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INTERIORS

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A world of new colors to hel

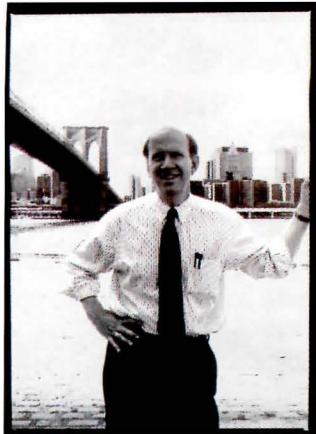


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EDITORIAL

Proving What We Feel

BY ROBERT A. IVY, FAIA



Read this quote twice: "Their settings were more important determinants of his subjects' behavior than their personalities." The import of this fragment, which refers to psychologist Roger Barker's observations of childhood development, should be obvious. Barker's work in the 1960s helped to prove that our surroundings play a critical role in molding our behavior. That environment affects experience is a fundamental theme among architects, a core understanding, yet few among us are aware that hard facts are available to back up this belief. Proponents of architecture's relationship to human experience usually resort to anecdote, intuition, and emotion, unaware that scientists are exploring the equation every day—and proving the connection.

You don't have to be a scientist to gain access to this research. Winifred Gallagher's brief, readable book, *The Power of Place*, provides an introduction to environmental psychology, a field that complements our design efforts with an existing body of data. But aside from a few professors of architecture who are engaged in active research in the subject, it is rarely taught in formal coursework at architecture schools. This valuable discipline, which may seem unfashionably earnest at a cool moment in the collective psyche, has been relegated to the touchy-feely world of the 1960s and 1970s.

It is time to take a second look. ARCHITECTURAL RECORD's *Interiors* issue seems an apt forum to consider how spaces affect our thoughts, emotions, and actions, since interior spaces are where we spend most of our time. If contemporary society challenges us with stress, depression, and insomnia, the spaces we design can affect us in myriad positive ways: elevating our emotions, changing our moods, boosting our health, encouraging our alertness. So while genetics, upbringing, and numerous other factors are obviously important in our development, physical environment can alter, for good or ill, our interaction with family members, partners, or coworkers; our productivity and creativity; and, ultimately, our happiness.

Findings reported by Gallagher—such as the fact that heat is a

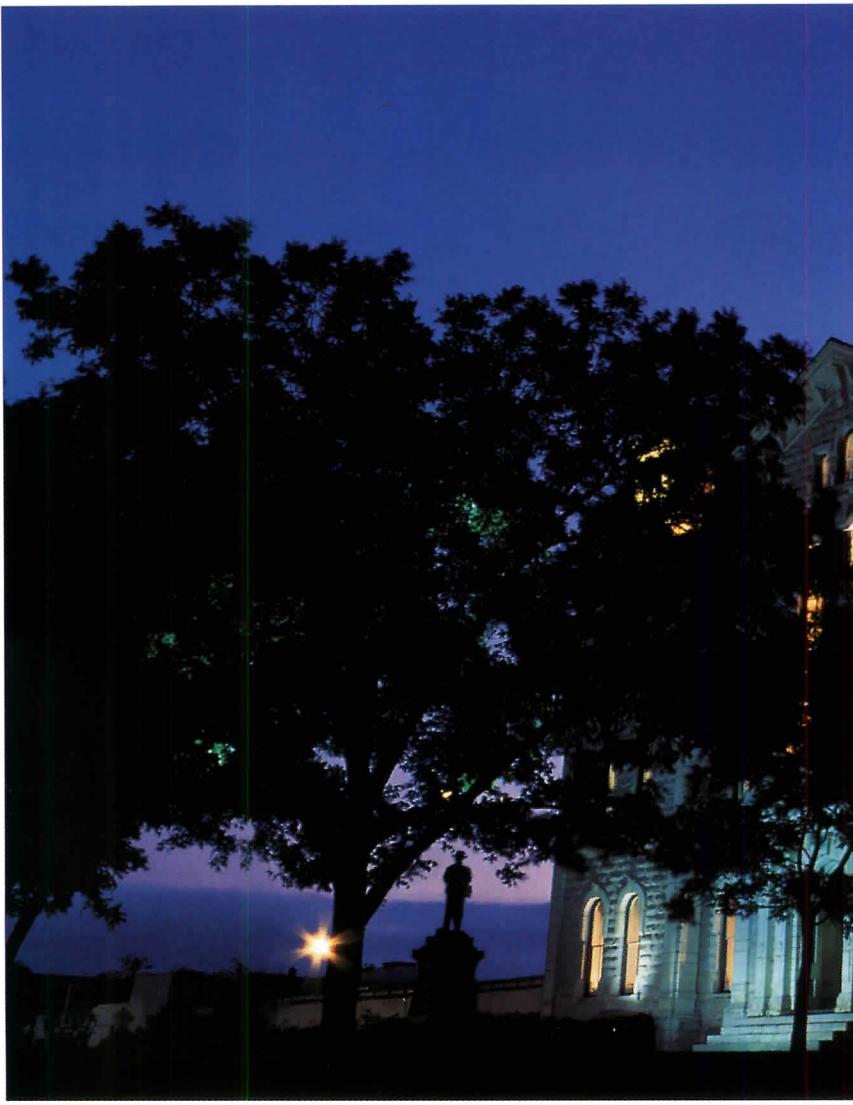
sedative and cold a stimulant—are fundamental to Architectural Technology 101. Light, she reminds us, has incredible power to alter feelings. In addition, she introduces less pragmatic, more esoteric realms, such as orientation to the compass and its effects on our sense of well-being—including the complex understanding of natural forces that the Chinese call feng shui. She mentions the presence of "subtle energies," such as electromagnetic fields induced by high-voltage lines and radio waves, that may change the way we feel. All of these influences deserve further study.

Gallagher also raises questions for architects to debate. What are restful colors? Not necessarily white, she states. What is the proper balance of sensory stimulants in any given space? What is over-stimulation and what is under-stimulation? What is the relation of human scale and the human-made object to the sense of awe and repose we find in nature?

Although environmental psychology may have been largely forgotten or ignored by architects, it offers important lessons for the profession. It may help us discover not only where people are happiest or where they feel most inhibited but, more important, how we can derive empirical data from well-conceived places of healing or learning or work.

The possible shared benefits offered by collaboration with psychologists seem obvious. Original research into the relation of constructed space to human experience, cosponsored by schools of architecture and other educational institutions or foundations, could be a vital information source and could become the cornerstone of a newfound status for architecture schools within the university. Environmental psychology may help future architects quantify what today we can express only in form and space.

WHEN IT CAME TO RENOVATING THIS HISTORIC COURTHOUSE, EVEN THE



In 1964, The Parker County Courthouse in Weatherford, Texas was designated a Texas Historic Landmark. And thus began the slow, methodical process of restoring it. First to receive attention was the structure's limestone stonework. Later, the roof was replaced. Then came the windows, which proved to be one of the most challenging aspects of the project.

The Historical Survey Committee mandates that if nothing remains of a historic building's original windows, the new ones must be faithful reproductions, right down to the last detail. Since the courthouse's original wood windows had been replaced by aluminum ones some years back, that meant that all 105 of the new windows had to be virtually identical to those made and installed over a century ago.

Bids were sought, but only two manufacturers felt qualified to respond. One of them, Marvin Windows & Doors, had actually been recommended by a company that was asked to bid but declined.

Though underbid by the other finalist, Marvin's figures were based on building the largest windows with structural muntin bars to withstand the winds that buffeted the building's hilltop site. Intrigued, the architect asked each company to build a sample window. One look at the prototypes and the job was immediately awarded to Marvin.

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of the courthouse and measurements of the actual openings, they designed the round tops, double hungs, circles and checkrail units that play such an integral role in the building's design. As for the largest of them, not only were they built to withstand the high wind requirements, Marvin delivered them factory-milled to further simplify installation.

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CIRCLE 10 ON INQUIRY CARD

LETTERS

Classic protest

It is disturbing to witness an illustrious architect like James Freed squirm for having designed the Ronald Reagan Building in a classicist style [July, page 59]. The architect of the Holocaust Memorial Museum should know that good buildings need not apologize for their style any more than decent persons should bury their beliefs. That he feels compelled to do so confirms the totalitarian ethos of the current architectural scene.

—Andres M. Duany
Duany Plater-Zyberk & Company
Miami, Fla.

Salutary design?

Regarding the emergency room at North Oakland Medical Center in Pontiac, Michigan [July, page 40], I would like to humbly suggest that the last thing an emergency room patient wants to see is a space that embodies "the idea of a collision—objects forcibly coming together and breaking apart." The architects, not to mention the patients and employees of this hospital, would have been better served by employing metaphors of healing and wholeness in their design. Your headline writer got it right: "Designed by accident." What were the architects thinking?

—David Greusel, AIA
HOK Sport
Kansas City, Mo.

Architect pols

I really enjoyed reading Blair Kamin's article in the July issue about Chicago's successful public works program under Mayor Richard M. Daley [Correspondent's File, page 25]. It mentions that the mayor has appointed former design professionals to his administrative cabinet, confirming my long-held contention that architects and engineers are well suited for public office. They not only have the sound business sense and excellent management skills needed to do the job well, but they also have the discipline and integrity the public looks for in their public officials. Architects in particular possess the special talent for being able to engage cultural issues and form solutions that can bridge and heal.

It's been said that architects are the "quiet giants" of society, but there is no reason to think they need to remain quiet when their skills could affect more universal good if they were more publicly applied.

—Michael J. Hyatt
Philadelphia, Pa.

Wheelchair guidelines clarified

Nancy Solomon's article in the July issue ["Understanding Accessibility Laws," page 109] provides an excellent overall discussion of the current status of the ADA and should be lauded for its concise handling of "reasonable standard of care" versus "strict liability." However, there is some very important information about accessible assembly seating that should also have been included.

The diagram included in the story, available from the Department of Justice since it issued its 1996 Statement on Accessible Stadiums, does not clearly define "comparable line of sight." This has been problematic since the ADA Accessibility Guideline was issued. Without dimensions defining standards for the location of a spectator's eye height, shoulder height, and height of the top of the head, the illustration does not provide the architect with the information necessary to design accessible wheelchair locations.

These dimensions are now available from the ADA Web site (www.usdoj.gov/crt/ada/adahom1.htm) as a result of the Minnesota settlement and should have been included in the illustration.

—Gordon E. Wood, AIA, Principal
Ellerbe Becket
Kansas City, Mo.

Credits/corrections

The two model shots of the Ronald Reagan Building that appear on the lower right hand side of page 64 in the July issue should have been credited to Eric Schiller.

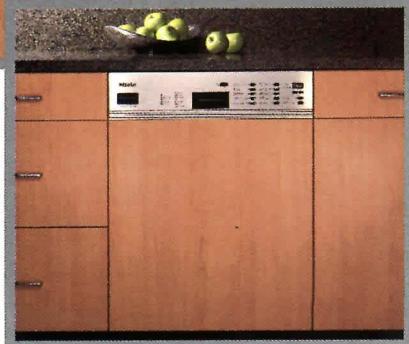
In the July story "Listening to Clients" (page 52), the firm of Ayers/Saint/Gross was misidentified.

In addition to the architects cited in the May story on the California Science Center (page 177), the following staff of the State of California, Department of General Services, Division of the State Architect, also deserve credit: Fred Hummel, FAIA, State Architect; Glenn Hezmalhalch, project manager; and Gary Sills, assistant project manager.

In the trade show roundup that appeared in the August Products pages (page 175), Spain's ceramic tile show, Cevisama, was misspelled, as was Pamesa, a Spanish tile manufacturer. ■

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CIRCLE 11 ON INQUIRY CARD

SPEAK OUT A Dallas architect considers a major competition for a local arena to have been grossly unfair and misleading.

ROBERT L. MECKFESSEL, AIA

Robert L. Meckfessel, AIA, is president of F/M Associates, an architecture, graphic design, and interior design firm with offices in Dallas and Singapore. He earned a master's degree in architecture from the University of Texas at Arlington in 1979.



A recent design competition held in Dallas was so flawed that it serves as a prime example of how not to select an architect for a major civic structure—in this case, the new Dallas Arena, home to the local basketball and hockey teams, the Mavericks and the Stars.

Although owned by the city of Dallas, the arena will be operated by Hillwood Development, whose owners have significant equity in the teams and have threatened to relocate both to the suburbs. To counter this possibility, the city, after much negotiation, agreed to issue \$125 million in bonds to fund a portion of the costs of a new downtown arena. However, many citizens and elected officials were greatly concerned about the wisdom of the plan, and city officials decided to put the issue to a public vote.

During the campaign preceding the referendum on whether to issue the bonds, numerous claims were made by both sides, including statements by Hillwood that the firm intended to build a "world-class and innovative" facility for the next millennium. After much heated debate, the referendum passed by a margin of 51 to 49 percent, and the arena moved ahead.

Hillwood then announced that a design competition would be held to select an architect, and invitations were issued to five firms: Pei Cobb Freed & Partners, Ricardo Legorreta, Murphy/Jahn, Kohn Pedersen Fox, and David M. Schwarz. After a two-stage process with little public involvement, Schwarz was announced as the winner, in spite of the fact that the firm had apparently

not produced any concrete design proposals, only a series of facade designs in various styles for the developers to peruse and choose from. The limited amount of work that was made available for public viewing was at best banal—appropriate for a theme park, maybe, but not for a progressive city with a desire to be "innovative."

Much of Dallas's architectural community was stunned and embarrassed by this turn of events, and several parties—including members of AIA's Dallas chapter—wrote letters to the editor and testimonies to the City Council. In retrospect, though, we local architects should have seen it coming, since control of the selection process was placed entirely in the developers' hands, in spite of the infusion of public money.

It was only natural that the developers would run their competition by their rules and in their own interest. That this occurred is not surprising; in Dallas, as in many cities, selecting architects for development projects through limited competitions is considered a normal process.

What was overlooked by almost everyone, though, was that this was not a typical developer competition: a great deal of public money was involved. In exchange for its participation, the city should have required a higher-quality competition run in a professional, responsible manner according to an accepted set of rules, such as those of the AIA.

Such a competition could have been run with the consultation of a

professional advisor, civic leaders, and the architecture profession. All would have participated in the development of the competition goals and criteria and in the selection of a qualified, balanced jury that included not only the developers but also design professionals, civic leaders, and representatives of the public interest.

Instead, the Dallas Arena competition was run for the sole benefit of the developers and their priorities, with no provision made for input from other affected parties, including the citizens who are now obligated to repay the millions of dollars in bonds that support this project.

It may be too late to salvage the Dallas Arena. However, as we are seeing more and more public and private cooperation involved in major development projects, this competition should serve as a cautionary tale for institutions and cities—and those who care about them—of how a selection process can go awry. Competitions must be carefully and equitably structured from the outset. ■

Contributions: If you would like to express your opinion in this column, please send submissions by mail (with a disk) to Speak Out, Architectural Record, Two Penn Plaza, New York, N.Y. 10121; by fax to 212/904-4256; or by E-mail by visiting www.archrecord.com and clicking on News/Features/Dialogue. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive text approval.

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CIRCLE 12 ON INQUIRY CARD

MENTORS

Mediation can provide a quick resolution to a construction-related dispute if the parties are properly prepared.

Zela Claiborne is a partner in the law firm of Bronson, Bronson & McKinnon LLP in San Francisco, a fellow in the American College of Construction Lawyers, and a mediator with the American Arbitration Association.



When the AIA introduced new versions of two standard construction contracts (A201 and B141) last fall, it added a mediation requirement: before arbitration or litigation, disputes must be mediated under the rules of the American Arbitration Association (AAA). Because more construction-related disputes will now be mediated, RECORD asked Zela Claiborne, a lawyer and mediator, to discuss what architects should expect from the proceedings and how to prepare for them.

Mediation has grown in popularity, and for good reason: surveys claim a success rate for mediation of around 90 percent. It is a low-risk procedure that allows for a speedy resolution and involves a relatively low cost when compared to arbitration or trial.

The first step in ensuring the success of the process is the selection of an appropriate mediator. Participants should choose a mediator with experience in construction disputes and a reputation for fairness.

Equally important is the selection of participants; mediation will work only if each party is represented by a decision maker with full settlement authority. The process depends on hearing an opposing viewpoint and evaluating it with an open mind. A person who is heavily involved in the events leading to the dispute may be too biased or too eager to justify earlier behavior to make an effective representative.

Another crucial element is preparation: mediation will be suc-

cessful only if the parties prepare adequately. Architects should plan a mediation strategy with care. Claimants in a large dispute will have to pay consultants to draft at least a preliminary claim document if they expect to receive a substantial settlement. In complex disputes, some discovery—an exchange of documents or taking depositions—may have to take place if mediation is to lead to resolution. Money spent getting ready for mediation is easily justified if it leads to a prompt settlement. With proper preparation, the parties have an excellent chance of reaching a timely and economical resolution.

The mediation procedure itself is simple and straightforward. Usually, short briefs outlining the factual background of the dispute, the key issues, and the applicable law are exchanged. After opening statements by counsel, there may be presentations by experts or by one or two key witnesses, usually followed by group discussion covering the most important issues. The mediator then meets with each party individually to discuss the strengths and weaknesses of its position and to explore settlement options.

Parties should be willing to exchange information freely in mediation because the procedure is confidential. AAA rule M-12 provides that information disclosed to a mediator in confidence shall not be divulged by the mediator. Furthermore, the law in most states provides that views expressed and information shared, including admissions, are to be kept confidential

and cannot be introduced as evidence in any future proceedings.

Mediation is not binding, but it can be used to reach a voluntary settlement. The point of the process is to encourage the participation of the parties and allow them to craft their own resolution, rather than having one imposed by an arbitrator, judge, or jury.

Settlements reached in mediation are enforceable, however, if the key terms are agreed upon in a written statement. The agreement may be handwritten, and it should be executed before the proceedings close. A more formal agreement should then be prepared by counsel within a period of time agreed upon at the mediation. Adhering to this formula will assure that a successful mediation truly results in a prompt settlement and avoids the costs of protracted litigation.

A successful mediation means the parties involved retained control of the settlement of their dispute. The format allows for creative solutions, perhaps involving more than a simple payment. In addition, parties that have worked together in the past may be able to salvage their business relationship. ■

Questions: If you have a question about your career, professional ethics, the law, or any other facet of architecture, design, and construction, please send submissions by mail to Mentors, Architectural Record, Two Penn Plaza, New York, N.Y. 10121; by fax to 212/904-4256; or by E-mail by visiting www.archrecord.com and clicking on News/Features/Dialogue. Submissions may be edited for space and clarity.

PERFECTIONIST

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Michael Hart, M-E Engineers, Inc., Denver

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CIRCLE 13 ON INQUIRY CARD

JOHNS MANVILLE

CORRESPONDENT'S FILE Hanoi makes big plans for its future, hoping to preserve its historic core and avoid the mistakes of other Asian cities.

BY CLIFFORD PEARSON

Crossing the street in Hanoi is no simple task. Swarms of bicycles, mopeds, motorcycles, and cyclos (the ubiquitous Vietnamese pedicabs) whizz by, uninterrupted by traffic lights and untamed by traffic lanes. The only way to get to the other side is to slowly wade into the colorful stream of twin-wheeled vehicles and let them maneuver around you. The first time you try this is unnerving.

Vietnam is in the process of figuratively crossing the street, moving from a tightly controlled socialist economy to a more open, capitalist system. On the way, it is jumping from an era of pedal-powered machines to one of electronics and international finance. It's a frightening leap, especially now that many Asian economies have experienced their first crash along the emerging-market superhighway.

Catching the eye of investors

Twenty-three years after the fall of Saigon, a unified Vietnam is finally emerging on the international scene. With a population of 80 million, a high literacy rate (nearly 90 percent, according to the Chamber of Commerce and Industry of Vietnam), and newly reformed laws encouraging capitalist enterprises, the country is attracting the attention of foreign investors, developers, and architects.

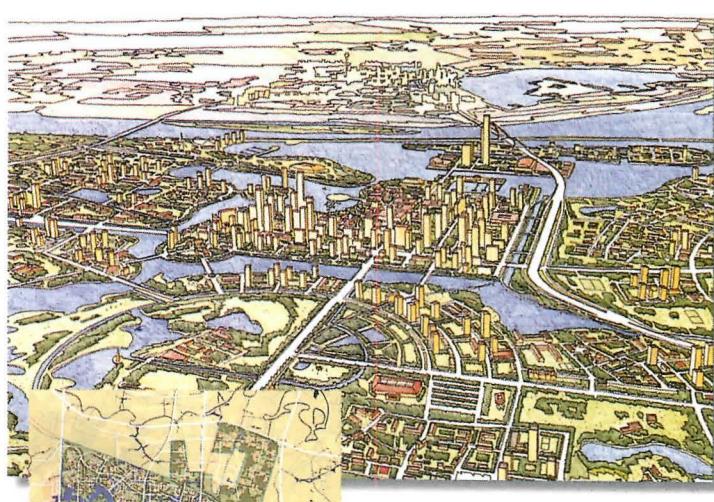
But decades of war, communism, and an American trade embargo have left Vietnam a poor nation with huge obstacles to development. The nation's transportation, telecommunications, and power networks are ramshackle at best.

In addition, the old north-south split still manifests itself in an unequal level of economic activity in Ho Chi Minh City (formerly Saigon) and Hanoi, the capital. While in the south Ho Chi Minh City (HCMC) sprouts clusters of high-rises and buzzes with foreign investors and overseas Vietnamese, Hanoi moves at a more stately pace. The money and the nightlife are in HCMC, but Hanoi's slower economy has allowed it to retain its rich history of French colonial architecture and densely packed city streets.

Although the Vietnamese struggled as many of their neighbors got rich during the past decade, they may benefit from getting into the development game late. For example, they can see what happens when urban growth runs amok just by visiting places such as Bangkok and Jakarta.

"We want to extract lessons from other cities, so we can reduce the number of problems and the amount of time it takes us to develop," states Hoang Van Nghien, Hanoi's equivalent of mayor, whose official title is chairman of the Hanoi People's Committee. Chairman Nghien has traveled throughout Asia and spent time recently in Boston, where he was impressed by the city's ability to preserve historic areas while moving forward with modern development.

One of the lessons Nghien has learned from his travels deals with traffic congestion, an issue that his city will have to confront soon as more Vietnamese begin to buy cars. The only cities in Asia where traffic moves, says Nghien, are Rangoon in

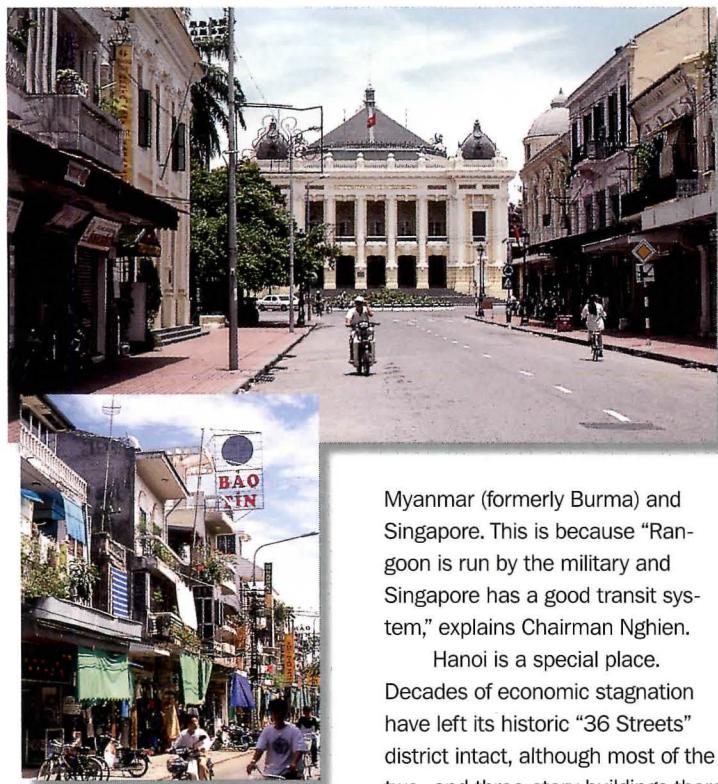


A recently approved plan for Hanoi calls for a new downtown north of the Red River (above and left).



By concentrating high-rise development in the new downtown, the plan will allow the existing city south of the river to retain its low scale and its blend of colonial-era avenues (above) and narrow streets (right).





Two faces of Hanoi: the recently renovated opera house (top) and an old street alive with bicycles (above).

Myanmar (formerly Burma) and Singapore. This is because "Rangoon is run by the military and Singapore has a good transit system," explains Chairman Nghien.

Hanoi is a special place. Decades of economic stagnation have left its historic "36 Streets" district intact, although most of the two- and three-story buildings there are badly in need of repair. The fast-beating heart of the city's old commercial area, the 36 Streets

district actually has 78 narrow, crooked roads lined with shops on the ground floor and residences above. Plastic tables and chairs from makeshift restaurants spill out onto the sidewalk, where everything from traditional Vietnamese dresses to motorcycle seats is sold.

The value of history

The area is remarkable for being a distinct quarter, not just a collection of buildings. Fortunately, Hanoi's government understands the nature of its appeal and has established one of Asia's few historic districts as a way of protecting its character.

To the east and south of the 36 Streets is the administrative quarter where 19th-century French colonial authorities built tree-lined boulevards, stately mansions, and neoclassical civic buildings. The recently restored opera house (modeled after Garnier's in Paris) and dozens of ochre-colored administrative buildings are architectural souvenirs from Vietnam's colonial past.

Just as important as Hanoi's legacy of graceful buildings are the many parks and lakes dotting its urban landscape. Hoan Kiem Lake, for example, is a pagoda-and-temple-studded jewel right in the middle of the city. Much larger Ho Tay, or West Lake, is on the outskirts of the city's historic core and is a natural magnet for all kinds of hotels and recreational facilities. And nearly every neighborhood has at least a small park offering shade and a place to meet.

Towers cause alarm

In the last few years several high-rise office buildings have shot up in the center of Hanoi, breaking radically from the much finer scale and texture of their neighbors. Residents, architects, and government officials quickly realized these bland glass-and-metal towers were mistakes that should not be repeated. Slower economic growth than expected in the past two years may have led developers as well to see

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these high-rises as less than successful. As a result, new regulations restrict high-rise projects to just a few areas in town.

Hoping to avoid the errors of other Asian metropolises and to make the most of the city's assets, Hanoi officials started working about two years ago with a group of international consultants to develop a master plan that would guide the city to the year 2020. The group was led by Daewoo of Korea and included Bechtel; Skidmore, Owings & Merrill; Nikken Sekkei; Rem Koolhaas; and firms from Singapore, Malaysia, and Sweden. The plan was approved by the city and national governments this summer.

A new downtown

One of the key recommendations of the master plan was to develop a new downtown across the Red River from the existing city. By concentrating modern buildings in this new district (as well as a few other parts of the city), the planners hope to

preserve the historic character of old Hanoi.

The master plan also calls for a new park along the Red River, greenways around the city, and establishing about 20 satellite towns within 20 to 30 miles of Hanoi to relieve the center city of some of its population pressures.

Hanoi currently has about 2.5 million people, according to Dao Ngoc Nghiem, deputy architect in chief for the city. But Hoang Van Dung, deputy secretary general of the Chamber of Commerce and Industry of Vietnam, notes that the city "was planned for a population of about 300,000."

The government's goal is to keep Hanoi's population at its current size while increasing the number of people living (and working) in satellite towns to 2 million, reports Nghiem. Each of the outlying areas would have a different focus and character, ranging from a university town to a high-tech center to a manufacturing hub.

A high birth rate and immigration of people from the countryside, however, could push Hanoi's population to 6 million by 2010, says Hoang. He also estimates that \$50 billion of infrastructural development is needed in the city.

Looking at mass transit

Public transit in Hanoi is almost nonexistent. The beginnings of a light-rail system were abandoned a few years ago after planners and residents saw how much space it took up in the existing narrow streets. And the current bus system is so unreliable that very few people use it.

"In the next five years, we plan to build up the bus system so it handles 30 to 40 percent of the city's transportation," states Chairman Nghien. "We also hope to upgrade the railroad around the outskirts of the city and into the city center." A new ring road around the city is now being built by a consortium of foreign companies under a

build-operate-transfer arrangement with the government.

Who will pay for all these improvements is a key question. Foreign investment in Vietnam has slowed down in the last two years and the Asian currency crisis now promises to delay large-scale foreign involvement even longer. The World Bank and the International Monetary Fund are helping to finance some infrastructure projects, but their scope is limited.

Some outside observers, though, are bullish on Hanoi. "The mayor is a farsighted guy; he has a vision for the city," says Robert Wolfgang, the director of the Office of International Trade and Business Development for the City of Boston, who has set up business exchanges between the two cities and started a "sister city" relationship.

"It's still very bureaucratic, but I didn't see a lot of mistakes in their plans," reports Homer Russell, director of urban design for the Boston Redevelopment Agency, who visited

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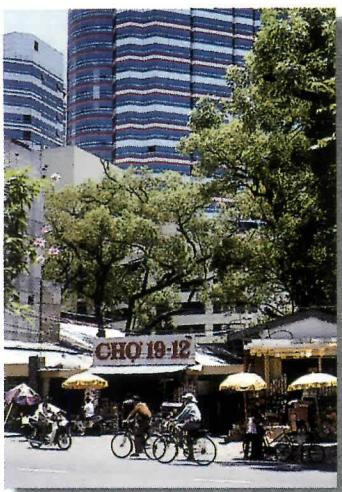
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Modern towers in the center of town convinced the authorities to restrict where new skyscrapers may be built.

planners and government officials in Vietnam earlier this year. "They understand the value of what they have," says Russell, referring to the historic parts of Hanoi.

On the national level, Vietnamese officials are trying to put together plans that would allow for

controlled growth over the next 20 years. Estelle Jackson, a Boston architect and planner, is working with the Boston Society of Architects and a team of international business experts to assist the Vietnamese in guiding development.

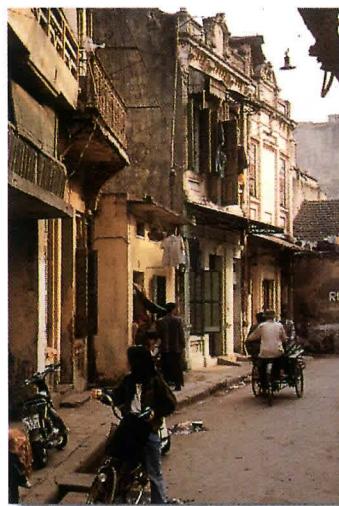
"We're recommending that the Vietnamese build their social and economic infrastructure before they start with all the physical stuff," says Jackson. New banking, monetary, and legal codes all have to be written before large-scale building begins, she argues.

More needs to be done

Douglas Peterson, U.S. ambassador to Vietnam, agrees that much work still must be done to create the right economic and regulatory conditions for future growth. "The lack of standards" in terms of building, banking, and legal codes "is one of the most serious issues facing the Vietnamese," says Peterson. "They need to build a reliable banking system that is accountable and auditable and to

eliminate a lot of the governmental red tape."

Peterson says the Vietnamese have talked a lot about change, but haven't done enough. For example, he says, "Vietnam has about 6,000 state-owned enterprises, but only 15 or 16 have been privatized. They need to do much more."



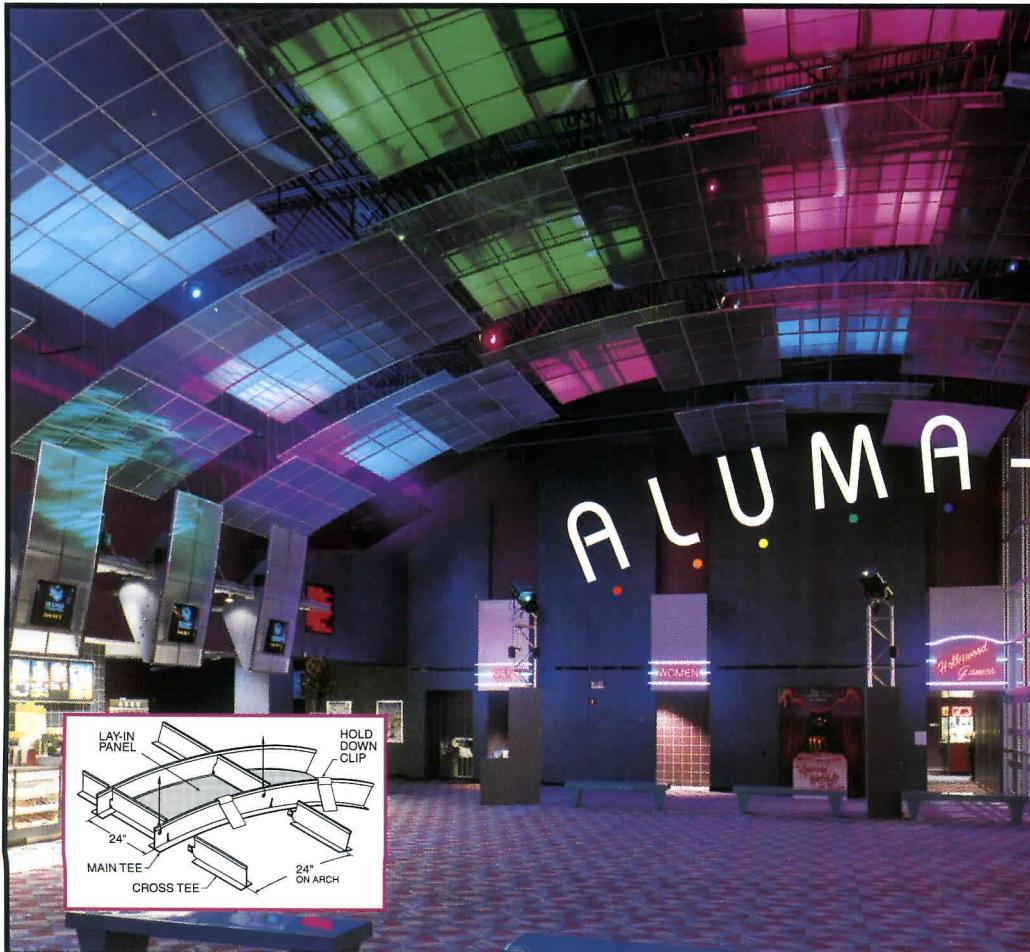
The 36 Streets district is mostly intact, but buildings are in disrepair.

Binh Vinh, an architect in Philadelphia who was born in Vietnam and educated in France and the United States, shares many of Ambassador Peterson's views. "The fundamentals in Vietnam are still communist," states Vinh, who is design principal at Kling Lindquist Associates. "Some of the mid-level officials are trying to make changes, but they're not in charge yet."

Hard to say no

Vinh gives Vietnamese officials credit, though, for learning from the mistakes of other Asian countries that let their cities grow without enough controls. Referring to officials in Hanoi, Vinh says, "They've stopped high-rises in the old city and set up development rules. So they're trying to do things right."

But, Vinh warns, "It's difficult to stop the tide of international finance and development once it starts. Money talks. Money is king. It's hard to refuse." Especially for a country as poor as Vietnam. ■



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BOOKS Practice, practice, practice: three new books that attempt to help young architects along the path from education to the workplace.

BY JOHN E. CZARNECKI

Architect? A Candid Guide to the Profession (revised edition), by Roger K. Lewis. Cambridge: MIT Press, 1998, 304 pages, \$17.

Professional Practice 101, by Andy Pressman. New York: John Wiley & Sons, 1997, 345 pages, \$44.95.

Management for the Small Design Firm, by Jim Morgan. New York: Whitney Library of Design, 1998, 176 pages, \$45.

For students and young practitioners, working in an architectural office for the first time can be a difficult adjustment. Professional practice courses do little to prepare students for the realities of practice and office management; only in the workplace can architects learn these lessons. Three recent books by practicing architects cover much of this ground for architects-to-be who are about to enter the profession: informing young people about architectural education, training students for the transition from formal education to practice, and helping to supplement the office experience.

Originally published in 1985 and recently revised, *Architect? A Candid Guide to the Profession*, by Roger K. Lewis, is required reading for architecture students and interns. The new edition includes updated information as well as more illustrations, all drawn by Lewis, to complement the text.

When I first read the book as a freshman in architecture school, it gave me more insight into the education I was beginning and the profession I was entering than most of my professors could. As Lewis claims, *Architect?* provides "a candid account of the realities of becoming and being an architect." It defines the path to licensing and examines the architect's role in the building process.

Lewis brings a wealth of experience to this guide. A practicing

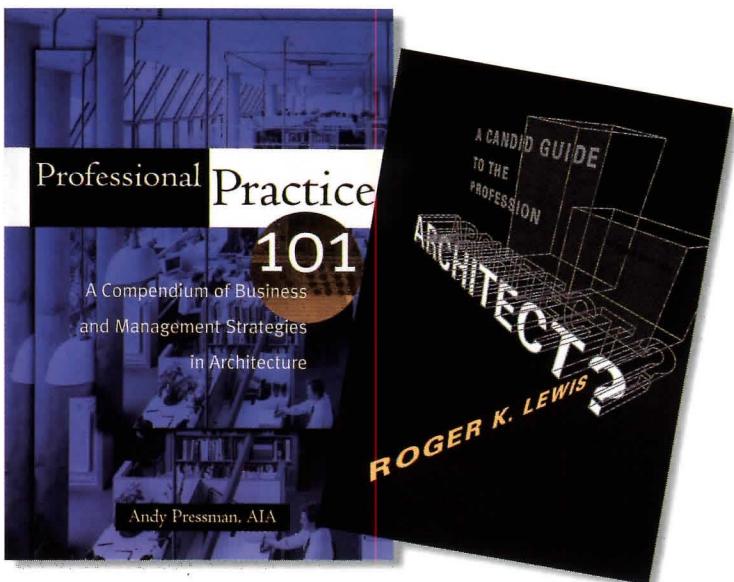
John E. Czarnecki is a former editor of Crit, the national journal of the American Institute of Architecture Students.

architect in Washington, D.C., and a professor at the University of Maryland School of Architecture, he also writes a column on architecture, "Shaping the City," for the *Washington Post*. While *Architect?* is admittedly subjective, based solely on Lewis's expertise, his advice will serve most of his readers well on the road through architectural education and practice. And while the book's value to aspiring architects and architecture students is clear, it should also be read by practicing architects to affirm (or rethink) the reasons they entered the profession.

In *Professional Practice 101*, Andy Pressman, AIA, uses a range of experts to cover similar issues. Though the book's subtitle, "A Compendium of Business and Management Strategies in Architecture," may make *Professional Practice 101* sound deadly bland, Pressman's text, as well as the contributions from numerous practitioners

and educators, delivers an engaging dialogue on the state of architectural practice. And while it's true that some of the essays are more gripping (or humorous) than others, the book's ideological neutrality allows it to serve as an effective catalyst for bridging the gap between education and practice.

The book begins, appropriately, with discussions of professionalism by three authors. The essays and interviews that follow, by Pressman and his contributing writers, cover subjects from firm typologies to project delivery to legal issues and non-traditional practice. In one evocative story, Michael Borowski writes about the contributions of David Wisdom, Louis Kahn's right-hand man, who spearheaded the production end of Kahn's practice. Anyone interested in teaching should read Stephen Dent's essay, which defines the stages and expectations associated with academia. Robert Douglass's account of



alternative careers is valuable in helping you discover if you're a "seeker" or a "solver."

An assistant professor of architecture and planning at the University of New Mexico, Pressman intended his book for students and intern architects. However, *Professional Practice 101* is equally, if not more, relevant to seasoned practitioners and educators.

Although it targets the same audience as Lewis's and Pressman's books do, Jim Morgan's *Management for the Small Design Firm* is not as engaging—a critical lapse when targeting a young audience. Morgan's book provides essential information on practice, but it is overly dry and lacks depth.

In the first four chapters Morgan covers a number of issues vital to beginning a practice: human resources, financial management, and project management and development. His lessons here are useful. However, in the final chapter, where small firms are profiled, what should

be the most informative part of the book is little more than a promotion of Morgan's friends and colleagues. Although it's interesting to see the management styles of small firms, most of the firms profiled are either associated with Architects/Designers/Planners for Social Responsibility, of which Morgan is secretary, or have been associated with Pratt Institute, where Morgan taught interior design for more than 25 years. Because it lacks a conclusion and could use a broader range of profiles, *Management for the Small Design Firm* could have ended at chapter four.

Briefly Noted

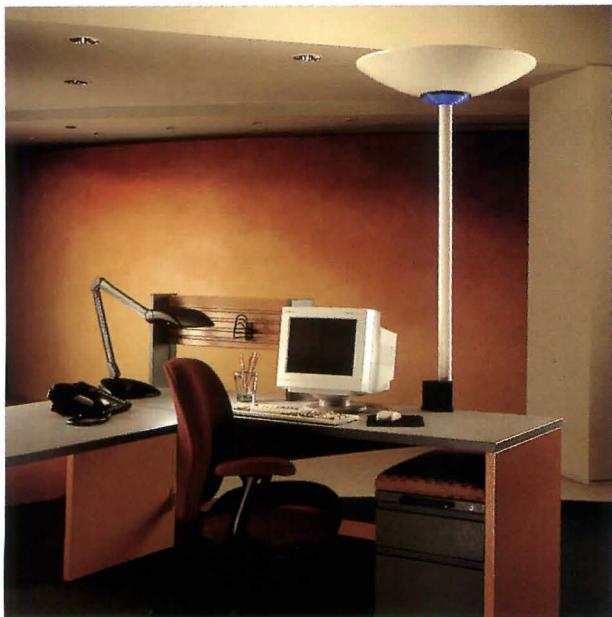
Solutions: Understanding the Graphic Divisions of the Architect's Exam, by Norman K. Dorf. Published by the author, 1998, 135 pages, \$40.



NORMAN K. DORF, AIA

lished guides to help explain the test's newly computerized version. To aid in studying for the computerized graphic vignettes—arguably the most ambiguous and difficult-to-prepare-for portions of the exam—Norman K. Dorf, AIA, has published *Solutions: Understanding the Graphic Divisions of the Architect's Exam*. The guide, which can be ordered at Dorf's Web site, <http://members.aol.com/nkdorf>, covers the site planning, building planning, and building technology

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divisions of the architects' exam.

A self-published effort, *Solutions* may lack the production quality of NCARB's manual, but because it provides a comprehensive view of the graphic divisions, it is worthwhile. Dorf has extensive experience teaching ARE preparation courses, conducting workshops, and writing and grading ARE questions. Using images taken from NCARB's sample problems, Dorf provides detailed, annotated illustrations of successful graphic solutions. His recommendations for accurate and complete answers to the exam's graphic sections, and his explanations of how each problem is scored, exceed similar information found in NCARB's guide. Although it should not be used as the only guide to prepare for the ARE, *Solutions* is a useful supplement.

Architectural Graphic Standards

CD-ROM Version 2.0, edited by John R. Hoke Jr. New York: John Wiley & Sons, 1998, \$395.

Just as CAD systems have replaced hand drafting in most architectural offices, the CD-ROM version of *Architectural Graphic Standards* (AGS), complete with links to industry Web sites, is also becoming an important tool for increasing efficiency in architectural practice. AGS Version 2.0, a PC-based CD-ROM, is a marked improvement over Version 1.0 and a necessary addition to every architect's desktop.

Version 2.0 contains more than 10,000 drawings, half of which are vector data drawings—five times as many vector data drawings as were included in Version 1.0. All the drawings can be copied easily into AutoCAD, Microstation, and most other CAD programs, as well as desktop publishing programs. The vector drawings' layers, accurate scale, and editable text remain intact when they are copied into a CAD program.

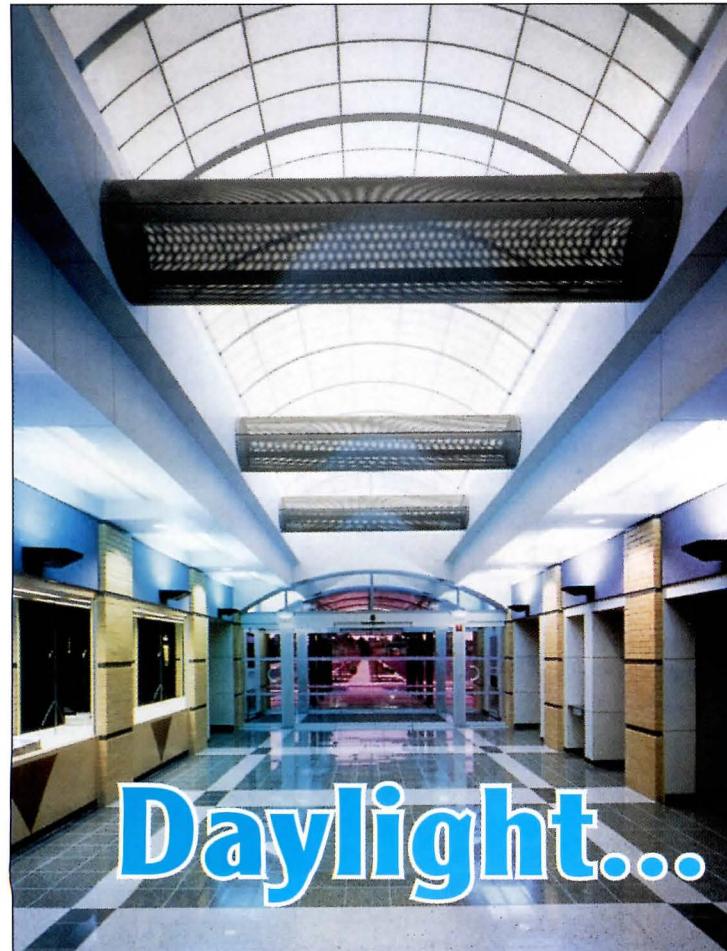
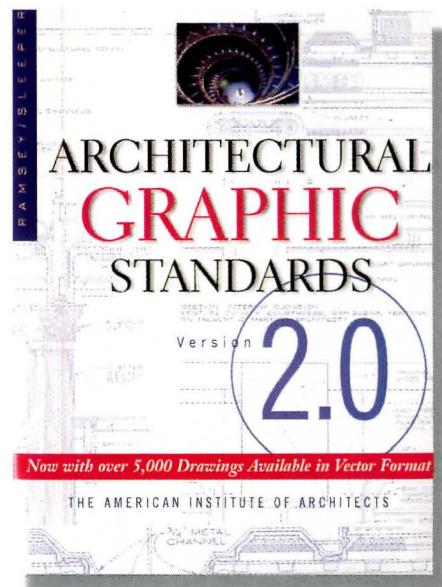
Among the important additions to Version 2.0 are direct links to more than 2,000 manufacturer Web sites

and manufacturer profile pages on the Architects' First Source (AFS) Web site. Instead of paging through the AGS book and then finding the appropriate manufacturer information in various catalogs, architects can quickly access and download drawings and accompanying text if they have Web access. As new Web links become available, users will be able to download them from the John Wiley & Sons Web site. By fully implementing all the features of the AGS CD-ROM, production time can be decreased and accuracy of detail increased.

AGS Version 2.0 was edited by John R. Hoke, Jr., FAIA, the publisher of the American Institute of Architects Press and editor-in-chief of the eighth and ninth editions of AGS. The CD-ROM was developed

by Jordani Multimedia of Minneapolis.

As with most Windows-based programs, you don't have to be a computer expert to retrieve and implement information from Version 2.0. It's well worth the price, especially for owners of Version 1.0, who can upgrade for \$200. ■



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RECORD NEWS

TALLEST TOWER IN LATIN AMERICA IN THE WORKS FOR MEXICO CITY

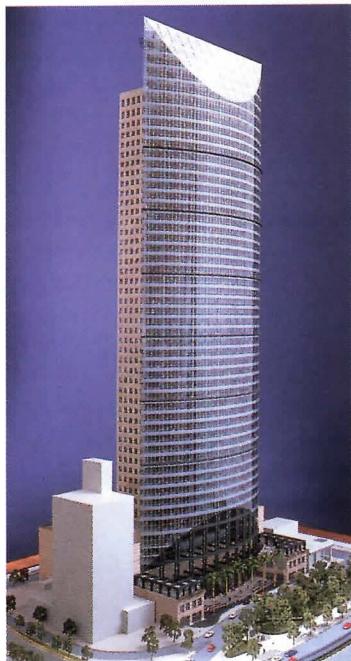
Paul Reichmann, developer of Canary Wharf, the office campus that eventually revitalized London's Docklands, is now building the Torre Mayor in Mexico City, a 738-foot office tower that will be the tallest building in Latin America. The building will rise 55 stories above Paseo de la Reforma and Chapultepec Park. Its site lies between the city's historic district and the big hotels and corporate buildings of Polanco, an area that, despite its great location, has been in decline over the past few years.

