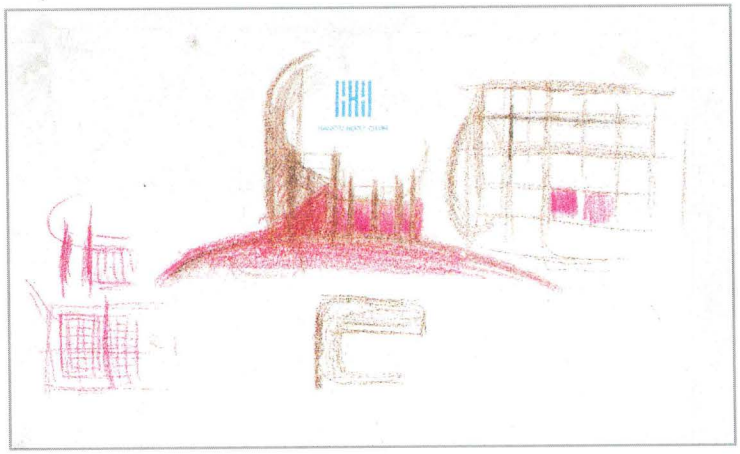

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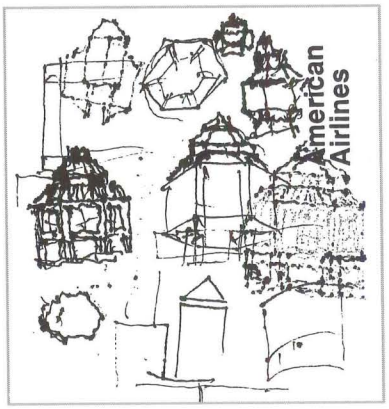
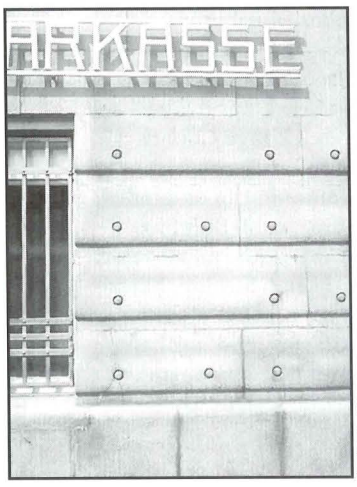


We hear a lot of stories about architects, in fits of inspiration, sketching on cocktail napkins, but we don't remember anyone ever ***sending us the napkin*** *before. But Tadao Ando did just that when he provided us with material on the Lotus Temple (p. 112). The words beneath the logo at the top of the sketch (far left) read "HANKYU HOTEL CHAIN." James Freed was more cautious, sending only a photocopy of his in-flight sketch (left) for the Holocaust Memorial Museum (Feb. 1993, p. 60).*

David Brown Perry

Another Must for the Truly Green *A New York group called Transportation Alternatives offers a postscript to our Critique of the Natural Resources Defense Council headquarters in New York (March 1993, p. 84). The group has sponsored the installation of what they call "New York's first architecturally designed office bicycle parking facility" in the NRDC headquarters, shown at left with its designer, Paula Krauss, who is a sculptor and a bicyclist (but not an architect). Transportation Alternatives says that 75,000 New Yorkers use bicycles for non-recreational purposes every day; the number would be higher, they say, if secure parking was available.*



Caroline Hancock

A Few Yards of Wagner *Here's our favorite response (okay, it was the only response) to the question we asked in February: What is your favorite square yard of architecture? Caroline Hancock of Princeton, New Jersey, sent a photo of Otto Wagner's Post Office Savings Bank in Vienna (right). Says Hancock: "The sign graphics and the heads of the aluminum bolts with which Wagner attached the stone panels to the façade exemplify this breakthrough work." It's a bit more than a square yard, but we're in no position to be picky.*

Question of the Month

"What city is the most underrated for architecture?"

Pilgrimages to Rome, Paris, and Chicago are part of the travels of many an architect. But what lesser known architectural destination would you suggest our readers explore? Before August 15, send your idea, with a photo to support it, to Furthermore Editor, P/A, 600 Summer Street, Box 1361, Stamford, CT 06904.
We'll publish the most intriguing responses in Furthermore in October.

P/A in July

Next month, we present our third Young Architects issue. This time, we have improved the balance of the issue to represent the diversity of employment (and unemployment) among architects in their first decade of professional experience. Sections include:

- **self-employed architects, those practicing on their own or running their own firms;**
- **employees of firms;**
- **holders of professional degrees pursuing alternative careers;**
- **"proactive" architects who generate their own work;**
- **activists who turn their attention to social concerns;**
- **architects distinguishing themselves through work with organizations, either new or existing.**

Also in the issue is a look at one particular architecture class – the Washington University Class of 1987 – and what its graduates are doing now.

A Technics Focus on lighting will include articles on exit lighting, occupancy sensors, and laboratories where lighting is tested.

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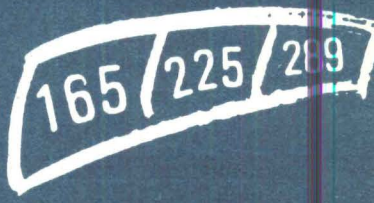

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