The project teams Reichmann's International Property Corporation,

cal elements: one curved, green glass structure, opening out on multiple views, and a burnished granite structure with a rectangular floor plan. The most striking formal elements are the 60 degree diagonals that cut the glass volume at top and bottom. The glass body leaves visible the interior structure of the first 10 floors, emphasizing the entrance and paralleling the nine parking levels at the rear of the building.

The Torre Mayor will boast 800,000 square feet of column-free office space, while four underground levels and nine above provide 2,000 parking spaces. A 32,000-square-foot commercial area is planned for the entrance area, and a sophisticated foundation—outfitted with innovative shock absorbers capable of counteracting seismic effects—will support the steel structure.

In Mexico City, where accelerated growth has created a chaotic urban pattern, the Torre Mayor should help mark a central reference point. *Miquel Adria*



the developers and one of Canada's largest real estate organizations, with ICA, the largest construction company in Mexico, and Canadian architect Zeidler Roberts Partnership, best known for its high-tech structures for the Vancouver Expo in 1986. Architect Eberhard Zeidler also designed parts of Canary Wharf and buildings along the Paseo, among many commercial projects.

In his design for the Torre Mayor, Zeidler juxtaposes two verti-



HOLLYWOOD ON THE HUDSON: NEW YORK GETTING NEW STUDIOS

Though the days are long gone when New York was the capital of the film industry, production activity in the city has been on the rise lately. Now, a pair of projects—a film studio being built in the Brooklyn Navy Yard and a production studio in SoHo—could play a major role in attracting even more business to New York.

In June, New York Studios, Inc., signed a 70-year lease with the Brooklyn Navy Yard Development Corporation with the intention of building what it describes as the largest production facility outside Hollywood. If all goes as planned, the \$160 million, 700,000-square-foot complex would sit on a 15-acre site in the Navy Yard. A pre-development, conceptual design

has been created by HLW International.

Across the river, Meridian Design Associates has completed its plan for Hudson River Studios (above), a complex that will be built on top of an existing building on West Street that was originally a rail freight facility. The project is budgeted at \$120 million and slated for completion in January 2000.

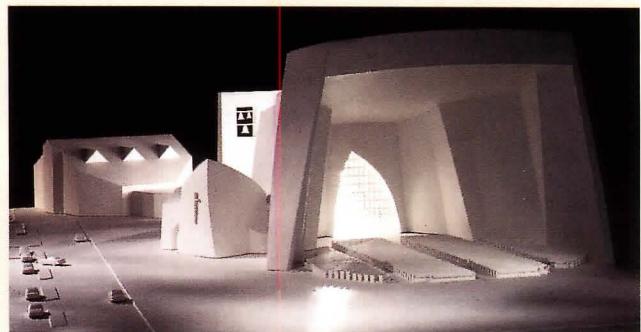
The architects designed 310,000 square feet of new construction, including five television studios and post-production, office, and logistical spaces. Meridian put a premium on comfort in the proposed workspaces, including windowed, sunlit offices, terraces overlooking the Hudson, and an exercise room. *Soren Larson*

JOHNSON'S HOPEFUL DESIGN Ground was broken in late July for Philip Johnson's Cathedral of Hope, being built in Dallas to serve the largest gay and lesbian congregation in the world. A 78-foot bell tower will be followed next year by a sanctuary, chapel, and cloister. A dedication is planned for the \$20 million project on January 1, 2001. "I keep telling them to hurry up," says Johnson, who is 92 and openly gay. "Twenty million for a building like this is not expensive. Once people see it going up, they'll rush in to help complete it."

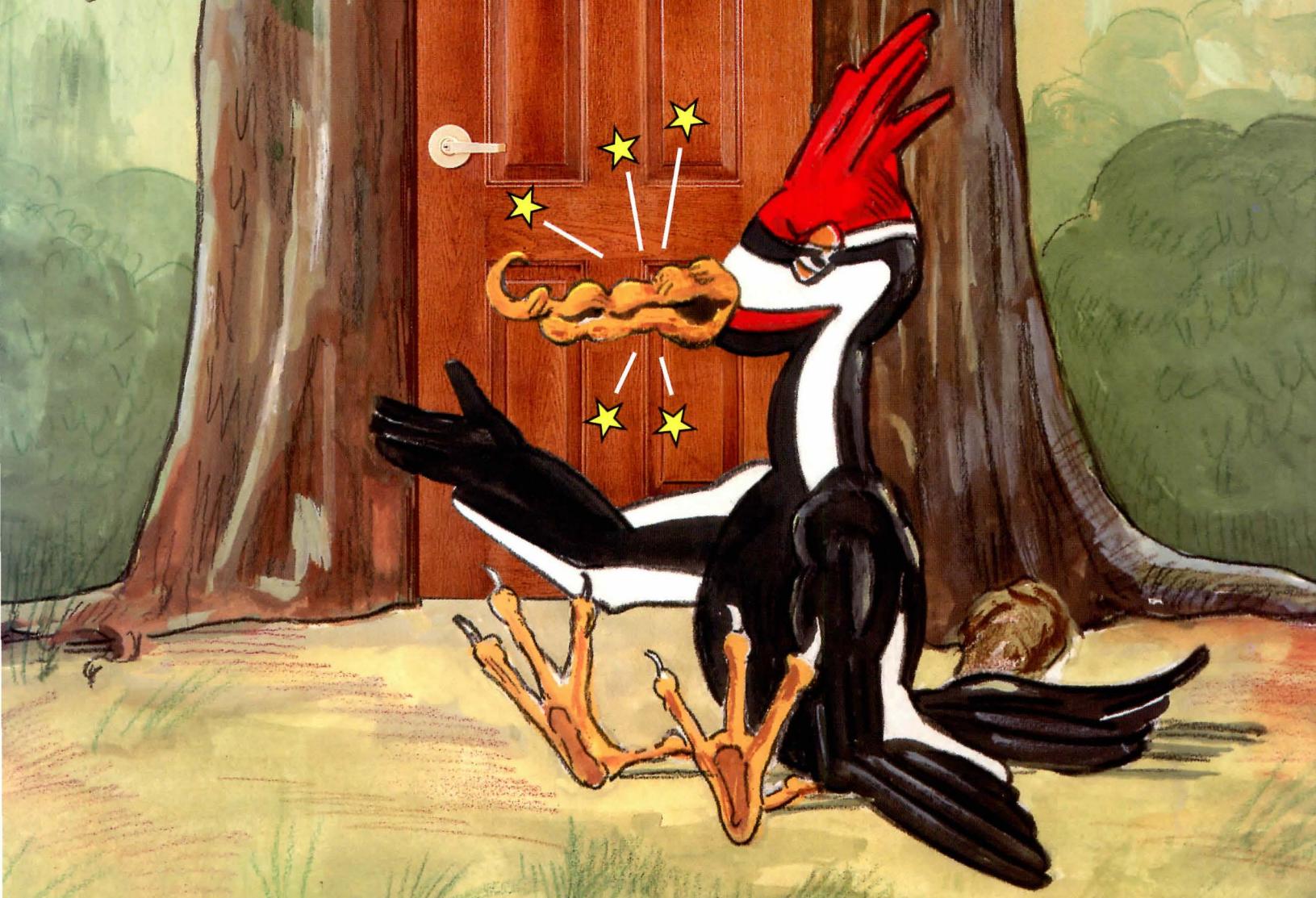
Philip Johnson/Alan Ritchie Architects got the commission three years ago after senior pastor Michael Piazza was impressed by Johnson's Crystal Cathedral in Garden Grove, California. "We wanted a unique architectural statement," Piazza explains, "something both new and traditional, ancient even. We are not a New Age church."

The new cathedral will inhabit the same expressionist, biomorphic realm as Johnson's St. Basil's Chapel in Houston and the undulating visitor center at his estate in New Canaan, Connecticut. The main sanctuary will seat 2,500 and be framed by curving walls and sloping ceilings. However, the basic plan is conventional: altar, pews, choir loft, and a long center aisle.

A side chapel and a winding cloister will connect with the smaller, existing church, and the entire structure will be covered in synthetic concrete. "I'm doing real architecture again," says Johnson. "Churches and synagogues are the only buildings worth designing these days, unless of course I'm designing something for myself." *David Dillon*



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LET THE GAMES BEGIN: ONTARIO BUILDS ON THE CASINO CRAZE

A somewhat restrained, Canadian version of a Las Vegas-style casino hotel opened this summer on the Windsor, Ontario, side of the Detroit River.

Casino Windsor's 100,000 square feet of gaming is crammed with 3,000 slot machines and 130 table games, and a video poker bar sits on the main floor of the 21-story, 389-room hotel. A temperature-controlled skywalk connects a 300-space parking structure to the casino and hotel, which has restaurants, bars, lounges, and an 11,000-square-foot ballroom. The silver and blue, concrete and glass complex carried a price tag of around \$333 million.

The project was designed by the Webb Zerafa Menkes Housden Partnership (WZMH) of Toronto. Mel Glickman, one of the partners, says the nearby river strongly influenced the design, as illustrated by the 60-foot-high "water feature" that cascades three stories down through the atrium.

The landscaped site covers six city blocks. "From an urban design point of view, the casino is an anchor for a proposed major downtown redevelopment," Glickman says. There is another anchor in the works, a 34-story, 660,000-square-foot office tower, hotel, convention center, and parking garage now under active consideration by city

council members—which WZMH also designed.

A second casino in Windsor is likely to be built, albeit on a smaller scale. Ron Barbaro, chairman of the Ontario Casino Corporation (OCC), the government agency that owns the province's three nonstop casinos, favors a second gaming venue on an adjacent government-owned site.

As many as 30,000 people a day packed the new Casino Windsor within the first five days of opening; with these numbers and a continual flow of revenues into provincial treasures, it becomes not a question of whether a second casino will be built, but when and how big.

There has been little opposition to the idea, certainly not from political quarters. Windsor Mayor Michael Hurst actively lobbies for a second casino several blocks away from the new one.

He also calls for more family entertainment attractions and a convention center to help beat back competition from the U.S. side of the border. However, no commitments have been made.

And competition will arrive. Soon, Casino Windsor will face three neighboring casinos—with a combined 300,000 square feet of gaming space—that have been approved by Detroit's city council. Al Warson

TOUGH TIMES FOR WRIGHT HOUSES Fallingwater is not quite falling down, but structural analysis indicates that stress levels in Frank Lloyd Wright's famous cantilevered living room balconies have produced sagging—which could lead to a dire situation. As a result, the Western Pennsylvania Conservancy, which owns Fallingwater, has put a brace under the cantilever and is embarking on a restoration project. "The long-term prognosis? If untreated, [the house] will end up in the river," says Robert Silman, whose New York firm is the project's consulting engineer.

The first step was to put temporary steel shoring under the cantilever (shown below), as well as beneath the projecting rock of the waterfall below. The shoring does not carry any weight, but it prevents any further movement of the cantilever and will reduce stresses during the repair process.

The structure was analyzed using nondestructive pulsed radar and a three-dimensional computer model. Engineers determined that the primary cause of the deflection was the dead load of the inadequately reinforced structure itself—not snow, nor the hundreds of tourists who visit daily. According to Silman, Wright's ideas did not overreach the structural capabilities of the time—the cantilevers were underbuilt by the standards of 1936.

The eventual solution will likely be to take up the stone floor of the living room and insert pre-stressing members to reinforce three of the four main beams. The strategy will not eliminate the existing sag, because jacking up the building would cause extensive cracking. While the floor is removed, other mechanical and electrical renovations will be done as part of a larger program of repairs under a master plan by New York's Wank Adams Slavin Associates.

The conservancy plans a fund drive for the \$6 million project and will host a forum in April to present its recommendations. Work will begin toward the end of the year, and the house will remain open.

Meanwhile, a wing of Taliesin, Wright's home and studio complex in Spring Green, Wisconsin, was damaged in June by a tree felled in a thunderstorm—ironically, a tree that helped serve as the architect's inspiration in designing the home. The century-old oak, which the house was built around in 1911, split and fell onto the roof of an area that Wright had used as his office and drafting studio.

Although the roof was crushed and windows were broken, the structure did not collapse and can be stabilized, according to the Taliesin Preservation Commission, which will now turn its attention to raising funds for a restoration.

The studio, in a section where the Wright Foundation now has its offices, had been left untouched by fires that twice destroyed the adjoining house, first in 1914 and again in 1925. *Jonathan Hale*





VALENCIA'S DEVELOPMENT PLAN STARTS WITH FOSTER'S CONGRESS CENTER

The Congress Center in the Mediterranean port city of Valencia, Spain, designed by Foster and Partners, is a deceptively simple structure.

As in other Foster works, the center's elaborate program is packed into a simple geometric shape, and the balanced, classical harmony of the exterior yields to a more dynamic interior distribution. The public areas and meeting rooms are developed in plan from the curving eastern facade as if they were following a distorted orthogonal grid, while the curving western wall cuts through this implied grid to define backstage service areas.

A zinc-coated aluminum roof soars over the lens-shaped plan, recalling the thin-shell concrete vaults of the 1960s and earning the center—which opened in July—the local nickname of *sardineta*, or little sardine.

The new building is located at the western entry to the city, in the center of a landscaped block that is the focus of a future zone of dense commercial development. The

167,000-square-foot facility was commissioned by the city and built on a tight budget of \$33.3 million, or \$200 per square foot.

Diez Cisneros was the local architect, Ove Arup & Partners was the structural and acoustical engineer, and J. Roger Preston + Partners was the mechanical engineer.

The team developed a high, wide lobby (above) that follows the long arc of the eastern facade, offering access to two maple-lined auditoriums seating 1,500 and 470 people, and to a multipurpose hall accommodating 250.

Between these volumes, stairs rise to nine seminar rooms, a restaurant serving 1,100, and other services on the upper level. The 650-foot eastern wall is glass, shaded by fixed vertical louvers of translucent stone.

A pool running the length of the base is designed to cool air drawn over the water into the lobby, cutting mechanical air-conditioning needs. *David Cohn*

MANHATTAN NURSING HOME ADDITION ADAPTS TO ITS SURROUNDINGS

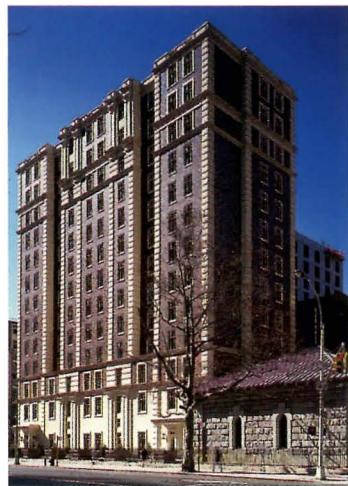
When Geddis Partnership set out to design an addition to a nursing home in upper Manhattan, the firm wanted the new building to fit in with the traditional residences in the area. Design partner Barbara Geddis, FAIA, says she chose to "evoke the image of prewar luxury apartment houses on the Upper West Side, and in so doing, we thought to achieve a level of refinement usually not found in urban skilled-nursing facilities."

The \$25 million, 88,000-square-foot addition to Amsterdam House consists of a 13-story wing fused to a nursing home built in 1977. The architects created a new lobby and common area, then connected the addition to the north with a senior day-care center housed in a restored 1880s waterworks structure.

The new structure's masonry is organized into a horizontal base and vertical tiers, a look in keeping with the neighborhood. The overall tones of the brick, windows, and precast elements are in tune with the

palette of nearby Columbia University, and the interior is meant to be consistent with the original feel of Amsterdam House, founded as a nonprofit entity in 1872.

The continuous lower levels of all three structures host therapeutic services, ambulatory care, and social services. The upper floors include new semiprivate rooms for some of the 409 residents, as well as a dining room, nurse's station, and lounge. *S.L.*



DESIGNS FOR DOGS Most dog owners don't put a lot of thought into the design of their animal's housing, but once a year they do have an opportunity to nab an architect-designed palace for their pet. At the annual Dog Day Afternoon fundraiser in St. Paul, Minnesota, to be held this year on September 27, the usual unusual array of architect-crafted doghouses will be auctioned to benefit DIFFA (Design Industries Foundation Fighting AIDS) and local humane societies.

The event comes highly recommended from one of last year's participants, Bill Baxley, AIA, who was lead designer of a group from

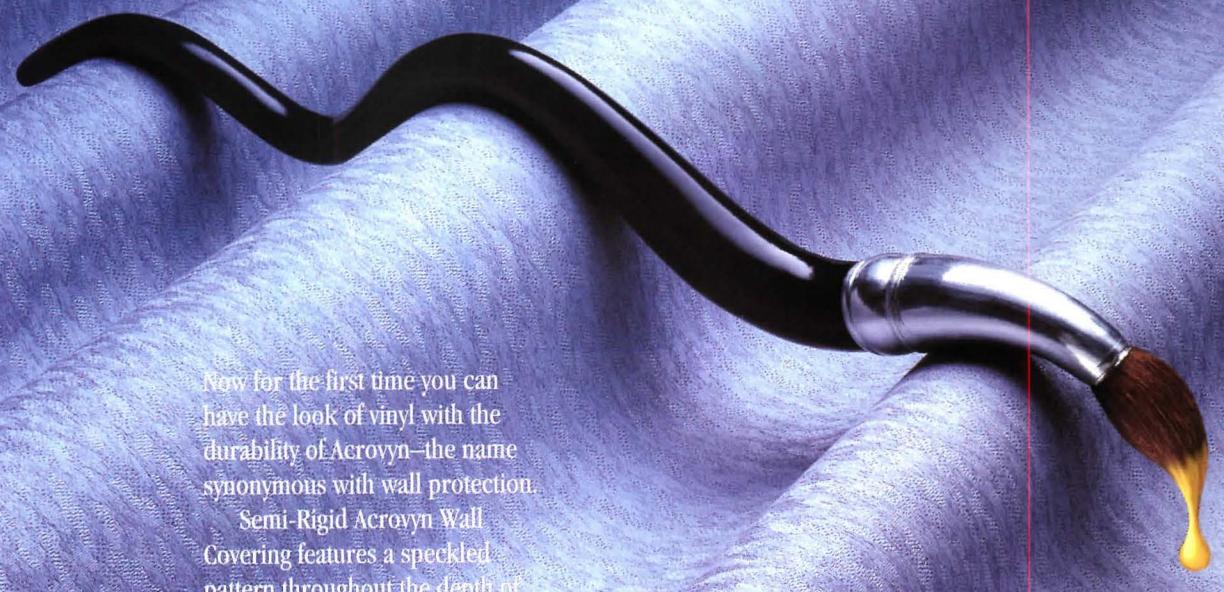


Bentz-Thompson-Rietow. Baxley, coworker Vesa Loikas, and the rest of the team "played around with the board-and-batten roof," Baxley says. They stretched heat-shrunk Dacron over part of the 10-foot-long, four-foot-high cedar dwelling, whose ramp expands the roof into a deck. There, a

drainpipe directs rain into a wooden groove that terminates in a bowl (above). Another participant, Bill Blansky, AIA, entered a 30-inch-high, two-foot-wide dog bed shaped like "the quintessential doghouse" and covered in fake fur cut into designs recalling Mondrian and de Stijl.

Those interested in donating a doghouse for this year's auction should contact Randall M. Buffie, AIA, at 612/288-9800. *Janet Cass*

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MAYA LIN FINDS INSPIRATION IN THE ARCHITECTURE OF NATURE

Maya Lin is still best known for her first major commission, the Vietnam Veterans Memorial in Washington, D.C., but she hasn't let the ensuing pressure and notoriety cloud her creativity. Lately, she has produced a line of furniture for Knoll (see RECORD, June 1998, page 192), had her proposed design for a recycling plant and paper mill in the Bronx shown at the Municipal Art Society in New York, and pulled together her first one-woman travelling show, "Maya Lin: Topologies." The exhibition, a group of sculptures and installations, is at the Grey Art Gallery in New York through October 31 and will then hit Des Moines and Houston. Lin discusses her new work and the role of architecture in her art in the following interview.



RECORD: What triggers inspiration for you?

Lin: Anything and everything involving natural phenomena: a meteor shower, glacial patterns, sandiness. Nothing I do can be as beautiful as what naturally occurs, so what I'm trying to do with my work is to call attention to the articulations of the earth, views that might otherwise be missed.

RECORD: Could you comment on your use of mutable materials [wax, glass, plants] and randomness in your work?

Lin: My pieces are always about contradiction. I'm torn between

Eastern and Western influences, so there's the yin and the yang, the hard and the soft. For instance, I've always been fascinated with the attributes of glass, that it's a solid that can look like water, that it's never stable. People often take for granted the incredibly complex curves in stones, in river-washed pebbles. I wanted to create these volumes that almost deny mass and weight. They're like drops of water sitting on the ground. Works like *Wave Field* [a field of grassy mounds inspired by ocean waves, shown at right] are going to require maintenance and are going to evolve. That they will fluctuate over time is intentional.

RECORD: Describe your creative process.

Lin: I try to let ideas percolate to the surface, not to force them. It might take me two to three years to develop an artwork. I try not to come up with one construct and then make the art around it, an approach that I think is encouraged in most architecture schools. I am



interested in letting the process of making the work control it. In fact, my training as an architect was a difficult time for me. I think of all my work, be it a building or a sculpture, as art conceived intuitively.

RECORD: How is creating architecture different from creating art?

Lin: I couldn't do one without the other; the combination makes me whole. Sometimes the number of layers and levels involved in architectural problem solving exhausts me and I just want to simplify it.

Often I think of what I do as similar to the approach of Frank Lloyd Wright: his vision of architecture transcended the structural envelope to embrace both the landscape outside and the furniture inside. For me, architecture is like a novel because it is a hierarchy of sentences expressing one theme, while art is like a poem, an idea reduced to its purest essence but still open-ended enough to convey a multitude of meanings.

Victoria C. Rowan

THE LAMINATE LIFESTYLE "Most people laugh when they see the house," says independent design curator Grace Jeffers. "But then they spend some time there and start to understand its true significance." When the Ralph Sr. and Sunny Wilson House in Temple, Texas, was put up for sale last year, Jeffers approached Wilsonart—the plastics company Ralph Wilson founded in 1956—about saving it; the suggestion was quickly embraced. Ralph Wilson had commissioned the house—based on Richard Neutra's California houses of the 1940s and 1950s—in 1959 to use as a home and a place to experiment with plastic laminate. Once relegated to work surfaces and countertops, laminate was used by Wilson for furniture, shower stalls, interior walls, and even in the garage.

Most of Wilson's laminate innovations are now taken for granted. But the house, according to the Texas Board of Review, now stands as an icon of mid-century design. In fact, after it was recommended for the National Register of Historic Places, the Wilson House quickly received national landmark status in the categories of technology and architecture.

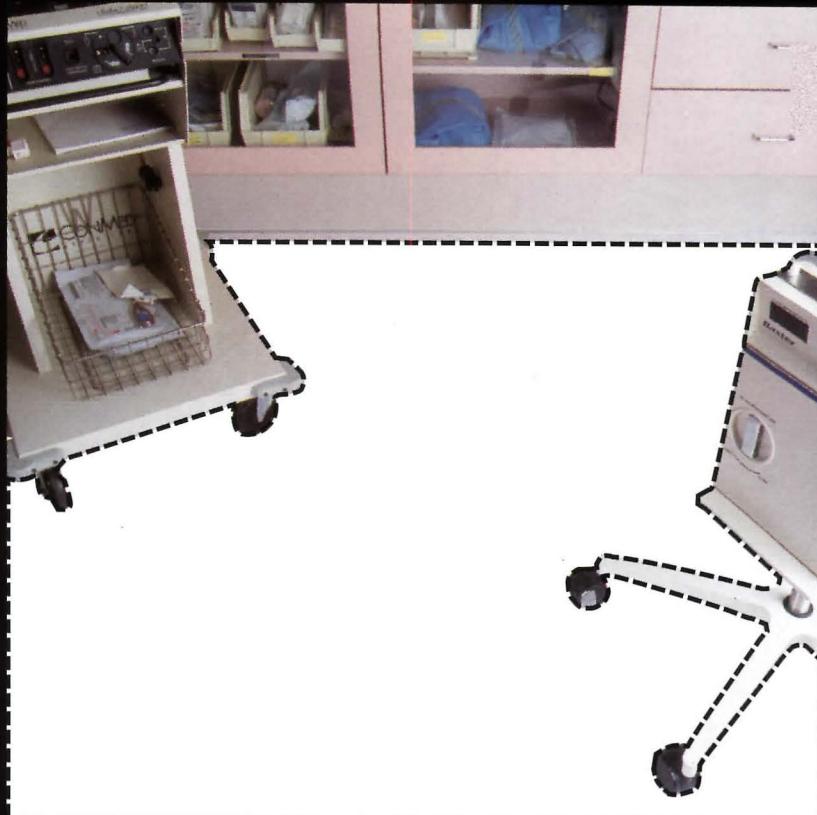
The house reflects an ideal of affordability and easy maintenance for the average American, a concept scholars often miss as they pay homage to high-style design. But Jeffers, also an adjunct professor at F.I.T., says that "if documents of culture are to be preserved, then the spectrum must be broadened to encompass examples such as this." Wilsonart plans to open the house to the public in November, when it will begin to host design exhibitions for—what else—the innovative use of plastics. *Elana Frankel*



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CIRCLE 31 ON INQUIRY CARD



AS HUNGARY EXPLORES AUTONOMY, LOCALS FEAR ANOTHER INVASION

Architects in Hungary, a country that over the centuries has been invaded by practically everybody in the immediate vicinity and some from beyond, are bracing for a new incursion from the West.

The Romans left amphitheaters, viaducts, and other mementos in the first century. Later, the Ottoman Empire held sway for 150 years and left tombs, baths, and onion-domed edifices as a reminder. Much of this became part of Hungary's architectural culture.

World War II left behind a lot of rubble, then the Russians came, stayed for 40 years, and departed, leaving a legacy of bland—if not outright ugly—buildings. Around two to three million Hungarians, or about 20 to 30 percent of the population, live in vast "Commie Condo" complexes (above), constructed of steel-reinforced concrete panels during the Russian presence.

Hungary is now a free-market country, struggling with the ramifications of capitalism and aspiring to become a member of the European Union. Fearing that designers from Western Europe and overseas—commissioned and brought over by multinational corporations and deep-pocketed real estate investors—will taint the country's architectural heritage, the Hungarian Chamber of Architects wants a bigger role in determining what will be built and how.

To this end, the 7,400-member group has drawn up a 12-point document urging the government to recognize architecture as an integral part of Hungary's culture and work in partnership with the chamber.

"We should be involved in all government decisions involving architecture, such as urban planning and housing," says chamber member Jozsef Finta, managing director of Finta and Associates Architect Studio, a professor of architecture, and a member of the Hungary Academy of Sciences.

Because nearly one-third of its membership is essentially unemployed or grossly underpaid, the chamber also wants restrictions on foreign architects until the country becomes part of the EU early in the next century. Until then, "foreign architects would be able to work here only if they are permanent residents and members of the chamber," says Ferenc Callmeyer, the organization's president.

He said the chamber is also interested in working with the government to design affordable, energy-efficient housing for middle-class families. This could be a major challenge; currently, single-family homes are primarily the domain of the old and new rich. Of the 22,000 single-family homes built in Hungary last year, approximately 27 percent cost HUF 100 million (approximately \$950,000) or more. *Carl Kovac*

MODERN LOOKS JOIN ANTIQUES SHOW For the first time, the prestigious Paris International Antiques Biennale, running from September 18 to October 4, will include modern furniture from as late as the 1950s, acknowledging a booming market for works of this period.

Moving beyond Mies, buyers—the majority of whom are American—have discovered Charlotte Perriand, an early collaborator of Le Corbusier who is given co-credit for his famed chaise longue of 1928, and French engineer and architect Jean Prouvé ("kangourou" chair at right), among others. In addition, Gallery Yves Gastou is presenting furniture custom-designed by Marc du Plantier in 1936 for a Modernist villa just west of Paris, an illustration, says Gastou, "that there is still original furniture to be found."

A set of du Plantier stools is priced at \$13,000, while a rationalist multicolored bookcase by Perriand, shown at the Down Town gallery in Paris, is tagged at \$17,000. In comparison, reproductions of Rietveld's red and blue chair sell for about \$1,400. *Claire Downey*



GREENE & GREENE'S BLACKER HOUSE TO HOLD A TEMPORARY REUNION

Greene & Greene's fabled Blacker House, built in 1907, is about to be reunited with itself—briefly. During the first three weekends of October, the Pasadena, California, home will be open for self-guided tours as a fundraiser for its Pasadena sibling, the Gamble House, which Greene & Greene designed in 1908. For the festivities, the Los Angeles County Museum of Art, which owns the largest collection of original Blacker furniture, is lending its cache to the Blacker House's current owners, Harvey and Ellen Knell.

In 1966 the Gamble family gave their summer "bungalow" with its site-specific furnishings, to the city of Pasadena. Since that time, it has been administered as a museum by the University of Southern

California's School of Architecture.

But the Blacker House (below), which at 12,000 square feet was Greene & Greene's largest commission, shared no such good fortune. In 1947 its furniture was put on the front lawn and sold. In 1985 lighting fixtures and stained-glass windows were stripped and sold at auction.

But over the last four years, the Knells have undertaken a restoration of the house, which in its heyday bordered on ostentation. They have commissioned meticulous reproductions of the 55 missing fixtures and windows. Rotted beams have been replaced, the physical plant updated, and ebony-detailed mahogany walls and herring-bone patterned oak floors refurbished.

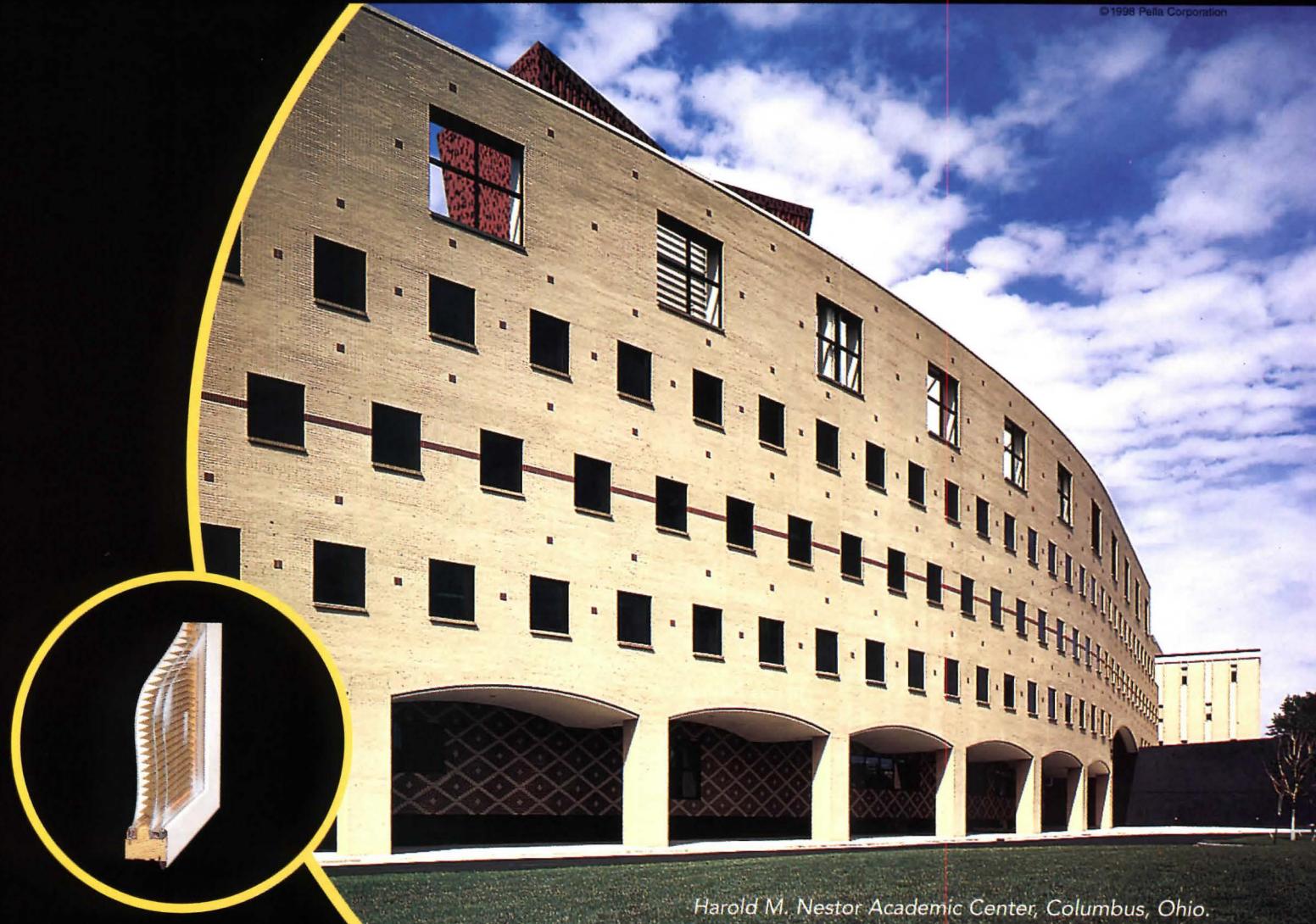
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CIRCLE 32 ON INQUIRY CARD

NEWS BRIEFS

On a mission Gwathmey Siegel & Associates has been selected by the General Services Administration and the Department of State to be the architect for the new U.S. Mission to the United Nations, the firm's first project for the GSA. The 160,000-square-foot building, which will go up directly across the street from U.N. headquarters in New York, will include offices, a press room, a foreign affairs briefing center, an auditorium, reception rooms, and an apartment for the U.S. representative to the U.N. Construction of the mission will cost around \$40 million and is expected to begin in early 2001, after the demolition of the existing facility.

One more try After many stops and starts over the years, New York's Metropolitan Transit Authority and mayor have agreed to sell the Coliseum site on Manhattan's



SOM's new plan for a multi-use complex on Columbus Circle.

Columbus Circle for development. Earlier designs had been vilified, and a plan by developer Mort Zuckerman fell through when the real estate market went bust, but officials are optimistic about the design by Skidmore, Owings & Merrill's David Childs for a development

group headed by Time Warner and the Related Companies. The proposed building has an essentially Art Deco silhouette, with two towers dressed in glass. A jazz theater would hold the center of the complex, above a retail base and underneath apartments, a hotel, and Time Warner's offices.

Unbuilt, not forgotten When Le Corbusier designed the master plan for the Indian city of Chandigarh, one of the highlights was the proposed Governor's Palace—a structure that was never built. Now, as part of a conference convening in January to celebrate the city's 50th birthday, a group called Chandigarh Perspectives is erecting a mock-up of the palace. The hope is to persuade the local authorities to finally realize the long-pending project.

Aalto's new look The Massachusetts Institute of Technology has begun a restoration and renovation of Baker House, the dormitory

designed by Finnish architect Alvar Aalto. The 1949 building, whose wave shape is an icon along the Charles River, is one of just two permanent structures by Aalto in the United States. The \$24 million renovation will replace all major mechanical systems and fully restore the building envelope, as well as restore primary features—such as the lounges and the dining pavilion—to Aalto's original specifications.

Memorial mess Another of the finalists bidding to design Germany's national Holocaust Memorial has dropped out of the process. According to German press reports, German artist Jochen Gerz withdrew because he doubts the much-delayed project will ever be built. Gerz's design envisioned 39 poles on which the word "why" would be written in the languages of the Nazis' victims. Earlier this year, American sculptor Richard Serra withdrew from the competition, although his collaboration with Peter

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Eisenman—a labyrinthine field of 4,000 pillars—is said to be favored by city officials. A design, which was supposed to be announced in March, had yet to be chosen at press time.

Safe design The recent bombings in Kenya and Tanzania raised questions about the security of U.S. embassies. Similarly, safety was the hot topic after the shooting at the U.S. Capitol this summer, and politicians have revived a proposal for a Capitol visitor center, which would exhibit Congressional doings while offering police additional time to scrutinize visitors. The holdup is money: building the center would cost as much as \$125 million. The *Philadelphia Inquirer* reports that, among other options, Congress and the Architect of the Capitol will now reevaluate a 1995 design by Baltimore-based RTKL Architects.

Arts project The Minneapolis Institute of Arts has almost com-

pleted a 10-year, \$150 million revitalization program involving the expansion of the McKim, Mead & White building that has been the institute's home since 1915. The project, overseen by RSP Architects of Minneapolis, increased museum space by 46,000 square feet, with 33 new galleries—including a new period room with a section of Frank Lloyd Wright's 1914 house in Deephaven, Minnesota—joining 74 renovated gallery spaces and expanded visitor services.

Speed trial Architects Pugh + Scarpa recently teamed with contractors and a client, Stoney Road Productions, to turn the interior of an earthquake-damaged structure in Santa Monica into a television and film production facility called Bedford Falls—in just 10 weeks. Construction began in the first days of the design process and the architects' drawings, drawn freehand, were combined as client-presentation and construction documents.



Bedford Falls was constructed at the same time it was designed.

Heery hears teachers Heery International, an architecture, engineering, and management firm, has undertaken a survey to find out what teachers would like to see in school design. Heery found that educators want fresh air and natural light, places for students to interact outside the classroom, a central dis-

play area for art and awards, and, in general, flexible, adaptable classrooms. Multipurpose "cafeterias" were one of the most hated design features.

New folks' home The oldest permanent school of folk music in the United States, Chicago's Old Town School, is moving into a new structure this month. The \$7 million Chicago Folk Center, designed by locals Wheeler Kearns Architects, features a 425-seat concert hall, group classrooms, private studios, and a library and resource center.

Mace, universal advocate

Ronald L. Mace, who advised the Kennedy Center and the U.S. Holocaust Memorial Museum on accessibility issues, died June 29 in his Raleigh, North Carolina, home. Wheelchair-bound since contracting polio at age nine, Mace got his architecture degree at North Carolina State in 1966 and later founded its Center for Universal Design. ■

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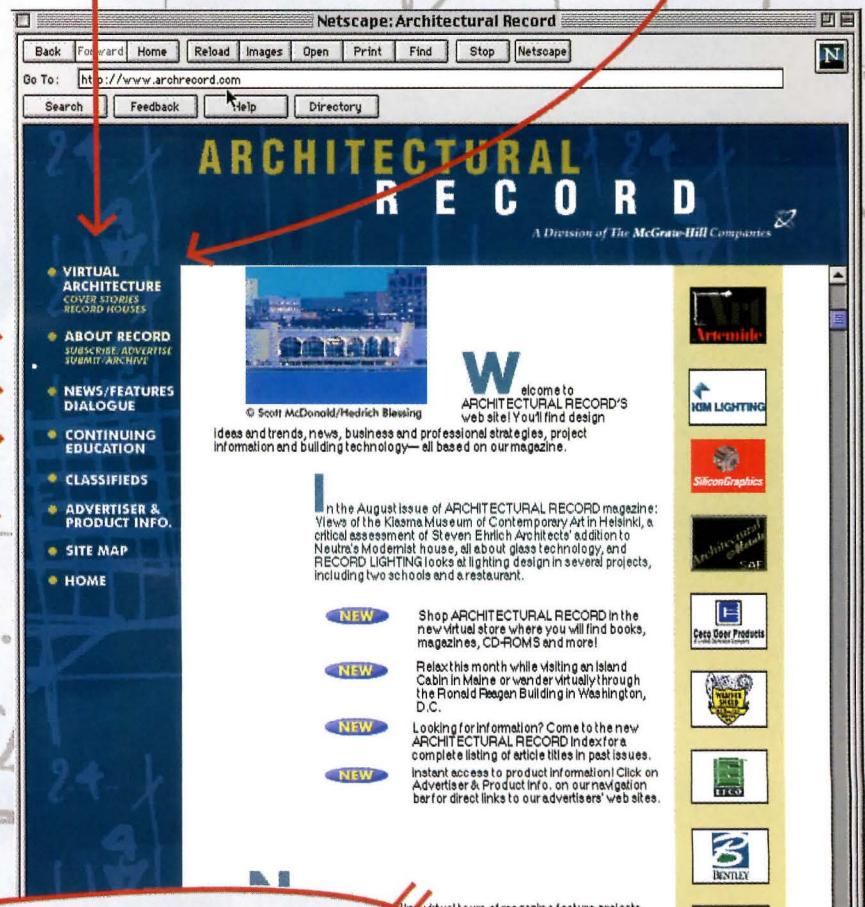
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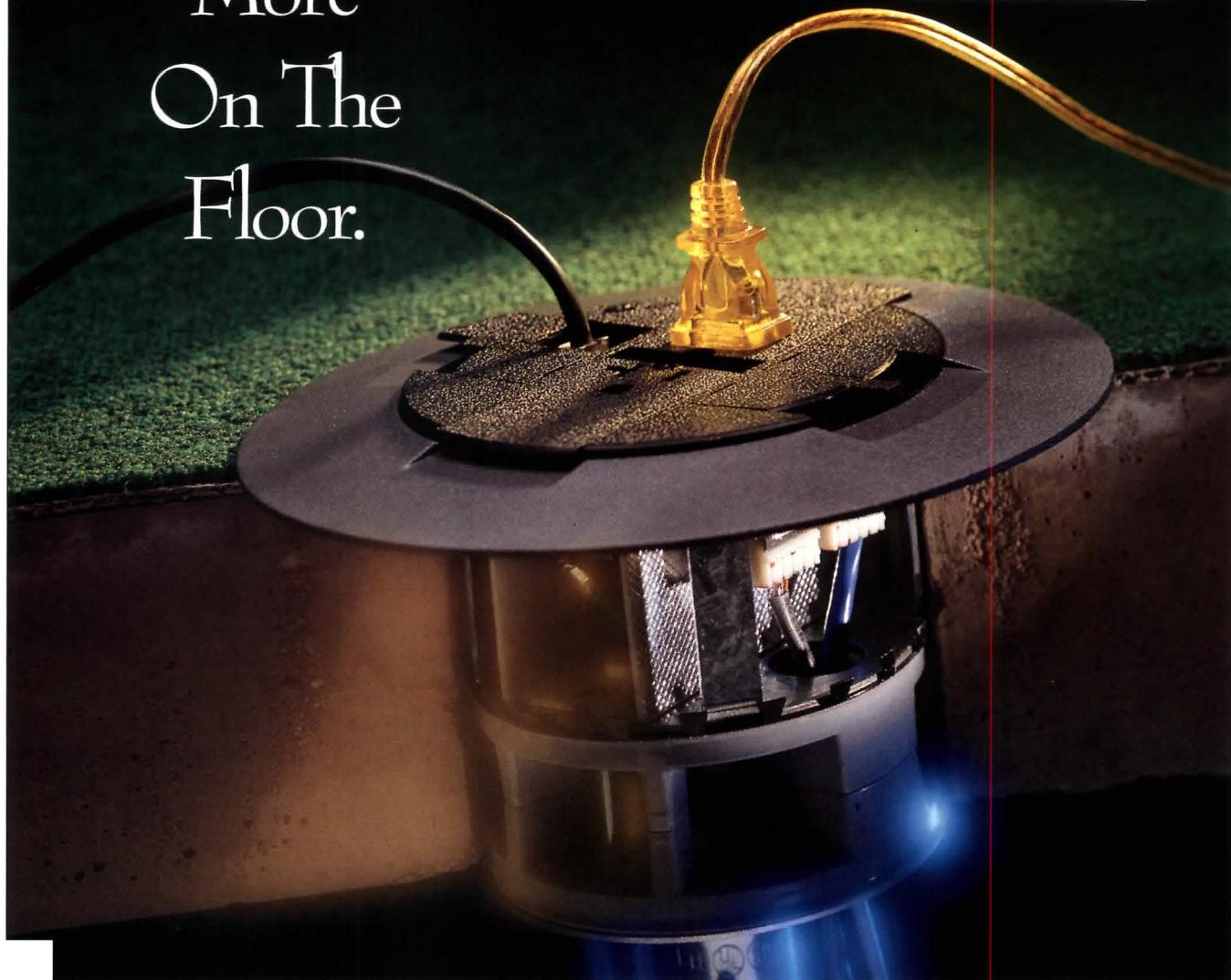
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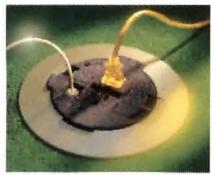
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CIRCLE 38 ON INQUIRY CARD

DATESEVENTS

Calendar

National Design Triennial

New York City

Through September 12

A survey of developments in contemporary design, investigating how issues and ideas drive design practices in America. Cooper-Hewitt National Design Museum. 212/849-8300.

The Art of the Motorcycle

New York City

Through September 20

An exhibition exploring the motorcycle as both cultural icon and design and technical achievement, with an installation designed by Frank Gehry. 212/423-3840.

The Art of Architecture and Architecture in Art

New Orleans

Through September 20

This exhibition features architects' work in various art media and artists' work that incorporates an architectural sensibility. Contemporary Arts Center. 504/523-1216.

Tony Smith Retrospective

New York City

Through September 22

Works by the architect and artist, who trained under Frank Lloyd Wright and designed houses before turning to painting and sculpture. Several of Smith's monumental sculptural works will be installed at public sites throughout Manhattan during the exhibition. Museum of Modern Art. 212/708-9400.

Completing the Federal Triangle

Washington, D.C.

Through September 27

An exhibition documenting the recently completed Ronald Reagan Building and International Trade Center in Washington, D.C., by Pei Cobb Freed & Partners in association with Ellerbe Becket. National Building Museum. 202/272-2448.

Shifting Gears: In Pursuit of a Greener City

Toronto

Through September 27

An exhibition proposing urban design strategies for reducing carbon dioxide emissions. Design Exchange. 416/216-2145.

Fountains: Splash and Spectacle

New York City

Through October 11

This exhibition elucidates the role of fountains—and water as a design force—in defining urban space in Europe and America, with examples ranging from the Renaissance to the present. Cooper-Hewitt National Design Museum. 212/849-8300.

Frank Lloyd Wright and the Living City

Weil am Rhein, Germany

Through October 11

An exhibition of Wright's schemes for Broadacre City, which attempted to erase the dichotomy between city and country. This is the most comprehensive exhibition in Europe of Wright's work to date. Vitra Design Museum. For more information, call 011/49/7621/702-33-51 or visit www.design-museum.de.

Walker Evans: New York

Los Angeles

Through October 11

While Evans is best known for his Depression-era photographs of the American South, this exhibition reveals the full range of his work as a New York street photographer, including some of his earliest and most abstract compositions. J. Paul Getty Museum. 310/440-7360

Do Normal: Recent Dutch Design

San Francisco

Through October 20

This exhibition of works by Dutch designers focuses on the centuries-old design consciousness that pervades every aspect of the coun-

try's culture. San Francisco Museum of Modern Art. 415/357-4000.

Design and Building of Gerard College

Philadelphia

Through October 23

Surviving entries in the 1832 design competition for the college, the first architecture competition to attract nationwide attention, are on display, as well as drawings of the construction of the winning entry, completed in 1848. Founder's Hall. 215/787-2601

Manchester: A Neighborhood Sketchbook

Pittsburgh

Through October 25

This exhibition of photographs, maps, and architectural drawings inaugurates the Pittsburgh Neighborhoods Project, an exploration of the city's rich diversity. Heinz Architectural Center, Carnegie Museum of Art. 412/622-3131.

Under the Sun: An Outdoor Exhibition of Light

New York City

Through October 25

An exhibition of solar-powered installations, including commercial products, experimental prototypes, and commissioned designs. Cooper-Hewitt National Design Museum. 212/849-8300.

New Ways of Revitalizing the American City

Washington, D.C.

Through January 3, 1999

An exhibition illustrating how new cultural facilities have enlivened tired downtowns in Phoenix; Cincinnati; Fort Worth; Newark, New Jersey; San Jose, California; and Kansas City, Missouri. National Building Museum. 202/272-2448.

Robert Adam: The Creative Mind

Washington, D.C.

Through January 3, 1999

An exhibition of the work of the 18th-century Scottish architect, demonstrating his process of design

from conception to final presentation. The Octagon. 202/638-3105.

Bechtel's First Century

Washington, D.C.

Through January 4, 1999

A portfolio of projects by the San Francisco-based Bechtel Group, one of the world's largest engineering and construction firms. Highlighted "megaprojects" include the Hoover Dam, San Francisco's rapid transit system, and the Channel Tunnel. National Building Museum. 202/272-2448.

Louis Comfort Tiffany at the Metropolitan Museum of Art

New York City

Through January 31, 1999

Nearly 100 Tiffany works from the museum's collection, including windows, lighting fixtures, and objects, are featured. The full-scale entrance loggia from Tiffany's Long Island estate is also on view. Metropolitan Museum of Art. 212/570-3951.

Marion Mahony and Walter Burley Griffin

Sydney, Australia

Through May 2, 1999

This exhibition explores the professional and spiritual journey of Mahony and Griffin, from their years in Frank Lloyd Wright's office at the turn of the century through their work in Australia and India in the 1920s-30s. Powerhouse Museum. 011/61/02/217-0111.

Reconstructing the Aluminaire House

New York City

September 11–October 31

An exhibition celebrating Lawrence Kocher and Albert Frey's innovative 1931 structure, which is being restored and relocated to New York Institute of Technology's Central Islip campus. Architectural League of New York. 212/753-1722.

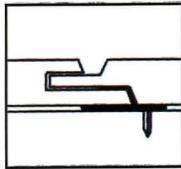
Rail-volution Conference

Portland, Oregon

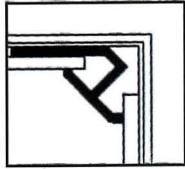
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Changing Cities: Strategies for Quality

Lisbon, Portugal

September 13-17

The 44th International Federation for Planning and Housing Congress focuses on recent changes in urban societies and strategic approaches to these changes, including both public and private initiatives. Centro Cultural de Belém. Call 011/351/1/793-26-68, fax 011/351/1/796-13-12, or E-mail ifhp98@mail.telepac.pt.

DOCOMOMO Conference

Stockholm

September 16-18

This year's conference of the International Working Party for the Documentation and Conservation of Buildings, Sites, and Neighborhoods of the Modern Movement focuses on the social aspects of modern architecture and urban planning. Swedish Museum of Architecture. E-mail marina.botta@arkitekturmuseet.se for more information.

Tensions in Architecture

New York City

September 16-January 5, 1999

This exhibition examines the extraordinary developments in the materials and technology of tensile structures. Material ConneXion Gallery. 212/445-8825.

The Triumph of Grand Central Terminal

New York City

September 23-November 11

A multimedia exhibition that includes photographs documenting the soon-to-be-completed restoration of Grand Central; historic photographs and news clippings; a video installation featuring views of the terminal from the "celestial ceiling"; and time-lapse photography of pedestrian traffic. Municipal Art Society. 212/935-3960.

All Wright: The Dana-Thomas House

Chicago

September 24-January 31, 1999

An exhibition showcasing the most complete and best-preserved example of Frank Lloyd Wright's early Prairie houses. Chicago Architecture Foundation. Call 312/922-3432 or fax 312/922-0481.

Equal Partners: Men and Women

Principals in Contemporary Architecture

Northampton, Mass.

September 25-December 13

A celebration of male/female professional collaborations, featuring the work of 15 American firms founded and run jointly by men and women, including Arquitectonica, Asymptote, Hodgetts + Fung, and Tod Williams Billie Tsien Associates. Smith College Museum of Art. 413/585-2760.

Conference on J. B. Jackson and American Landscape

Albuquerque, N.M.

October 1-4

The goal of this conference is to provide the opportunity for an interdisciplinary assessment of cultural landscape studies, in addition to evaluations of Jackson's ideas and impact. School of Architecture and Planning, University of New Mexico. For information, call 505/277-3133, fax 505/277-0076, or E-mail schreib@unm.edu.

Competitions

Shinkenchiku Residential Competition

Submission deadline: September 10

Kyoto architect Shin Takamatsu will judge this year's ideas competition, sponsored by *Japan Architect* magazine. Winners' work will be published in the December 1998 issue of JA. To receive a copy of the rules, fax a request to 011/81/3/3811-0243.

AIA Continental Europe Design Awards

Submission deadline: September 11

Eligible projects are those built on the European continent and completed after January 1, 1993. For submission information, contact Frimmel Smith at frimmel@compuserve.com.

Union Internationale des Architectes Student Competition

Registration deadline: September 15

Submission deadline: January 31, 1999

Student entrants are invited to design a housing project for a city in their home country. In addition to cash, the winner will receive the UNESCO Prize for Architecture. To register, call Liu Kecheng at Xi'an University, in Xi'an, China, 011/86/29/220-29-43, fax 011/86/29/552-78-21, or E-mail LiuKCH@pub.online.xa.sx.cn.

Wood Design Awards

Registration deadline: September 18

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(continued on page 206)

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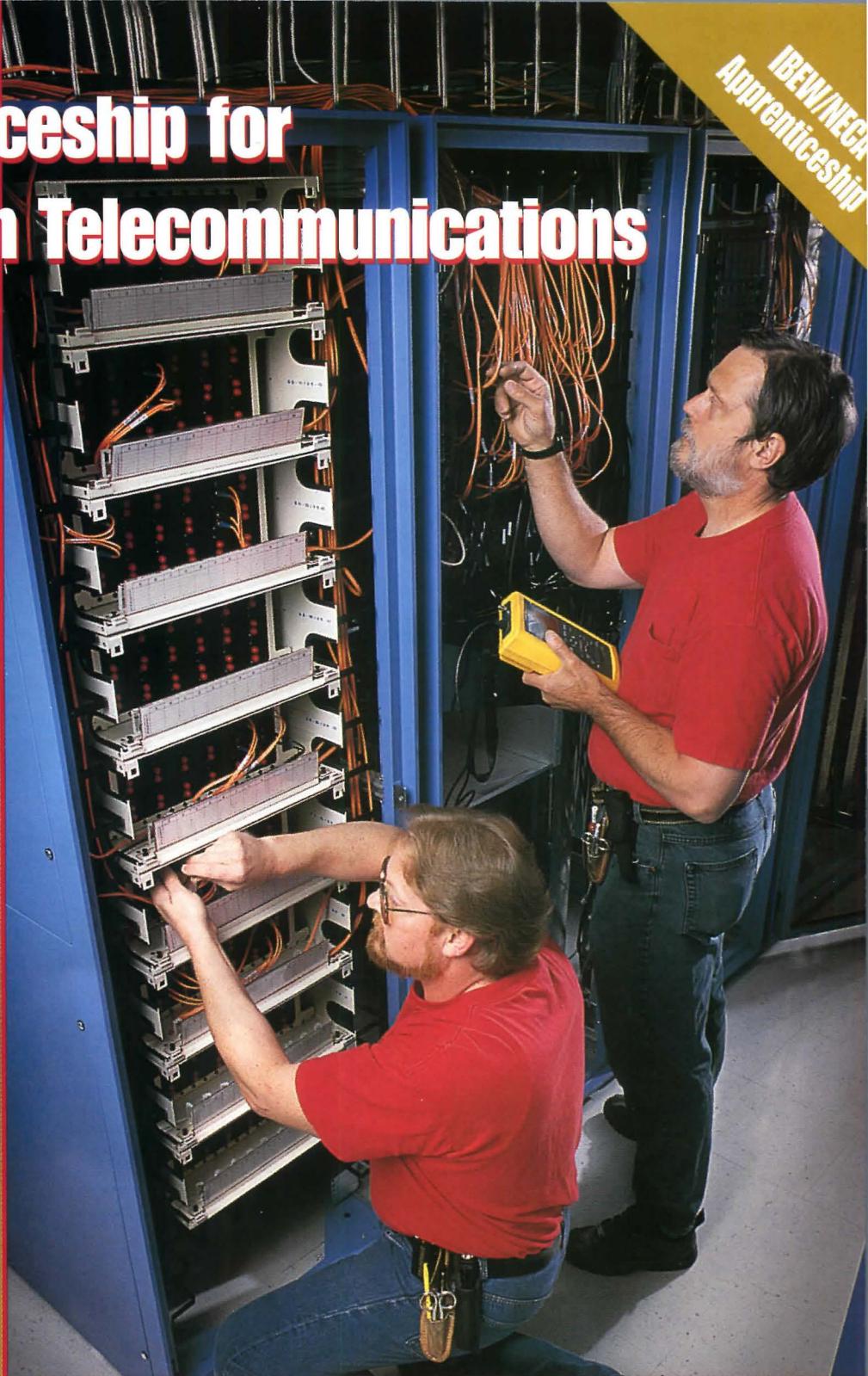
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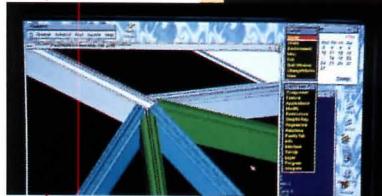
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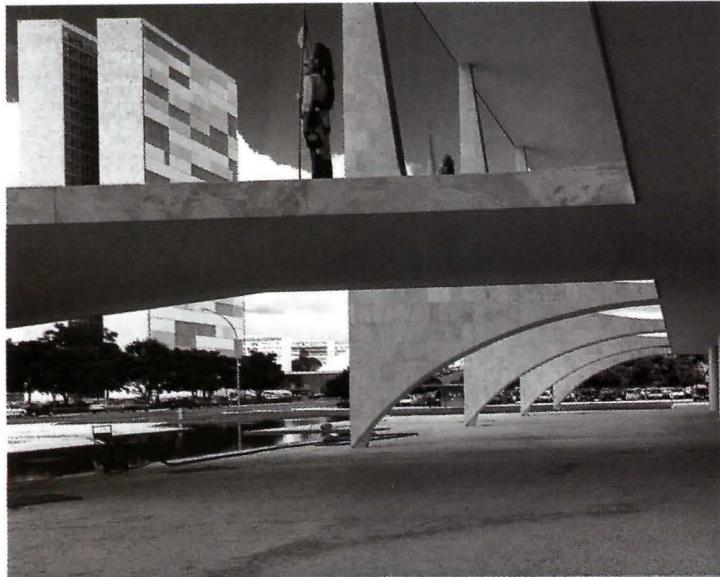
Army General Headquarters,
Oscar Niemeyer, 1968.

Right: Planalto Palace
(the executive building),
Oscar Niemeyer, 1958.
The sculpture in the
foreground is *The Warriors*
(1959), by Bruno Giorgi.

Below: A view from Planalto
Palace to the towers of the
Congress Building,
Oscar Niemeyer, 1959.



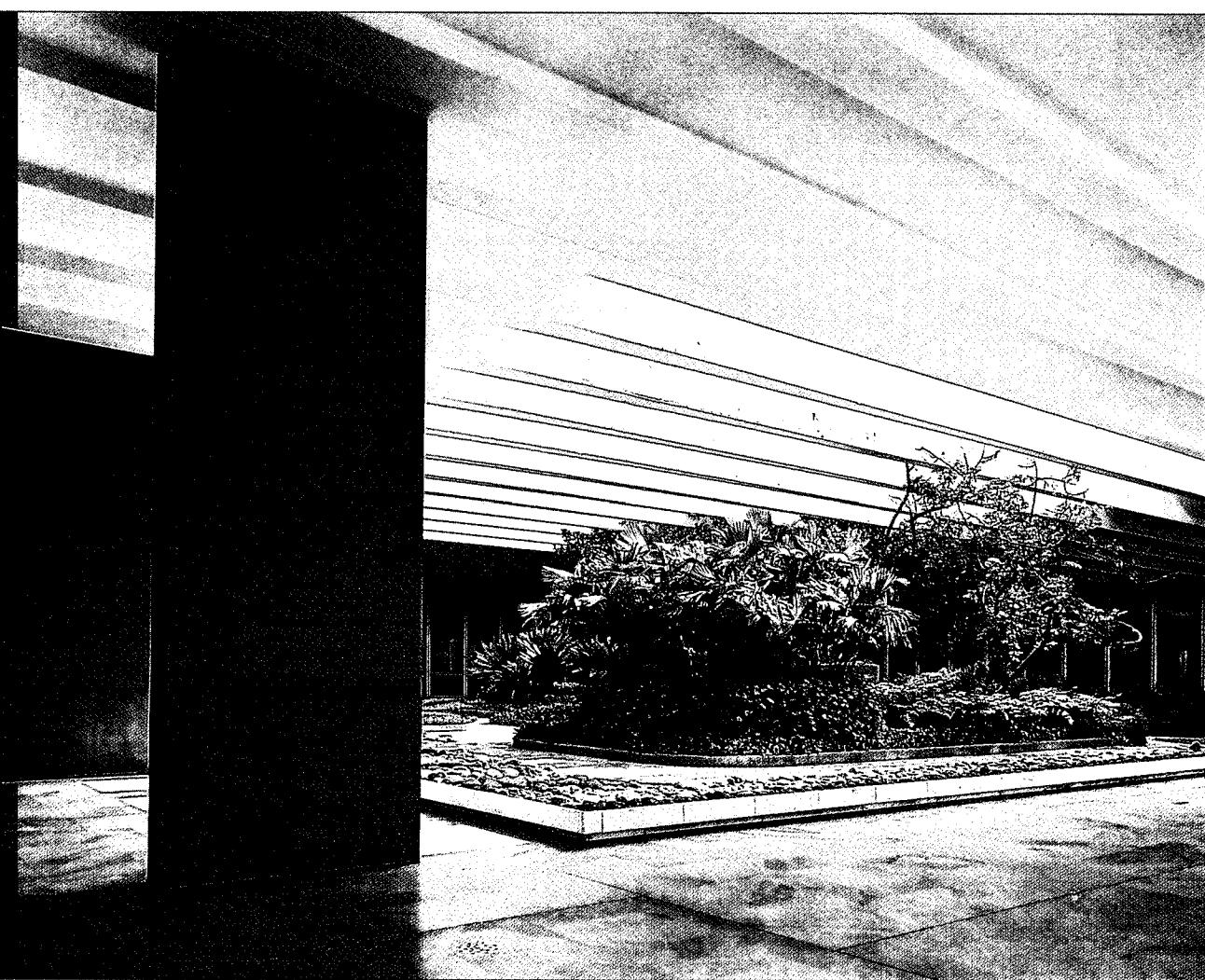
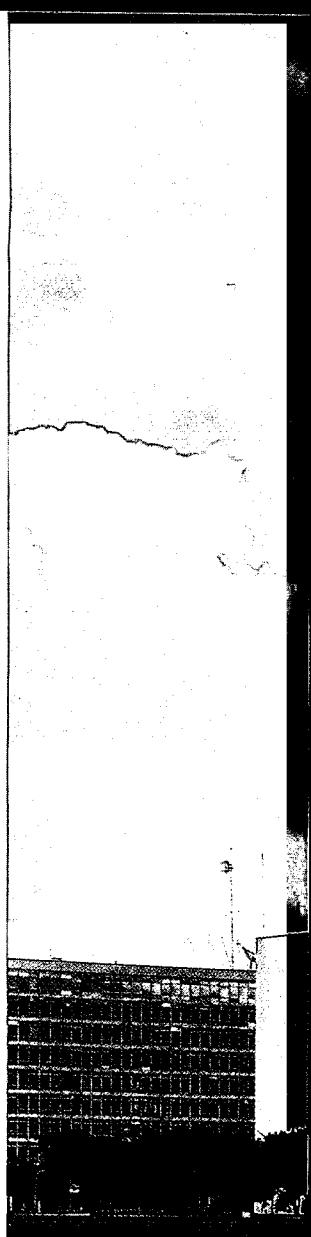
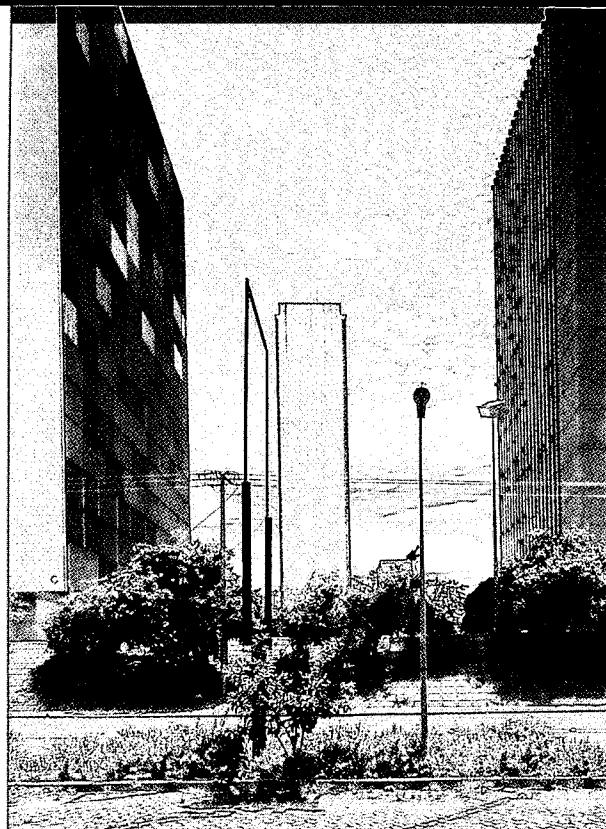
Through the Viewfinder: Brasília's Modernism Emptied



In 1956 a new Brazilian government decided to realize a long-standing national fantasy to build a new capital city, Brasília, in the undeveloped Central Highlands. The expectation was that, as a geographic middle, the city would unify the country's disparate regions and provide a clean, rational, egalitarian, and modern example for crowded coastal Brazil and the rest of the developing world to follow.

Four decades later, many visitors to Brasília expect to hate the place. The taut, Corbusian Modernism of Lúcio Costa, the master planner, and Oscar Niemeyer, the architect of most of the buildings, is often perceived as vacuous and monotonous, despite Niemeyer's romantic forms. When photographer Todd Eberle went to Brasília, Carnival had emptied the government district of people, but he still did not find it desolate. Here he captured alien things—buildings and sculptures—active among great plaza voids. Eberle's images go on display at New York City's Robert Miller Gallery in March 1999. *David Simon Morton*

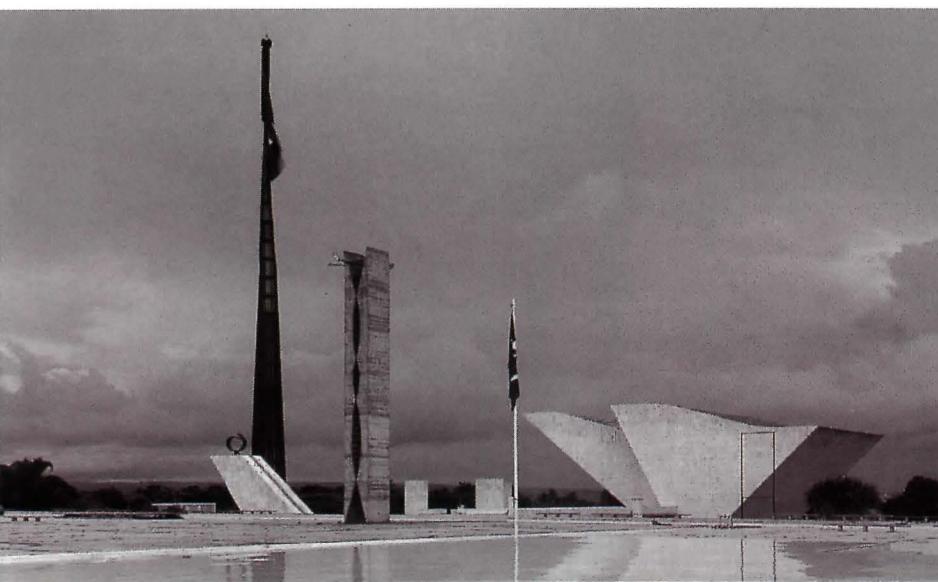
Government buildings
behind the
National Theater.



Brasília Room,
Itamaraty Palace
(the foreign ministry),
Oscar Niemeyer, 1962.
Roberto Burle Marx
designed the garden.

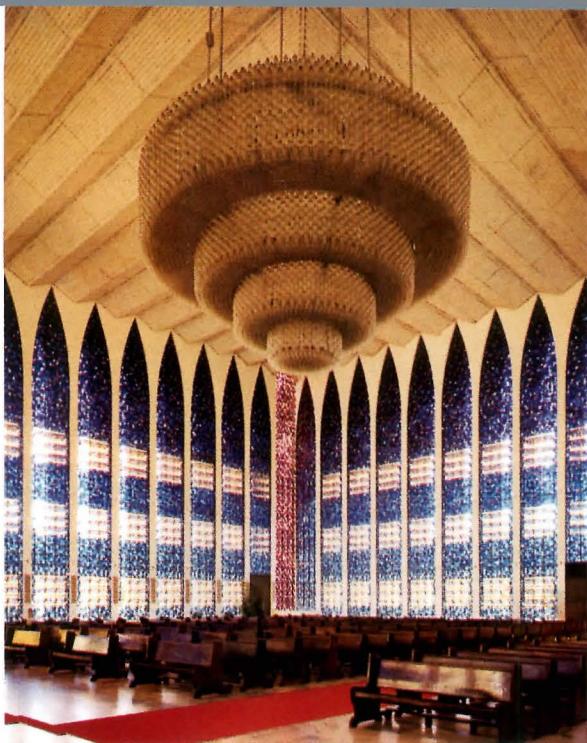


Esplanade of Ministries,
Oscar Niemeyer, 1958.



Tancredo Neves Pátria
Pantheon, Oscar Niemeyer,
1985.

Dom Bosco Sanctuary,
Carlos Vasconcelos Naves,
1964.



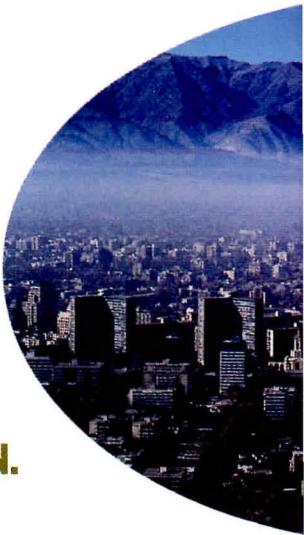
Below and opposite bottom:
Itamaraty Palace,
Oscar Niemeyer, 1958.



SPECIAL REPORT:

South America's Building Boom

**THREE COUNTRIES LEAD THE WAY TO
ECONOMIC REVIVAL AND A LIVELY CLIMATE FOR DESIGN.**



by Clifford Pearson

As the drumbeat of economic development sounds for South America, a new generation of architects (both local and foreign) is transforming skylines from São Paulo to Santiago. Since the Latin American debt crisis of the 1980s, governments throughout the region have slowly put their economic and political houses in order. Inflation and interest rates have been tamed, trade barriers reduced, and democratically elected leaders given mandates to reform sclerotic systems. Leading the way have been Chile, Argentina, and Brazil, which together account for 66 percent of the continent's population and are the key forces in the six-member Mercosur trading block, along with Bolivia, Paraguay, and Uruguay.

Of course, today's hot spot can be tomorrow's wasteland. Just a year ago, Asia's siren song still lured architects to Pacific shores, offering them the chance to design some of the world's tallest buildings, largest shopping centers, glitziest hotels, and biggest airports. "Fast, cheap, and out of control" is one way of describing what happened there. Now that many Asian economies have crashed, North American eyes are looking south. And what they're seeing is opportunity: demand is rising for modern development, an emerging middle class is providing new ballast for political systems, and rich cultures are providing fertile soil for talented native architects. So while experience in Asia has taught U.S. architects to

BRAZIL, ARGENTINA, AND CHILE TOTAL MORE THAN 217 MILLION PEOPLE AND \$1.25 TRILLION IN GDP.

be more cautious as they do business in South America, the construction market there hasn't been better in more than two decades.

Together the three countries profiled in this report have more than 217 million people and accounted for \$1.25 trillion in gross domestic product (GDP) in 1997. Individually they present different business climates and economic conditions. Chile is farthest along the free-market road and the most U.S.-oriented, but it is also the smallest of the three countries, with only 15 million people. Argentina, which has 36 million people, enjoyed very strong growth in 1997 (GDP was up nearly 7 percent) and almost no inflation. But it is more European in its culture and trade focus, and the ruling Peronist party is losing much of its popularity. The biggest opportunities and risks lie in Brazil, which has a population of 166 million, many cultures, and a long history of economic volatility.

"While the immediate situation may fluctuate from time to time, the long-term prospects for Brazil and much of South America are a good bet," states Carlos Vega, an associate vice president of RTKL, which is working on retail, entertainment, and office projects in Brazil. "Throughout Latin America there is strong demand for large, mixed-use developments," he continues. But South American developers and architects don't have much expertise in these complex building types.

While at first glance conditions seem similar to those that had prevailed in Asia, veterans of both regions note important differences. "Asia is a much larger market and the rate of acceleration was greater there," explains Don Hackl, president of Loeb Schlossman & Hackl, a Chicago-based architecture firm. South America is closer to the United States geographically and culturally, and presents a simpler linguistic barrier—just two languages (Spanish and Portuguese).

Making friends for life

As in Asia, personal relationships are the key to business. "When a client hires you in South America, they're hiring a person, not a firm," explains Tom Porter, a senior principal at Thompson Ventulett Stainback & Associates (TVS), an Atlanta-based firm with several retail projects under way in Chile. "So it's essential to have the right people representing you. They must be senior-level people." RTKL's Vega agrees: "Business relationships last a long time in South America. If you deliver, you can have a client for life."

South American architecture firms tend to be different from the U.S. firms that do international work. Not only are they much smaller, but "they usually are generalists and don't have expertise in particular building types," says Hernando Gomez, the senior associate and coordinator for Latin American projects at VOA Associates, based in Orlando, Florida. Gomez, who grew up in Colombia, adds that it is important for U.S. firms to "build cultural bridges" with their colleagues in South America, so their designs are compatible with the way people live in these countries.

While U.S. firms almost always work with local architects, finding the right match is not always easy. "In South America they don't have the production-type firms" that can take charge of construction documentation and deal with local building authorities, says TVS's Porter.

Foreign architects must also respond to differences in local cultures and understand how these affect the way buildings are programmed and used. For example, people in Chile spend much more time on a trip to the mall than shoppers in the United States do. As a result, shopping



Santiago, Chile
Set against the Andes, the capital boasts a Mediterranean climate and a vibrant economy.



São Paulo, Brazil
Brasília may be the capital and Rio the cultural hot spot, but São Paulo is Brazil's commercial hub.

Buenos Aires, Argentina

With a population of 8 million, this city is the political and commercial heart of the country.



centers have a greater mix of uses, often including space for community facilities and even medical offices, reports Porter. The same is true in Brazil, says RTKL's Vega, noting the large entertainment components and high-end restaurants found in Brazilian retail complexes.

Changes in the commercial real estate market

Due to the region's history of high inflation and currency fluctuations, real estate developers have shied away from committing large sums of money for any length of time. Most office buildings have been financed as condominiums, with the risk shared by the many individual investors buying space. But with growing monetary stability, the commercial real estate industry is becoming more like that in the United States and Europe. "New sources of money are coming in to finance larger projects," says James Diaz, a principal at San Francisco-based Kaplan McLaughlin Diaz (KMD), whose South American work has been centered mostly in Brazil. The growing sophistication of the commercial office building market in Brazil is resulting in more big-budget projects in which design is an important element, says Diaz.



Many of the U.S. architects interviewed for this article said their first contacts with South American clients were at conferences in the United States, and that making presentations at conferences is a good way of getting the attention of developers. Other firms like RTKL and KMD have followed U.S. clients to South America and then leveraged these projects to market their firms to local developers and businesses.

While the sound of collapsing economies in Asia has frightened many investors looking at emerging markets around the globe, South America still offers some big opportunities. "In the short term there are some real risks, but the long-term outlook for the southern cone of South America is favorable," reports Francisco Larios, senior emerging

NEW SOURCES OF MONEY ARE CHANGING THE WAY THE COMMERCIAL REAL ESTATE MARKET WORKS.

markets economist for Standard & Poor's DRI, an economic forecasting division of the McGraw-Hill Companies. The biggest question mark, he says, is Brazil and its ability to defend its currency in the wake of devaluations in Asia. If Brazil gets sick, it will certainly infect Argentina and to a lesser degree Chile (which has the most stable currency of the three countries).

Demand for buildings with international cachet and for complex structures like modern hospitals, however, is growing rapidly in South America. And much of the expertise needed to design these projects will come from U.S. and European architects. ■

CHILE WITH STRONG TRADE LINKS TO THE NORTH AND TO ASIA, CHILE AIMS TO BE A GATEWAY FOR TRADE.

Strategic vision: Having established free-trade agreements with Canada and Mexico, Chile is now aiming to join the NAFTA trading block. "Chile's goal is to become a financial capital of Latin America and a gateway to Asia," says architect Bernardo Urquieta, AIA, who was born in Chile and practiced there before moving to the United States.

Where the action is: The great majority of construction is taking place in Santiago, the capital, and the nearby city of Valparaíso. But activity is picking up in the north, where mining and other industrial operations are expanding; in the south, where fishing is growing; and in the central region, where wineries are becoming big businesses.

Construction outlook: The market for building products, a key indicator of construction activity, is expected to grow between 7 and 10 percent annually for the next five years. Housing has been a particularly strong part of this story, averaging 11 percent annual growth over the last 10 years. In 1996 a total of 141,000 dwelling units and 98.2 million square feet of housing were built, annual increases of 4.0 percent and 7.1 percent, respectively. In Santiago, demand for international-quality office space is soaring and supply has yet to catch up. "The vacancy rate for Class A office space is very low," according to Daniel White, an associate principal of Perkins & Will, who had worked on South American projects for NBBJ. Retail complexes, especially high-end shopping centers, are also hot; many U.S. architects are working on these projects.

Raising the bar: "Chile is changing into a postutilitarian society," states Urquieta, explaining Chileans' growing demand for higher standards of design and living. This is creating an opportunity for local and foreign architects to design buildings

that meet international standards and have greater amenities. The level of engineering is already very high, says Tom Porter, a senior principal of Thompson Ventulett Stainback & Associates. "In many cases they're ahead of us," he adds.

Economic overview: Chile boasts one of the healthiest economies in South America, with a high savings rate and low foreign debt. But it is also one of the most exposed to problems in Asia, having built up strong trade relations with Pacific Rim countries. Standard & Poor's DRI reports that in the first two months of 1998 exports to Japan fell 25.4 percent and those to Korea dropped 75 percent. While last year there were fears of an overheated economy, fallout from the Asian flu—including sagging exports and higher interest rates needed to defend the Chilean peso—has pushed the nation into a lower gear. DRI predicts growth will slow further in 1999 to 3.9 percent but will pick up in 2000 if Asia rebounds.

Political situation: Since General Augusto Pinochet handed over power to civilian leaders in 1990, Chile has had one of the steadiest democracies in Latin America. Tension between the military and civilian politicians, though, flares up on occasion, such as in March when Pinochet retired as head of the army and took a seat in the Senate.

Contacts: * Colegio de Arquitectos de Chile (Chilean Architects Association), Rene Morales, president. Tel. 56/2/639-8744, fax 639-8769.

* Cámara Chilena de la Construcción (Chilean Construction Chamber), Hernan Doren, president. Tel. 56/2/233-1131, fax 232-7600.

Population: 14.9 million

GDP, 1997: \$80.58 billion

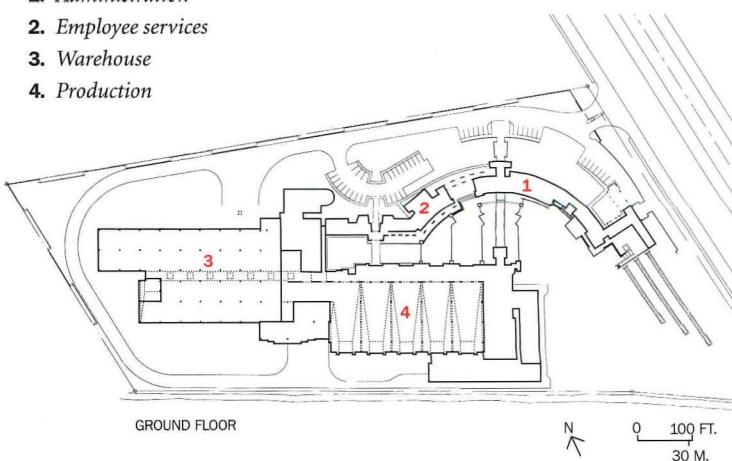
GDP growth, 1997: 7.1 percent

GDP growth forecast, 1998: 5.2 percent

Inflation, 1997: 6.2 percent



1. Administration
2. Employee services
3. Warehouse
4. Production



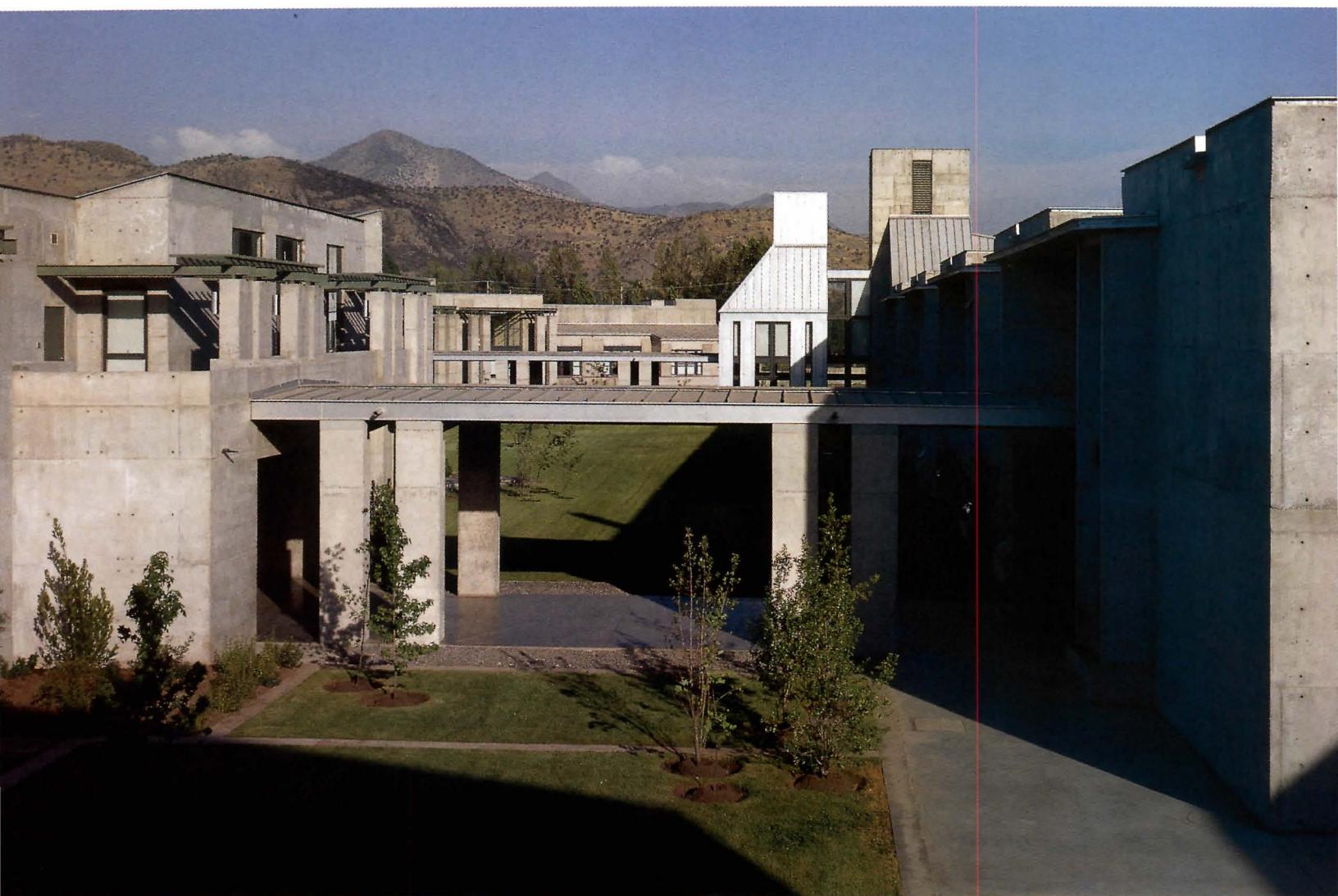
Alusa Printing Company

Headquarters

Santiago

Architects: *Bru Architects—Bernardo Urqueta, AIA, Renzo Zecchetto, AIA, principals*

Set on the outskirts of town, this complex includes offices, printing, storage, dining, and recreational facilities. Gardens and courtyards surround the buildings, creating a strong relationship between indoors and out.



Prolam Building

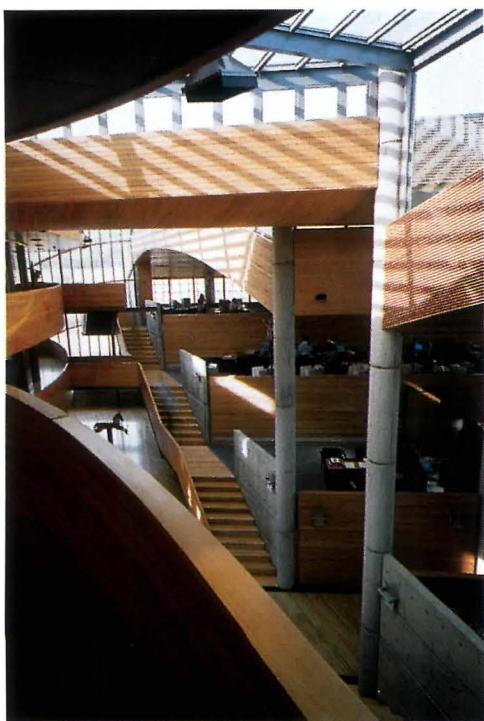
Santiago

Architects: Juan Ignacio Baixas and
Enrique Del Rio (Victor Hugo
Franzani, assistant)

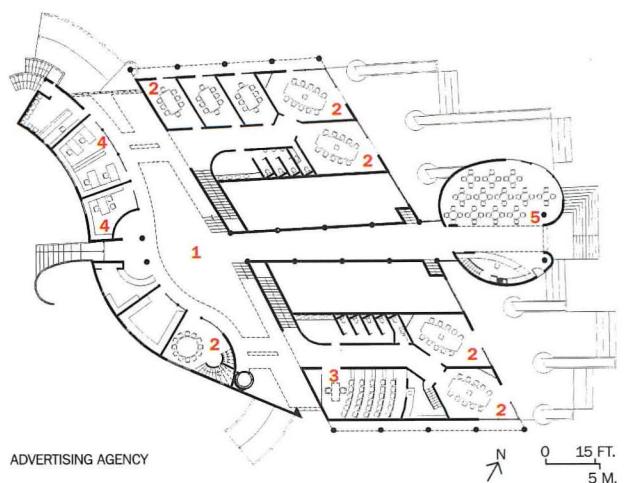
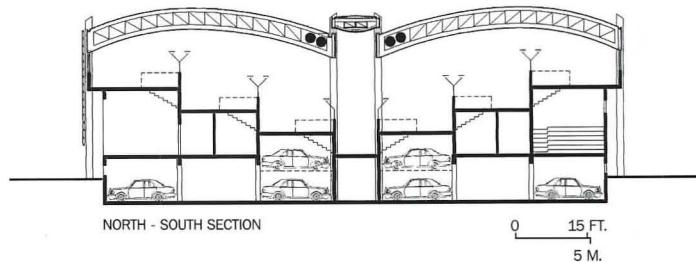
Designed as the Chilean office of the large advertising agency Young and Rubicam, this building provides separate areas for business and creative

staffs while establishing a dramatic central atrium that serves as a unifying element for the entire company. The poured concrete structure also includes a curvilinear dining area and parking spaces below the offices.

Landscaping helps contrast the built realm from the natural.



1. Reception
2. Conference
3. Auditorium
4. Office
5. Dining

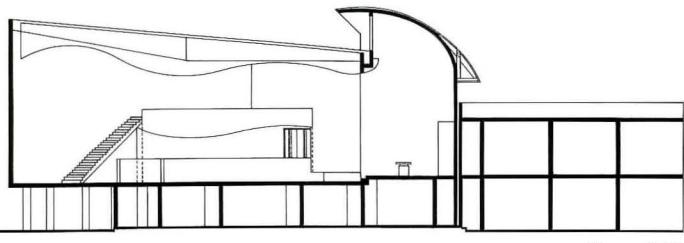


Chapel of Villa María School

Santiago

Architects: Enrique Browne and Mario Pérez De Arce; Ricardo Judson, associate architect; Jaime Irarrázabal, Patricio Sancha, collaborators

An addition to an existing school, this project includes administrative offices on the ground floor and a chapel above. The architects used simple materials and incorporated ribbons of daylight to animate the sanctuary. A curving ramp creates a sense of procession as one moves into the space. The project also included a gymnasium (not shown) at the other end of the school.



SECTION THROUGH CHAPEL



ARGENTINA ARCHITECTS BUILD ON A TRADITION OF URBANISM AND DESIGN THAT ADDS TO THE PUBLIC REALM.

Old world ties: Foreign architects often describe Argentina as the most "European" of all South American nations, referring to both the country's architectural heritage and its people's attitudes. With its broad avenues and eclectic mix of neoclassical apartment buildings and storefronts, Buenos Aires has much the feeling of Madrid or Paris. Construction and building practices, along with building and engineering standards, tend to follow European models rather than American ones.

Urban culture: "There is a concern for urbanism in Argentina," says Jose Caban, AIA, chair of the school of architecture at Clemson University in South Carolina. "Architects there talk of buildings that preside over open space, that lend presence to the public realm rather than refer just to themselves."

Where the action is: With more than 8 million people and its status as the nation's capital, Buenos Aires is by far the largest building market. The next most important cities are Córdoba in the north central part of the country and Mendoza in the west central.

Construction market: Until the economy began to slow down earlier this year, the Argentine market for building products and supplies was growing at a 10 percent annual clip. Demand for housing has been particularly strong, with a national housing "deficit" of 2.5 million units. This has led the federal government to announce its intention to build 100,000 low-cost units each year from 1997 to 1999.

Economic overview: Argentina led all of Latin America last year in terms of GDP growth with an 8.4 percent surge. The first quarter of 1998 was another strong period. But the Asian economic crisis has frightened many investors from all emerging markets and has cast a large shadow on Brazil, which buys

approximately 30 percent of Argentina's exports. As a result, the country's current-account and trade deficits have grown and the government has begun to cut spending. With a slowing economy, the Merval stock index declined 18 percent in the first half of 1998. Inflation is low, but real interest rates are high, as is unemployment, which remains above 13 percent. While there are problems with the Argentine economy, it should bounce back starting next year, says Francisco Larios, senior emerging markets economist at Standard & Poor's DRI. "There are some questions about the level of bad loans at some small and medium-size banks, but the banking system as a whole is more transparent and stronger than it was before a series of reforms was instituted in 1995," adds Larios.

Political situation: After making noises that he might try to amend the nation's constitution to allow him to run next year for a third term, President Carlos S. Menem has said he will not run again. Persistent high unemployment and stories of corruption had reduced his popularity rating to 20 percent, making a third victory questionable anyway.

Contacts: * Sociedad Central de Arquitectos (Central Architectural Society). Tel. and fax 54/1/813-6629. * Consejo Profesional de Arquitectura y Urbanismo (Professional Council on Architecture and Urbanism). Tel. 54/1/811-1068, fax 812-6573. * Cámara Argentina de la Construcción (Argentine Construction Chamber), Aldo Benito Roggio, president. Tel. 54/1/361-8778, fax 361-4724

Population: 36.1 million
GDP, 1997: \$309.5 billion
GDP growth, 1997: 8.6 percent
GDP growth forecast, 1998: 4.8 percent

Inflation, 1997: 0.5 percent



Novartis Headquarters

Buenos Aires

Architects: *Aslan y Ezcurra Arquitectos*—Jorge Aslan, Lorenzo Gigli, Alejandro Madero, Oscar Carattini, Marta Aslan de Gigli, Juan Carlos Demdemian

An addition to and renovation of an existing Corbusian-style office building from 1960, this project connects old and new by means of a metal-and-glass atrium. In addition to the new central hall (above), the 45,000-square-foot extension includes new offices, conference rooms, auditorium, dining area, and parking.



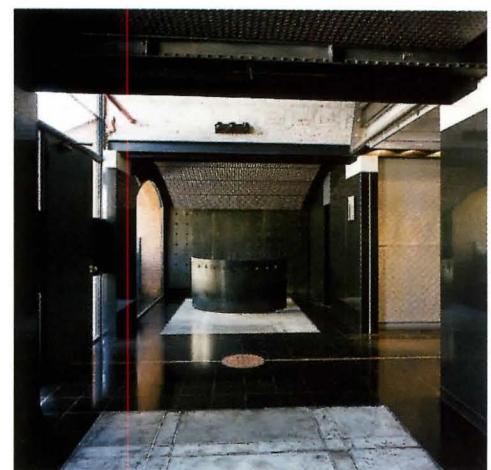
Dock 7 at Puerto Madero

Buenos Aires

Architects: Baudizzone-Lestard-Varas
Arquitectos

Collaborators: Donoso, Ledesma y
Gradel

The architects converted a large brick warehouse into a mixed-use building with retail space on the ground floor and lofts above. The warehouse is one of 16 such structures built at the turn of the century as part of a new port for the city.



Dock 8 at Puerto Madero

Buenos Aires

Architects: Baudizzone-Lestard-Varas

Arquitectos and Bilik/Szwec y Fryd

Arquitectos

Collaborators: Flavio Janches, Marcelo Izraelewicz, Fernando Iglesias Molli, Alejandro Delisio

Echoing the massing of the old warehouses nearby, this new 216,000-square-foot structure brings together commercial and residential uses.

The architects reinterpreted turn-of-the-century industrial architecture in a modern way and incorporated a waterfront esplanade, balconies with generous glazing facing the water, and rooftop terraces.



BRAZIL

GROWTH IS SPREADING FROM RIO AND SÃO PAULO TO A SECOND TIER OF CITIES.

Not just the usual suspects:

The largest country in South America, Brazil is also one of the most urban, with 71 percent of the population living in cities. São Paulo has 15 million people and construction is booming. Rio de Janeiro buzzes with 9.8 million inhabitants and is busy adding to its stock of large buildings. But there are a number of secondary cities that are significant markets in their own right and should not be overlooked—places such as Belo Horizonte, with 3.4 million residents; Porto Alegre, with 3 million; Recife, with 2.8 million; and Brasília, with 1.6 million. "I was amazed at how many big cities Brazil has," recalls Juan Diego Perez Vargas, director of Latin America for Kaplan McLaughlin Diaz (KMD). "We've been totally absorbed by São Paulo and Rio, but there's a lot of building going on in these other places," adds Perez Vargas. U.S. firms are starting to take notice; for example, KMD has industrial projects under way in Campinas, VOA Associates a large conference center in Curitiba, and RTKL a three-tower complex in Recife.

Construction market: The market for building products in Brazil in 1997 was \$24.4 billion and grew 11 percent. Higher interest rates this year, due to the Asian economic crisis and pressure on the Brazilian currency, is taking some steam out of the building sector. But Standard & Poor's DRI expects the construction market to grow at an average rate of 10 percent a year until the end of the century, in part due to the recently approved Real Estate Financing System, which will establish a secondary mortgage market and provide more funding for development projects.

Residential construction: Housing is critical in Brazil; 5.5 million new units are needed and another 5 million are in need of extensive

repair. Federal programs such as "Habitar Brasil" aim to alleviate the problem by building 102,000 houses in 1997–98 for families with monthly incomes of less than \$300.

Other sectors: Although commercial construction has been strong in the last few years, 77 percent of the office buildings in São Paulo are more than 25 years old and are not equipped to handle the computer and electrical needs of modern corporations. So demand for Class A office space remains high. In the retail sector, Brazil has 128 major shopping malls; but experts say the country could use another hundred. Growth in tourism should also continue and the Brazilian Institute of Tourism expects \$5 billion of investments in this sector over the next two years.

Economic overview: Economic growth will slow significantly this year, from a previous estimate of 4.4 percent to just 1.1 percent, due to the Asian crisis and a loss of investor confidence in emerging markets in general. To protect the value of the *real*, the central bank raised reference interest rates to 43.4 percent at the end of 1997. The move seems to have worked and interest rates have come down this year, but unemployment has risen to over 8 percent. This year's pain, though, may set the stage for renewed growth next year.

Contacts: * Instituto de Arquitetos do Brasil (Brazilian Institute of Architects), Pedro Antonio Galvao, president. Tel. 55/27/227-9823, fax 225-3250. * AsBEA (Brazilian Association of Architectural Firms), Edison Musa, president. Tel. 55/11/822-2982, fax 822-4589.

Population: 166.5 million

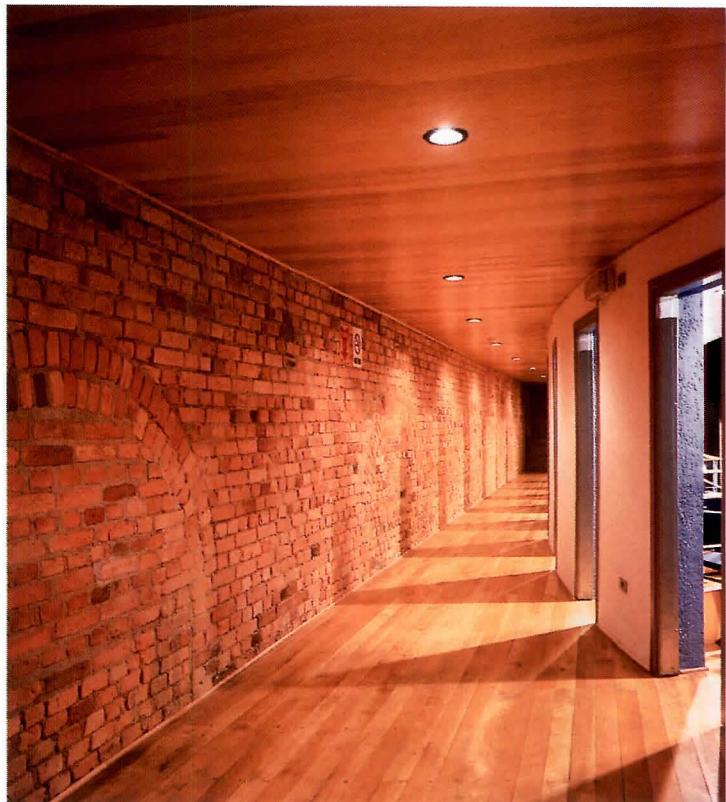
GDP, 1997: \$855.0 billion

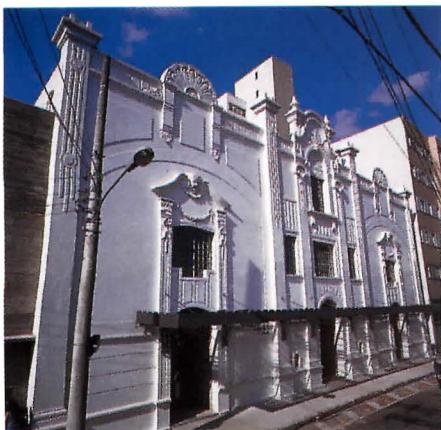
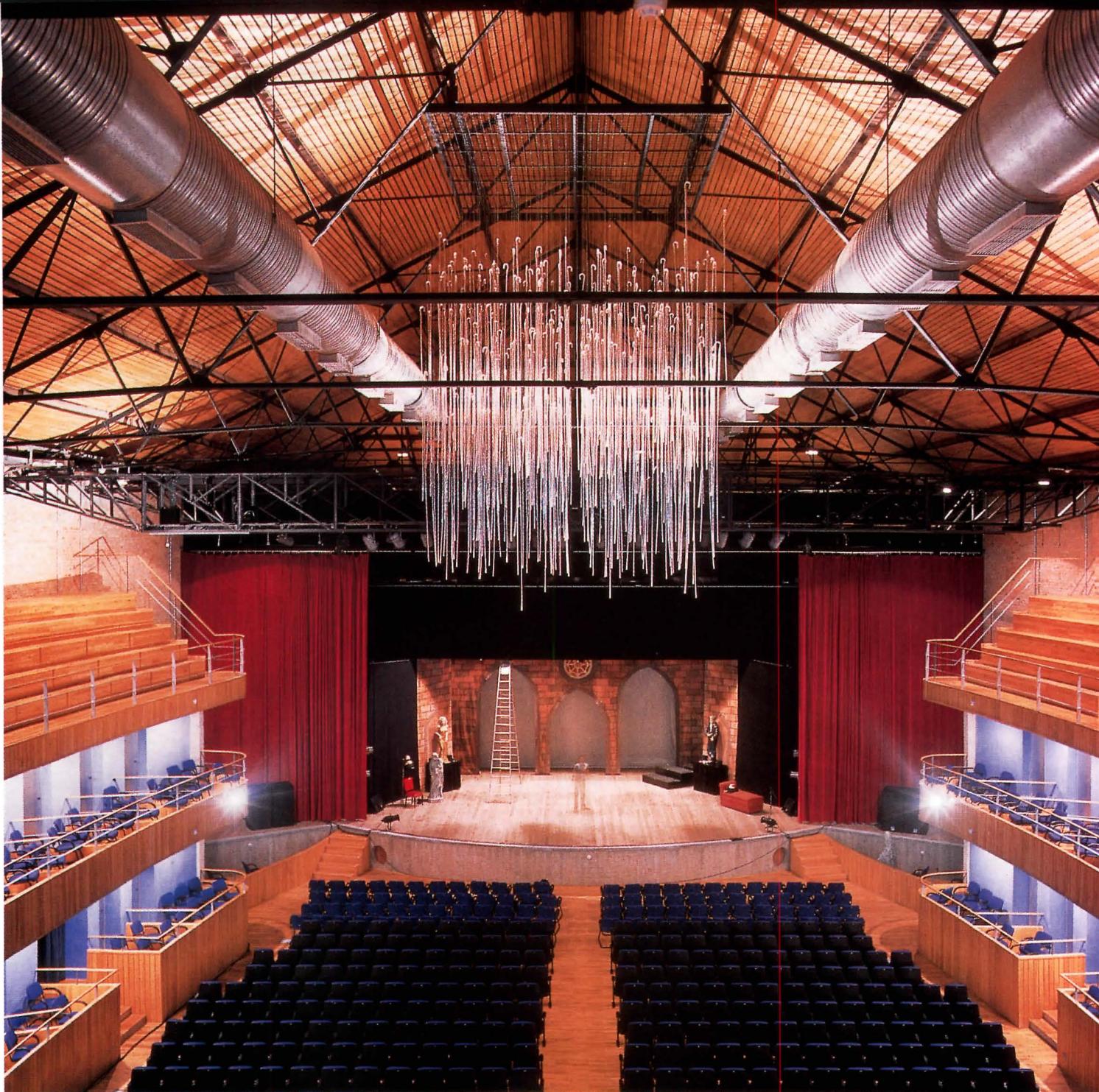
GDP growth, 1997: 3.7 percent

GDP growth forecast, 1998:

1.1 percent

Inflation, 1997: 8.3 percent





Restoration and Renovation of the

Teatro Polytheama

Jundiaí

Architects: Brasil Arquitetura—
Francisco de Paiva Fanucci, Marcelo
Carvalho Ferraz, Marcelo Suzuki,
André Vainer

After opening in 1897, the Teatro Polytheama provided residents of Jundiaí, a city 30 miles northwest of São Paulo, with popular entertainment on stage and a Beaux-Arts landmark downtown. In the 1970s, the theater went out of business and was abandoned. A comprehensive renovation, completed in 1996, brought the 34,000-square-foot theater back to life.



Atrium III Building

São Paulo

Architects: Aflalo & Gasperini

Arquitetos—Gian Carlo Gasperini, Luiz Felipe Aflalo Herman, Roberto Claudio dos Santos Aflalo Filho

Located in Villa Olímpia, once a mostly residential neighborhood, this 108,000-square-foot office tower opens to the narrow streets with a large glass entry hall. Plantings inside and an adjacent garden offer touches of green in what is now a heavily developed part of town.

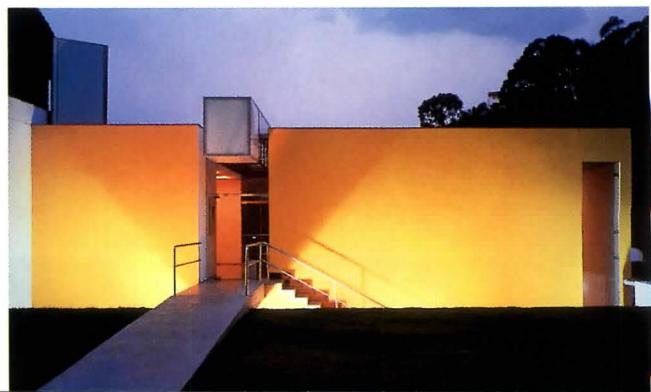


Leila Pace Gallery

Belo Horizonte

Architects: Gustavo Penna Arquiteto & Associados—Gustavo de Araújo Penna, Alexandre Bragança de Matos, Alessandra Rodrigues, Fernando Arruda, Norberto Bambozzi, Priscila Dias de Araújo

This 2,500-square-foot gallery provides one large space and a mezzanine for the display of art. The straightforward design, along with simple materials and a bold use of color and light, creates a proper setting for art. A few strong gestures, such as a ramped entry path and a long skylight, complement the simple building shell.





Acayaba House

São Paulo

Architects: Marcos Acayaba

Arquitetos—Marcos Acayaba, Mauro Halluli, Fabio Valentim, Suely Mizobe

To preserve as much of the steeply sloped site and existing vegetation as possible, the architect designed this house to rest on three concrete pillars. The roof and floors are made of triangular, precast-concrete components and the walls are made of prefabricated plywood panels. Supporting elements include wooden pillars and beams and steel cables and connections. This system allowed four workers to build the 2,800-square-foot house in just four months.



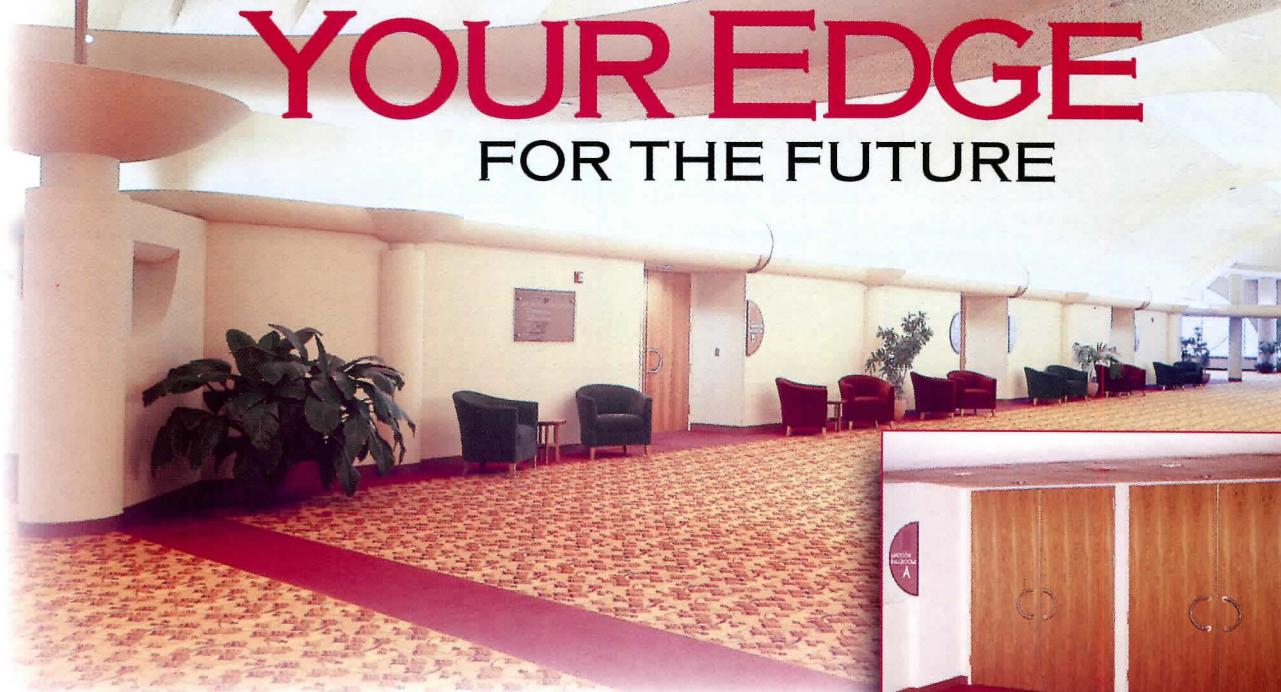


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Monona Terrace Community and Convention Center
Madison, Wisconsin

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CIRCLE 52 ON INQUIRY CARD

Record Interiors 1998

Henry Smith-Miller calls the first phase of the renovation he and partner Laurie Hawkinson just completed for the Corning Glass Center in upstate New York a "suture." While phase one includes a 9,800-square-foot structure called the West Bridge and a renovated auditorium (page 124), the majority of their ongoing work for Corning involves creating a new identity for a pair of buildings designed by Wallace Harrison in the 1950s and a 1972 Gunnar Birkerts museum. In addition, their work provides a new-generation design presence for a remote corporate campus increasingly known for its distinctive architecture. Though the centerpiece of Smith-Miller + Hawkinson's West Bridge is an interior space,

the three-phase commission touches on nearly all aspects of architectural practice: master planning, building design, interiors.

For architects Calvin Tsao and Zack McKown, who have offices in New York City and Singapore, interiors are only one aspect of a multidimensional, bi-continental practice. A recent series of

residential projects gives a glimpse of their design signature, a unique hybrid of multiple styles and viewpoints (page 114).

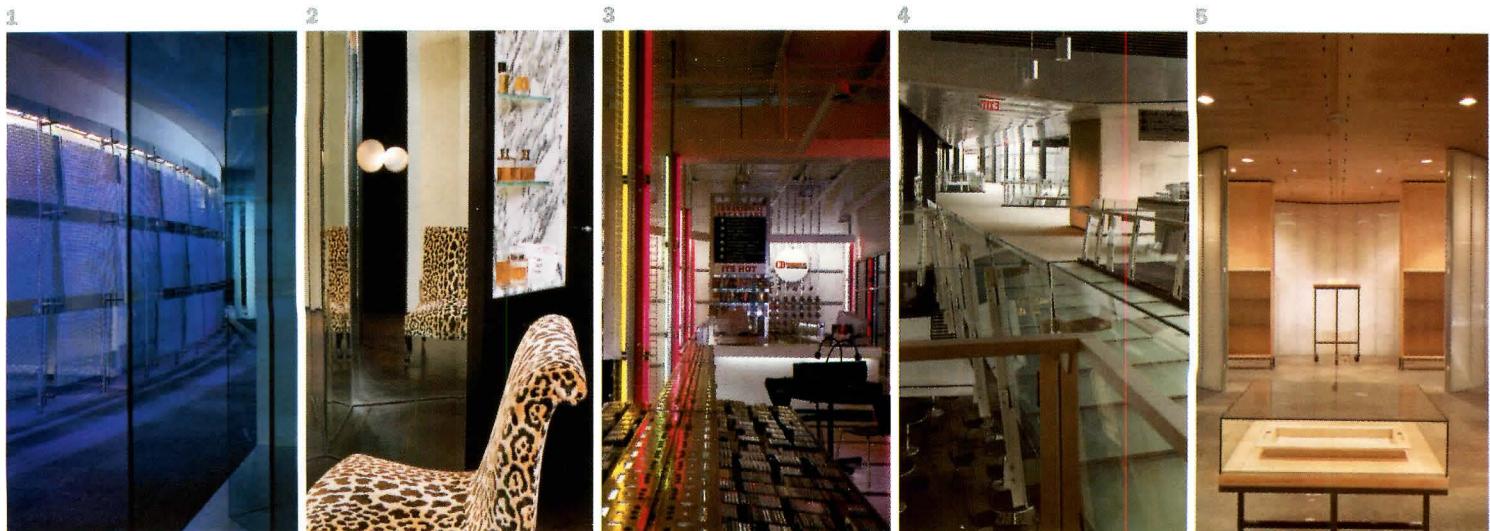
An aura of newness pervades the work of Ron Krueck and Mark Sexton, the Chicago-based architects who completed the renovation of the Herman Miller showroom in the Merchandise Mart on a tight deadline (page 108). Once the client determined that no other furniture manufacturer in the Mart had ever done what the architects proposed, their scheme of jagged glass walls was quickly approved and built.

At M. C. Ginsberg (page 132), a West Des Moines art and jewelry store designed by Herbert, Lewis, Kruse, Blunck Architecture, curiosity is the operative word. A curved translucent wall divides the space and guarantees that shoppers don't immediately see the entire array of carefully displayed merchandise when they enter the shop.

A different concept in retailing guided the design of the CD Warehouse store in Norman, Oklahoma (page 120), a prototype for 40 franchises set to open this year. Architect Rand Elliott and his firm Elliott + Associates were inspired by brainstorming sessions with the client, which led to a design whose overall theme was the visualization of music.—Karen D. Stein

The firms featured in this issue are:

1. Krueck & Sexton Architects
2. Tsao & McKown Architects
3. Elliott + Associates
4. Smith-Miller + Hawkinson Architects
5. Herbert, Lewis, Kruse, Blunck Architecture





Krueck & Sexton's daring, glass-fronted showroom for **HERMAN MILLER** projects a vibrant new image for the company.



Pressure can be an unexpected blessing, at least according to architects Ron Krueck and Mark Sexton. Asked last January by furniture manufacturer Herman Miller to redesign its showroom in Chicago's Merchandise Mart, they faced a looming and unyielding deadline—NeoCon, the three-day trade fair held every June. The duo had a mere 20 weeks to get the new showroom ready. But the quick decision-making necessitated by the time constraints, say the architects, ultimately paid off with their often cautious client. As Sexton explains, "It's the most rapid process we've ever been involved in. For Herman Miller it was like lightning. There was no time to play around."

The time pressure would have been hard enough, but Krueck & Sexton Architects, who had completed a more modest renovation of the showroom five years earlier, were given the added challenge of reestablishing Herman Miller's leadership position in the design community. "We used to lead with architecture. In recent years, we had slipped," says Phil Strengolt, who was the furniture manufacturer's North American vice president of sales programs during the project. "With the new showroom we wanted to bring back attention to detail: the fun, not just the functional."

by Karen D. Stein

A jagged wall of glass panels acts as the frontispiece of the showroom. The panels are $\frac{1}{2}$ inch thick, 9 $\frac{1}{2}$ feet high, and as wide as 6 feet.

What's more, because Herman Miller was uncertain which of its new products would be ready for introduction at NeoCon '98, the company's main chance at making news was with the space itself. "The showroom had to look great with nothing in it," explains Sexton. For the architects, inspiration came, in part, from Herman Miller's own history, including its long association with designers Charles and Ray Eames. "The idea of taking common materials and putting them on a pedestal goes back to the Eameses," notes Sexton.

In the world of trade shows, first impressions are important, so the architects focused their attention on the showroom's public face along the long, internal corridors of the Mart. Since NeoCon '97, Herman Miller had leased two more 20-foot-wide structural bays from a neighboring competitor, an additional 6,000 square feet that brought the showroom's total to 25,000 square feet.

In an early meeting with their client, the architects, known for their daring use of glass and metal [RECORD, April 1997, page 98], proposed a variety of possible design solutions that ranged from the straightforward to the more complex, including an almost giddy rendition of the facade as a jagged series of planes that seemed to crackle along the corridor. Prepared for the client's timidity, the architects were pleasantly surprised.

As Krueck recalls, "Strengolt said to the group working on the project, 'Has anyone ever seen anything like this before?' When it was clear no one had, he said, 'Let's do it.'" Strengolt elaborates: "I was immediately taken by the scheme aesthetically. Then I worried, 'Is it going to look like a fun house? Are the products going to undulate before our

Project: Herman Miller Showroom, Chicago, Illinois

Architect: Krueck & Sexton

Architects—Ronald A. Krueck, FAIA, design principal; Mark P. Sexton, AIA, project principal; Thomas Jacobs, Robin A. Johnson, Paul Kozlowski, Tim Tracey, project team
Engineers: McGuire Engineers

Consultants: The Environments Group—Joe Connell, Rod Vickroy, Julie Doyle (exhibit layout); THIRST and Joyce Mast (exhibit and graphic design); Schuler & Shook, Inc. (lighting)

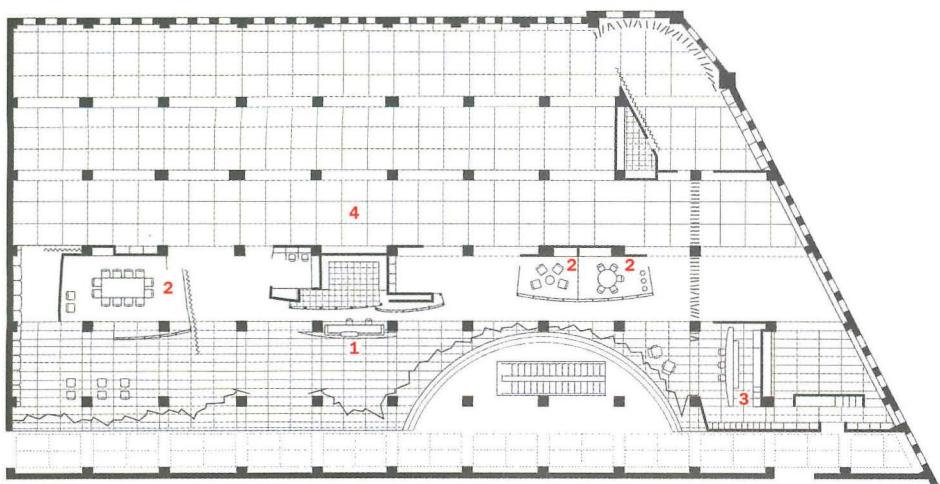
General Contractor: Clune Construction Co.—Jariath Igoe



The front zone of the showroom (opposite and right) was intended to convey Herman Miller's credo of openness and flexibility. Circles sandblasted on both sides of the partitions' glass panels are meant to provide some privacy without completely sacrificing translucency.



1. Reception
2. Conference
3. Kitchen
4. Office systems display



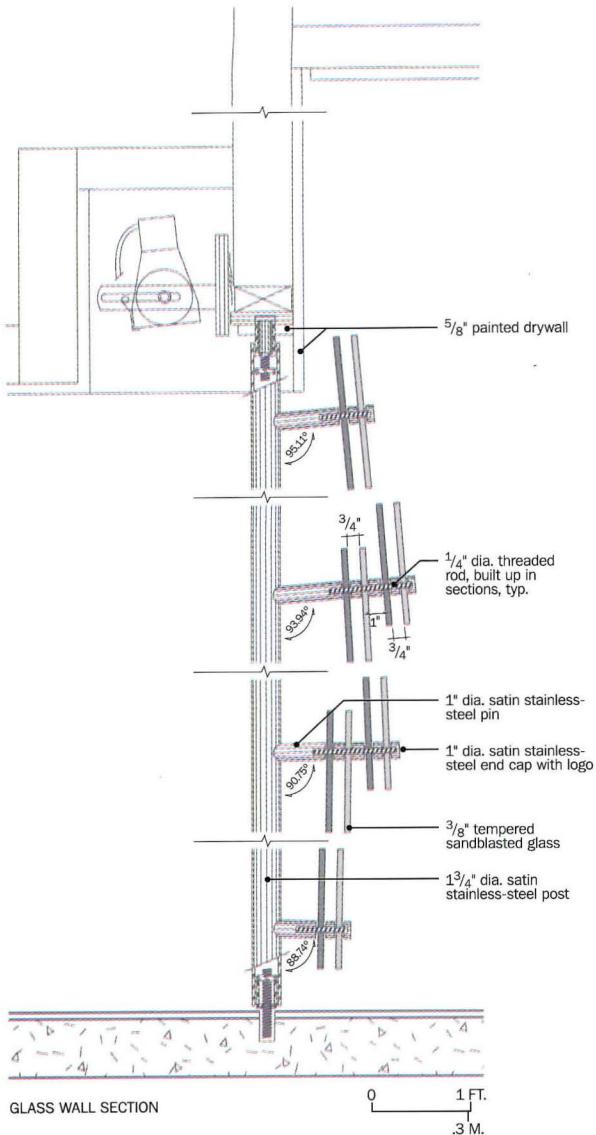
FLOOR PLAN

↓ N 0 20 FT.
6 M.



Classic Herman Miller designs are etched into glass walls (above). Logos were water-jetted on the stainless-steel

caps of the curved partitions. A computer-controlled lighting system is used to adjust the mood.



eyes?" The architects produced a large-scale mockup to reassure all concerned that the glass would create no such optical effect.

Producing the complicated glass-wall front and a series of glass-enclosed conference/product display rooms cost about twice the original renovation budget of \$600,000, an increase the client accepted as in keeping with the project's expanded ambitions. In order to ensure accuracy during construction, Krueck and Sexton produced full-size paper templates for the 192-foot-long, 9 1/2-foot-high glass wall. Once they were cut, the large panels of $\frac{1}{2}$ -inch-thick glass, some as wide as five feet, were fit into aluminum channels within the poured terrazzo floors.

If the main purpose of the glass front is to project a public image for Herman Miller, the remainder of the showroom has other functions to fulfill, predominantly to serve as the company's "laboratory," as Krueck describes it. This back-of-the-house area was established in the architects' 1993 scheme as a flexible space for changing seating and office furniture systems configurations.

And did this high-risk experiment succeed? "The response from the design community and our own employees was tremendous," says external communications director Mark Schurman, describing the June opening. The now-retired Strengtholt, a presence at all 30 NeoCon shows to date, offers the longer view: "In all those years of walking up and down the Mart, I've never seen anything like it." ■

Sources

- Tempered glass:** Trainor Glass
- Tempered-glass entrances:** Blumcraft
- Locksets:** Schlage
- Center-hung pivots:** Rixson-Firemark
- Acoustical ceilings:** US Gypsum
- Paint:** Benjamin Moore

Glass terrazzo flooring: Metropolitan Terrazzo

Carpet tile: Interface

Interior colored glass: Times Square

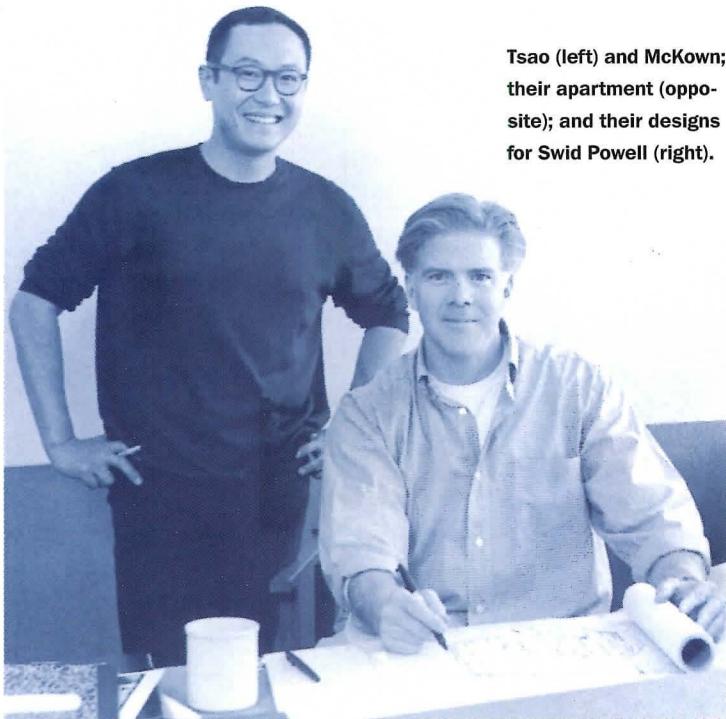
Recessed downlights: Lightolier

Dimming controls: Lutron

Stainless-steel posts: Tesko



PROFILE The interiors of **TSAO & MCKOWN** show a wide range of references and equal enthusiasm for style and anti-style.



Tsao (left) and McKown; their apartment (opposite); and their designs for Swid Powell (right).

by Karen D. Stein

Why not indeed.

While most young architects consider interiors a point of departure, a portfolio-builder for bigger commissions, Tsao and McKown imbue the relatively limited scope of interior work with the many disciplines—set design, couture, performance art—they have pursued at one time or another. They both give the impression that they could have chosen any number of professions and that ultimately they chose architecture not because they prefer that medium over others but because they appreciate the range of involvement it offers.

For all of their high-profile, style-conscious clients and their fluency in pedigreed domestic accoutrements—from Jacques-Emile Ruhlmann and Gilbert Rohde to Louis XV and Karl Friedrich Schinkel—Tsao and McKown apotheosize anti-style as much as style. “We don’t believe in ‘style,’” says Tsao. “We try to address style as a phenomenon and use it as a tool to create an environment where life can be lived.”

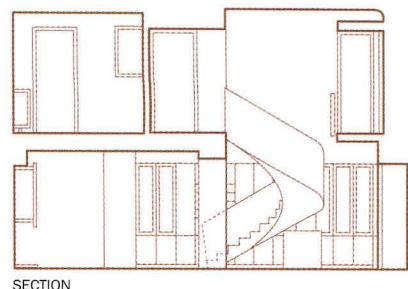
Taut planes and sensuous curves are the backdrop for Tsao and McKown’s play of cultural and aesthetic references. In the architects’ own Manhattan apartment (drawing below, photos opposite and on page 116), a series of subtly differentiated surfaces—lacquered and matte shades of white, a silver-leaf wall—suggest distinct zones within overlapping spaces. The spare envelope of their Singapore apartment is offset by curvaceous, jewel-tone furnishings (page 117). In another residence, a New York duplex (page 118), the architecture plays a supporting role to a collection of bold objects.

Still searching for a label, the observer wonders aloud, “Is there a minimal streak running through it all?” Says McKown, “It’s not minimal. It’s what’s essential.” ■

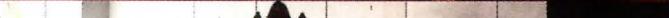


Architects Calvin Tsao and Zack McKown defy classification. In practice together for 14 years, they are known for the diversity of their work and an overall stylishness that has more to do with an attitude of assemblage than a single aesthetic. Tsao & McKown Architects design everything from the extra-large—the firm’s Suntec City in Singapore includes a one million-square-foot convention center, four 45-story office towers, and an 18-story retail and entertainment complex [RECORD, May 1996, page 86]—to the tiny—their ongoing collection of tabletop objects for Swid Powell. Residential interiors have been a mainstay of Tsao and McKown, and a recent series of such projects reveals their multiple viewpoints, from the whimsical to the surreal, the literary to the arcane.

“You can find your voice without limiting your range,” explains Tsao, whose frequent allusions to the dramatic arts betray his early training as a director. Discussing the firm’s constant shift in scale and building type, he jokes, “It’s like being in a repertory company. One day I play the ingenue. The next day I play the grandmother. If I have the skills to do both, why not?”



SECTION



CENTRAL PARK WEST APARTMENT, NEW YORK

In their own 3,500-square-foot New York City apartment, Tsao and McKown use subtly differentiated wall surfaces—stainless steel (in the kitchen), silver leaf, multiple shades of white paint—as a foil for furniture culled from many locations and historical periods. Stairs of Brazilian cherry are the centerpiece.



SINGAPORE APARTMENT, 1994

This 3,000-square-foot duplex, where McKown lived while he supervised Suntec City, has a central stair that is a precursor of the grand staircase of the Central Park West apartment. Teak, used for the floors, continues up the walls, reframing windows and hiding pipes.



UPPER WEST SIDE APARTMENT, NEW YORK, 1996

In this renovation of a 3,400-square-foot duplex, ebonized mahogany floors act as a datum for furniture and objects. Wool rugs designed by Tsao and McKown were manufactured in Tibet. Furniture designed by the architects, including the living room's wall-hung secretary

(below left) and the sitting room's orange-silk-covered sofa, coffee table, and Fortuny-clad chaise (bottom), commingle with antiques like a neoclassical chaise and mirror from Paris (below right). In the master suite (opposite), a boudoir chair in a leopard-print silk adds drama.







Oklahoma architect Rand Elliott created a distinctive prototype design for the interior of CD Warehouse, a store that buys, sells,

and trades compact discs. The CD display units (below), designed by Elliott, house more than 21,000 new and used CDs.

In the prototype CD WAREHOUSE store, Rand Elliott creates an energetic, user-friendly, “musical” space.



Tucked away in one of the more upscale strip malls of Norman, Oklahoma, between Good Vibrations Gifts for the Spirits and Wild Birds Unlimited; miles from the city's well-manicured neoclassical college campus; far from the urban sprawl of fast-food joints, truck stops, gas stations, and roadside motels, stands the first of 40 new CD Warehouse stores that will open across the country this year. The light, airy, 2,880-square-foot space, a prototype for the young franchise's future locations, is as hip as any mainstream urban retail outlet but also boasts a rough-and-tumble attitude borrowed from the surrounding plains.

The ideas behind the CD Warehouse design began with a simple brainstorming session in August 1997. Architect Rand Elliott, an Oklahoma native and a music enthusiast, posed some broad questions to CD Warehouse's CEO, Jerry Grizzle, and his team to help define industry trends as well as the store's image and its functional needs: "What is your

by Elana Frankel

favorite music?" "Where is the music industry going?" "What are the spatial needs of the typical store?" He also had the team fill in blanks to complete such sentences as "Music is ____" and "Our new stores will feel like ____." The participants, whose tastes ranged from big band to rock and roll, enthusiastically contributed to the creative process.

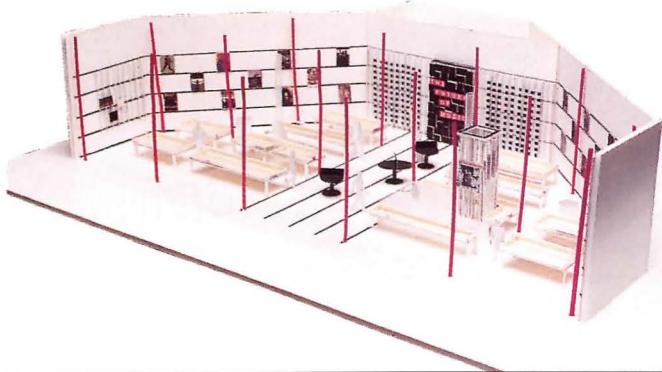
Their answers to Elliott's questions proved to be the architect's starting point. According to one participant, the next wave in the industry is "music plus visual." Music, said another respondent, is "color, energy, light,

and mood"; the stores will sell not CDs but "emotional pleasure." CD Warehouse should be "a place to hang out," explained a staff member, "a local music store that feels like my den or my favorite sweat shirt, a place where customers are not intimidated."

Elliott began to sketch out details that would transform these ideas into architecture. Combining his Modernist academic upbringing with a more personal stream-of-consciousness process, Elliott's sketches became "word paintings," a way, he explains, to describe to the client the concepts inspired by the brainstorming meeting. "I began to understand my intentions in words before forms," he further explains. The overall theme for the space that emerged from these early thoughts was the visualization of music.

As the initial concepts began to form, Elliott built a small working model out of foamcore, "an easy, fast, and wonderful way to transform my ideas into three dimensions," he says. Elliott prefers to build a model before creating a scale floor plan. "You can get caught up in the plan," he explains. "It doesn't allow you to think beyond 'I have to build what's on the plan.'" Grizzle immediately approved the design scheme and provided Elliott with a budget.

To realize his idea of how music might be visualized in a retail environment and in a cost-efficient manner, Elliott had to be resourceful in his choices. Along the back wall, which defines the space, he designed



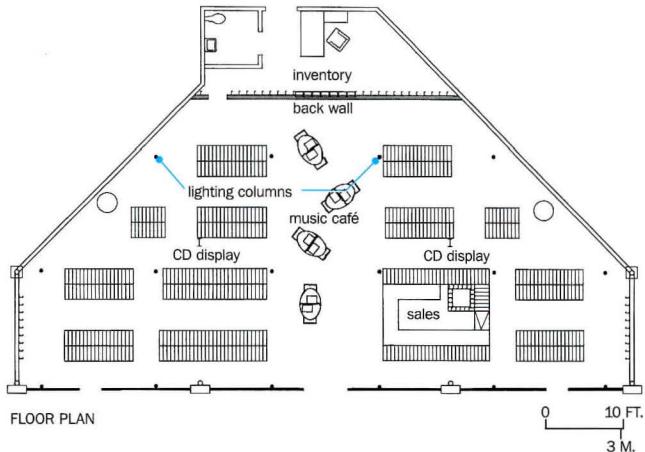
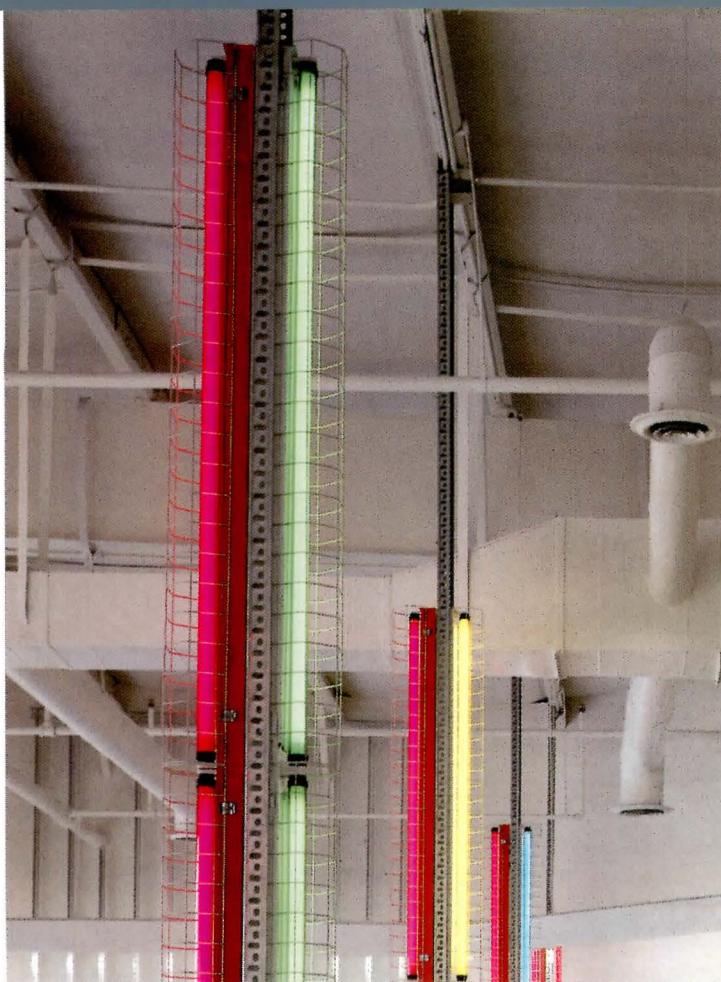
Project: CD Warehouse, Norman, Oklahoma

Client: CD Warehouse—Jerry Grizzle, president and CEO

Architect and Interior Designer:

Elliott + Associates—Rand Elliott, FAIA, principal-in-charge; Mike Mays, Associate AIA, project manager

General Contractor: K. J. McNitt Construction



The fluorescent column lights (left), which are spaced throughout the store, resemble the stems of musical notes. The tables in the music café, a listening area, look like a staff.

simple horizontal bands made of 1½-inch galvanized hat channels to resemble a musical staff. Washed with ambient light, the wall is used primarily to highlight promotional posters and new CD releases.

A series of fluorescent columns that are meant to enliven the space and serve as the store's dominant lighting—there are very few ceiling fixtures—make reference to the stems of musical notes. Reminiscent of artist Dan Flavin's fluorescent light works, the columns glow red (CD Warehouse's corporate color) on the storefront side and a variety of colors on the other side. The tables in the music café, a listening area, are shaped like musical notes.

Surround-sound speakers above the entry allow customers to hear the music and feel its vibration. A final, humorous touch appears in

THE OVERALL THEME FOR THE SPACE THAT EMERGED FROM EARLY THOUGHTS WAS THE VISUALIZATION OF MUSIC.

a neon sign above the door, which customers see only as they exit the store. It reads: "Play It Loud."

Elliott made clever use of materials to keep within the client's tight budget, creating a simple and economical sign and display system, for instance, by using industrial-style bulldog clips with plexiglass and fiberglass panels and standard steel-slotted angles. Basic resilient floor tiles, scored with black lines in the music café to create another musical staff, provide a hard surface that bounces sound around the store.

One of Elliott's more pressing challenges was to find a way to effectively accommodate 21,000 new and used CDs into the store and to present them without the annoying glare that is often caused by light reflecting off the CDs' plastic covers. The architect's solution was to design

a series of CD display tables with task lighting located above and below so that the tables appear to float above the floor and reflections are minimized. The displays can also accommodate digital video disc (DVD) screens for franchises that may want to incorporate such technology at a later time.

For the store's grand opening in March of this year, Elliott and his team draped the front of the building in a Christo-like fashion. After the unveiling ceremony, attended by the CD Warehouse team, a group of potential franchisees, local colleagues, and friends, the new retail space was alternately described as industrial, electric, economical, ethereal, and, most important, musical. The range of descriptions captures the store's user-friendly nature and its ability to evoke the energy of music for everyone, no matter what their taste—and all for a total construction cost, including furniture and signage, of approximately \$134,500. ■

Sources

Carpet: Atlas

Resilient flooring: Armstrong

Rubber base flooring: Roppe

Paint: Sherwin-Williams

Doors and hardware: Hager, Yale,

Hewi, Ives, GL

Light columns, wall washers, strip

fluorescent lights, display-table

lights: Metalux

Downlights: Halo

Surface-mounted HID lights: Lumark

Gooseneck café-table lights:

Brookstone

Exit lamp, emergency light: Surelite

Interior signage: Elliott + Associates (design), ASI (fabrication)

Exterior signage: Metro Sign Company

Café seating: Nuovo Melodrom (Jacobsen chair)

Display tables: Danmark

Table bases: Falcon

Custom furniture: Danmark, Mark Burrows, Falcon

Sales counter: Danmark

Fiberglass panels: Sequentia



CD WAREHOUSE
The Future of Music

NEW RELEASES

THE
FUTURE
OF
MUSIC
CD
FORMATS

NEW RELEASE

SOUNDTRACKS
SOUNDTRACKS
DANCE RAY

The West Bridge's vestibule (this page) and main facade (opposite) introduce the idea of making connections.



Smith-Miller + Hawkinson's addition to the CORNING GLASS CENTER connects to the past while pointing to future growth.



It's a glass suture," says Henry Smith-Miller, talking about the recently completed first phase of his firm's renovation and expansion of the Corning Glass Center in upstate New York. "It stitches together several different buildings and acts as a new spine that opens up views," adds Laurie Hawkinson. Called the West Bridge, the 9,800-square-foot structure heals a wound caused by piecemeal growth among the public buildings at Corning's corporate campus.

Opened in 1951, the Glass Center started as a pair of buildings designed by Wallace Harrison of Harrison & Abramowitz: an elegant glass box serving as a visitors' center and a Modernist shed housing a factory for Steuben glass. In 1972 Gunnar Birkerts designed an amoeba-shaped museum that attached itself to one corner of Harrison's strictly orthogonal visitors' building. In the process of adding to the complex, Birkerts moved the main entrance from the east facade of the Harrison building to his new museum on the southwest part of the site.

Other changes over the years resulted in convoluted circulation through the Glass Center, making it difficult for some visitors to orient themselves. By the early 1990s the complex had gotten a bit tired, a fact

WWW On The Web: Take a virtual tour of this project at www.archrecord.com.

by Clifford Pearson

reflected in attendance figures that dropped from a peak of 500,000 visitors a year in the early 1980s to under 300,000 a decade later. "We realized we needed to freshen up the place," notes Kenneth Jobe, director of corporate projects for Corning.

Since noticing the crowds that its glass exhibit attracted at the 1939 World's Fair in New York City, Corning has understood the value of architecture in shaping its public image. In addition to buildings by Harrison and Birkerts, the company's corporate campus includes a new headquarters building by Kevin Roche and a day-care center by Scogin, Elam, and Bray. "The Glass Center is seen by the company as a cultural center for the community," explains Jobe. "This is particularly important if you're a Fortune 500 company and you want to attract talented people to work for you in a small upstate town."

Representing a new generation of architects, Smith-Miller + Hawkinson first worked with Corning on a temporary exhibit in Harrison's visitors' center [RECORD, September 1994, page 62]. The exhibit showed the company that Smith-Miller + Hawkinson could inject new vitality into the old building and led Corning to hire the firm for a much bigger job: the 31,000-square-foot, \$60 million renovation and expansion of the Glass Center, which the company calls the Glass Center 2000 project.

The new West Bridge and the renovation of an existing auditorium are the first fruits of the project. Phase two, scheduled to open in May 1999, is the 11,000-square-foot Innovation Center, which erupts from within the visitors' center and will feature exhibitions by Ralph Appelbaum Associates. The third phase, already under construction and set to debut in 2000, is the 10,000-square-foot Orientation Center, which will act as a new front for the Glass Center and return the main entrance to the east side of the complex.

Project: Corning Glass Center 2000,
Corning, New York

Architect: Smith-Miller + Hawkinson
Architects—Henry Smith-Miller, AIA,
Laurie Hawkinson, design principals;

Ingalill Wahlroos, project architect;
John Conaty, Ferda Kolatan, Flavio
Stigliano, Oliver Lang, Mauricio
Salazar, Catherine Bird, Paul Davis,
Maria Ibanez de Sendadiano, Christian

Lynch, Akira Okaji, Eric Van Der Sluys,
Kristina Yu, Karin Taylor, project team

Engineer: Ove Arup & Partners
(structural, mechanical, electrical,
plumbing)

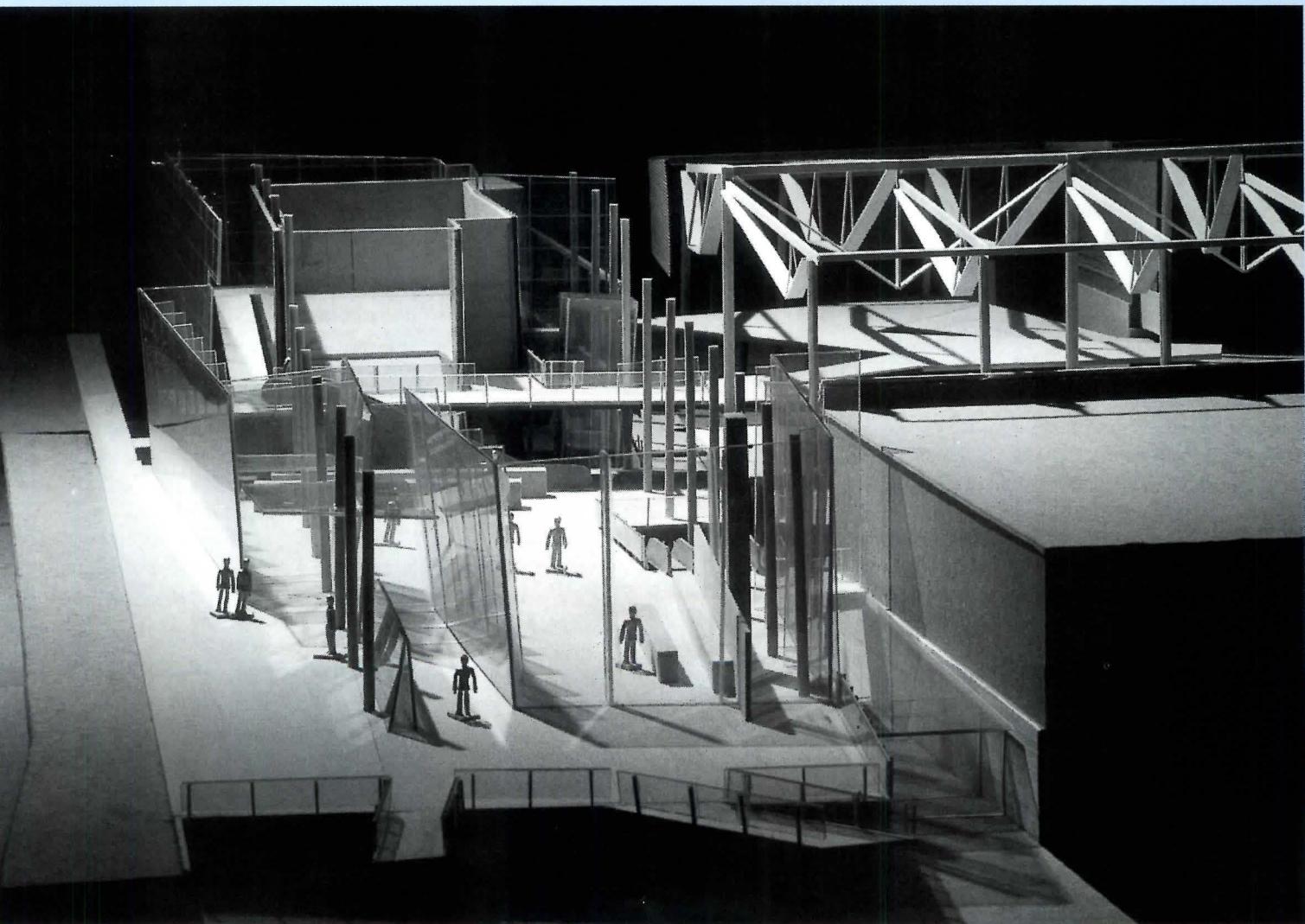
Consultants: Quennell Rothschild
(landscape); Claude Engle (lighting);
R. A. Heintges Architects (curtain wall);
Fisher Dachs (theater)

General Contractor: Welliver McGuire

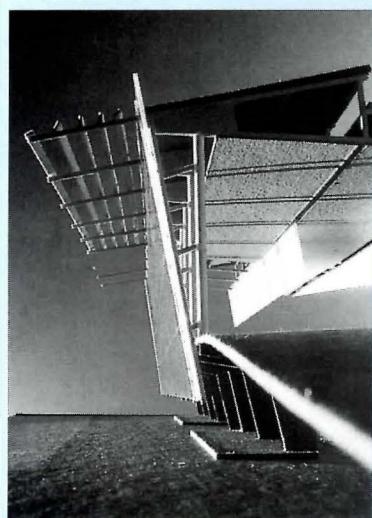
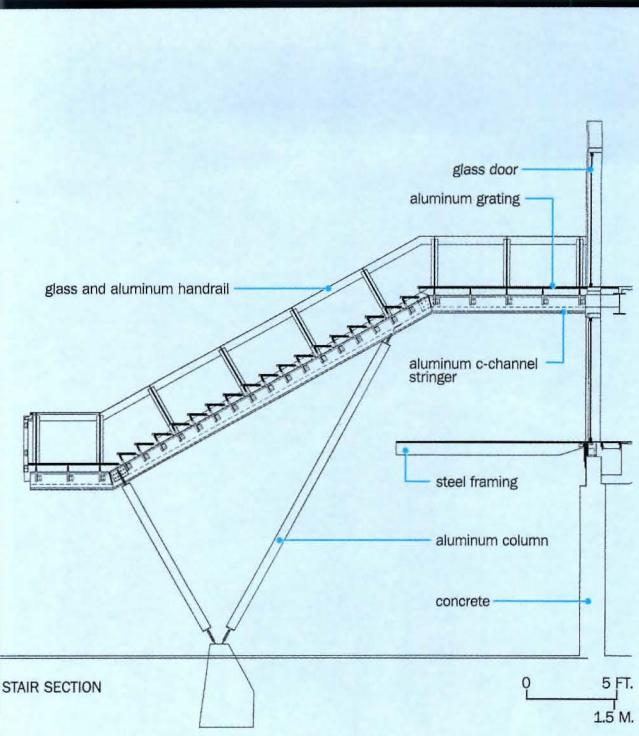
FUTURE PHASES EXPLORE POSSIBILITIES OF GLASS IN ARCHITECTURE

Now under construction, the second and third phases of the \$60 million Corning Glass Center 2000 project (model below) will transform much of the existing complex and add a new front. New exhibits, designed by Ralph Appelbaum Associates and organized into galleries titled "windows," "vessels," and "opticals," will occupy the Innovation Center, which will debut in May 1999. To fit the 11,000-square-foot Innovation Center into the original 1951 Glass Center, Smith-Miller + Hawkinson raised the roof and designed a jazzy procession from the West Bridge to the yet-to-be-completed Orientation

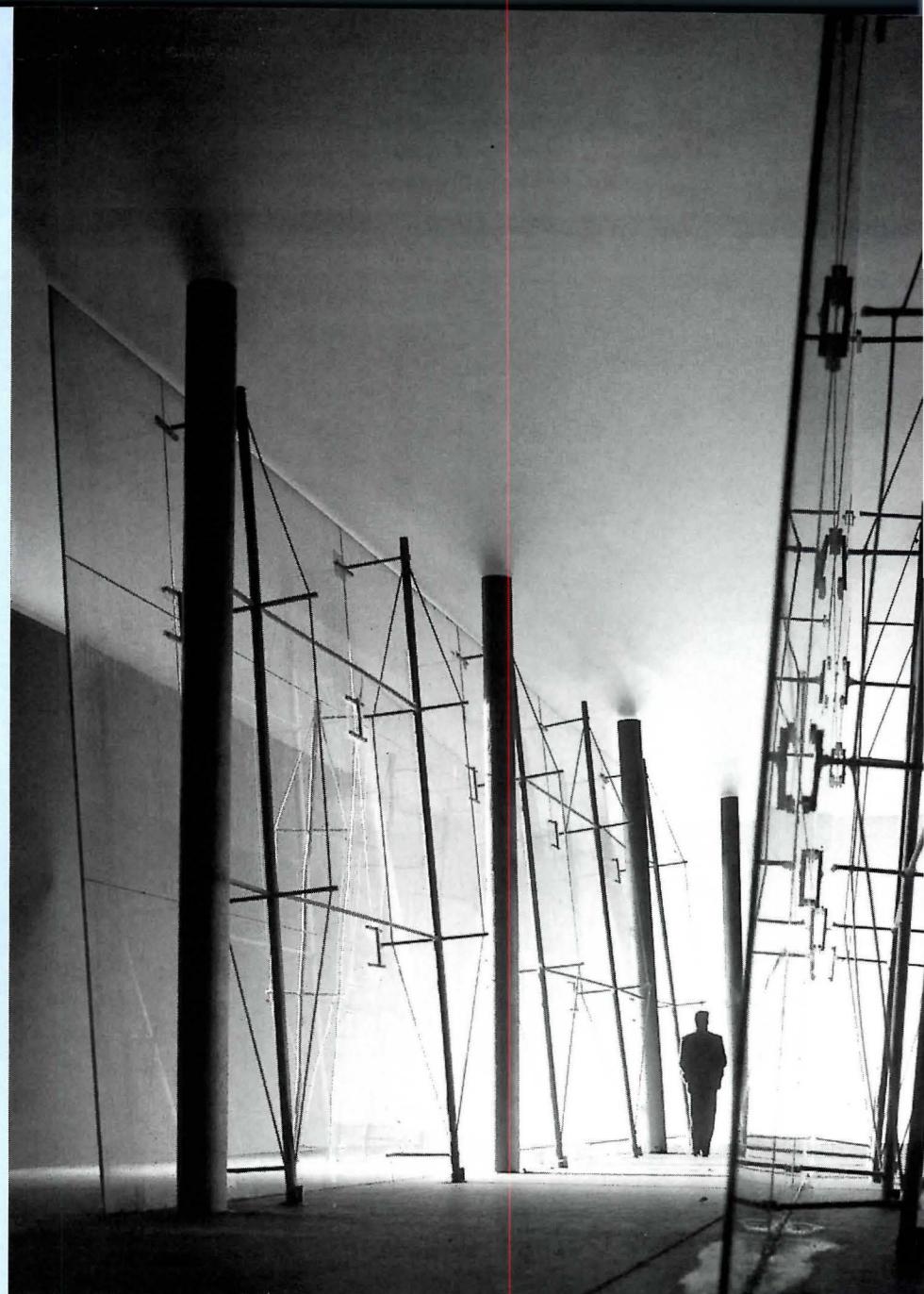
Center on the east end of the complex. For the last phase of the project, the architects designed an angled facade made of large frameless glass plates that will be supported by stainless-steel tension and compression members (photos opposite). One wall will have masts on the exterior, while another will be supported on the inside, creating both an "exoskeleton" and an "endoskeleton." A dramatic stair (right) will lead to the Orientation Theater, located on the second floor. Visitors will arrive at the second level in jitneys running on a raised roadway.



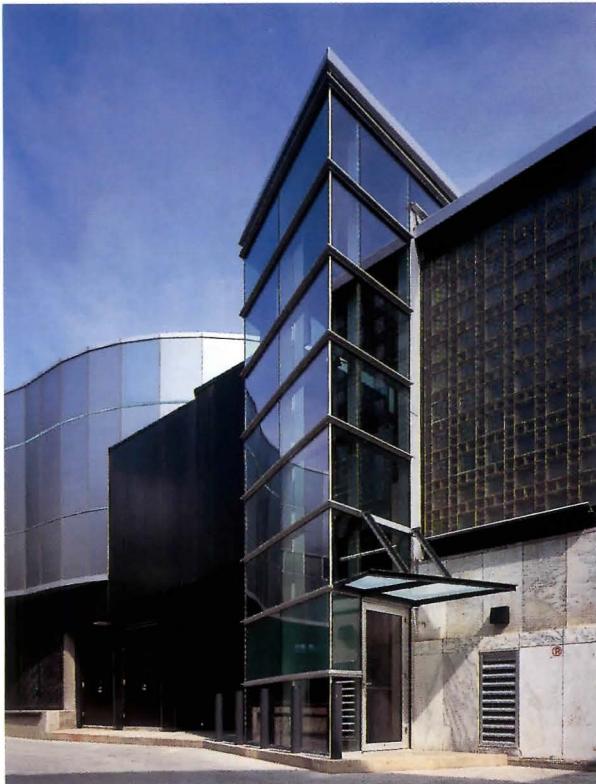
PHOTOGRAPH: SMITH-MILLER + HAWKINSON ARCHITECTS



The new entry facade
will be angled at 7.5
degrees and be made
of glass plates and ele-
ments connected by
point fittings drilled
through the glass.
Layers of transparency
will blur the separation
of indoors from out.



Three eras meet at the south end of the West Bridge (below). The layering continues inside, where spaces run vertically as well as horizontally (right).



"This project is about presenting a new skin and then playing with the spaces in between the new and the old," explains Hawkinson. Her comment was made in reference to a mast-steadied, two-story glass facade that will be one of the showpieces of the project's last phase, but it is equally applicable to the already completed West Bridge. Indeed, the first and last phases of the project share many of the same design challenges: creating new frontispieces for the two primary facades of the

CORNING HAS A MATERIALS CULTURE, AND THE ARCHITECTS HIRED BY THE COMPANY USUALLY SHARE THIS PASSION.

complex, exploring the varying character of glass, linking old and new, and incorporating pieces of Harrison's glass-block exterior wall inside new spaces. The solutions devised for these two phases are quite different, but the ideas at play are the same. As Herbert Muschamp wrote in the *New York Times*, the two additions on either side of Harrison's visitors' center act as "a pair of faceted quartz bookends."

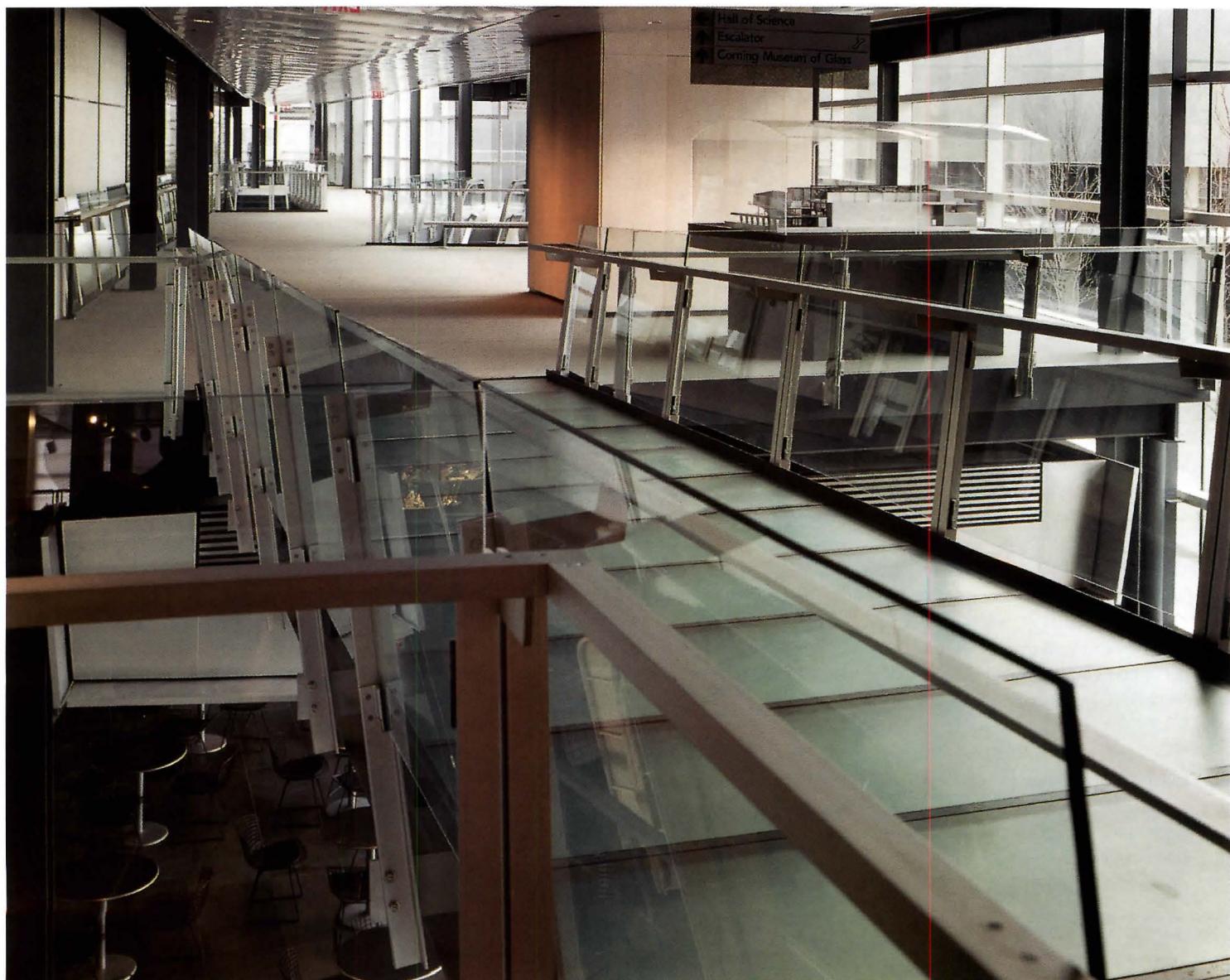
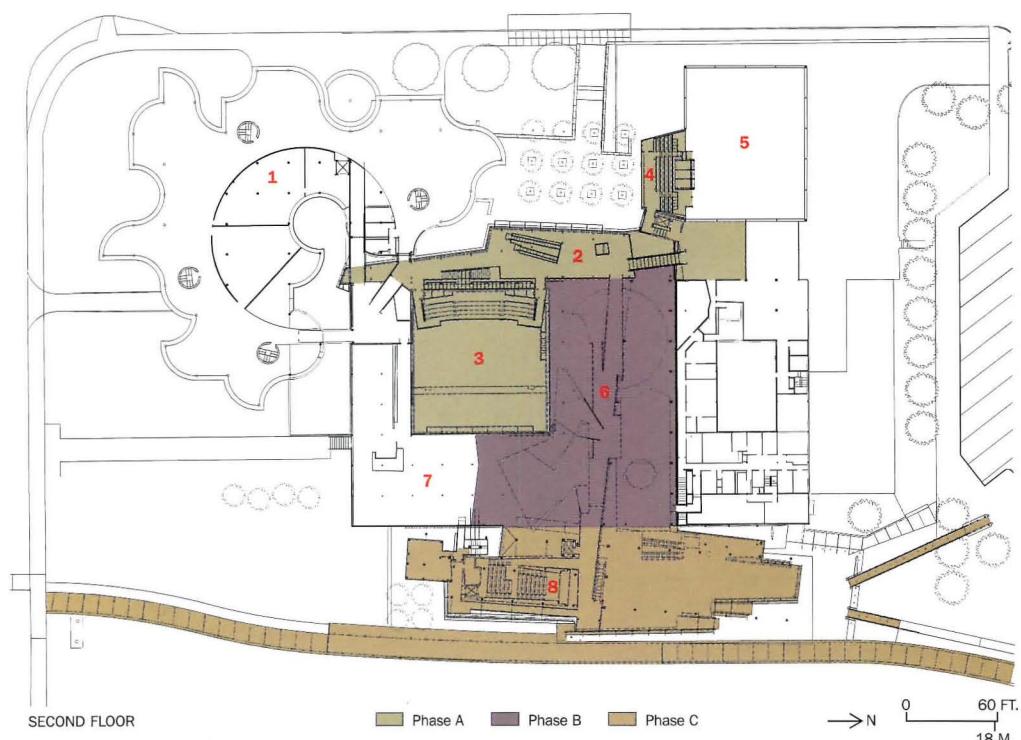
Showing off glass is an obvious strategy that has been employed by every architect who has worked at Corning. So it's not surprising that the company would be interested in Smith-Miller + Hawkinson, whose work has often investigated the nature of materials. "There is a materials culture at Corning and I knew that Henry and Laurie's approach would reverberate with the people in the company," explains Samuel Frank, who

was the director of architecture and design at Corning when Smith-Miller and Hawkinson were hired. "Their work is honest and exploratory and engaged with an understanding of materials," adds Frank.

While Harrison experimented with various kinds of opaque and translucent glass on his Corning buildings and Birkerts used glass in an expressionistic way reminiscent of the German architect Bruno Taut, Smith-Miller and Hawkinson were fascinated by the three-dimensional aspects of the material. "Usually you see glass frontally, but we wanted to present glass on edge," explains Hawkinson. As a result, visitors see the new glass elements as planes, rather than as transparent surfaces. To heighten the effect, the architects established a slightly skewed geometry that pushes the additions at an angle from the original building and cant glass walls at a 7.5-degree angle. The angled elements also serve the more prosaic function of pointing visitors in the direction of escalators and circulation spines.

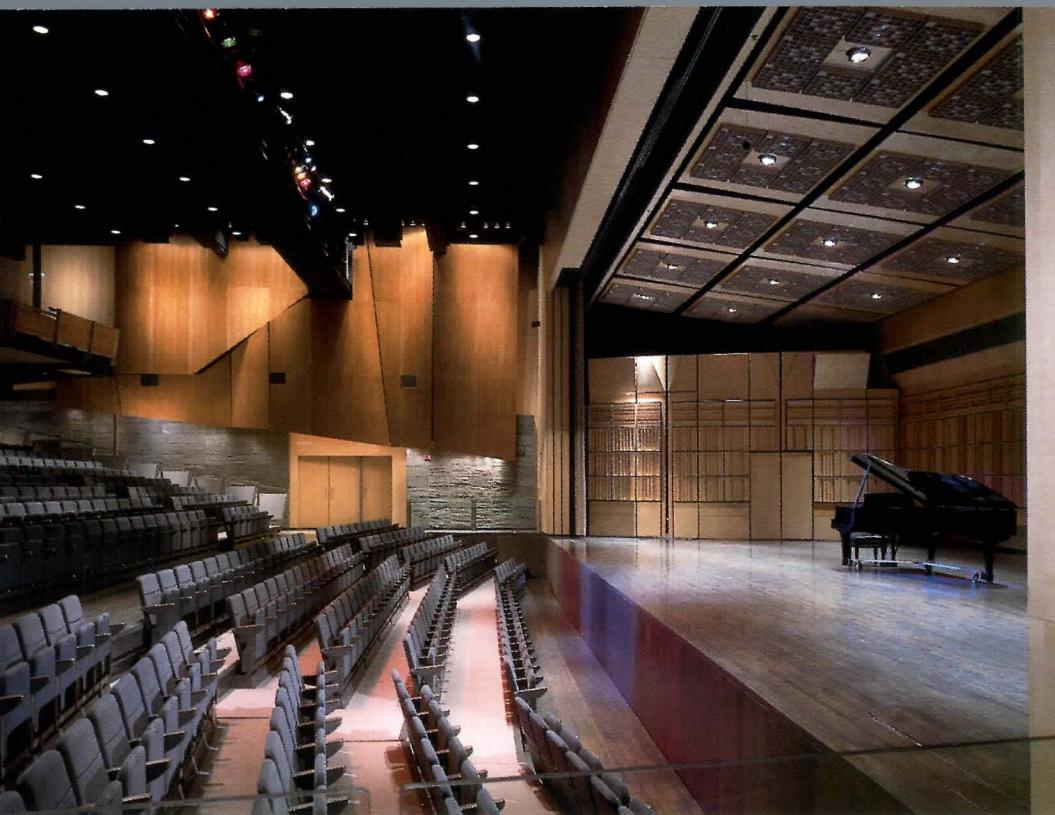
While the architectural effect of the glass elements in phase one is innovative, the materials used are not cutting edge. Indeed, the new west facade employs a standard curtain-wall system with low-e glass and aluminum mullions. A renovated courtyard with a new arbor of locust trees shading the West Bridge makes a more sophisticated (and expensive) system unnecessary.

Before the West Bridge was built, people often had a hard time finding their way from Birkerts's museum to Harrison's factory building (where glassblowing demonstrations are held). Sheathing the addition in

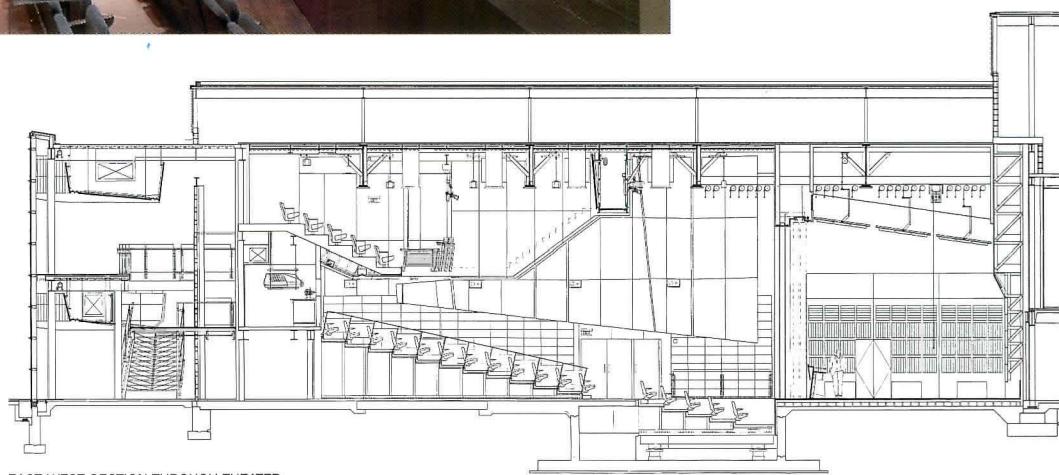


1. Museum (1972)
 2. West Bridge
 3. Performing arts theater
 4. Glassblowing demonstration
 5. Factory (1951)
 6. Innovation Center (1999)
 7. Glass Center (1951)
 8. Orientation Theater (2000)

A glass bridge (below) takes visitors from Birkerts's building, across the West Bridge, and into renovated space in Harrison's Glass Center.



An old multipurpose auditorium has been converted into a 770-seat performing arts theater (left) with sophisticated acoustics. Seats can be removed and the stage lowered to create a single floor surface for functions such as dinners and balls.



EAST-WEST SECTION THROUGH THEATER

glass has opened up views to the other buildings, so visitors can see where they have been and where they are headed. In a similar vein, the architects “blew out the [southwest] corner” of Harrison’s visitors’ center, says Smith-Miller, creating striking views at a point where three different buildings come together.

In addition to connecting places and eras, the West Bridge houses a 40-seat café on its ground floor and serves as the lobby for a remodeled 770-seat auditorium. Originally a multipurpose room, the 100-by-100-foot space has been transformed into a performing arts theater with sophisticated acoustics, removable seating in the orchestra, and a new balcony cantilevered out from the West Bridge and suspended from the roof at two points. “Folded” plywood panels and Italian stone on the side walls work together acoustically and provide a visual contrast to all the glass found in the rest of the complex.

One of the challenges of the project was reworking the old buildings’ mechanical systems to accommodate higher volumes of traffic and higher standards of comfort. For example, the multipurpose room originally had no air conditioning. A series of rooftop air-handling units was installed later but proved to be unsightly and inadequate. Smith-Miller + Hawkinson dealt with the situation by installing a new HVAC system on the

roof of the performing arts space and using large, low-velocity ducts to keep noise levels down, explains Ingallill Wahlroos, the project architect. For the West Bridge most ducts and mechanical systems have been inserted underneath the floor of the second level.

Stepping back from the Corning project to look at the grander scheme of things, Smith-Miller says, “During the last 10 years, architecture has been about the very large significant gesture. Now I think you’re seeing the emergence of a new generation of architects who are really interested in craft and the way things come together.” The Corning Glass Center 2000 certainly exhibits an attention to detail and an almost obsessive interest in making connections. But with its sleek, angled forms slipping past one another and its complex layering of spaces, this is a project that clearly makes a few gestures of its own. ■

Sources

Curtain wall: EFCO

Anodized aluminum panels: Una-Clad

EPDM roofing: Carlyle

Built-up roofing: Siplast

Low-e, insulated glazing: Viracon

Flooring: Kirkstone Flooring

Lighting: Edison Price Lighting

Escalators: Schindler

Auditorium seating: GDS

Ceiling system: Simplex

Exposed metal deck: Epic

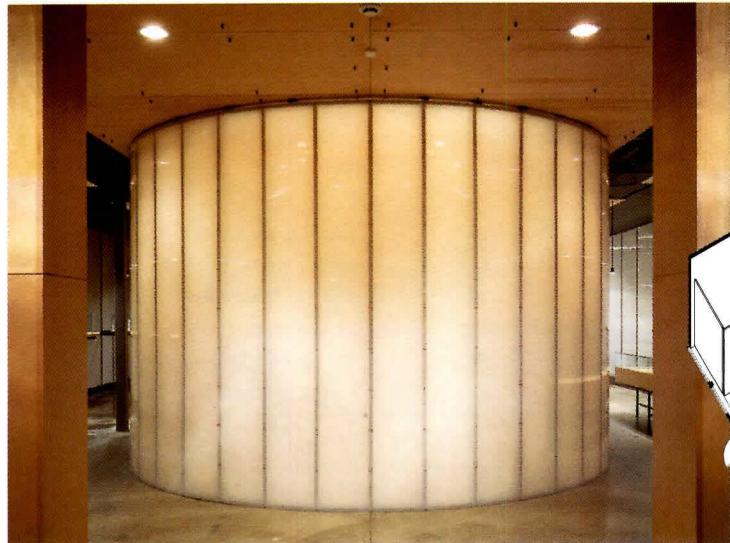


Folded plywood panels, slatted wood railings, and stone surfaces work together to create rich acoustics.

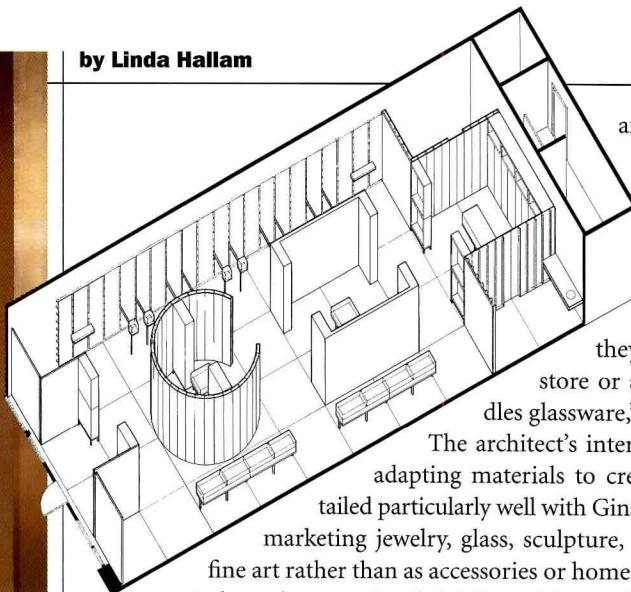
**Sculpture, art, and
jewelry are displayed
in the neutral, gallery-
like setting of M. C.
Ginsberg.**



Architect Kirk Blunck's design for M. C. GINSBERG decontextualizes a West Des Moines art and jewelry store.



by Linda Hallam



ambience of contemporary studio and gallery spaces. "When people enter, they don't simply assume that they are in a jewelry store or a store that handles glassware," says Blunck.

The architect's interest in art and in adapting materials to creative uses dovetailed particularly well with Ginsberg's concept of marketing jewelry, glass, sculpture, and furniture as fine art rather than as accessories or home furnishings. "We wanted to take away the clichés," says Blunck. "We didn't necessarily feel we had to use granite or polished brass. As an architect, I'm interested in materials—how they relate to one another, and how prosaic materials such as concrete look when they are finished correctly."

The materials the architect chose—concrete, concrete panels, extruded plastic, sandblasted steel, and maple—give a neutral quality to the space. Ash panels finished in a black translucent stain, black industrial fasteners and stainless-steel hardware, and black halogen light fixtures provide contrast without competing with the objects for sale. "There are no strong colors here," Blunck says. "There's a reason art galleries have neutral backgrounds."

As in the careful staging of a theatrical production, the interior is slowly revealed as the steel exterior door opens to a cool, carefully lit environment. A circular translucent wall divides and defines the center of the 3,000-square-foot space. The wall also prevents shoppers and browsers from taking in the space with one glance or strolling casually through the store. Rather, patrons must choose which way to go: to the

Inspired by sophisticated gallery displays and the current proliferation of touring art shows, the interior of M. C. Ginsberg Objects of Art, a fashionable West Des Moines, Iowa, jewelry store, treats commerce as an experience and a destination. Architect Kirk Blunck, of Herbert, Lewis, Kruse, Blunck Architecture, worked within his own interpretation of what could be called decontextualism.

Rather than replicate or even blend his design with the styles of the shops in the surrounding upscale suburban shopping strip, Blunck designed an interior that melds cloistered commerce with art. Instead of the typical plate-glass store windows that blatantly proffer merchandise, M. C. Ginsberg entices the passerby with a four-foot-wide, black-steel-clad door, which serves as the store's discreet public face. Once inside the store, the visitor experiences architecture as both artistic presentation and theater.

One way Blunck achieves this effect is by consciously controlling access. "In a typical retail store, you walk in the door and see the whole space from front to back, the whole array of merchandise," he notes. "There's nothing left to the imagination, no element of curiosity." Curiosity is the operative word: owner Mark Ginsberg, an art patron and a frequent traveler, strived to re-create the ambiguities and

Linda Hallam is an author and editor of shelter books for Meredith Publishing in Des Moines, Iowa.

Project: M. C. Ginsberg Objects of Art, West Des Moines, Iowa

Owner: Mark Ginsberg

Architect: Herbert, Lewis, Kruse, Blunck Architecture—Kirk Blunck, FAIA, Ellen Kyhl, AIA

General Contractor: Holcomb Corporation

Millwork: Tony Lisac Construction

Mechanical/electrical, light fixtures: Stroh Corporation



right, where sleek cases of glass and wood line the interior wall in a reinterpretation of the traditional jewelry store; or to the left, where jewelry is displayed in a more gallery-like setting of custom-made tempered-glass cubes supported by steel bars and tubes.

Steel bars mounted between unfinished industrial cement wall panels are used to create a flexible display system that can be changed at will. Steel tubes act as support rods at heights of two, four, five, and six feet. The space created by the circular wall of plastic panels is used as a backdrop for changing sculpture displays. Hooks can be attached to the wall as well as the ceiling for expanded display, and the panels can be disassembled and removed for special exhibitions.

Flexibility does not preclude order, however. The center of the curved entry wall lines up on axis with the spine of the store. The architect further imposed a sense of structure by working in an eight-foot grid, dictated by the plywood panels' standard dimensions—four by eight feet. The concrete floor is also scored in eight-foot squares, and halogen pendants suspended from tracks organized on the same grid heighten the feeling of regularity.

Taking the store's noncontextual quality to its ultimate end, the architect designed the space so that when the three-year lease expires, the elements can be disassembled, if the owner desires, and moved to a new location. "Like a stage set for the theater, the important pieces can be used again," says Blunck. ■

Custom glass: Two Rivers Glass

Ornamental iron: Hawk Metal

Products

Security/safety systems: AAA

Security

Floor covering: Huega Tiles

Translucent panels: Polygal

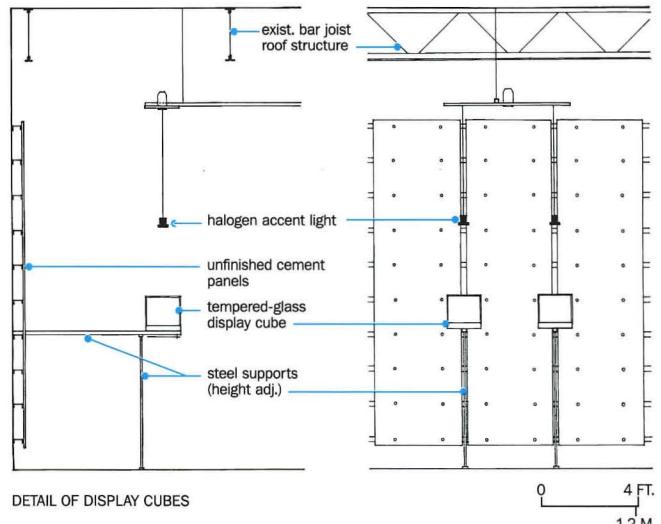
Solid panels: Eternit

Custom tabletops: Celotex

Bar sink: Just Manufacturing

Bar faucet: Hans Grohe

Sound system: Bang and Olufsen



Steel tubes and bars support custom-made, tempered-glass cubes for displaying jewelry

(left top and bottom and drawing above). The height of each cube can be adjusted

on the suspension system, which is mounted between panels of industrial cement board.



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CIRCLE 54 ON INQUIRY CARD

COMPUTERS IN ARCHITECTURE...



The changes wrought over the last 20 years by such developments as the affordable personal computer, computer-aided design, photorealistic rendering software, and, more recently, the Internet and the Web have been so powerful and pervasive that the practice of architecture will never be the same. Coverage of this evolution has long been a mainstay of RECORD, although in recent years we have been challenged, as have all magazines, to keep pace with the rapidly evolving technology.

Since January 1997 we have enhanced our coverage of the topic by publishing articles that go beyond simple discussions of CAD to grapple with such issues as how computers can streamline practice and management and how the Internet is changing the way architects work. These stories have included, among others, "Copyright Law in the Age of the Web" (June 1997, page 169); "Collaboration by Wire" (September 1997, page 131); "The Architecture of Cyberspace" (November 1997, page 139); "Changing the Face of Practice with Digital Technology" (June 1998, page 72); and "Entering the Third Dimension," a story on 3D modeling software (June 1998, page 175).

Earlier this year we launched our Web site, www.archrecord.com, which now includes an index to articles from the last five years and virtual-reality tours of well-known architectural projects. We will continue to add new features.

SEE OUR CAD SELECTION TABLES ON THE WEB

In addition to the computer section on the following pages, ARCHITECTURAL RECORD is pleased to present comprehensive online selection tables for CAD buyers, compiled by W. Bradley Holtz, author of *The CAD Rating Guide* (ZEM Press). Visit our Web site at www.archrecord.com.

But the scope of computer technology is so large, and the needs of our readers so great, that we decided the subject deserved this special section in the magazine. In the first article, computer consultant and architect Jerry Laiserin, AIA, presents techniques for developing technology plans for architectural offices. Freelance writer B. J. Novitski presents five case studies that demonstrate ways in which architects are using computer tools to improve the exchange of information, to archive important data, to search for product information, and to provide value-added services for clients.

Steven S. Ross, who has written more than 100 software reviews for RECORD over the last dozen years, reports on the latest developments in software seen at this year's trade shows. Ross has also compiled a buyers' guide including questions that those who plan to purchase equipment like printers, digital cameras, or modems can ask of their vendors.

And we're not done yet. Watch for an article later this year by Kristine K. Fallon, FAIA, who writes about training the computer users within an architectural firm to use the technology to its greatest advantage. As Fallon points out in her article, "Architects are reaping great benefits from technology, but there's plenty more to learn."

—Charles Linn, AIA, and Wendy Talarico

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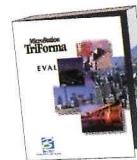
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Planning a Computer Technology Strategy for Design Professionals

by Jerry Laiserin, AIA

As little as 10 years ago, few design firms used computers, and fewer still wove their computers into the everyday fabric of their practice. Today, a majority of firms use advanced computer and communications technologies on a daily basis, often with the necessary tools readily available on every employee's desk. Yet there is no guidebook, no single resource, that helps design firms identify, choose, and implement technology strategies to complement their market-positioning and business strategies.

Even among those well-managed firms cited for their comprehensive use of information technology, many have not addressed the few

experienced users recognize that hardware and software represent a fraction of total technology costs. Results from the AIA's 1997 Firm Survey, which included more than 4,000 member-owned companies, show that 94 percent of all design firms are using computers. Most firms spend between 5 and 8 percent of net revenue per employee per year on the total cost of hardware, software, networking, upgrades, supplies, services, maintenance, support, and training—a total of \$361 million last year. Companies with 50 or more employees each spent an average of \$187,100 on hardware alone while investing \$141,000 in technical support in 1997.

These numbers are proportionate to the percentage of revenue

**EXPERIENCED USERS RECOGNIZE
THAT HARDWARE AND SOFTWARE
REPRESENT ONLY A FRACTION OF
TOTAL TECHNOLOGY COSTS.**



simple questions that every principal wants answered: Why does the company need a technology strategy? How do we develop one? How will we apply it to this firm?

A case for technology strategy

Management guru Peter Drucker has observed that "every business has a strategy. The problem is that 90 percent don't know what it is." Seeking least-cost, industry-standard, or state-of-the-art technology may be equally valid approaches for different firms. Deciding which is best for an individual firm is the difficulty. The same goes for software; what is ideal for one firm may be underpowered for another yet inappropriately complex for a third. Technology policies that support productivity in one practice may stifle creativity in another.

Such differences in performance capabilities are compounded by order-of-magnitude differences in system cost. In other words, while useful work can be accomplished with an investment of less than \$2,000 in hardware and software, equipping a full-blown design/production "seat," or station, can quickly run up to five figures. Furthermore, experi-

that is spent on marketing, or the percentage that flows to the bottom line as profit. Clearly, then, no design firm can afford to spend too much or too little on technology, or to risk squandering its technology investment on inappropriate or dead-end tools.

Experimenting with different strategies in search of the one that is "just right" is not a practical course. Instead, some practice management commentators have provided insight into overall firm strategies that can serve as general guidelines in determining technology plans. Weld Coxe, AIA, founder of a management consultancy specializing in design professions, and David Maister, a former Harvard Business School professor, have independently theorized that design firms are oriented toward one of three different market positions: strong-delivery/procedural work, which means the firm is best at solving routine problems by providing quick, practical solutions and economical documentation; strong-service/"gray-hair" work, which means the architects can solve broad, complex problems and offer comprehensive advice; or strong-ideas/brain work, which means the designers are good at solving unique problems through innovative thinking. No matter their size, all firms combine elements of each approach. Yet one of these three typically predominates. And that helps determine wise choices in computer technology.

For a firm that emphasizes rapid production and delivery of documents, computers may add little more than speed. To clients like

Jerry Laiserin, AIA, consults with architects who are developing and implementing technology plans. He is CAD-in-practice editor of ACADIA, the quarterly journal of the Association for Computer-Aided Design in Architecture.

national retail chains, this is most beneficial: their doors will open, with cash registers ringing, that much sooner.

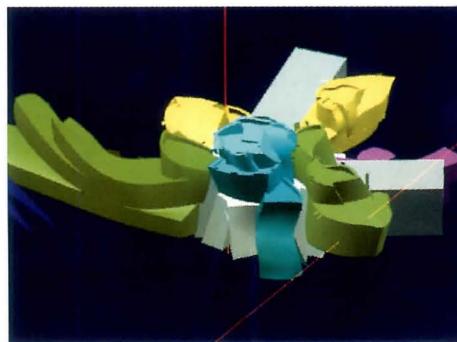
For architectural firms that specialize in complex projects, computers permit exhaustive studies of program alternatives, allowing for better management of massive databases. They also improve project coordination for large projects, such as major medical centers or international airports. But for those firms that are sought for their innovative design, computers offer a method of exploration that would be difficult and time consuming to do by hand. The design of the swooping forms of Frank O. Gehry & Associates' Guggenheim Museum in Bilbao, Spain, for instance, was facilitated by the use of CATIA, a 3D computer modeling system (photograph below).

With these models in mind, it's also possible to set some cost parameters. Frank Stasiowski, FAIA, publisher of several practice management newsletters, points out that the first model—commodity-type

technology support personnel, and relying on staff with strong computer backgrounds.

Strong-idea/brain-work firms are often able to invest the most in technology. Capturing the unique solutions of a design principal may outweigh worries about cost. This is the realm of 3D digitizers, exotic software, and expensive workstations. Such firms are more likely to undertake the administrative overhead and cost burden of supporting multiple hardware/software platforms to achieve the ideal blend of computer tools and techniques. System support and decision-making are likely to remain in the hands of design professionals, and self-starting users tend to train and support each other.

Whether a firm follows a value-, performance-, or solution-driven computer strategy, management must choose what to buy and when. According to CAD consultant and author Brad Holtz, AIA, there are three main technology buying styles: early adopter, mainstream, and



COMPUTERS PERMIT FREE-RANGING DESIGN EXPLORATION THAT WOULD BE DIFFICULT OR IMPOSSIBLE TO DO BY HAND.

procedural work—tends to garner lower fees than one-of-a-kind negotiated service on the order of Frank Gehry's designs. Extending Stasiowski's argument, lower fees require lower costs in order to maintain profitability, which in turn implies that firms focusing on procedural work probably cannot obtain and maintain as much or as up-to-date technology as firms engaged in higher-margin, strong-idea practices.

Combining these perspectives, it is easy to see that strong-delivery/procedural firms neither need nor can afford the latest and greatest in technology. Their strategy must be to minimize technology costs, even at the expense of performance. Such firms' focus on value will most likely result in their waiting to buy mature technology as its price declines, and then keeping it in service longer. They should choose generic software tools and expect employees to train and support themselves. This frugal, no-frills approach is best suited to frugal, no-frills practices.

Strong-service/gray-hair firms can charge higher fees and are thus able to afford more costly technology—the kind that allows them to deliver the performance their full-service clients expect. Such firms should buy fully loaded PC hardware and the latest releases of industry-standard software. They should count on providing training, hiring

late adopter. Those firms focusing on the solution-driven, brain-work strategy like to adopt new technologies early, and as a result they pay more. They also gain a competitive advantage. Those firms that wait until technologies are mainstream before they buy pay much less, but they may earn a lower return on their investment. Mainstream users, like the performance-driven, strong-service firms, seek to optimize the cost/value tradeoff.

How to apply technology strategy

Once a firm has identified a technology strategy that reflects and supports its overall practice, the next step is to apply that strategy to the development of a technology master plan. To be effective, the master plan must address both tactical and operational levels. At the tactical level, aligning the technology plan with the firm's marketing and financial plans is a key part of the process.

The first step, consistent with overall firm strategy, is to identify the markets the firm serves or wishes to serve, and the projects and services the firm seeks to deliver. The second is to determine the minimum level of technology necessary to support those markets, projects, and services. For example, some markets can be supported with simple 2D computer-aided drafting (CAD) and plain text general notes, while other markets may demand integrated 3D design and database-driven specification systems with live Internet links. The final step is to identify the maximum level of technology the firm can afford.

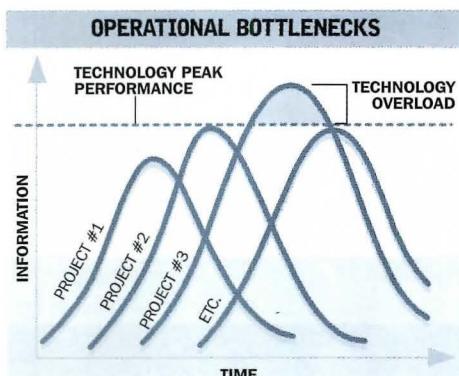
If the minimum technology needed to serve the firm's intended markets is less than or equal to the maximum technology the firm can afford, then the tactical planning process is complete. More often than not, however, the firm's technological reach exceeds its financial grasp. Failure to recognize and adjust for such mismatches is one of the most common causes of technology-based problems in all businesses, but

WHAT IS YOUR FIRM'S TECHNOLOGY APPROACH

	TYPE OF FIRM		
	PROCEDURAL	GRAY HAIR	BRAIN
MARKET POSITION	STRONG DELIVERY	STRONG SERVICE	STRONG IDEAS
COMPUTER STRATEGY	VALUE-DRIVEN	PERFORMANCE-DRIVEN	SOLUTION-DRIVEN
PURCHASING APPROACH	LATE ADOPTER	MAINSTREAM	EARLY ADOPTER

Choices in computer technology are driven by a firm's work style and market position.
Most firms fall into one of the categories above.

The digital demands of projects move in waves but have a steady impact on technology. When one project is too demanding, the computer system is overloaded.



especially in design practice. Project managers must learn not to overpromise or under-budget for technology to meet client expectations, while principals and financial managers must weed out projects that fail to return profits commensurate with technology investment.

The staff responsible for the technology must constantly be alert to potential bottlenecks in the firm's information-processing bandwidth, or total information-processing capacity. Even before computerization, design was an information-intensive process. A jotted note on the back of a business card could represent the initial project-lead information. During that project's life cycle, those initial jottings could expand to file drawers full of correspondence and flat files full of drawings. Eventually, the flow of project paperwork tapers off until the punchlist is closed out and the final retainage released.

With computers, the digital crescendo and decrescendo of project information follows the same pattern. In a busy firm many projects will overlap, each in its own stage of rising or falling information flow. The sum of these flows at any moment in time is the information capacity that must be accommodated.

Bottlenecks may occur in any number of places—in the calculating speed of the firm's hardware, the file-transfer speed of the software, or the learning speed of the firm's staff. Often, fixing one bottleneck reveals another new bottleneck. For example, new software may reveal a

firm's technology operations as a whole but to each of three principal aspects of those operations: platform (software and hardware), procedure (standards, file exchange, etc.), and personnel (system administration, training, etc.). If you know where you are going and understand where it is possible to go (in terms of technology and competition), then it is not hard to target tactical implementations of the overall strategy.

Architects on the Net

In the last five years, the Internet and related technologies (intranets and extranets) have offered some of the best tools to create added value for design-firm clients. According to the AIA Firm Survey, 60 percent of architectural firms have Internet access and 28 percent either have a Web site or are planning to have one soon. Yet many practices rush from one fad and buzzword to the next, with little or no regard for the opportunity to leverage Internet technology in support of firm strategy. Rather than using the Internet to make themselves more like everyone else, design firms should be using the Net to make themselves the best at what they already do.

For example, E-mail and FTP (file transfer protocol) offer low-cost means of high-speed communication, a perfect prescription for leveraging procedural work. Client-accessible Web sites dedicated to specific projects provide strong-service firms an opportunity to extend their work directly into client organizations. For strong-idea firms, the best Web sites create immersive educational environments that compellingly convey their design philosophies.

Who's in charge?

Successful implementation and operation plans recognize that the staff skills necessary for ongoing monitoring and support are not necessarily the same skills required for long-range strategizing. In too many design firms, technology management focuses on supporting PCs, programs, and protocols, instead of supporting people and projects.

At the end of the day, design practice is still about architects and their projects. PCs, programs, and peripherals should be simplified and standardized so they require as little attention as possible, and whatever

PROJECT MANAGERS MUST LEARN NOT TO OVER-PROMISE OR UNDER-BUDGET FOR TECHNOLOGY TO MEET CLIENT EXPECTATIONS.

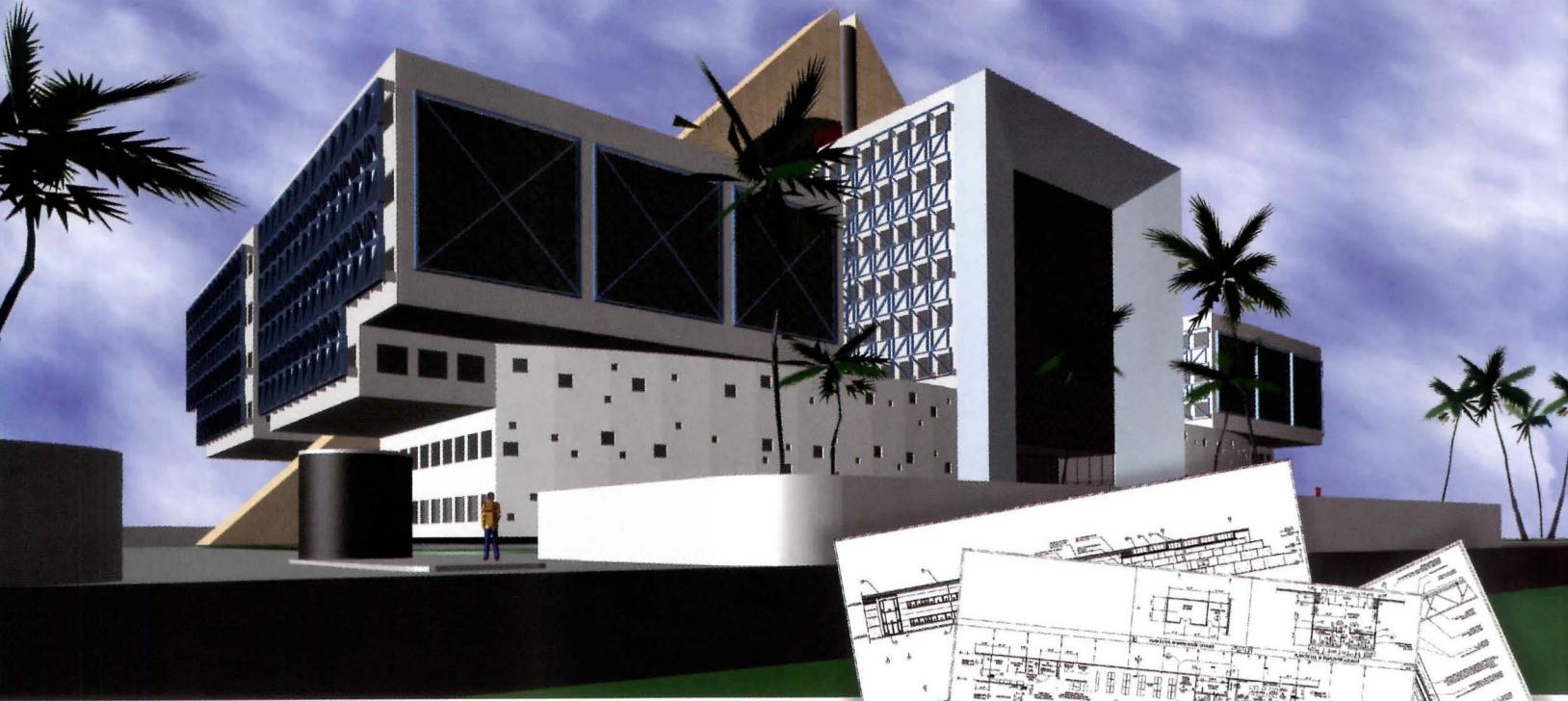
need for faster hardware, which requires upgraded network connections, which necessitates retraining users, who then demand new software, and so on. During the economically overheated second half of 1998, the bottleneck for many design firms has been a dearth of experienced technology support staff.

A simple way to keep track of this ever-escalating spiral is to craft a master plan that can be periodically revisited to address three straightforward questions: What are you doing? What could you be doing? What should you be doing?

Each of these three questions may be applied not only to the



system-support needs remain should be delegated to nondesign staff or, better yet, outsourced entirely. The overall management of design-firm technology is best kept in the hands of design professionals. Whether at the level of strategy, implementation, or operations, a user group or technology advisory committee should serve as a resource for the technology staff. The most successful technology advisory committees draw heavily on those who are closest to the client's perspective, including project managers and business development people, because ultimately the only sustainable reason for investing in technology is to create added value and service for the firm's clients. ■



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#12	AutoCAD 14\$7250

MiniCAD recently went head-to-head against 12 of the world's top architectural CAD programs and won. A panel of 12 CAD industry experts and more than 400 design professionals in attendance at the annual Designers CADD Shootout voted MiniCAD the "Best Overall Architectural CADD Software". MiniCAD's ease-of-use, sophisticated 2D drafting tools, powerful 3D modeling tools and affordable price made it the clear winner.

Architects are often surprised to learn how affordable MiniCAD is—especially when they see the complete suite of architectural tools that are built right into the core program. Without purchasing a single add-on, this professional CAD program lets you create everything from precise working drawings to 3D client presentations and comprehensive materials lists. In fact, no other CAD program offers so much for so little.

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The Latest Software for Architects: Internet Solutions Abound

by Steven S. Ross

Intelligent objects. Web collaboration. Enterprise computing. These relatively new terms refer to innovations that are quite different from each other but which all contribute to one thing: owners, architects, engineers, and contractors actually talking to one another, continually, throughout the life of an entire project. At this year's trade shows, vendors demonstrated that it is possible to put an entire building, even maintenance manuals, into a computer.

All this is happening, oddly enough, without real agreement among vendors on data standards. Autodesk cut much of its support for the International Alliance for Interoperability, a nonprofit building-industry alliance it helped found, which is trying to create communications standards. And some long-standing relationships, such as the one between Sweet's and Autodesk, have ended. What vendors and design professionals do agree on is that the Internet in general, and the World Wide Web in particular, has enough glue to tie data exchange together in a cost-effective and relatively error-free way, even without absolute agreement on specific standards.

While many showgoers described the advances in Internet applications in terms of rapid communication between designers and construction sites, or between owners and tenants, these new applications have the potential to do much more. They can:

Produce a database of changes and the decisions leading to them.

Produce a final set of drawings that not only show exactly what was built, but also how to maintain it in the future.

Produce billing documents and data for other bookkeeping needs, in fraud-resistant ways.

Measure project progress against budgets and schedules.

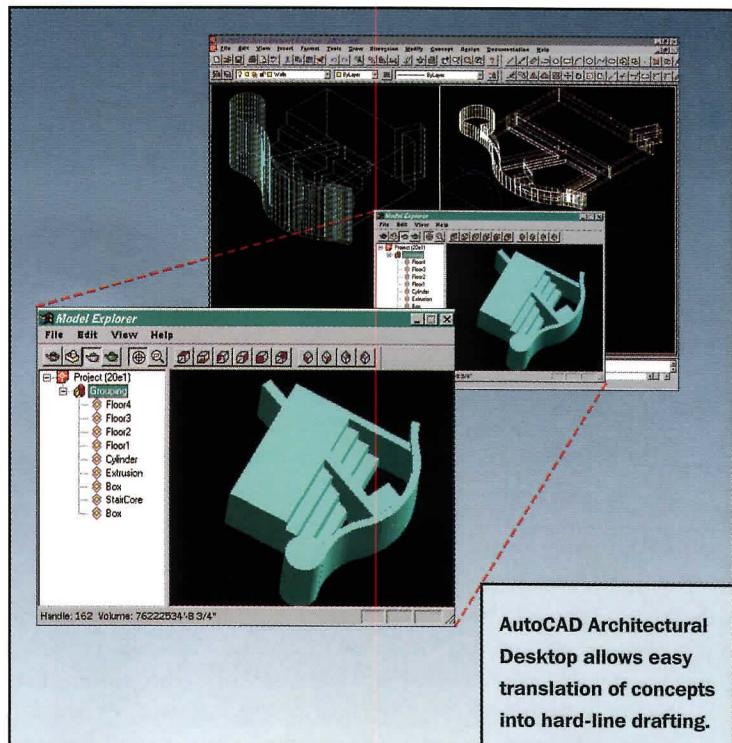
Allow members of a design team to look over each other's shoulders as decisions are hashed out, designing quality in from the beginning rather than correcting it later.

CAD software

Architects are being offered new, exciting choices in CAD software, often at drastically lower prices than just a year ago. Autodesk introduced AutoCAD Architectural Desktop, which incorporates the 3D technology it acquired in early 1997 when it bought Softdesk. At under \$4,800, the package is priced about \$1,000 less than was the combination of AutoCAD R14 and Softdesk Auto Architect a year ago, for a similar set of drawing tools. "We kept seeing copies of MicroStation TriForma and ArchiCAD in AutoCAD shops, copies purchased to do specific 3D stuff," said one top Autodesk official. "We can now do that, too."

With the introduction of IntelliCAD from Visio, the cost of

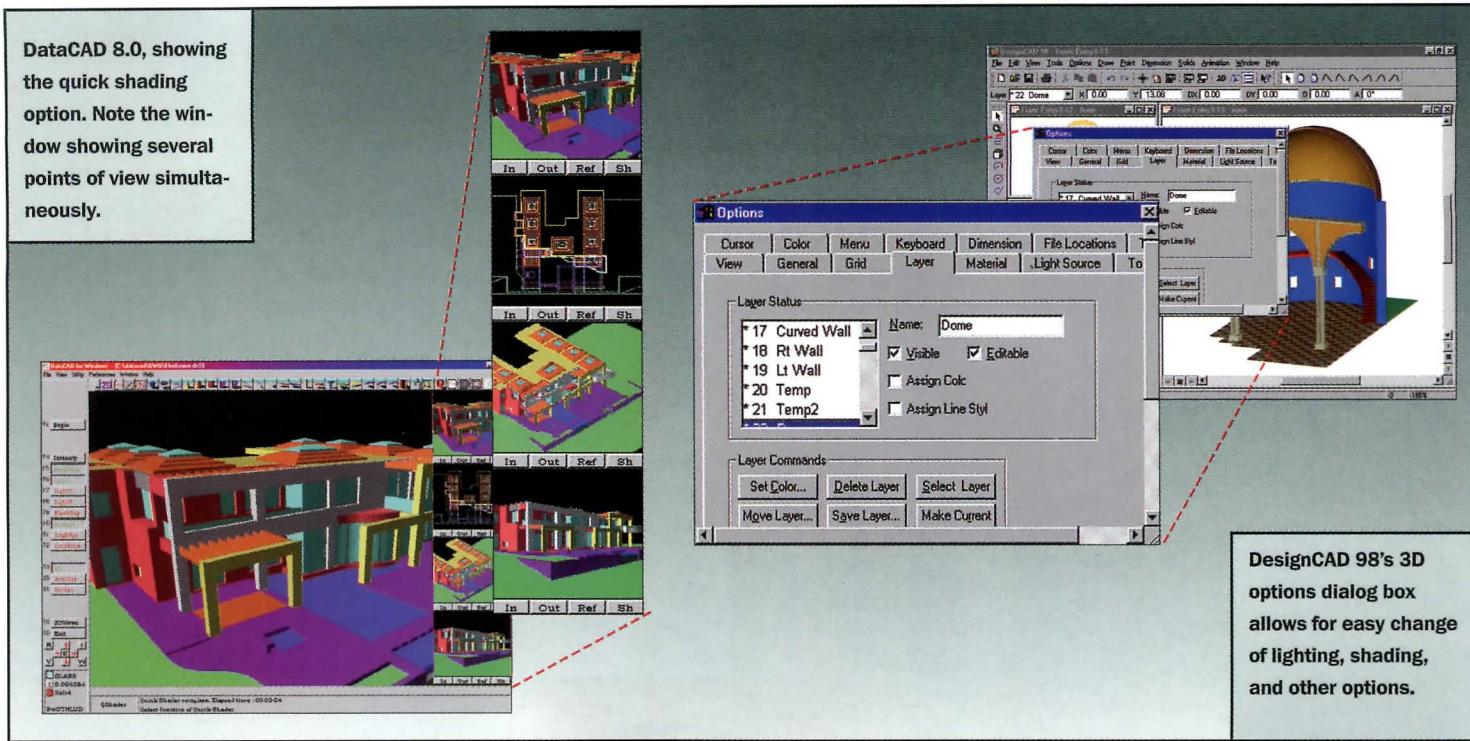
Contributing editor Steven S. Ross has been reviewing software and hardware for this magazine for 11 years.



AutoCAD R14 compatibility also dropped drastically. IntelliCAD saves its drawings in AutoCAD's R14 DWG format, producing files that do not need translation. The major exception: IntelliCAD does not save Autodesk ObjectARX entities. ObjectARX is a programming environment for AutoCAD R14 that can, among other things, make it easier to add functions to the program, make drafting easier, and help create intelligent objects. An intelligent object is an element in a drawing that behaves according to certain properties: an "intelligent" door, for example, will not let itself be placed where it couldn't open; an intelligent screw will "know" how far into an object it will penetrate. (Visio says it will use object technology from Microsoft instead.)

In June, Visio bought ArchT from Ketiv and combined it with IntelliCAD. A CD with IntelliCAD and two fully licensed versions of ArchT, one for use with AutoCAD R14, the other for simultaneous use with IntelliCAD, lists for \$695. ArchT adds easy ways to draw stairs, roofs, and other features to both CAD programs. With the combination, Visio can market IntelliCAD to firms that need to add AutoCAD-compatible seats while keeping AutoCAD as their standard drafting package.

There has been, however, plenty of talk about glitches in IntelliCAD. Associative dimensioning, for instance, does not work quite right. Expand a cross-hatched area in IntelliCAD and move it back to AutoCAD,



and the crosshatch may not match the new boundaries. Autodesk also seems to have fiddled with the DWG file format, to keep Visio off balance.

At the A/E/C Systems show, Autodesk argued that when one calculates the overall cost of a CAD seat, including hardware and training costs, the cost of its software is small. And, it added, the cost of slight file incompatibilities can be high.

Autodesk showed its Actrix package for the first time at A/E/C Systems. Actrix looks like Visio's technical drawing package on steroids. It will ship this fall with numerous objects, mainly for plant and office layout. Actrix accepts AutoCAD R14 files, though when files are imported back into AutoCAD, the Actrix objects lose their intelligence, turning into plain blocks. Within Actrix, the symbols are smart enough to perform such tricks as aligning with walls automatically. Visio, in turn, debuted its Technical 5.0 package at PC Expo in New York, a week after A/E/C Systems. Visio says it hopes to have a common core for Technical 5.0 and IntelliCAD, which would allow symbols' intelligence to be preserved as they're passed between the systems, ready by 1999.

Visio's Technical 5.0 is 2D. But an independent vendor, Lomasoft, has figured out a way to generate interactive 3D views from Visio files. Its product, 3D ShapeView, links to Visio through Microsoft's Visual Basic for Applications (VBA). The output is in VRML (viewable on any 1998-vintage Web browser) or DirectX (a Microsoft 3D standard).

Bentley Systems released MicroStation/J for beta testing in June, with the final product slated to ship later in the year. We first reported on MicroStation/J, the first object-oriented version of MicroStation to compete with AutoCAD, last year. It relies on Java rather than Microsoft or ObjectARX tools to create and manage objects, which makes it easier to translate MicroStation/J to non-Windows operating systems such as Unix or Macintosh. One trick: Bentley expects to be able to read and write AutoCAD files without ever translating them into MicroStation's own format. Instead, it might use Java to write new drawing entities to the DWG database, and pull them out for screen display.

Intergraph announced that Microsoft will include Imagination Engineer LE 2.0, a limited, upgradable version of its 2D sketch and draft-

ing program Imagineer Technical, in its Windows 98 Resource Kit.

Though Nemetschek has slowed its marketing efforts in the United States, it has released a great AutoCAD drafting and 3D add-on, PalladioX. According to Autodesk, it is the first add-on that uses Autodesk-certified ObjectARX technology.

Furukawa Information Technology (FIT) released version 8 of CADVANCE this past spring. CADVANCE was the first full-featured CAD package for Windows, but the developer fell on hard times and the system stagnated. With this version FIT catches up to the pack, thanks to impressive compatibility with Windows' utilities and a Multiple Document Interface (you can open as many drawings as you want). There's also a translator that supports AutoCAD R14 files, including XREF files. The company offers a free 30-day trial.

Now that Softdesk has been absorbed into Autodesk, several firms into Bentley, and part of Ketiv into Visio, Eagle Point is the only broad-based independent provider of basic add-on CAD software. At A/E/C Systems, it showed what it calls CALM technology, which allows the same add-on application to run on AutoCAD, MicroStation, and IntelliCAD.

At A/E/C Systems, Sigma Design and BAGH showed versions of their CAD packages (Arris and Architron, respectively) running on the Silicon Graphics O2, a UNIX workstation priced under \$6,000. Bentley showed an SGI version of MicroStation TriForma as well.

Diehl Graphsoft was celebrating its \$595 MiniCAD 7 for winning the Designers 3D CADD Shootout at Build Boston, a three-hour competition among 12 CAD packages. The Mac and Windows versions are tuned for architecture and are particularly good when working from plan. Floor plans and elevations go together easily, and rendering is fast.

Another package that continues to acquire additional production drafting tools is ArchiCAD from Graphisoft. Version 6.0 allows a drawing to be edited in 3D perspective or axonometric view. Walls and columns automatically place themselves on the floor beneath, without the operator having to set a Z coordinate. Translation from AutoCAD R14 preserves XREF links (drawings linked to other drawings) and intelligent objects. ArchiCAD 6.0 can publish directly to the Web, using Simplified

CUBUS project collaboration software allows on-line project discussions. Note how text, drawings, and a record of discussions can be combined.

ProjectEDGE allows Lotus Notes users to integrate their work into one report, regardless of their locations.

Vector Format (SVF). In ArchiCAD for TeamWork, a version that allows collaboration among drafters on a network, workspace boundaries—which define what portion of a drawing a user can work on—can now be changed on the fly. And Artlantis Render, included with ArchiCAD, can now output QuickTime VR animation in real-time.

DynaCADD 98, the latest version of Ditek's 2D/3D drafting, modeling, and rendering package, was shown at A/E/C Systems and began shipping a month later. Like MiniCAD 7, this package offers lots of features at a low price.

DataCAD LLC, which had been a bit behind in the introduction of a true 32-bit Windows 95/NT version of its software, released DataCAD 8.0 in May. It ships with DC Viewer, a stand-alone application for viewing DataCAD drawings, and Visual Reality 2.0, a 32-bit animation and presentation package. The introductory price is \$495.

IMSI's TurboCAD's new release includes voice input for commands and is faster overall. Also at the low end in terms of cost (and particularly compelling for corporate buyers) is DesignCAD from ViaGrafix. The latest version of this 2D/3D drafting package has faster shading, layer improvements, and more flexible print options.

Mainly for models

The number of modeling packages continues to expand. But choose carefully—these products have wildly different user interfaces and file formats. Some are strong on modeling, others on visualization or animation. Most offer demo versions you can try with your existing projects.

Ashlar, which is normally associated with production 2D drafting, shipped Vellum Solids in June. Its core is the industry-standard ACIS solids modeling engine (4.2), but the interface is pure Vellum, with a drafting assistant that identifies edges, midpoints, and so forth. The company is pitching the product as a bridge between 2D and 3D; it's ideal for modeling those pesky details, which can then be imported into architect-oriented drafting programs.

If you already have a structure and you want to build a 3D model based on it, consider 3D Builder Pro 3.0 from 3D Construction

Company. It builds a 3D model from two 2D photos. The new version, significantly faster than old ones, is great for interiors.

Piranesi, from Informatix Software International, creates an entirely new category: it's a 3D paint program capable of photorealistic effects. You can use it to dress up a 3D CAD image. In the hands of a talented user, the result is a more artistically pleasing model than an entirely computer-generated 3D rendering.

Kinetix, a division of Autodesk, released R2 of its 3D Studio VIZ. This modeling and animation package, tuned for architects and engineers, now dynamically links to AutoCAD R14 and ObjectARX files. Change the R14 file, and the 3D Studio file changes, and vice versa. Digital Media Interactive offers Lucidity RT, a VIZ plug-in that allows full-screen, full-motion 3D interactive video authoring with photorealistic detail.

Microsoft was expected to be a major competitor to Kinetix, but the software giant quietly gave up and sold its SoftImage division to AVID—a company focused on the film end of the business, not specifically on 3D visualization and animation.

Discreet Logic's Lightscape 3.1 showed up this year as a free-standing visualization tool (we reviewed it in June), and is built into many CAD packages. It now runs in Windows 95 and 98 as well as NT.

Among the enhancements in version 3.0 of form-Z, due this fall from auto.des.sys for both Mac and Windows, are more customizable palettes, continuous drawing from one window to another, better snapping and alignment, faster rubber-banding, primitive shapes with personalities, output to AVI and QuickTime VR, and new drafting tools.

IMSI introduced Multimedia Fusion, a successor to the popular Corel Click & Create software for multimedia presentations and animations. The upgrade price is under \$80, and the introductory price for new users is \$99.95.

Project management software

The big news is in clever, easy-to-use project and financial management, facilities management, and space planning software. The number of offerings exploded in 1998.

Semaphore showed its SEMA4 financial management package for Windows. Its remote-entry abilities for such items as time sheets and billing continue to improve.

Primavera showed version 6.0 of its Expedition contract control software, which offers strong Web ties. The product was due to ship at press time. The company also sells Webster, a communications package for its Primavera Project Planner (P3) and SureTrak project management software. Primavera also announced that SAP has certified a two-way data exchange interface between P3 and super-high-end SAP R/3 management software.

Axium's Protrax project control, invoicing, and accounting software can interact with any Windows-standard ODBC database. The company's pedigree is important for upgraders: Axium is a 1993 spinoff from Timberline (whose old name was CPA Systems), and acquired Timberline's DOS-based A/E line in 1996. Protrax is the Windows 95/98/NT successor to A/E.

Paragon acquired the project management technology and customers of Combase. The interface is intuitive, and the on-screen presentation looks like a tab binder.

Lotus Notes users might be interested in ProjectEDGE, from Edgewater Services Co, which can integrate the work of all project participants regardless of their location.

Meridian introduced Prolog Manager 5.0, which allows project team members to track submittals, meeting minutes, punchlist items, payment applications, change orders, and other project information over the Internet using a single project database. Remote users can print live reports that include more up-to-the-minute information than reports published ahead of time on a Web page. It's due later this year.

The number of professional-quality packages for employee scheduling and time-tracking as well as general accounting continued to grow, in part because of encouragement from Microsoft (which sells attractively priced small-business software for up to 25 users) and in part because of database technology available to Windows and Macintosh users. Among the new and upgraded products: IMSI's PeopleScheduler; Sage's general bookkeeping and time-tracking packages; WRQ's engineering and architecture-oriented packages; and Proven Edge Professional. All help with bookkeeping tasks.

RFP's marketing package can use your firm's project and talent database to create proposals in SF 254/255 and other formats.

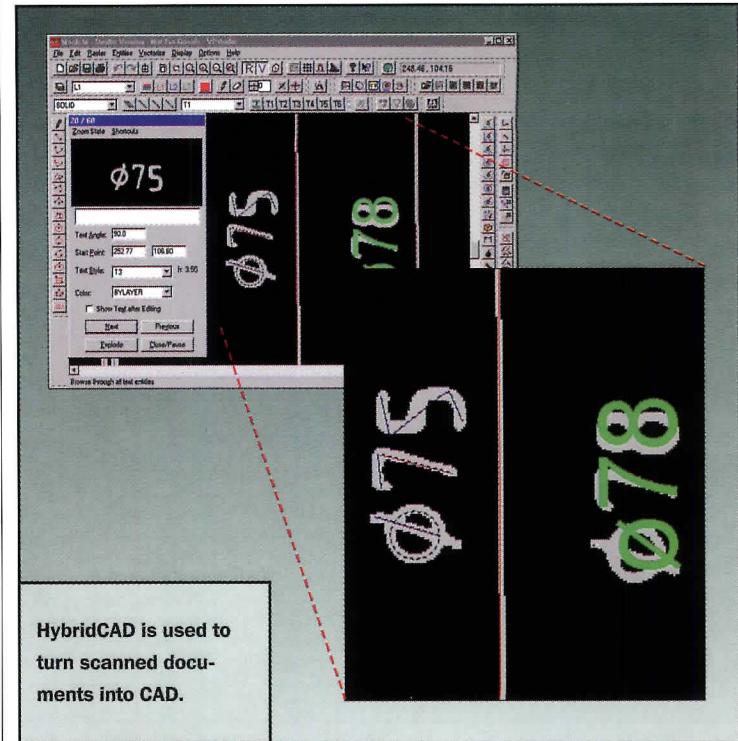
Along with the usual displays of quality how-to books, Viagrafix showed its broad line of CD-based training materials. Especially notable were the firm's discs on programming with Java and Visual Basic—ideal for systems people who need some reorientation toward these languages in order to build mini-applications that tie bigger packages together.

Facilities management

The Web and the ability of architects to deliver facilities-management-ready drawings has spurred many new entries into the field of computer-aided facilities management (CAFM). Some systems started out as facilities management packages, some as CAD products, others as databases.

Archibus/FM, the popular facilities management package, now has a new browserlike interface. Toolbars lock onto the screen's left edge to provide such aids as visual cue cards, crib notes, and flow charts that act as a wizard to walk you through the FM process.

Aperture Technologies showed its comprehensive FM software suite. The package accepts AutoCAD DWG, Bentley DGN, or DXF floor-



plan and symbol files, allowing users to categorize different types of spaces on the plan. It also includes a personnel manager for planning moves and changes, and furniture and equipment manager modules for photos, maintenance contracts, and documenting inventory.

FM:Space software and the FM:Web plug-in (based on Autodesk's Whip plug-in) from FM:Systems allow monitoring of space uses and moves. Innovative Tech Systems' Span-FM family of facilities management modules is strong on tracking labor and other indirect costs.

Facilities Information Systems' FIS/FM allows the merging of separate databases to coordinate moves and temporary or transient worker space (hoteling), inventory, space planning, facility drawings, and more.

Deltek Systems, which has long offered time management and accounting software, announced at A/E/C Systems that its flagship product, the Costpoint accounting system, would soon get a secure interface to Primavera's P3 (Deltek's older System 1 accounting package has long had a P3 interface). Deltek also announced that it had purchased the FM software vendor Harper and Shuman. As all these products become integrated, architects will be able to record costs and payments in project planning software and have the data cascade down into cost-tracking and accounts payable. It was unclear how Harper and Shuman's Advantage enterprise accounting system would be enhanced in the future; Deltek already supports several other enterprise accounting packages.

Framework Technologies showed ActiveProject 3.0 (formerly called Aspects), for building and managing project Web sites. It uses Rasterex, Expert Graphic's popular viewer for AutoCAD, MicroStation, and other files. Site construction is almost trivially easy—just drag and drop. There's a server product as well, for Web publishing.

WorkPlace System Solutions, a strategic affiliate of Bentley, showed ActiveAsset Manager, for tracking and organizing a facility's life-cycle data. Its ActiveAsset Planner helps with the actual facilities management chores.

Drawbase offers a combined CAD/CAFM package with an integrated database. It can design, draw, track, and manage facilities, and is being positioned for facilities management.

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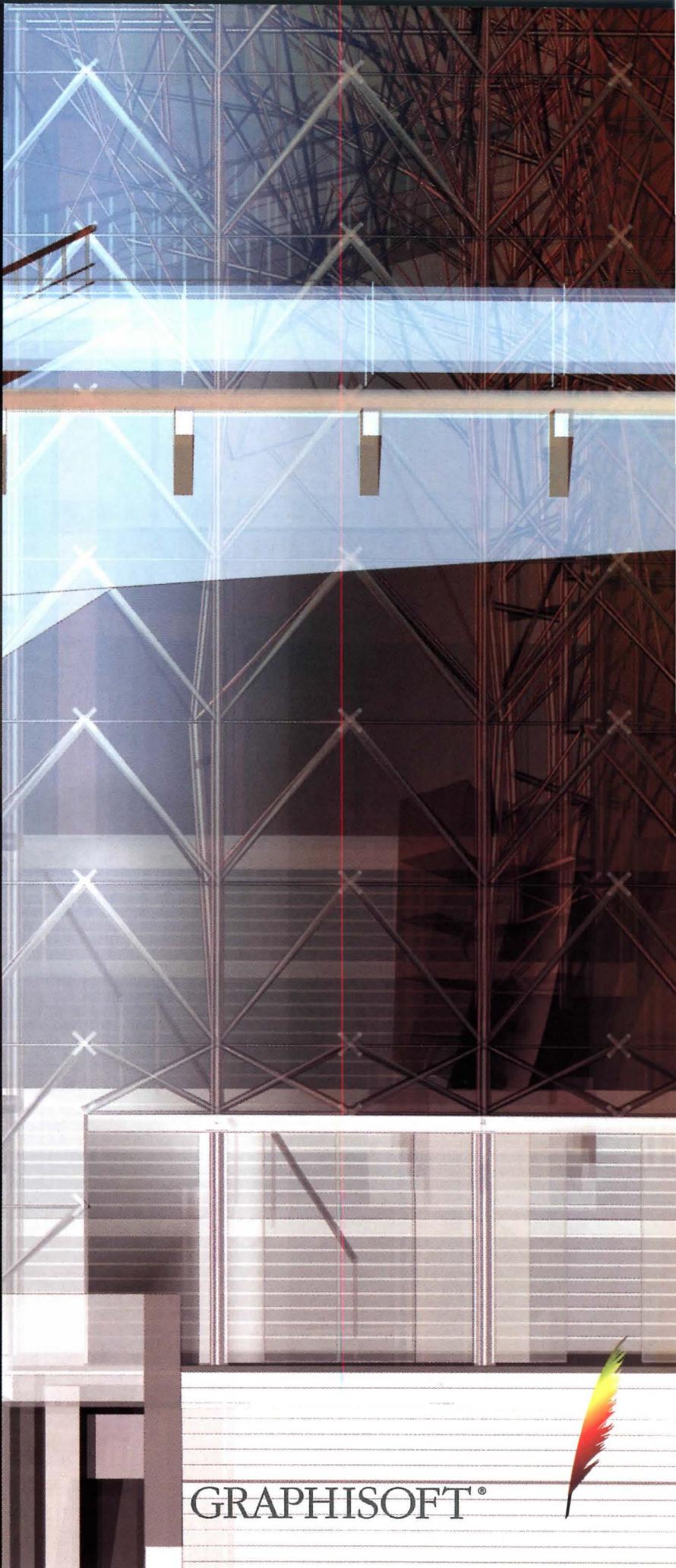
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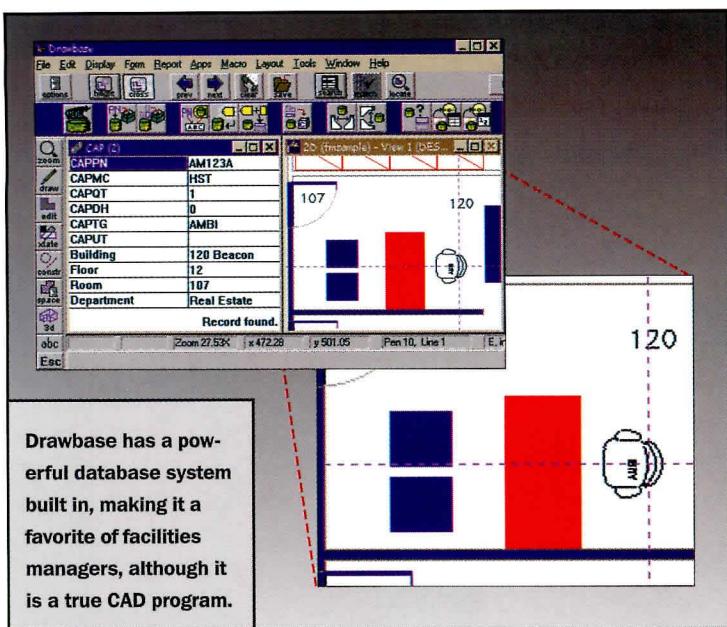
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Drawing and data distribution

New Web solutions abounded at this year's trade shows. These packages all do more than document viewing and redlining. Docupoint released its Whip-n-Post converter, which automatically turns AutoCAD DWG files into the DWF format for posting on the Web. A single-user, nontransferable copy has been available as a free download on the Docupoint site (www.docu-point.com) since June.

MP Interactive introduced an enhanced version of e-Builder. The program lets architects, contractors, clients, and others share project files and even chat over the Web. You don't need your own Internet server; MP Interactive hosts project-specific Web sites for you.

If you don't have a Web server, but do have Novell 4.0 or higher and a Windows NT server, consider Computhink's Paperless Office; it supports popular scanners and full-text search and document retrieval. The interface looks like Microsoft's Internet Explorer.

Cubus, which released its ReviewIt project collaboration Web package in January, offered a free evaluation deal at the June A/E/C show. The program logs and archives all discussion about a design.

The Rasterex group at Expert Graphics released a host of new and enhanced products for viewing graphics; for scan-enabling AutoCAD LT 97; for editing and converting raster images inside AutoCAD; and for managing large numbers of project files.

WorkPlace Solutions sells the new ProjectWise Extranet; used with Bentley's ModelServer, it can make publishing project documents on the Web easier.

RenderView Software offers Engineering Office for Windows 95, 98, and NT. The Web-publishing package can handle only about 30 file formats, but it handles all the major ones and runs on slow machines.

Drawing management

Drawing management software can handle XREF filing, Web viewing, and document archiving. Plain image-viewer packages are faster, cheaper, and more versatile; some packages that started as viewers seem on the verge of becoming plotter managers.

Cimmetry Systems enhanced its AutoVue and AutoVue Professional file viewing, document management, and redlining tools. It also released a 3D viewer, AutoVue SolidModel Professional, with support for

CATIA and almost 200 other file formats including AutoCAD and MicroStation. The AutoView line is Web-enabled (there's a browser plug-in). Cimmetry products are also compatible with DOCS Open, Documentum EDMS, FileNet, Matrix, and Lotus Notes/Domino, among others.

Cyco released AutoManager WorkFlow 6.0, the latest version of its document management and viewing software, this summer. It supports IntelliCAD, direct scanning, and Cyco's Internet Publishing Tool, which converts AutoManager's card views into HTML so they can be viewed with Web browsers equipped with the AutoManager plug-in. Users can view, zoom, scale, pan, and print the document right from the browser. If you're using other software to manage documents, consider AutoManager View 2 for viewing and E-mailing document files.

Spicer Corporation also added Web-publishing tools to its Imagination for Windows. Version 4.5 can output to JPEG, GIF, and PDF (Acrobat) formats. It can handle redlining and document markup in 12 languages, too. Spicer's DocuJet print driver utility is now totally compatible with Windows 95/98/NT.

SoftSource released Vdraft Internet Tools for AutoCAD R14. The plug-in allows users to view, print, and save R14 DWG and DXF drawings from Netscape or Microsoft browsers.

Softelec showed its new VPstudio, a pricey but comprehensive vector-and-raster editing tool meant for facilities managers and large-volume users. The firm has six other packages that offer progressively fewer features. Prices range from \$600 to \$5,000.

Vendor data

How will vendor data be distributed to architects for inclusion in drawing files? A few years ago private publishers thought they would aggregate information from materials vendors. Now most vendors say they'll do it themselves, over the Internet.

BSD SoftLink Products upgraded its BSD CostLink and BSD SpecLink specification and cost-management data packages. They are compatible with data from RS Means, Richardson Engineering, and others. It's also easy to add in-house data to them. CADSPEC introduced its Web-based VisualLibrary of more than 9,000 A/E/C companies, building product information, CAD details, specifications, and more.

Wiley released version 2.0 of its Architectural Graphic Standards CD-ROM, which includes more than 5,000 drawings (see Books, page 38) and now supports AutoCAD DWG and DXF files as well as MicroStation DGN. The CD-ROM also links to more than 2,000 industry suppliers' Web sites, including the Architects First Source product vendor listings.

Sweet's, which formerly collaborated with Autodesk to produce details called Design Blocks on CD-ROM, is now handling the task alone with its new product, CD\CAD. CD\CAD provides four sets of CAD details on disks each year, in DXF as well as AutoCAD R14 DWG formats.

At A/E/C Systems, the International Alliance for Interoperability demonstrated the benefits of intelligence in CAD models. In one demonstration, the design of a small bank building was checked for thermal performance and for compliance with energy codes. In another, an office building was remodeled; the original design drawings were converted to an intelligent model following IAI standards. The HVAC system was then redesigned with a model-driven cost estimate.

IAI released version 1.5 of its first set of Industry Foundation Classes in March. Release 2.0 is scheduled for next spring, with applications for architecture, HVAC, cost estimating, facilities management, and building-code checking. Autodesk has cut back its support, but IAI has been picking up backing from many small vendors and professional groups around the world. ■

Exploiting Advances in Computer-Aided Architecture: Five Case Studies

by B. J. Novitski

There's no question that technology has transformed our work lives. Professional advancement means keeping up with the times: scribes and blacksmiths, who were once commonplace workers performing vital, everyday tasks, would now have a hard time finding documents to copy and horses to shoe. The good news is that the computer, the very technology that has been steadily putting the pencil out of work, has the potential to reinvigorate architects' leadership role in the construction industry. But this revitalization requires that architects exploit computer technology to expand the arts and skills they already bring to the design and construction team. Unfortunately, the well-intentioned computer hype during the past 15 years has probably miscast the role of the technology in architects' offices. It is not a panacea that can instantly make the problems and complexity of professional practice disappear. Instead, the technological environment is one of gradual change, where innovative people, taking incremental steps, and sometimes missteps, move toward making their complex work better. In small stages, architects' work is becoming a little smoother, a little faster, a little easier, and a lot smarter.

HLW BREAKS FREE OF LEGACY TECHNOLOGY

Founded in 1885, HLW International provides services in architecture, engineering, planning, interior architecture, and landscape architecture. Besides its New York headquarters, the 300-person firm has offices in Los Angeles, San Francisco, Chicago, Boston, Shanghai, and London.

One bitter irony experienced by design firms who adopted computers early on is that just at the point when others are jumping on the bandwagon with the slickest new technology, they're burdened by aging legacy hardware and software. Such was the dilemma facing the architecture/engineering firm HLW International. They had bought into technology in the early 1980s, when other firms were still content with drafting tables and pencils. After more than a decade of loyal service, though, their once very expensive Unix-based CAD workstations had little more computing power than an obsolete 286 personal computer. And the machines' limited software was restraining the communications capabilities of the staff. The Unix CAD users, for example, didn't have access to the basic word processing or spreadsheet functions the administrative staff had on their PCs.

Mobilizing the 250-person New York office for change proved a major operation. To head up the massive upgrade, the firm hired architect Paul Seletsky as director of information technology. "Choosing him over

B. J. Novitski is a contributing editor of RECORD. She is author of *Rendering Real and Imagined Buildings: The Art of Computer Modeling* from the Palace of Kublai Khan to Le Corbusier's Villas, coming from Rockport Publishers this fall.

a computer professional was part of our management strategy," recalls CEO and senior managing partner Leevi Kiil. "We wanted to ensure that all changes would serve the professional goals of the firm."

The hardware upgrade involved rewiring 60,000 square feet on two floors of their building in lower Manhattan, replacing old telephone wiring with Category 5 cabling to support a fast 100 Base-T Ethernet local-area network. The servers were replaced and redundant connections were installed so data wouldn't be lost in case of fire. Unix workstations were replaced with fast Pentium PCs, and the old Intergraph CAD software with MicroStation 95. Each desktop now runs Windows NT and MS Office 97, and E-mail and Internet access are provided to all staff. To ensure that the firm doesn't go too long before the next upgrade, all of the equipment is now on a five-year lease with a three-year renewal option. Remote-access computing was introduced at the same time. The firm bought 50 notebook computers for managers working outside the office and set up secure Internet connections for each to an office server.

Performing this upgrade and the accompanying renovations without disrupting the staff was a logistical challenge for the firm's operations department and a team of HLW employees whose sole job during this time was overseeing the move. One at a time, studios were temporarily relocated while the tightly coordinated trades moved in and did their work, in one week per studio. In nine months, the entire office was transformed.

The software upgrade now being studied will move designers from 2D CAD to 3D modeling. Seletsky explains: "We'll be starting projects with 3D models and extracting the plans, sections, and elevations from them as opposed to the automated pencil we're using now. Now that we've got the new technology, we'll be able to transform the way we work, particularly in terms of Web-based communications." In addition, the firm is organizing a centralized database that will coordinate the management and financial monitoring of its projects.

WORKING ON THE ROAD



HLW International's CEO Leevi Kiil uses one of the firm's 50 notebook computers to track projects when traveling outside the office.

A FIRM THAT MAKES FINANCIAL INFORMATION SYSTEMS DO DOUBLE DUTY

Wiley & Wilson is a 97-year-old, 125-person full-service design firm. The firm serves industrial corporations, educational institutions, and government clients, primarily in the Southeast. Long-term clients include the Colonial Williamsburg Foundation, the Department of Defense, and the White House.

A valuable yet arguably underappreciated benefit of the paperless office is the accessibility of data in digital form. The true power of the "information age" comes from the ability to learn from patterns in information collected over time. Whereas paper archives have an indisputable longevity, they do not readily reveal such trends.

At the architecture, engineering, and planning firm of Wiley & Wilson, headquartered in Lynchburg, Virginia, vice president Russell Griffin, CPA, has been exploring the capabilities of financial management software to improve the firm's operations in project management and marketing as well as in administration. The Harper and Shuman Computer-based Financial Management System (CFMS), which Wiley & Wilson uses for its financial reports, has long been a favorite among A/E firms. It supports a variety of tasks such as budgeting, billing, payroll, accounts payable and receivable, and a wide range of customized reports.

Because the software is geared specifically toward project-oriented firms, it also supports the time-accounting procedures needed in project management. When employees post their weekly time sheets to the system, a project manager can compare time and fees spent with time and fees allotted to the job and with the percent of project completion.

This lets managers know whether the design team is progressing according to the time and budget allotted to the project. For example, if managers discover that 50 percent of the fee has been spent and only 30 percent of the project is complete, they know immediately that measures must be taken to streamline work processes, redefine the scope of the project, or find some other way to compensate for the discrepancy. Discovering such problems early on is essential to solving them with a minimum of pain and harm to profit.

Wiley & Wilson gets this information quickly and can forward it instantly to project managers. "We used to print out reports for distribution," Griffin says, "so they weren't reviewed until several days after the time sheets were posted." Time sheets are now posted directly from the employee's desktop, and the project manager can log onto the system and immediately evaluate the project status.

"Twenty years ago," Griffin adds, "financial information was used more by the owners. Now project managers are using this information to identify where changes might be needed. I can recall times when a review of financial information has helped us decide to talk to the client about a change order or a change to

the scope of the work." Detailed information about the financial status of the firm is still the private domain of the firm principals and their bankers, but because the program can disseminate other data on a "need to know" basis, project managers have access to the timely information they need.

Griffin is particularly excited about the ability of the new system to analyze the firm's financial history. "Under the old system," he explains, "we could only see the current reporting period's data—whether it was a week, a month, or a fiscal year—on screen. Once we left a period, we'd have to go back to the paper archive to examine any detail. Now we can examine past data to complement our financial forecasting. For example, we can ask the system to identify any project that has accounts receivable over 45 days old. We can also identify project profits by individual client, client type, or market area to see how we're performing. That could help our marketing people determine what direction they need to take in the future."

Harper and Shuman's CFMS/Advantage software, which provides this database capability, has recently been upgraded to work with Microsoft's SQL Server and is thus now suitable for firms of all sizes. Harper and Shuman itself has been recently purchased by Deltek Systems, Inc., which specializes in support software for large project-oriented companies.

INSTANT ACCESS TO FINANCIAL DATA

The screenshot displays three windows of the Wiley & Wilson financial software:

- Project Progress Report**: Shows data for the period 5/30/98 - 6/26/98. It includes columns for Description, Current Hours, Actual Hours, Amount, Budget, % Complete, and Balance. A summary row for "98063.00 INDUSTRIAL CLIENT - QA ENVIRON CHAMBER" shows a total of 32,227 hours and 30,616.00 amount.
- Office Earnings Report**: Shows data for the period 5/30/98 - 6/26/98. It includes columns for Fees Billed, Consult Billed, Reimb, Other, Total Billed, Revenue, Spent, Profit, and Profit Pct. A summary row for "98063.00 INDUSTRIAL CLIENT - QA ENVIRON CHAMBER" shows a total of 30,616.00 fees billed and 21,117.00 revenue.
- Aged Accounts Receivable**: Shows data as of 6/30/98. It includes columns for Invoice, Date, Balance, Current, 31-60, 61-90, and Over 90. A summary row for "98063.00 INDUSTRIAL CLIENT - QA ENVIRON CHAMBER" shows a total balance of 30,616.00.

Wiley & Wilson uses software that provides database capability over a server. Data that might once have been accessible only by examining paper archives can be seen at the desktop.

GRABBING PRODUCT DATA AT THE DESKTOP

Collaborative Design Architects is a 19-year-old, 25-person architecture firm. CDA specializes in planning, programming, and architectural design for both commercial and public clients, including dozens of Bay Area municipalities. The firm also offers engineering and landscape design services through integrated teamwork with consultants.

Over the past few years, many energetic entrepreneurs have started up software development companies aimed at bringing building product manufacturers' data to the architect's desktop. Their goal was to provide drawings and specifications that architects could place directly in their digital documents. Many of them failed, though, because of the lack of preparedness and standards among manufacturers and the absence of a practical distribution system.

The Internet has alleviated much of the distribution problem and a young company, CADSPEC, is working with manufacturers to overcome the standards barriers. CADSPEC's VisuaLibrary is a Web site that offers a wealth of product data. Users can find detail drawings, specifications, application photographs, and technical information, then download them and incorporate them into their own design and construction documents. They can search for information by manufacturer name, by CSI division, or by keyword.

Unlike other architecture/engineering Web sites that simply provide links to manufacturers' sites, VisuaLibrary contains information crafted specifically for use by architects. CADSPEC now has standardized data for 400 manufacturers (more are added every day), and has additional Web links to thousands of others.

"This window to the manufacturers' literature is presented from the designer's point of view," says Thomas Clark, project manager with Collaborative Design Architects, Inc., (CDA) in San Francisco. "You don't have to weed through the manufacturers' promotional, marketing, or corporate information," he adds. "But if you need more detail, you can always link to their sites." Clark has been observing trends in electronic product data for 10 years. In the past, he notes, although written specifications in word processing formats were useful, most graphic data lacked standard formats and consistent accuracy. By contrast, he says, "CADSPEC understands the architect's needs, and VisuaLibrary is very intuitive in use. Its information is current, and being on the Web, it's easily accessible. And a lot of the searching can be done in the background, while you continue to work on your drawing, which, when added up over 25 employees, saves a lot of time for the firm."

In addition to its current efficiency advantages, one of the greatest benefits of this technology, Clark says, is in how it is preparing the CDA staff for even more powerful applications that should arrive in the next five years. On the horizon, for example, are object-oriented systems. When an architect selects an object to place in a drawing, information about its specifications and costing and technical analysis

can be automatically placed throughout the rest of the documents.

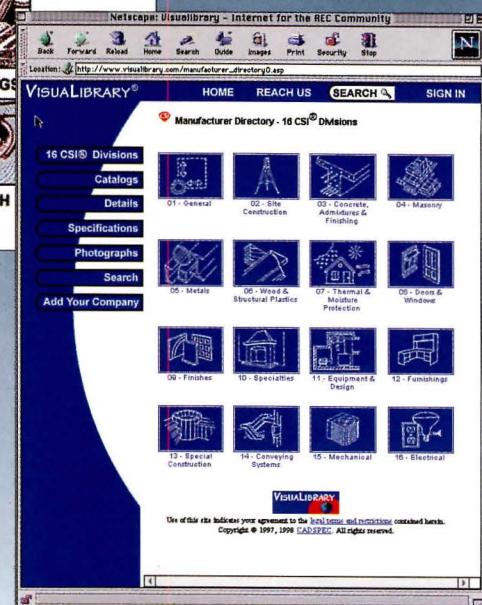
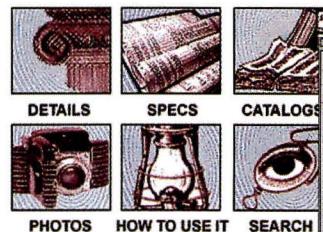
"Although manufacturers haven't caught on yet to the potential of object-oriented systems, the software developers have," Clark reports. "Autodesk's Architectural Desktop, for example, supports object components that embody graphic and nongraphic information." In the future, he continues, manufacturers will be able to provide information-laden objects on their Web sites. If an object-oriented file of a door were added to a drawing, information such as the door's color, sound coefficient, and fire rating would be acquired along with its dimensions. "This will be really revolutionary," Clark says. "We'll have the infrastructure to move information directly from the manufacturer to the design drawing."

However, with the capability of object-oriented files to add so much infor-

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CADSPEC's VisuaLibrary Web site is a portal to a wealth of product data. Users can find drawings, specifications, photographs, and technical information and download it to their construction documents. VisuaLibrary can search for this information while the user continues to draw, making it a time saver.

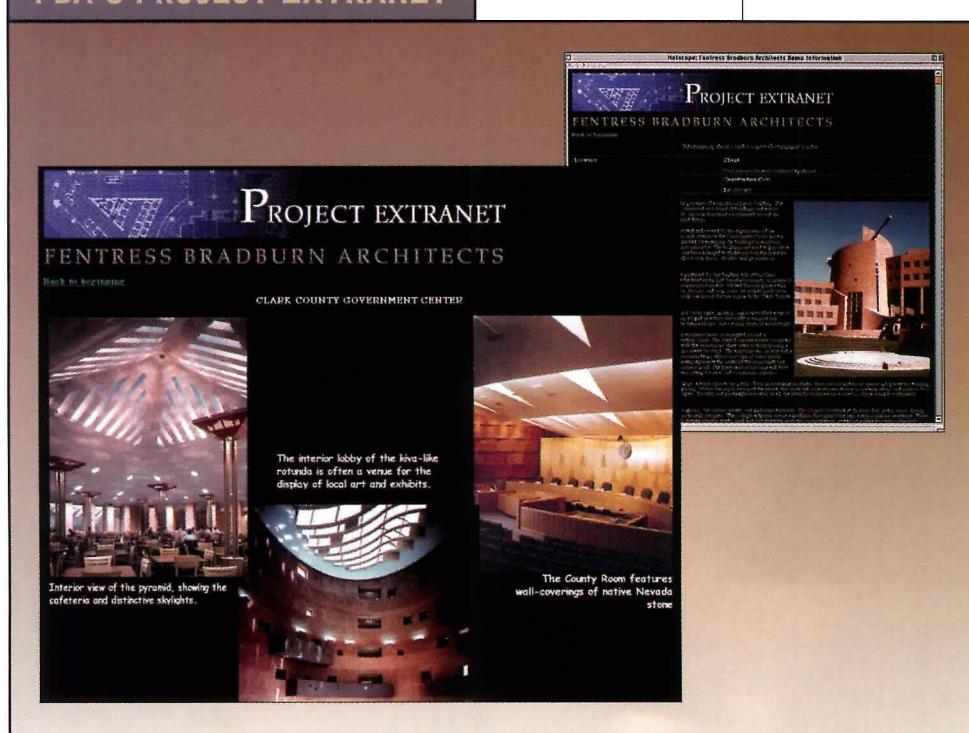
mation automatically, there is also the danger that data entered in error will go unnoticed. Architects will still need to take the time and apply their traditional expertise toward evaluating the data they're given. "You have to examine a detail and determine if it's the appropriate one, just as you would today," Clark cautions. "So now we're training our employees to take advantage of this technology. But we still want them to be very savvy about what's valuable and what isn't."

THE EXTRANET: THE NEXT BIG STEP IN PROJECT COMMUNICATIONS

Fentress Bradburn Architects works on international projects and has offices in Denver, Oakland, Toronto, Frankfurt, and Doha, Qatar. The firm's practice includes architecture, facilities programming, master planning, interior design, zoning and environmental approvals, and development consulting services.

When architect Mark Rothman goes on the road, he packs a complete set of drawings, specifications, and notes for six ongoing building projects. As director of information technology for award-winning Fentress Bradburn Architects (FBA), he also takes all the equipment he needs for direct communications to the firm's consultants, clients, and contractors.

FBA'S PROJECT EXTRANET



Using their extranet, Fentress Bradburn Architects team members can review almost any type of document, and exchange E-mail with the rest of the team.

again: it all fits in his briefcase. In fact, the "mini-laptop" Rothman uses to manage all this information is smaller than most portable computers. Its size and weight were important considerations to its being added to FBA's technology suite.

Most architects understand the power of digital file sharing and communications. They send drawings on disk to their consultants and install electronic mail systems in their offices. To promote data sharing still further, some extend Internet technologies to intranets (in-house networks) and FTP (file transfer protocol) sites from which outsiders can download files. As effective as these may be, though, they lack a method for bringing all this information together under the control of a logical, unified project management system.

Enter the "project extranet." This concept, barely heard of two years ago, has become the technology darling of 1998. In a nutshell, it is a limited-access Web site that brings together all project data for use by

everyone on a project team. In some cases, firms buy or write the software to make the system work. In other cases, they subscribe to a service that maintains the site for them.

FBA prides itself on being at the forefront of technological advances, so the company didn't care for the idea of subscribing to an outside service. They were not keen to transfer hundreds of large files to a service bureau that was probably also working with their competitors, and they wanted to maintain in-house control of their own drawings and project management data. At the same time, they wanted to avoid the hassle of constantly maintaining the links between documents, which is necessary to keep an ordinary Web site functioning.

The firm chose ProjectWise from Workplace System Solutions for their extranet. Workplace licenses software and sends a "rapid deployment team" to install the software, customize the interface, and set up the databases, all within 48 hours. The result is a unified system that accommodates files of virtually every type: MicroStation and AutoCAD

drawing files, databases, word processing files, Primavera schedules, and so on. The ProjectWise infrastructure organizes the material logically so that it is easy to find. Importantly, it is also easy to ascertain who has seen what, when. As new information comes in, new Web pages are created automatically, without the constant vigilance of a Webmaster. Each user has secure access to the appropriate set of information and is informed at log-on about anything new.

Depending on their technical expertise and their need to interact with the data, users can approach the extranet with simple point-and-click browsers or more sophisticated Java-based applications. Anyone can review drawings, construction photographs, meeting minutes, and change orders. They can exchange E-mail, create and print reports, and broadcast comments to the rest of the team. The centralized data source guarantees that everyone always has access to the most current versions of drawings and other information; the project control software enables drawings to be linked with any associated nongraphic documents.

Rothman, who manages FBA's extranet installations, explains the advantages over traditional design and construction communica-

cations. "The extranet allows us to provide our most up-to-date data to the entire team instantaneously. Their schedule doesn't have to coincide with ours, they're notified when anything is updated, and they can retrieve the new data whenever they want. We can put shortcuts on the Web site so they don't have to go beyond the opening screen. They just click on 'latest meeting report,' for example, and it opens automatically. Or, they can click on a thumbnail of a floor plan, and it expands to full size on their screen."

Already, the client for one project has required that a project extranet be the primary vehicle for communications. All team members are required to have Internet access, and that remains the only way that meeting notes, announcements, and files are distributed. Rothman reports: "Those using it have been very enthusiastic."

Discovering a way to deliver plans and specs faster than Fed Ex was an inspired idea:

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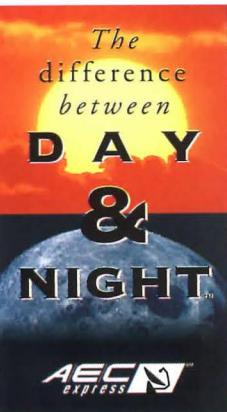
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DESIGNING NEW OPPORTUNITIES FOR ADDITIONAL SERVICES

BSA Design, of Indianapolis, has built a reputation for work on health-care, higher education, research, commercial, corporate, civic, and industrial projects. The award-winning, multidisciplinary firm offers planning, architectural, engineering, interior, and facilities management services.

Radical changes in the health-care industry over the past few years have opened up opportunities for firms willing and able to take the plunge into new client services. Hospitals have become more competitive, cost-conscious, and eager to take advantage of computer-aided facilities management (CAFM) systems to make their day-to-day operations more efficient. Benefiting from this trend has been BSA Design in Indianapolis and its recent spin-off, Continuum Solutions Consulting, which focuses

Later, when the facility requires an addition or remodeling, those drawings are available as base information for the next project. "It's a logical extension of our design services," Handy says, "the ultimate information recycling." Combining their knowledge of architecture and information systems, Handy and his staff have set up CAFM systems for a number of hospital and medical facility owners. Because his clients compete with each other and may hire competing architects for design services, they do their own database management. But, Handy notes, because CAFM software evolves so rapidly, some clients return to him every year for the latest update.

As stand-alone software or used with AutoCAD, ARCHIBUS/FM helps a facility manager to understand and manage the company's real assets at every scale, from global real estate down to lightbulbs. Control over this information enables facility managers to oversee leases and personnel moves, assess how efficiently space is being used within a given department, determine the proper furnishings and equipment for various types of employees, monitor computer networks, schedule routine maintenance operations, and perform countless other functions.

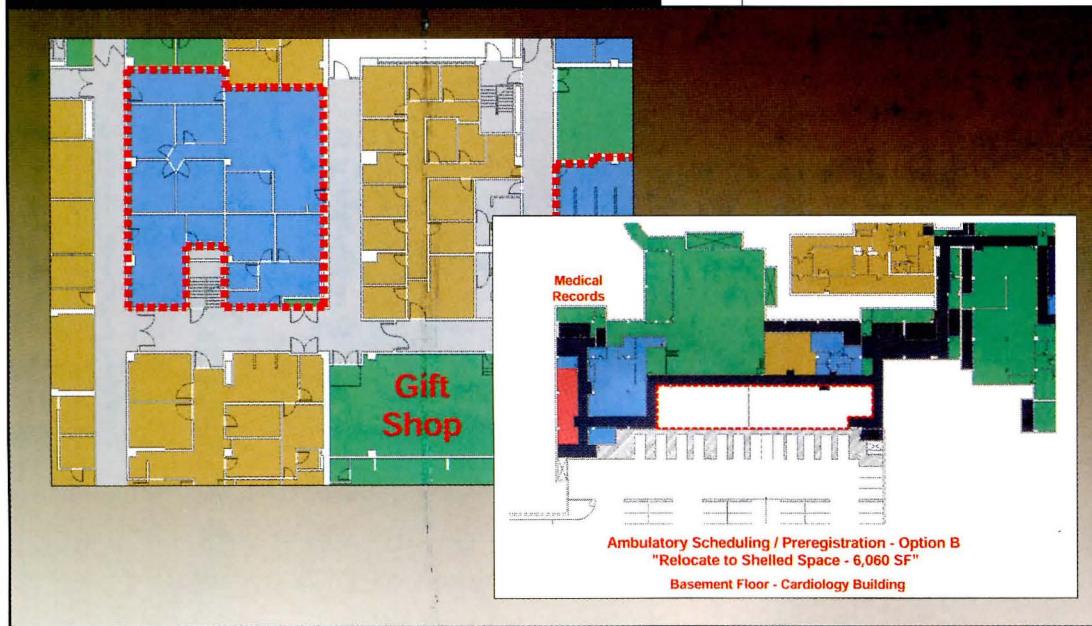
One challenge of CAFM systems has always been to make managing these huge and complex databases easy for nontechnical staff. And now that the World Wide Web has demonstrated how much can be discovered with a simple browser, clients are requesting simple methods to navigate their large databases.

A recent addition to ARCHIBUS/FM has made this ease-of-use possible. About a year ago, Handy explains, ARCHIBUS introduced the Executive Information Systems module, which enables technically savvy users to create a customized, Windows-like graphical interface that allows anyone to access and manipulate the information in the CAFM system. He compares this to custom-designing a dashboard according

to the needs and abilities of the driver. (A consultant like Handy is still required to be expert in the detailed needs and procedures of the client.) Facilities managers who may use the computer system only occasionally can now access or create very sophisticated reports without needing to know all the intricacies of the software. And because ARCHIBUS/FM works with powerful Sybase or Oracle databases, the resulting information can be extremely complex, even if the interface is not.

Handy compares the effect of EIS to having tabs on a binder, "except that here the binder pages are interactive and dynamic." He explains, "We teach our clients things like the difference between a spatial hierarchy and an organizational one. Using a graphical interface, it becomes much easier to describe these relationships. Architects are used to describing relationships through functional and spatial diagrams, and now we can present the client's information in a graphical way as well. This turns it into an additional service." ■

PIECING TOGETHER THE CAFM PUZZLE



Continuum Solutions Consulting generated these images to display and evaluate several responses to space requests. The floor plan images become the interface to additional data.

on strategic planning and asset and facility management. One of the largest architecture/engineering firms in the Midwest, BSA specializes in the design of health-care and other high-tech facilities. Now Continuum Solutions has created its own service for those clients: the design of information systems.

Architect Mark Handy, director of asset and facility management for Continuum Solutions, has been using CAFM software from ARCHIBUS, Inc., for four years to integrate hospitals' CAD drawings and nongraphic data systems. His first project was to organize a comparative study for two hospitals that had just merged. He had to compile the CAD and data files for three million square feet and standardize the data according to Medicare norms. When the study was finished, Handy recognized the value his expertise could add to the development of the client's facilities standards.

Handy's methodology for this value-added service involves stripping the drawings of construction-related notes and symbols not related to building operations so they can be used in CAFM programs.

What To Buy and How To Buy It

ASKING THE RIGHT QUESTIONS HELPS USERS SELECT HARDWARE AND PERIPHERALS THAT BALANCE NEEDS AGAINST COSTS AND CHANGES IN TECHNOLOGY.

by Steven S. Ross

Architects are at a disadvantage when shopping for computer equipment. Their computer needs are more specialized than those of most other professionals; performance minimums for architects' machines roughly correspond to the general consumer's maximums.

Product ratings in computer magazines often ignore or downplay the features most important to architects, such as fast 3D graphics and spacious hard drives. Hiring a technology consultant is expensive. The computer superstores are geared to the mass market and carry small monitors and pokey CPUs, and their salespeople understand computer games better than sophisticated graphics capabilities and memory capacity. Mail-order operations are based on volume, not customization. Shopping on the Web works only for those who know exactly what they need.

At the Mithun Partners, a 150-person architecture firm with a three-person management information systems (MIS) department, computer

equipment is purchased from a local vendor who specializes in working with architects. Bryan Anthony, the MIS director, meets with members of a local AIA chapter to discuss technology developments. "It's essential that firms designate someone who can keep up [with the technology] by reading or casting around on the Web. That's the best way to get good advice," he says. He keeps informed by checking several CAD-related Web sites on a regular basis.

No affordable system can be all things to all users. Architects must balance the strengths and weaknesses of each technology against their needs. The following guide is intended to help architects make intelligent technology choices. Knowing the right questions to ask and understanding enough about the subject to navigate the sea of products available can make the difference between a system that will need to be upgraded in six months and one that will still be useful in two years.

WORKSTATIONS

Workstations are becoming less expensive, faster, more standardized, and easier to install, especially those running Windows NT. As a result, the major producers of business personal computers have marched into the engineering workstation market once dominated by Intergraph, Tri-Star, and local vendors. Compaq, Dell, Gateway, IBM, and Hewlett-Packard—all of whom sell equipment suitable for CAD and other architectural tasks—are active in this marketplace. A typical architect's workstation has 128MB of RAM, a 6GB SCSI (small computer system interface) hard drive, graphics cards with video acceleration and two-monitor capability, and a Pentium II CPU running at 300 MHz or faster.

How easy is it to install?

Network cards, operating system software, graphics cards, and drivers should all be in place when the computer system is removed from its box.

How well does it communicate with other devices in the office? Tell the vendor the type of network and cabling used in the office, as well as the specific supplier of network software.

What are service and leasing options? The major vendors offer a wide variety of service and leasing options. But local dealers should not be ignored; they often

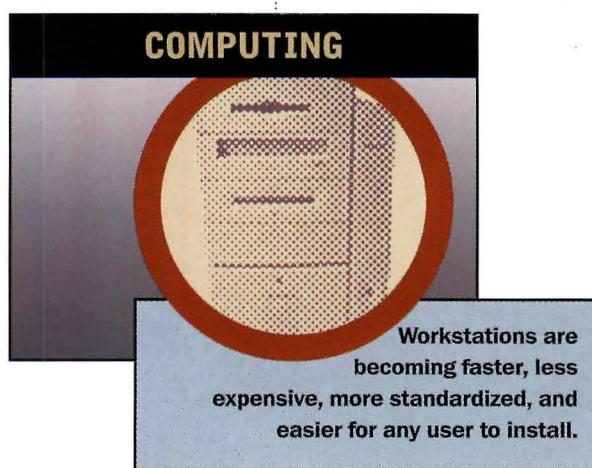
compete well on price and service. Expect to pay the latter extra in exchange for their familiarity with your system. Also consider a lease with a flexible termination clause in case your needs change or something newer and better appears.

How fast? These days, the price difference between fast and faster is so small that paying a little more for speed makes sense. A 330 MHz Pentium II CPU, for instance, is 3 to 5 percent faster than a 300 MHz

For those dealing with large drawings or lots of rendering and animation, the additional investment is worthwhile.

There are ways to lower cost without sacrificing too much speed. For workstations that won't be handling 3D graphics, "clone CPUs" from vendors such as AMD and Cyrix/IBM are perfectly adequate and will save \$300 or so per machine. Consider substituting an EIDE (extended integrated device electronics) hard drive for the faster, more expensive SCSI drives. The difference shows up only in animation and rendering work. EIDE is also easier to configure and maintain because all its circuitry is in the drive itself. By comparison, SCSI drives must be mated to controllers, and there are so many combinations of systems, drives, and controllers that configuring them can be tedious.

On the Macintosh side, Apple's G3 series offers a major improvement in speed over older Macs. Look for models that have room for extra drives and memory.



STORAGE

There are a lot of options for those who need more removable storage capacity than a floppy can provide. Emerging technologies include Sony's 200MB floppy-compatible system and Iomega's 40MB miniature Click disk. Most cartridges, however, must be used in specific drives; there's no widely used standard.

What are the disk and drive compatible with?

For those who must move files around from office to office, or share them with consultants and clients, it's essential that other equipment can handle your disks. The most compatible high-capacity media today, and the disk types used by more people than any other, are the Iomega Zip disk and CD-R (writable CD-ROM) disks that can be played on any CD-ROM

drives. Heeding filename conventions (i.e., sticking to the DOS eight-character limit) means that CD-R disks can be read on a Mac or on a PC. CD-R disks can't be erased. But one can be written to up to 99 times in "multisession mode," until it runs out of space.

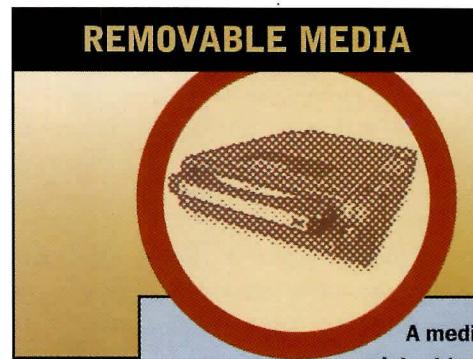
How fast is it? Animation demands systems that can load a file quickly from the disk. CD-R has the speed advantage, but various SyQuest drives and the Iomega Jaz are usually fast enough to get the job done, and are faster than many CD-ROM drives.

Which is most reliable?

Architects often must transport drawing files into the field. Thus, a medium that is resistant to dirt, moisture, and falls is a plus. All of the choices are fairly robust, though

CD-R has the edge. All can be damaged by being left in a hot car or exposed to strong sunlight for an hour or two. Zip disks will usually survive a fall of four feet or more. Jaz and Syquest cartridges take some hard knocks but aren't as reliable. Among magnetic

media, nothing beats the LS-120 Superdisk format. Each holds 120MB, is about as reliable as a floppy disk, and will survive a fall of six feet onto a hard floor. But the LS-120 is not fast enough to play animations directly; files must be moved to a hard drive first.



A medium that is
resistant to dirt, moisture,
and falls is a plus for architects
doing computer work in the field.

TECHNOLOGY	CAPACITY	SPEED	RELIABILITY	COST	NOTES
CD-R	650MB; SPECIAL DISKS CAN STORE 700MB	FAST ENOUGH FOR MULTIMEDIA, THOUGH A FULL DISK CAN TAKE MORE THAN AN HOUR TO CREATE	EXTREMELY RUGGED	DRIVES THAT WRITE THESE DISKS TYPICALLY COST \$300 TO \$500. DISKS ARE ABOUT \$1 TO \$3 EACH.	READABLE ON ANY CD-ROM DRIVE AND ON NEWER DVD DRIVES
CD-RW	650MB	ABOUT THE SAME AS CD-R; FILLING A DISK TAKES LESS TIME THAN FOR CD-R	EXTREMELY RUGGED	NOT ALL CD-R DRIVES CAN CREATE A CD-RW DISK; THAT CAPABILITY COSTS ABOUT \$100 EXTRA. DISKS COST \$12 TO \$15.	CD-RW DISKS CAN BE WRITTEN TO AND ERASED MANY TIMES. READABLE ON ANY CD-ROM DRIVE.
DVR-R	4GB	FASTER THAN ANY OTHER MEDIUM; CAPABLE OF RECORDING HIGH-QUALITY, FULL-SCREEN VIDEO	EXTREMELY RUGGED; MORE RESISTANT TO SUNLIGHT AND WARPING THAN OTHER DISKS	EXPECT TO PAY BETWEEN \$500 AND \$700.	OLDER DVD-R DRIVES MAY NOT BE ABLE TO READ CD-R DISKS BUT CAN READ CD-RW.
IOMEGA ZIP	100MB	SLOW, EVEN WHEN THE CONNECTION IS THROUGH AN EIDE OR SCSI INTERFACE	WILL SURVIVE MOST FALLS, BUT NOT AS TOUGH AS OTHER DISKS	DRIVES ARE \$75 (FOR OLDER PARALLEL-PORT MODELS) TO \$300 (FOR UNITS THAT FIT INTO LAPTOPS). DISKS COST \$10 TO \$12.	MACS CAN READ A PC-FORMATTED ZIP DISK, BUT PCs CAN READ A MAC-FORMATTED DISK ONLY WITH ADD-ON SOFTWARE.
IOMEGA JAZ	1GB OR 2GB	FAST ENOUGH FOR ALMOST ALL MULTIMEDIA PURPOSES	MORE DELICATE THAN ZIP DISK	ABOUT \$300 FOR 1GB VERSION; AN ADDITIONAL \$200 FOR 2GB. CARTRIDGES RUN ABOUT \$100/GB.	THE MAC-TO-PC RULES ARE THE SAME AS FOR ZIP DISKS.
SYQUEST SYJET AND SPARQ	1GB OR 1.5GB	FAST ENOUGH FOR ALMOST ALL MULTIMEDIA PURPOSES	MORE DELICATE THAN ZIP DISK	ABOUT \$200 FOR 1GB SparQ 1.0; CARTRIDGES RUN ABOUT \$33. ABOUT \$250 FOR SyJet 1.5GB; CARTRIDGES RUN \$80.	FOR PCs ONLY
SYQUEST EZFLYER	135MB OR 270MB	FASTER THAN ZIP DISK	ABOUT THE SAME AS ZIP DISK	ABOUT \$150 FOR DRIVE. 135MB CARTRIDGES ARE \$25; 230MB CARTRIDGES ARE ABOUT \$33.	FOR PCs ONLY
SUPERDISK	120MB	SLOW, ABOUT FIVE TIMES FASTER THAN A FLOPPY	EXTREMELY RUGGED	DRIVES ARE UNDER \$100 WITH REBATES; CARTRIDGES ARE \$15.	DRIVES ALSO READ 1.44MB AND 720K FLOPPIES.

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- ✓ Search text in, and copy images from, figures and tables
- ✓ Use hyperlinks to jump to a referenced word or table
- ✓ Obtain printouts of sections of a code
- ✓ Add colored notes directly to text or hide them
- ✓ Cut and paste code provisions into correspondence, reports, etc.

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International Collection CD-ROM Item No. INTCD97	\$95.00	\$119.00
CD-ROM	\$245.00	\$306.25

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The 1997 CodeXpress Version 1.1 includes the following codes and publications:

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- 1997 Uniform Building Code™*
- 1997 Uniform Mechanical Code™
- 1996 International Mechanical Code™
- 1997 Uniform Fire Code™**
- 1997 Urban-Wildland Interface Code™
- 1997 Uniform Building Security Code™
- 1997 Uniform Housing Code™
- 1997 Uniform Sign Code™
- 1997 Uniform Code for the Abatement of Dangerous Buildings™
- 1997 Uniform Administrative Code™
- 1997 Uniform Zoning Code™
- 1997 Uniform Code for Building Conservation™
- 1997 International Plumbing Code™
- 1997 International Private Sewage Disposal Code™
- Handbook to the UBC
- Handbook to the UMC
- Quick-Reference Guide to the UBC
- Dwelling Construction Under the UBC
- UFC Code Applications manual
- CABO/ANSI A117.1-1992
 - * Does not include NFPA Standards.
 - ** Does not include Volume 2.

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- 1997 International Private Sewage Disposal Code
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DIGITAL CAMERAS

Digital cameras are a quick way to capture scenes into which CAD-generated project images can be inserted. They can also capture textures, images of people, street furniture, and other items that make drawings fuller, more useful, and more realistic. With special software, it's possible to use these digital images to generate realistic 3D CAD files.

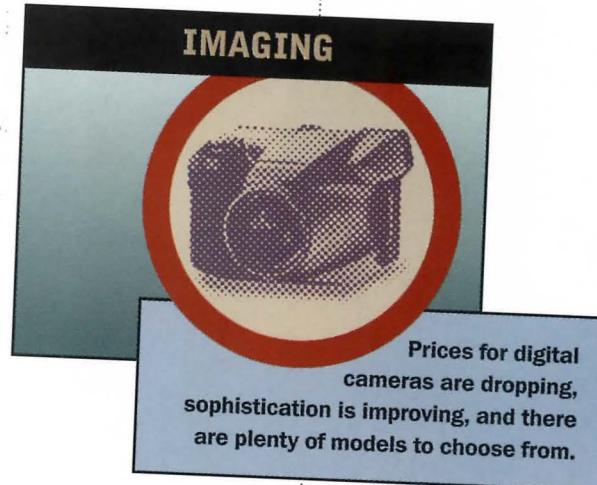
Prices for digital cameras are coming down and their technical sophistication is going up. But to make things confusing, plenty of vendors have jumped into the market with dozens of new products. All of the major camera and film vendors are offering digital cameras, as are most of the major electronics firms—Kodak, Fuji, Olympus, Sony, Pentax, Agfa, Casio, Epson, Canon, Ricoh, Toshiba, Yashica, Sharp, Konica, Minolta, Hewlett-Packard, Nikon, and Panasonic among them.

How many pixels? The resolution of an image is measured in pixels, or dots; more pixels means better resolution. Also, more pixels allow the user to crop a small section of the overall image and still have sufficient resolution to make that excerpt usable. Until recently the norm was 640 by 480 pixels; today it's 1024 by 768 and increasing.

Higher resolutions at lower prices are appearing monthly.

What is the image format?

Most cameras aimed at the amateur market save their images in a compressed format called JPEG. This is fine for on-screen use, but JPEG images don't look as good when printed. High-contrast lines on a slant tend to develop jagged edges, for example. JPEG technol-



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MONITORS

The mass market for monitors is catching up to professional levels and bringing prices down. Good 17-inch units are available for under \$400. The typical CAD workstation's 21-inch monitor is still pricey, but the 19-inch size is a nice, cheaper alternative. Several vendors, including ViewSonic and Panasonic, have come out with "short length" models—shallow monitors that take up less space on the desktop. Monitor terminology is confusing, though, and there is more to a monitor spec than size.

What type is it? Monitors come in two major types, with several sub-varieties. The most common is the dot- or shadow-mask, in which three beams of electrons excite red, green, and blue phosphors. The second major type is the aperture grille, or stripe-mask, which channels the electron beam to thin phosphor stripes on the tube's inner

face. Monitors marked "Trinitron" or "Diamondtron" use this method. They are brighter than shadow-mask screens, making them a good choice for architects. But the thin vertical wires can show up as vertical dark lines. Where ambient lighting is ample, stripe-mask monitors are easiest on the eyes.

What is dot pitch? This is the resolution of the screen—the level

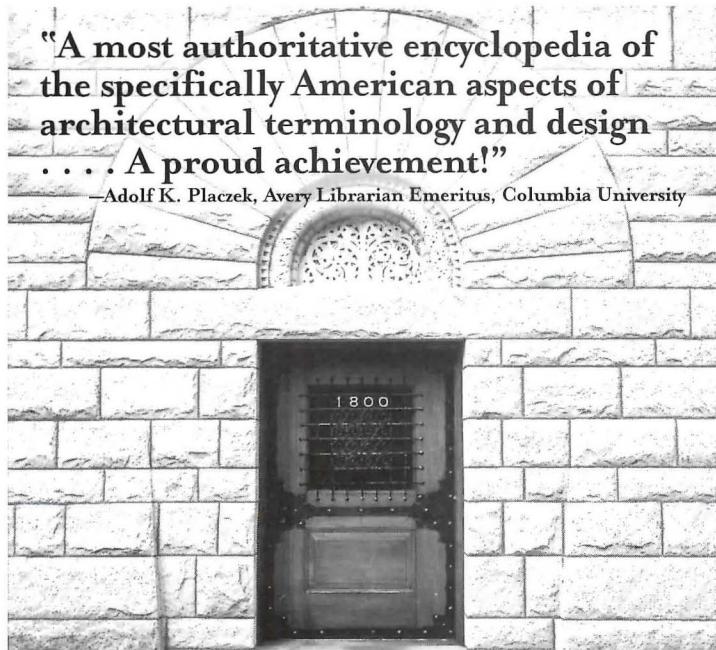
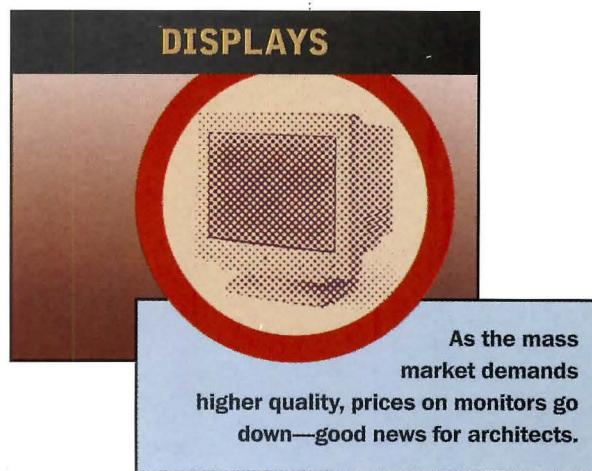
at which it shows detail. On a dot-mask monitor, it is the distance between dots of the same color. On a Trinitron, it is the horizontal distance between stripes of the same color. Look for a dot pitch of .26 to .28; smaller is better.

What is the refresh rate? This is the frequency at which the screen is redrawn by the electron beams. The lower the refresh rate, the worse the

"flicker." The rate considered acceptable keeps going up. The Video Electronics Standards Association recommends at least 85 Hz for monitors larger than 17 inches. Smaller monitors look good to most people at 75 Hz. The refresh rate varies with resolution, so make sure that the quoted rate is at the appropriate resolution. For those sensitive to flicker, reducing the screen resolution helps.

What is USB? The Universal Serial Bus is a new, self-configuring interface that makes moving machines around easy. Look for monitors with USB hubs built in, which makes hooking up USB peripherals for scanning and printing easy.

What about LCD panels? These flat screens take up little space and don't flicker. They are still expensive and don't have enough contrast for precision CAD use. But they're getting cheaper and should be commonplace in a few years.



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CIRCLE 70 ON INQUIRY CARD

MODEMS

A modem, strictly speaking, is a device that turns the digital zeros and ones of a computer file into tones the telephone system understands. At the receiving end, the modem turns the tones back into zeros and ones. Modems are a commodity item. In part, that's because there are only a few vendors making the chips that all modem vendors use, and the chips must conform to international technology standards. The two big chip vendors are Rockwell (which has most of the market) and AT&T. Major modem vendors include U.S. Robotics and its merger partner 3Com, and Hayes.

Is it compatible with cell phones and other equipment?

The term "modem" has also come to refer to devices that hook computers into ISDN lines, cell phones, or cable TV systems. ISDN and cable are digital—no conversion to tones ever takes place. Increasingly, cell phones are digital as well. Thus, modem equipment must match the requirements of the equipment in an office or home.

For those planning to use a modem with a cell phone, it helps if the modem is designed specifically for that. But older modems may work fine as long as the cell phone is an older model and the user stays within range of the same cell antenna while transferring data. Newer digital phones demand spe-

cial modems. Be sure to test any new and fancy equipment at hand before buying.

How fast is it? As far as throughput is concerned, there is little difference right now between 33.6 kbs (kilobits per second) modems and 56 kbs (which generally run at 53 kbs). It's worth buying an older 33.6 model, which are now very cheap. For those who already have 33.6 or even 28.8: Don't bother upgrading unless you have heavy-duty file-transfer needs (continuously sending large plotter files to a reproduction house, for instance).

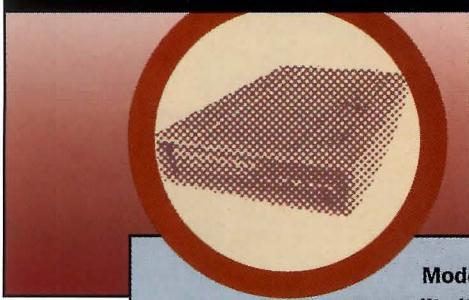
For laptops, which often have to function on networks and over phone lines, consider PCMCIA cards that combine Ethernet with the modem. Older cards may be fine and will save the cost of upgrading.

For those considering the purchase of a Palm PC or other tiny Windows CE (compact edition) machine, look for models that use a "software modem," run by the computer's own processor, rather than a separate modem. The performance is the same, but the software doesn't eat batteries.

Is there other hardware that makes connections faster?

ISDN lines, which typically run at 64 or 128 kbs, can be connected to the computer with a special box that takes the place of a modem. Internal networks can be connected to ISDN or conventional phone lines.

COMMUNICATION



Modems are a commodity item; there are only a few vendors making the chips that all modems use.

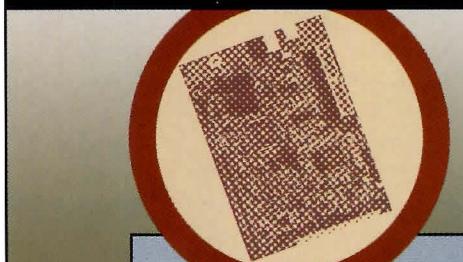
GRAPHICS CARDS

Graphics cards that cost \$2,000 a few years ago can now be had for \$500 or less. Drivers, the software that allows the cards to work with a particular computer or program, have become standardized. As a result, cards aren't rendered useless within a few years. However, users are now demanding more screen resolution, more colors, and more animation than ever before. Now

8MB of video RAM (VRAM) is an absolute minimum.

Graphics cards that can handle the three major 3D graphics standards—OpenGL, Direct3D, and HEIDI—have become less expensive. That's due in part to better HEIDI interfaces from AutoCAD, new graphics chips from several suppliers, and seamless support for OpenGL in Windows NT 4.0.

EXPANSION



Graphics cards are a quarter of the price they were a few years ago and they last longer.

OTHER INPUT DEVICES

There are several new ways to get information into the computer. Some make the drafting task easier, while others allow users to capture data in the field and upload it in the office.

New controllers let the user's hands work in 3D while on a 2D surface. Some are pucklike mice that are combined with a trackball or joystick for rotational motion. Most controllers are connected to the computer through the serial port or the port labeled "ps/2." Macintosh input devices are connected through the Apple desktop port. Make sure the controller is compatible; most PC-based equipment will not work with Apple systems.

Input devices should be matched to the functions they're intended to perform. Too often the controller is very fancy, but the

tasks it is meant to perform are very simple. Also, they can eat up a lot of desk space.

Handheld microphones and speaker systems are aimed at the traveler and at the voice-recognition market. Pick up a sound card, about \$100, at any local computer store. Since sound quality is the major consideration, be sure to test it with your voice in a noisy environment.

Casio, Hewlett-Packard, Philips, Sharp, Everex, Geobook (which has a keyboard that's almost laptop-size), and Psion offer palmtop computers that challenge the Palm Pilot series from 3Com. Test these carefully before you buy, since some are hard to use. Not all of these interface with a Mac. Also, some go through batteries very quickly and are sensitive to heat and water. Make sure the dealer and the software vendors offer a service contract.

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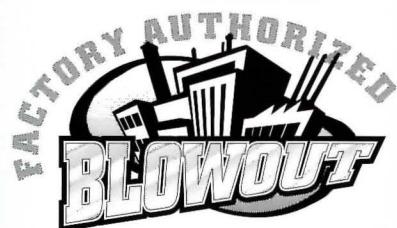
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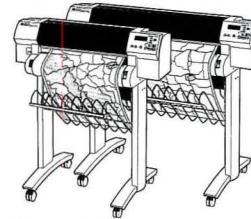
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PRINTERS, PLOTTERS, SCANNERS

The terms "plotter" and "large-format printer" are becoming interchangeable. Lower pricing and ease in set-up mean smaller firms can have large-format printer/plotter functions in-house. Also, the transition from pen plotter to inkjet is nearly complete, with models available from Hewlett-Packard, EnCAD, and others. Inkjets are more reliable and easier to service, and they create clearer documents.

Is it network-ready? It used to be that if you wanted to connect the plotter to a network, there were few choices, due to limitations in software. Now plotter management software, which controls how the image gets from the computer to the printer, almost always comes with the unit and is compatible with most systems. Occasionally the software must be adjusted when

used with an older network. As a result of these software advances, there is now a large number of network-ready products available from companies such as CADNET.

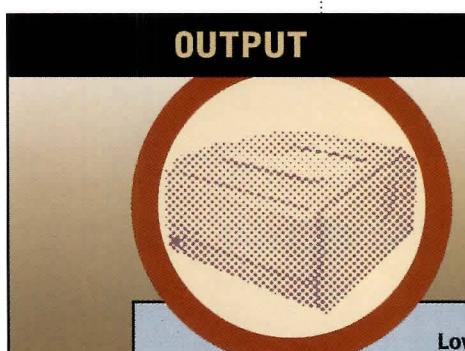
Digital or analog? Digital plotters have replaced analog machines in the medium- and high-price, high-speed ranges. Digital plotting offers higher quality than analog and makes the link from the plotter to the network easier. The vector-to-raster processing (from the CAD file's vectors to the printed image's raster) can take place in the workstation rather than in the plotter. As a result, there is less of a strain on the network; printing does not slow or halt other computer functions.

How easy is it to maintain? Disassembling a pen plotter used to be like performing surgery. The new

inkjet systems are almost all modular. Simply visit a local supplier for ink, print head, or other components that can be plugged in.

What is the capacity? Most offices have high peak printing needs followed by long periods of inactivity. Consider sending peak jobs to repro houses, rather than installing hardware to handle the peaks.

What about scanners? Higher resolution means more detail, but it also means slower printing and higher costs. A very inexpensive system, perhaps \$80, is useful for simple scans, while more complex jobs can be sent out. As a rule, scanners that connect through the parallel port are slower than those connected through a SCSI interface—important to know if there is a high volume of production work.



OUTPUT

Lower pricing
and ease in set-up
allow even small firms to have
large-format printer/plotters.

SEARCHING FOR SOFTWARE: SEE THE CAD SELECTION TABLES AT WWW.ARCHRECORD.COM

Deciding which CAD system is best for your firm is a complex task. Where can an architect turn for guidance?

While most architects realize that CAD software is more than an electronic pencil, few realize its full power, and fewer know how to harness it. CAD manufacturers are taking advantage of the growing power of desktop computers to create systems that offer flexibility, easy-to-use interfaces, and networkability. Software packages are also becoming more powerful, as well as incorporating new ways to link to other software. And as all the software and all the links become more standard, more interchangeable, CAD is no longer a tool; it is a system.

A comprehensive CAD system would include tools for making drawings; creating models; concep-

tualizing and designing; analyzing designs for cost and energy consumption; visualizing and communicating designs and models to clients, colleagues, and builders; physically manufacturing real objects; and linking to project planning, financial, and product data. An architect's office needs all of these tools, although the mix varies.

No single CAD product offers all of these tools, though some high-end systems do deliver them in one way or another, typically with add-ons. The add-on vendors, for their part, keep pushing the limits, creating new productivity tools and new links to existing tools that are often developed outside the world of CAD—animation and financial packages, for instance. Architecture firms might also rely on their own bright systems people to integrate these functions for them. And the

low-end CAD vendors, the ones who concentrate on drafting tools, try to make their products as compatible as possible with the high-end products.

Under the hood, CAD packages are really databases with graphical interfaces that allow the user to add entries to a large database. Each element in a drawing is just a data record; the drawing is a well-organized collection of these records. Aside from this data management system, the supporting framework includes an operating environment and ways to handle external functions, such as network connections and links to other data.

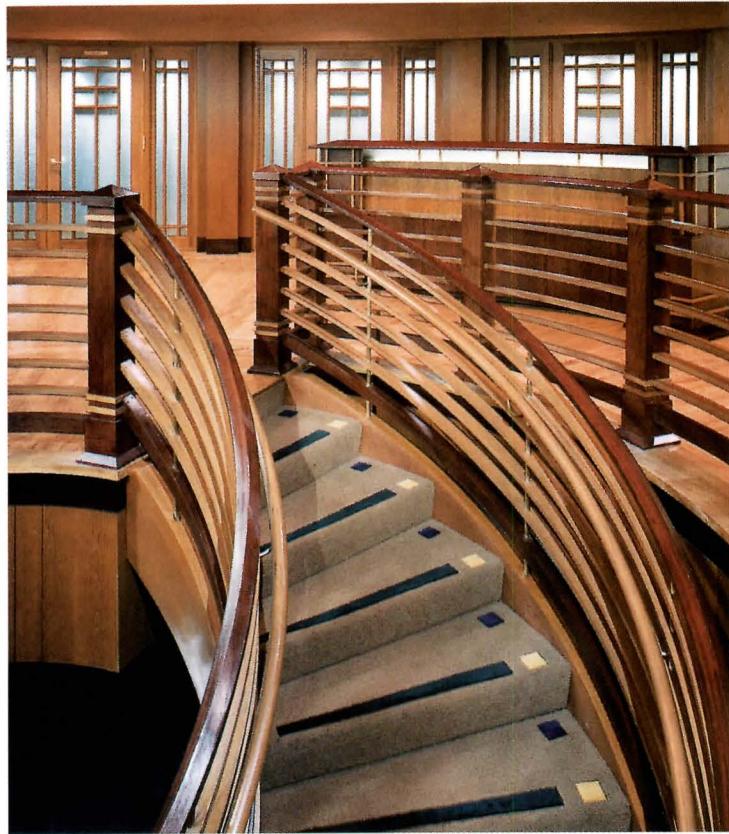
While these elements are important, it is the operating system that provides an interface between software and hardware. Today's operating systems are robust enough for firms to link files that are

running on machines with varying operating systems. The Mac, for instance, can run Windows or Unix. It's usually easier to transfer work between operating systems than to move from one CAD system to another.

This month, ARCHITECTURAL RECORD's Web site introduces tables with specifications on almost 25 CAD systems. Excerpted from *The CAD Rating Guide: A Tool for the Evaluation of Computer-Aided Design Systems Including FEM, GIS, and Animation Systems* (ZEM Press, \$150), a 650-page book by W. Bradley Holtz, the tables show what platforms support the various packages, where to get technical support, which tasks the systems perform, and what some of their selected advanced functions are. Visit www.archrecord.com for more information.

Safer, More Attractive Staircases

WHILE FEW ELEMENTS OF A BUILDING ARE MORE DANGEROUS, STAIRS CAN BE MADE BEAUTIFUL AND LESS HAZARDOUS WITH GOOD DESIGN AND THE CREATIVE USE OF MATERIALS.



In Santa Fe, New Mexico, there is a small chapel built in the 1870s by the Sisters of Loretto. Modeled after Sainte-Chapelle in Paris, the chapel was designed by a French architect named P. Mouly. Before the chapel could be completed, Mouly was killed by John Lamy, the bishop's nephew, who accused the architect of seducing his wife. Mouly had designed a beautiful choir loft high above the chapel floor. Unfortunately, the construction crew could not figure out how the architect had intended to reach the loft, as there was little room for conventional stairs. Distressed, the sisters sought guidance from a higher power: Saint Joseph, the patron saint of carpenters.

Their prayers were answered when a nameless old carpenter appeared one day and volunteered to build the stairs. He worked alone, and when he was finished, he had created a masterpiece of engineering and design, a spiral staircase that still inspires awe in visitors to the chapel. The staircase is 22 feet high, with 33 steps and no central or side supports. It makes two complete 360-degree turns and is held together with wooden pegs instead of nails. The sisters declared the stairs "miraculous," but before the carpenter could be thanked or paid, he disappeared.

David Hill is a Denver-based freelance writer who specializes in education and architecture-related subjects.

by David Hill

The stairs at the American Forest and Paper Association, designed by Greenwell Goetz Architects, lead from the reception area to offices below.

Stairs, often one of the defining elements of a building, can turn an otherwise ordinary space into something sublime. It's hard to imagine the Capitol without the steps overlooking the Mall, or the Paris Opera without its staircase. Stairs must be functional. Those at the Loretto Chapel are little more than a glorified ladder allowing access to the choir loft. But a staircase must do more than satisfy circulation needs; it must also satisfy the eyes and, perhaps above all else, it must be safe.

Stair safety

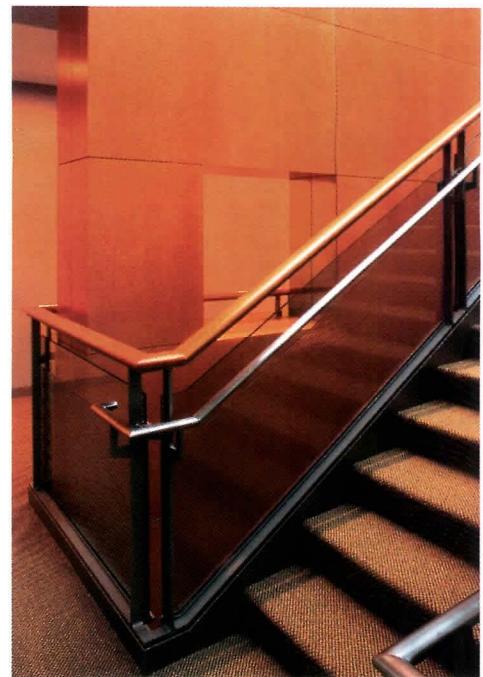
Stairs are among the most hazardous areas in a building. According to the National Center for Health Statistics, every year in the United States more than 1,000 people die from falls on staircases. While most of these accidents are in the home, those that occur in commercial buildings usually take place at the top and bottom of the stairs, where there are abrupt changes in level and surface materials. People may fall because of inadequate lighting; obstructions on the stairs, such as nosings that project beyond the step; distracting views; slippery treads; and confusing patterns on treads and risers. They also fall because they're crowded by other people or because they're in a hurry and aren't cautious. Statistics show that serious falls during descent outnumber those in ascent, and that the instrument of injury in most cases is the steps themselves, especially those with concrete, wood, or steel surfaces. Carpeted steps are more slippery, but they are less likely to cause serious harm to an individual who falls.

Despite these disturbing statistics, there's no doubt that the stairs being built today are safer than ever. That's partly because building codes that govern how commercial stairs are built, particularly the Americans with Disabilities Act (ADA), have become more stringent within the past 10 to 15 years. "Stairs are one of the most codified elements of a building," says Michael Brush, AIA, senior designer at Kahler Slater Architects, Inc. "The challenge is working within these limits and making the stairs attractive and affordable."

Continuing Education Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/AIA Continuing Education article. To receive credit, turn to page 214 and follow the instructions.

Learning Objectives After reading this article, you should be able to:

1. Identify safety concerns for stairways.
2. Describe the elements of a stairway specified by code.
3. Discuss the parameters for designing the rise-to-run proportion of a stairway.
4. List ways in which stairways can be designed to be more aesthetically pleasing.
5. Discuss the relationship between stairs and elevators in a building.



When the United States Court of Appeals in San Francisco was upgraded by Skidmore, Owings & Merrill, a grand stair (left) was added to make the

library and atrium livelier. Windows in the adjacent wall (above) frame views of the stair and the space beyond. The maple guardrail matches the paneling.

It is up to architects to meet or even exceed building codes while designing stairs that meet a building's aesthetic requirements. That's not easy. "You definitely lose some drama because of codes," Brush says. For example, it's hard to achieve an open look when codes require that handrails be continuous along both sides of the stair or that balusters be spaced close enough to prevent a child from falling through or being injured—usually no more than four inches apart. But Brush also realizes the codes' efficacy. "When you recognize why things are done a certain way—that limiting the size of the nosing makes it easier for someone who is weak or disabled to pull their foot onto the next step—you realize that the code is carefully thought out and not excessive," he adds.

Commercial stairs must comply with sometimes stringent local codes as well as the national building codes, the Life Safety Code (developed by the National Fire Protection Association), and the ADA, which specifies everything from the shape, height, and diameter of the railing to the configuration of the nosing and the location of the landings. Working within these restrictions, architects have various rules they follow to ascertain stair dimensions.

Stairs take up a great deal of square footage in a building. A steeper slope is more space-efficient, but it makes the stairs harder to climb. Research shows that the ideal slope, one that makes the stairway easy to climb at an average speed, is between 20 and 27 degrees. But rise-and-run proportions also depend on what the stairs will be used for and where they are located. Risers generally range from four to seven inches, while treads are between 11 and 14 inches. Brush uses a formula that says the depth of the tread plus twice the height of the riser should total 24 to 25 inches, or $2R + T = 24 \text{ to } 25$.

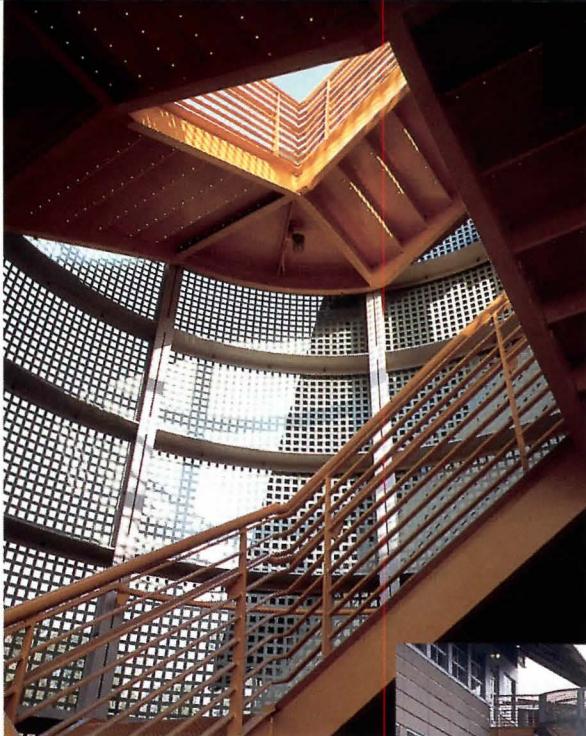
Denver architect Michael Brendle, FAIA, likes to design stairs

with six-inch treads and 12-inch risers, proportions he calls "luxurious." Seven-inch risers combined with 11-inch treads "seem more quickly paced," he says. Shallower stairs can be extended with a nosing, though code requires that this be no more than $1\frac{1}{2}$ inches long and be rounded. The width of the stair is based on the occupancy load, but a minimum of 48 inches is required by code. A wider stair provides more room for climbers to pause and socialize or simply catch their breath.

Handrails are one of the most important components of a stair and the codes that regulate their design leave architects little freedom. They dictate the few acceptable shapes and the size of the rail. The ADA requires a simple round profile that "permits some locking action by fingers as they curl around the handrail so they can be grasped firmly with a comfortable grip, and so the hand can be slid along the rail without encountering obstructions." There is some choice in materials, however. Many architects like the smoothness of steel, while others prefer the warmth of wood.

Codes are often exceeded when architects make stairs that are grand. But even on stairways that are merely utilitarian, architects often put in more frequent landings than those called for in the code. "There are rules about how many treads you can have between landings, but in a building used by children or elderly persons, for example, it's better to have more landings," Brush says. National codes require that a flight of stairs with a rise of more than 12 feet must have a landing, which must be as wide as the stairs. Where these landings are placed is often a question of traffic flow—whether the architect wants the stairs to funnel traffic at the top or bottom. Numerous landings can also keep stairs compact, wrapping them around a tower or interior wall, for example.

Lighting levels, though not mandated by code except for emer-



The stair at NTT Shinjuku Head Office Building (left), and the stair tower at Owens Corning World Headquarters (above and right), both by Cesar Pelli & Associates.



gency conditions, can contribute a great deal to the safety of a stairway. "It's hard to integrate lighting on a stair because the relationship to the ceiling changes with each step," Brush says. Shadows are also a problem: it's best if lighting levels are even throughout the staircase. Hanging lights help bring the light source closer to the stair. Putting the lighting on the walls is another solution, as is integrating the lights into the railing. Lighting along the treads calls a lot of attention to the stairs, though it is a valid approach.

While the positions of stairs and elevators need not be related, many architects try to put these elements in close proximity. Doing so makes it easier to find the stairs in case of an emergency. It also makes the stairs more convenient for quick trips when the elevator is slow.

Improving stairwells

Every multistory building must have at least one staircase, depending on the capacity of the building and the size of that staircase, that is designed to serve as a means of egress in the event of a fire, according to the Life Safety Code. Devoting a full 20 pages to making these areas safe, the code requires that these stairs serve as a safe haven for up to two hours, be made of noncombustible materials, provide minimum emergency lighting levels, and be sealed off from the rest of the building with fire-rated walls and doors. Sometimes such stairs are placed on the outside of a structure, but more typically they are enclosed in stairwells.

Cold and forbidding in appearance, these stairs are seldom inviting and generally are unused, wasting building space. However, introducing natural light, providing views of the outside with windows, and integrating the stairs and the building make stairwells safer, more social places without sacrificing safety. Making the treads and the risers different

colors not only helps users differentiate the two, it also creates a livelier set of stairs. Most code officials advise against introducing vivid patterns, however, since these can be distracting.

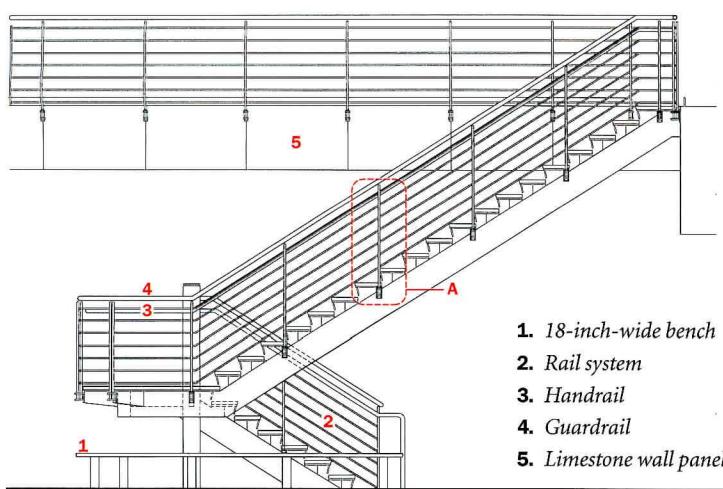
The central staircase at Little Village Academy, an elementary school in Chicago, is actually a stairwell that conforms to that city's tough fire regulations. But Ross Barney + Jankowski Inc.'s light-filled, wedge-shaped tower design has become a neighborhood landmark. "We wanted to give the school a heart, something distinctive," says Carol Ross Barney, FAIA. Located next to the school's main entrance, the three-story stair curves, forming half circles between floors. But when it comes to schools, code officials don't mess around. Although it poses no safety compromises, the unusual configuration meant some haggling with officials accustomed to straight stairs in fire towers. The concrete stairs, topped

ARCHITECTS ARE TRYING TO MAKE STAIRWELLS MORE INVITING SPACES.

with grit to prevent slipping, have landings positioned at eleven-step intervals. The architects were concerned about children tumbling and having nothing to break their fall.

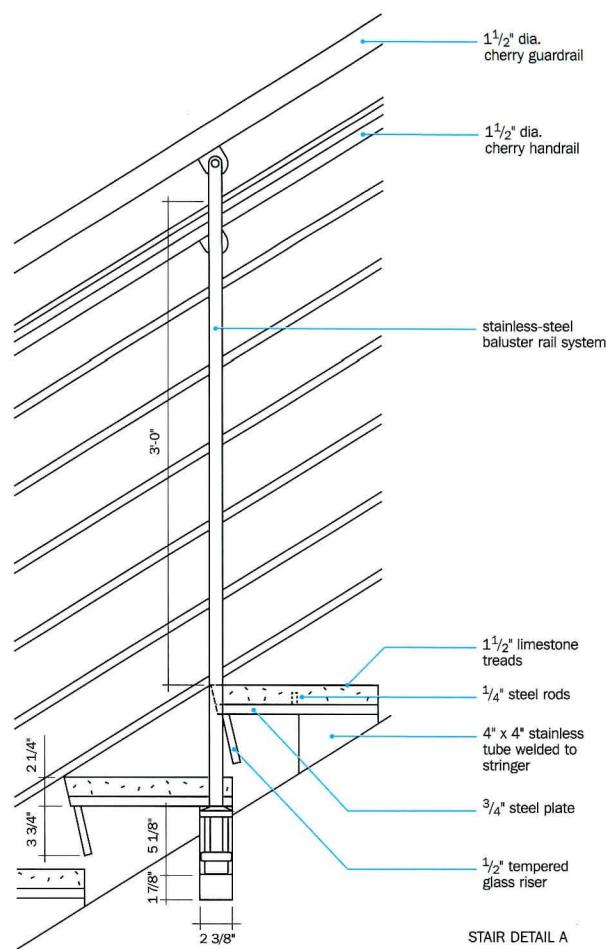
The steel handrails which, according to the Life Safety Code, "serve as a guide if smoke enters the stairway in a quantity to obscure one's vision or if the stair-lighting system fails," are mounted 34 inches above the stair nosing—at the low end of the code-required range of 34 to 38 inches to accommodate youngsters. The seven-inch risers and 11-inch treads are at code limits.

The staircase is supported, in part, by six-inch-diameter pipes that are tied to the stringers and to beams that extend from the outside



NORTH-SOUTH STAIR SECTION

Glass risers, honed limestone treads, and a stainless-steel railing system combine to make this stairway in Harnischfeger Industries' headquarters unique. The wood bench beneath the landing is a cane detection device.



STAIR DETAIL A

wall. The pipes are topped with fluorescent light fixtures. At the top of the tower is an angled skylight with a sundial—an allusion to the role of the sun in Aztec culture, Ross Barney says.

Another viable alternative to the forbidding internal stairwell is an outside staircase. Bert Gregory, AIA, of the Mithun Partners, wanted to avoid using a conventional stairwell for the Seattle headquarters and flagship store of the Seattle-based outdoor-gear retailer Recreational Equipment, Inc. (REI). To do so, he created an open-air stair tower protected from the elements by a metal roof. The stairs are a primary means of egress, which means they conform to the same standards as an interior stair. Shoppers enter the tower from the parking garage or directly off the street and climb to the front door. From the sub-basement level of the parking lot, that's 32 feet, or four flights, of stairs. But visitors to REI tend to be young and athletic, the kind of people who prefer stairs to elevators.

Sometimes, making a stairwell inviting means working with code officials to find a solution. For his redesign of Denver's Ross-University Hills Library, Michael Brendle wanted to place one of two mandatory fire stairs in a vestibule that also serves as the main entrance. "We try to have some kind of 'grand stairway' in all our buildings," he says. The local fire code, however, required two sets of fully enclosed fire stairs. So Brendle added fire sprinklers to the building, which allowed him to keep the entrance stairs and still comply with the code.

Stairs that make a statement

It was once thought that elevators would effectively eliminate staircases, but that didn't exactly happen. What did happen, particularly in low-rise buildings, is that stairs became "the route of last resort," says John Templar, author of a two-volume study called *The Staircase* (MIT Press,

1992). Too often, he says, stairs are treated as a necessary nuisance and built with low levels of comfort, convenience, and ambience.

"It's a shame, because stairs are a significant design opportunity," Brendle says. Deep treads, shallow risers, curves and winders, dramatic lighting, sizable landings, and rich materials—all of these can be used to make stairways monumental. For example, Sir Norman Foster designed a dark green granite staircase with 16-inch treads and five-inch risers for his 1994 addition to the Joslyn Art Museum in Omaha, Nebraska. The stairs, which lead from an atrium to the museum's galleries, provide a slow and easy ascent, and broad landings present a nice place to pause and view the art as well as other museum visitors.

Harnischfeger Industries, based in Milwaukee, is a manufacturer of heavy mining equipment. But the staircase in the atrium of the firm's new headquarters, which overlooks Lake Michigan, is delicate. "The client wanted it to be as transparent and light as possible; they didn't want it to block the view of the lake," says Michael Brush, who designed the stair.

One solution would have been open risers, but these are prohibited by the ADA since it is easy for a climber's feet to slip through the open spaces. So he substituted the next best thing: glass. Each riser is made of half-inch clear tempered glass, which is fastened to the underside of the limestone tread above. Brush left a small gap between the bottom of the glass and the surface of the limestone treads to account for deflection—bounce in the treads and stringers. The staircase, which leads from the building's lobby down to the lower level, appears to float in space, but it is supported by a single steel post at the landing.

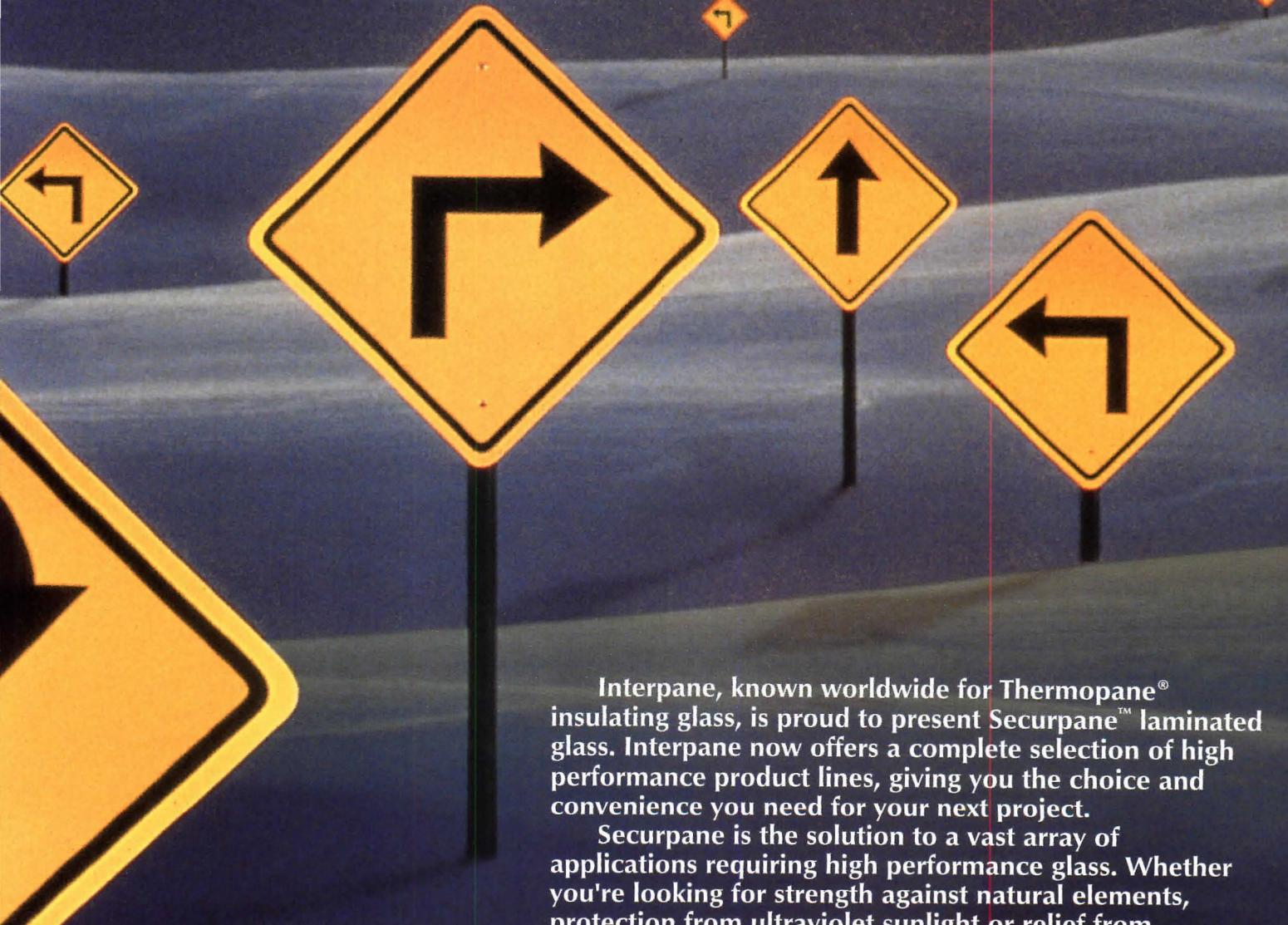
The railings are prefabricated, tubular stainless steel. This was the first time Brush had specified a premanufactured system—in this case by P&P Artec. In the past he's had steel railings custom made. "We just found

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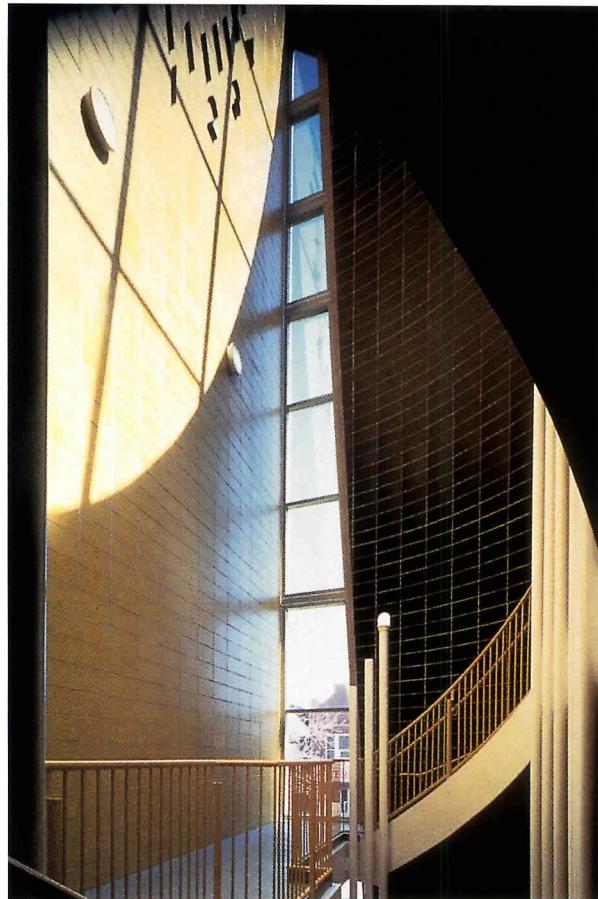
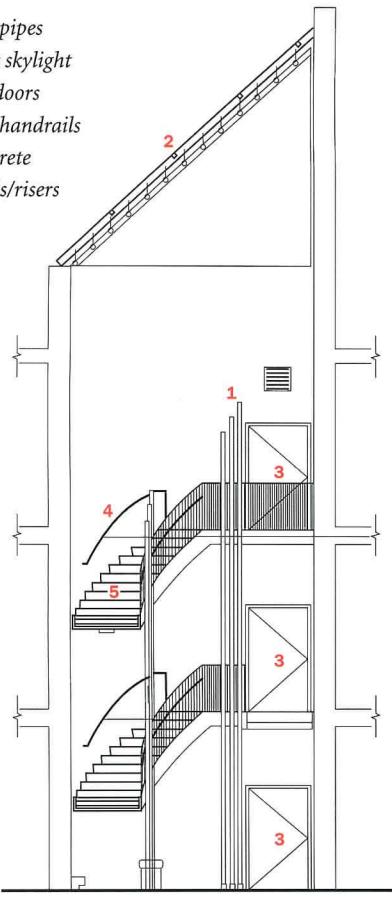
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Sun shining through skylights onto an Aztec-inspired sundial illuminates the stairwell at the Little Village Academy (left), designed by Ross Barney + Jankowski. The stairwell tower is the building's major architectural feature.



that making these from scratch is more expensive and the work is often sloppier. The manufacturers we used here are already tooled up," he says. Using prefabricated elements, however, meant designing to the specifications of the manufacturer. "You almost have to begin with the railing and work backward," Brush adds. It also meant reconciling the structural steel reveals with the polished, rounded finish on the rails, a detail that took extra attention. The balusters run horizontally and are also used along the perimeter of the atrium. Codes discourage horizontal guardrails because children climb on them like a ladder. But since few children would be visiting Harnischfeger Industries, the horizontal rails were permitted.

The ADA requires a "cane detection device" when there's limited headroom, as beneath the landing of a staircase, to prevent a blind person from walking into the obstruction. To fulfill this requirement, Brush designed a wooden bench that mimics the curve of the landing.

Glass was also used to make a more inviting staircase inside a new gymnasium building at the College of Staten Island in New York City. William J. Conklin, FAIA, used eight-inch glass bricks to form the staircase's solid guardrails. Narrow vertical steel straps inside every other mortar joint make the rail strong enough to prevent it from being knocked over by "a group of jocks walking down the stairs," he says. The straps are welded to a steel frame at the bottom and screwed to a wood rail on top.

Because the stairs are designed to carry crowds of spectators to the gym's sports arena, "it had to be strong and secure," Conklin says. "But I also wanted it to be light and buoyant. I wanted it to be like a gracious hand, reaching down from above." To achieve that effect, the architect used red-painted steel rods to suspend the staircase from the ceiling. The treads are 12 inches deep and made of granite; the risers are six inches and made of steel, painted white. The base of the staircase sits on a large block of black granite, allowing the entire structure to float above the floor.

New stairs in an old building

Damaged in the 1989 Loma Prieta earthquake, the 1905 United States Court of Appeals building in San Francisco was in need of a major renovation. The task was given to Skidmore, Owings & Merrill's San Francisco office. Chief architect Craig Hartman, FAIA, created a new skylit atrium in what had previously been a dark interior area. The atrium now serves as a library and reading room for staff attorneys.

"Although our design provided convenient staff access by other direct stairs and elevators, linking all levels of the new structure, the atrium looked empty, instead of like the active hub of a new courts facility," Hartman says. The solution was to add a staircase to create "a visual anchor and hierarchy, and as a way of communicating the idea of connectedness and accessibility in the first moment one encounters the atrium. The poetics of sequentially revealed space that is possible through the use of stairs adds drama to the library." The staircase serves as both a symbolic and a functional device.

Like Michael Brush, Hartman had originally wanted to use open risers to lighten the look of the stairs but couldn't because of ADA requirements. Instead, visitors enter the stairs through a "screen wall" composed of wood and stainless steel. "This wall is punctured with large openings to provide access to the stair and smaller openings to provide captured views into the atrium," Hartman says. The stairs are cantilevered and make one dogleg between floors. Hartman used a glass balustrade, maple guardrails that match the paneling in the room, and steel handrails. The stairs are carpeted to create a quiet, opulent feeling.

Stairs animate the architecture of a space. They celebrate movement and hint at activities waiting on higher levels. "Stairs can be a very powerful architectural opportunity," Hartman says. The old carpenter in Santa Fe surely would have agreed. ■

NEW PRODUCTS

INTERIOR FINISHES: PAINTS, STAINS, AND THE FINE ART OF MIXING

"By the time trends are identified, they are already over," says color consultant Donald Kaufman of Donald Kaufman Color. "The pendulum is always swinging in terms of colors and styles, and lately the swing has accelerated. Ideas get used up so much faster. Basically, I see what everyone is doing and then do the opposite."

This philosophy has won Kaufman work with Richard Meier on the Getty Center; James S. Polshiek on the American Museum of Natural History's planetarium; and the Catellus Development Corporation on the restoration of Los Angeles's Union Station. Though Kaufman was hired to custom-mix colors for these high-profile projects, he and his partner, Taffy Dahl, have also produced a collection of 37 ready-mades for residential work. 800/977-9198. Donald Kaufman Color, New York City and Santa Monica, Calif. **CIRCLE 200**

The stain game

The eight Fun Stains, part of the Wood Classics series of interior stains, sealers, and varnishes from Sherwin-Williams, include green, blue, and red tones. Stains can be applied to nonwoods such as fiberglass, metal doors, or concrete floors to simulate real wood. Also available is a low-odor paint system

called HealthSpec, with a primer that quickly prepares surfaces for topcoating; a semi-gloss sheen; and a flat or eggshell finish. 800/552-7579. Sherwin-Williams, Cleveland.

CIRCLE 201

Color talk

Glidden has four new color groups that have been categorized by mood. The Fresh collection includes light and airy colors; Vibrant is the strongest and most dramatic palette; Warm offers mellow hues; and Calm adds elegance and softness. Other paint resources from Glidden include *Color* magazine; IdeaCards, application photographs of Glidden paints; an interiors brochure; and stripe cards. 800/221-4100. Glidden/ICI Paints, Cleveland.

CIRCLE 202

Odor-free paint

Duron's Genesis is an odor-free paint with no volatile organic compounds; it exceeds the EPA's method 24 test (the government's VOC standard). 800/72DURON. Duron, Beltsville, Md. **CIRCLE 203**

Low-e finish

Radiance, a low-e interior finish from ChemRex, applies, covers, cleans, and looks like latex. But because it is infused with microscopic particles suspended in a

Paint guru Donald Kaufman custom-mixed 150 colors for six of the buildings at Richard Meier's Getty Center. These included 50 shades of white and a variety of colors for the galleries that ranged from deep red to pale neutrals. Kaufman won the high-profile project by avoiding faddish or trendy interior finishes, as he discusses below. Continuing the focus on interior finishes, specifically commercial paints and stains, this page highlights various products on the market, from low-odor paints to colorful stains. Next month, look for the latest on metal cladding.

—Elana H. Frankel, *Products Editor*



transparent binder matrix that enables it to act as an emissive barrier and a radiant energy reflector, Radiance helps reduce heating and cooling expenses. 800/766-6776. ChemRex, Shakopee, Minn.

CIRCLE 204

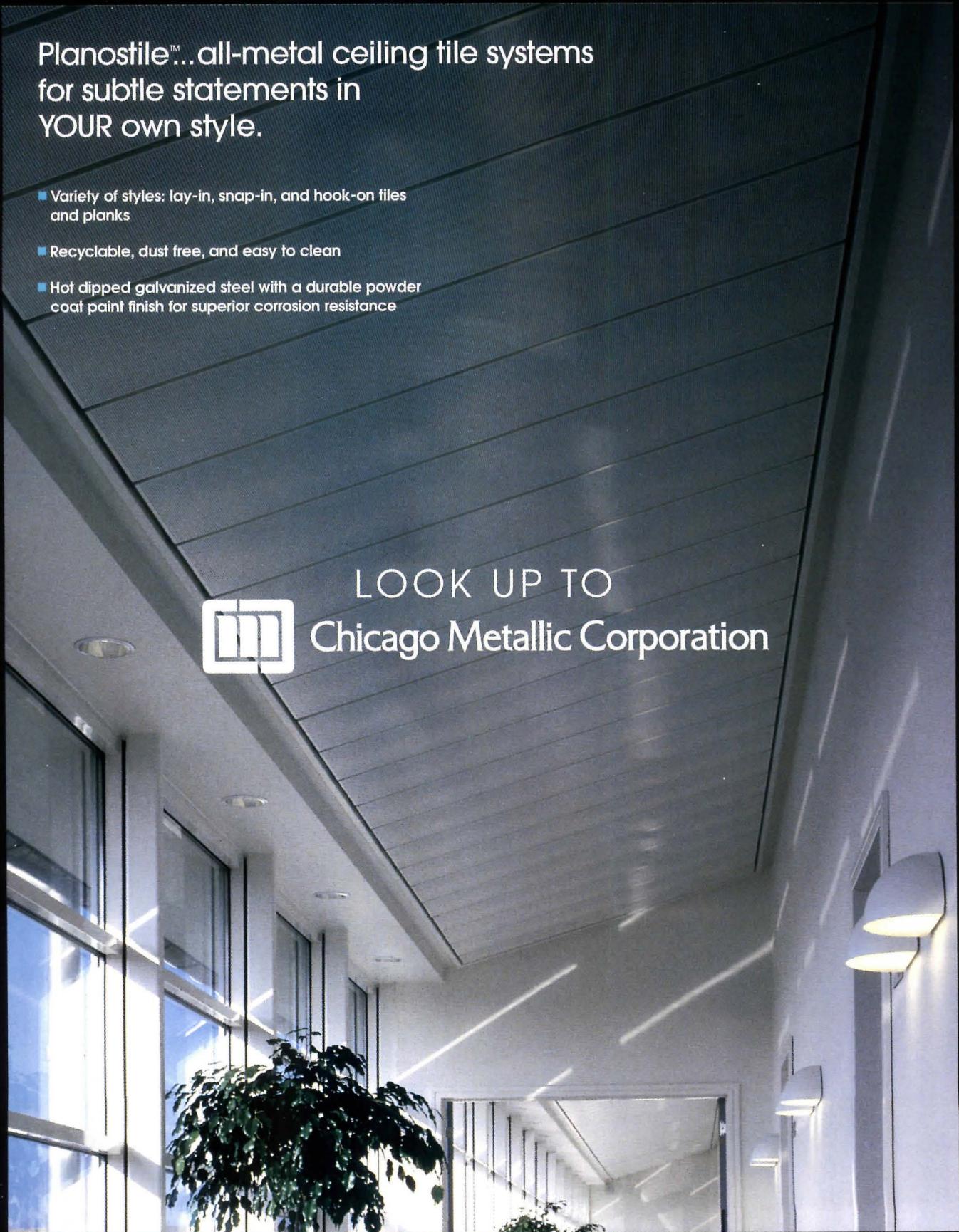
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cured epoxy, penetrates the surface, equalizing low-drying areas and substrate moisture. As a finish coat, M68/M69 protects wood and concrete surfaces against water, oil, greasy soils, salts, and chemicals. M70/M71, the company's 100 percent solids amine-cured epoxy, is nonflammable, low-odor, and low-viscosity. 888/777-3012. Benjamin Moore, Montvale, N.J. **CIRCLE 205**

Fun Stains (left); Vibrant collection (above); wall with and without Radiance (below); Genesis paint (right).





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▼ Have a seat

Smith & Hawken's outdoor bench, hand-hewed by Vermont stonemasons from slabs of granite with a subtly textured surface, measures 20½ by 49 by 21 inches. 415/389-8300. Smith & Hawken, Mill Valley, Calif. **CIRCLE 206**



▲ In Plains view

Looking for an Eames table, molded plywood chair, lounge chair and ottoman, or screen? Perhaps a Nelson platform bench, a Gaston lamp, or a James Irvine sofa? Look no further than Inside Design, Jim Huff's Oklahoma City design resource center. A St. Louis and Seattle transplant with a varied background in industrial design and interior architec-

ture, Huff sells mid-century objects as well as pieces by young American designers like Blu Dot and Karim Rashid. The design center presents a variety of choices in terms of price, aesthetics, and periods, including what Huff calls "now design," to fulfill his goal of creating a niche for "90s living" in the Plains states. 405/840-5858. Inside Design, Oklahoma City. **CIRCLE 207**

▼ Indoors or out

Created by Giati Design president Mark Singer, Azia is a 12-piece collection of teak tables, chairs, sofas, bar stools, lounge chairs, ottomans, and mirrors for interior or exterior use. Seats are available upholstered or with loose cushions. Other custom options include gold- or silver-leaf finishes. 805/965-6535. Giati, Santa Barbara, Calif. **CIRCLE 208**



▼ The modular market

Nuances, a 36-inch textured, loop-pile, modular carpet from Milliken Carpet Commercial Markets, is available in three designs—Ornamental Terrace, Weathered Mosaic, and Herbal Array—and ten colors. The carpets are constructed of 26-ounce DuPont Antron Legacy nylon. 706/880-5511. Milliken, LaGrange, Ga. **CIRCLE 209**



▲ Upholstery chic

In keeping with their corporate ideal of sustainability and industrial ecology, Guilford of Maine, a division of the Interface Interior Fabrics Group, has reintroduced its FR701 panel fabric with 100 percent recycled content and new colors. The fabric is also produced using more sustainable manufacturing practices. 207/876-3331. Guilford of Maine, Guilford, Me. **CIRCLE 210**



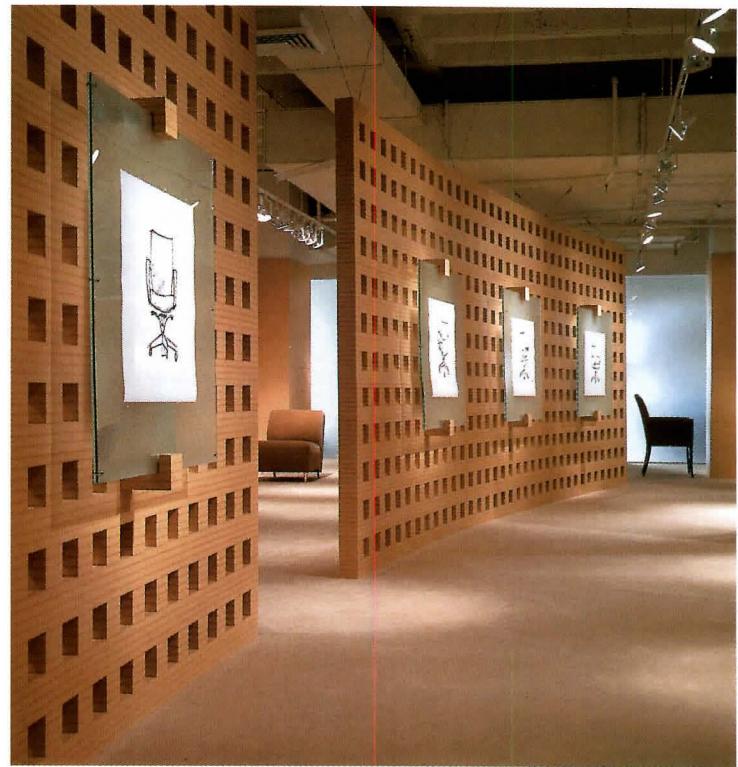
► Poufs, pods, and UFOs

Brueton Studio's UFOs (Unidentified Flying Ottomans), designed by Jaime Bouzaglo, debuted at Chicago's NeoCon. They are fully upholstered and have five cylindrical steel legs with an Argento finish. 800/221-6783. Brueton, Springfield Gardens, N.Y. **CIRCLE 212**

▼ Au natural

Keilhauer's new environmentally friendly Chicago showroom, designed by Michael Vanderbyl, features surfaces of a one-inch-thick medium-density fiberboard (MDF) called Trupan. Fabricated from

wood harvested from sustainable Chilean forests and distributed by Tumac Lumber, the MDF is also manufactured in a two-inch thickness. The material has finer fibers than particleboard. 425/258-2217. Tumac Lumber, Everett, Wash. **CIRCLE 211**



PRODUCT BRIEFS

▼ Acoustical finish

The International Cellulose Corporation's spray-applied acoustic ceiling treatment, SonaSpray, was used on Monona Ter-

race in Madison, Wisc. A $\frac{3}{8}$ -inch application to over 109,000 square feet gave the facility a noise reduction coefficient of .75. 800/444-1252. International Cellulose Corporation, Houston. CIRCLE 213



◀ Sliding doors

YKK AP America has introduced a heavy-duty, hurricane-resistant sliding door system for commercial property, YSD 400. The doors are shipped knocked down and YKK AP provides the necessary hardware. Transom frames are available to accommodate taller openings. Curtain-wall and sliding-window applications are also available. 800/955-9551. YKK, Atlanta. CIRCLE 215



► Effective communication

For presentations, Egan's Team Board combines whiteboard and computer technology with an interactive touch screen, a data projector, and a pressure-sensitive surface that allows your finger to act as a mouse. The Team Board can be flush mounted with wall brackets or hung on a track system. 800/263-2387. Egan, Woodbridge, Ont. CIRCLE 218



► Solar electric roofing panels

Uni-Solar shingles are laid out and nailed onto a roof like conventional shingles. Shown here is the Atlanta Southface Energy and Environmental Resource Center's roof covered with Uni-Solar shingles in a grid-connected system configured at 48 volts DC, using a 4,000-watt inverter. The total capacity equals 2 kilowatts DC. The Uni-Solar system powers a demonstration home and the center's offices. 888/UNI-SOLAR. Troy, Mich. CIRCLE 219



▲ Brewing services

DME's new 5 BBL Natural Brew system is designed for small start-up brew pubs or existing restaurant retrofits. It is fitted with polished stainless-steel piping (a copper-clad finish is also available) and is

prewired to one junction box. The system is designed for easy cleaning and includes pump starters. Five barrels of beer are produced every 14 days. 902/628-6900. DME, Charlottetown, Prince Edward Island. CIRCLE 214



▲ Adjustable personal desk

The Biomorph interactive desk is ergonomically designed, with multilevel, height-adjustable work surfaces. The personal desk shown here is only one of a variety of available styles. 212/647-9595. Biomorph, New York City.

CIRCLE 216

▼ Interior walls

Ytong's autoclaved aerated concrete (AAC) interior wall panels and partition walls combine cement, limestone, sand, and water to produce a lightweight material that meets a six-hour fire rating for eight-inch, non-load-bearing walls. AAC wall panels can be installed in 20-square-foot sections and can be pre- or field-cut. A $\frac{1}{8}$ -inch mortar joint bonds the system, eliminating the need for wood or metal studs. 800/YTONGFL. Ytong, Haines City, Fla. CIRCLE 217





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CIRCLE 220

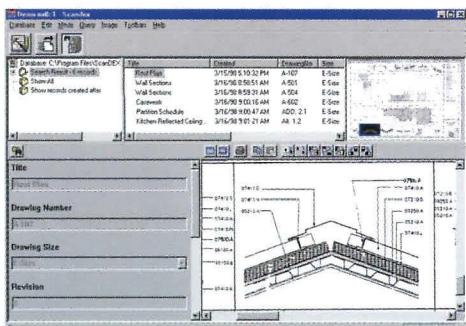


► Basement floor alternative

The dimpled, heavy-gauge plastic membrane Delta-FL is laid directly on concrete slab floors and overlapped by six inches to create a seal. To complete a subfloor, Delta FL is covered with plywood or OSB at the joints and anchored with concrete screws. 888/4DELTA4. Cosella Dörken Products, Beamsville, Ont. CIRCLE 221

▼ Digital document control

ScanDEX, from Ideal Scanners & Systems, is a network/Internet software



package that supports on-line access to large-format drawings and technical documents. It controls the scanning process,

indexes drawings, stores them in a database, and provides search, browse, edit, and tracking capabilities. A special Web server allows archived material to be viewed using a standard Web browser. 301/468-0123. Ideal Scanners & Systems, Rockville, Md. CIRCLE 222

► Lab fixtures

Marklab USA offers a complete line of bright white, powder epoxy-coated laboratory fixtures including water fixtures, needle valves, gas cocks, and fume-hood front controls. The corrosion-resistant fixtures have been tested against substances such as hydrochloric and sulfuric acid and will not fade, discolor, or disintegrate over time.

412/967-1663. Marklab Laboratory Fixtures, Pittsburgh. CIRCLE 223



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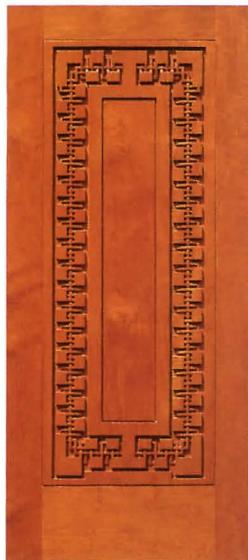
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**▲ The doors**

The Geometric II, shown here, is one of three hand-carved teak doors designed by Charles Gardner. Each door receives a branded imprint and edition number. Editions are limited to 45 examples of each copyrighted design. 800/792-3373. New Tomorrow, Garden Grove, Calif.

CIRCLE 224

**▲ Data center**

Panel Concepts has introduced a second generation of TL2 stackable office system products that includes an integrated flat-screen video monitor, a CPU, and a

teleconferencing station, as well as a temporary docking station for laptops. The system accommodates a retrofit. 714/433-3300. Panel Concepts, Santa Ana, Calif. CIRCLE 225

**◀ Floored**

"You can drive a forklift over it," says Matrix's Scott Moore of the company's solid-surface floor and wall tile called Madera. The tiles are 12 inches square, $\frac{3}{8}$ -inch thick, and weigh approximately two pounds each. Colors can be Pantone matched. 905/670-9070. Matrix, Mississauga, Ont. CIRCLE 227

▼ Textured loop carpet

Bolyu, a Beaulieu Commercial brand, has introduced Kinsale, a neutral-style carpet with the look of a knitted sweater, made of 100 percent solution-dyed nylon with $\frac{1}{8}$ -gauge construction. Vertical color variations combine with horizontal multi-level loops to form a small-scale grid design. Coordinated lines include two new Bolyu styles called Bantry and Limerick. 800/451-1250. Beaulieu Commercial, Chatsworth, Ga. CIRCLE 226



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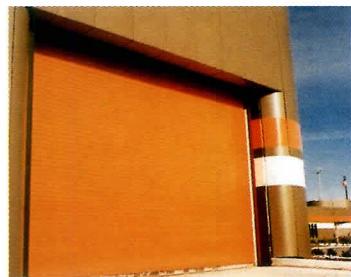
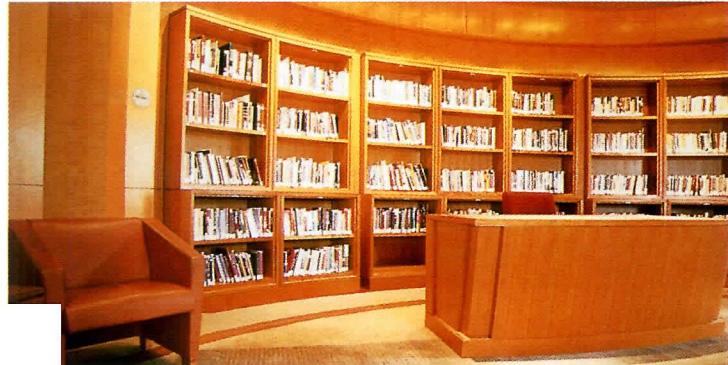
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PRODUCTBRIEFS**▼ Formaldehyde-free MDF**

SierraPine's collection of formaldehyde-free medium-density fiberboard (MDF) was shown at CSI and includes Medite

FR, a Class 1 fire-rated board; Medex, a moisture-resistant MDF; and Medite II, a lower-cost alternative for interior applications. 916/772-3422. SierraPine, Roseville, Calif. **CIRCLE 228**

**◀ Rolling service door**

The reduced number of parts in Wayne Dalton's 800 and 900 series rolling service doors means extended operation, less wear-and-tear and downtime for repairs, and savings in maintenance costs. The doors are engineered to meet a 20 PSF windload. 800/827-DOOR.

Wayne Dalton, Mt. Hope, Ohio. **CIRCLE 230**

**▲ Step on it**

Mercer's safety nosing is manufactured with a two-inch polyurethane insert for slip resistance. Available in vinyl and rubber, nosings accept $\frac{1}{4}$ -inch flooring with a lip and $\frac{3}{8}$ -inch flooring without. Nosings come in seven lengths and 16 colors. Complies with ADA, OSHA, and California Disabled Access codes. 800/447-8442. Mercer, Eustis, Fla. **CIRCLE 231**

▼ On display

ALU, a company that designs and manufactures visual merchandising systems produced in Italy, has expanded its collection. The new Risers group includes freestanding shelves in various heights. New to the table collection are three Concorde tables available in black or chrome frames with solid aluminum tops and micro-veneer wood finishes. The box collection has six new illuminated rectangular designs made of aluminum and Plexiglas. 212/924-8713. ALU, New York City. **CIRCLE 229**

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PRODUCT BRIEFS



► Window options

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CIRCLE 232



► Solid-surface table

Adden's solid-surface table series is made with an acrylic resin that looks like stone. Light gray, charcoal gray, sand taupe, and malachite green are available. 978/454-7848. Adden Furniture, Lowell, Mass. CIRCLE 233

► Seating around

Ten semicircular settees from Weatherend Estate Furniture were recently installed at Chicago's Navy Pier. Each mahogany settee features a custom radius of eight feet. To prevent staining and seasoning, several coats of wood preservative were applied, and all of the joints were structurally reinforced with marine epoxy. The furniture is also available in a high-gloss white or natural teak. 800/456-6483. Weatherend, Rockland, Me. CIRCLE 234



► Bending services

The Max Weiss Company specializes in steel shaping and recently completed the rolling and forming of the structural steel

used in the rotunda at the Teaching, Learning, and Technical Center of Alverno College, Milwaukee. 888/649-3477. Max Weiss, Milwaukee. CIRCLE 235

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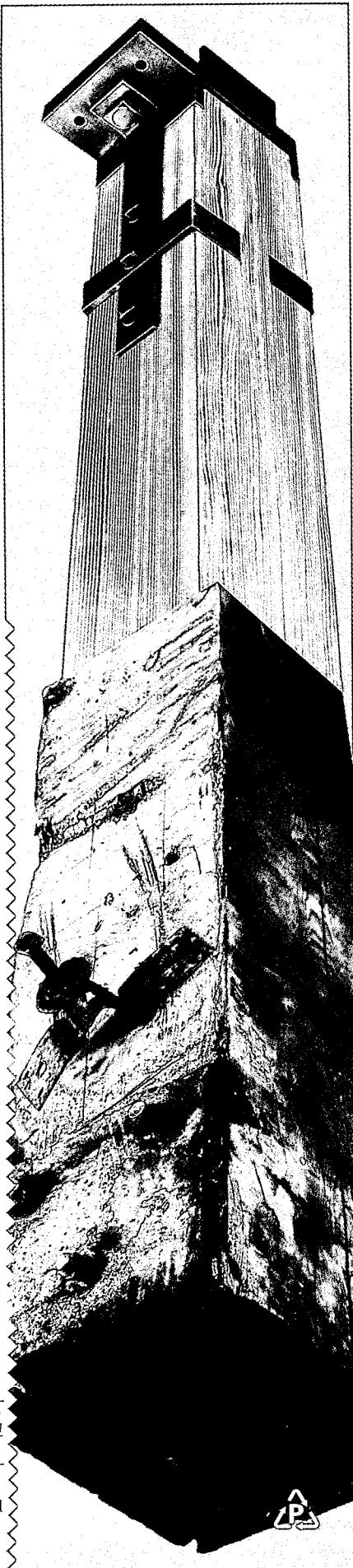
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PRODUCTLITERATURE

Wood foundation

The Southern Pine Council (SPC) has published a fact sheet called "Your First Look: The Permanent Wood Foundation (PWF) System," which introduces basic PWF design features. 504/443-4464. SPC, Kenner, La. **CIRCLE 236**

Carpet design

"Square Feet" is the new catalog for Bentley, Interface, and Prince Street commercial carpets. 800/336-0225. Interface Companies, Atlanta. **CIRCLE 237**

Lighting catalog

The e•klips catalog, available on CD-ROM from Atum Software, presents products from a variety of North American lighting manufacturers. 514/725-5874. Atum Software, Montreal. **CIRCLE 238**

Windows and doors

Weather Shield's new product catalog includes information on the expanded ProShield vinyl-clad wood window and door series. 800/477-6808. Weather Shield, Medford, Wisc. **CIRCLE 239**

Ceramic tile

The US-149 Ceramic Tile Merchandising Items literature sheet showcases the United States Ceramic Tile Company's

samples and displays. 330/866-5531. United States Ceramic Tile Company, East Sparta, Ohio. **CIRCLE 240**

Risk management

Victor O. Schinnerer & Company has published an educational resource for design professionals called "Guidelines for Improving Practice: Managing Risk Through Contract Language." 301/961-9800. Victor O. Schinnerer & Company, Chevy Chase, Md. **CIRCLE 241**

More windows and doors

Eagle's "Giving Vision to Great Ideas" highlights aluminum-clad and wood windows and doors. 800/453-3633. Eagle, Dubuque. **CIRCLE 242**

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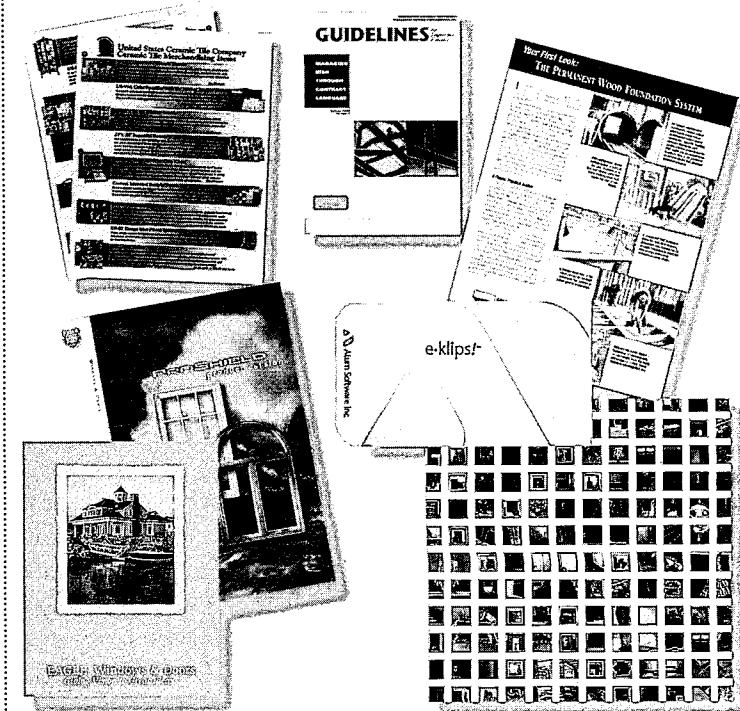
Malnight Furniture
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Asphalt Roofing Manufacturers Association
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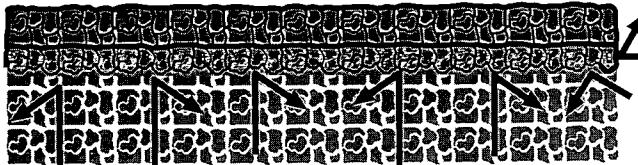
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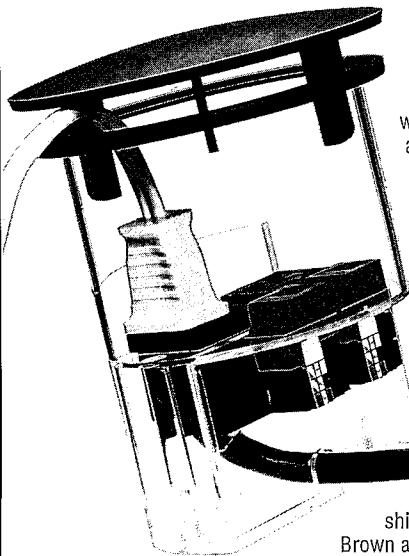
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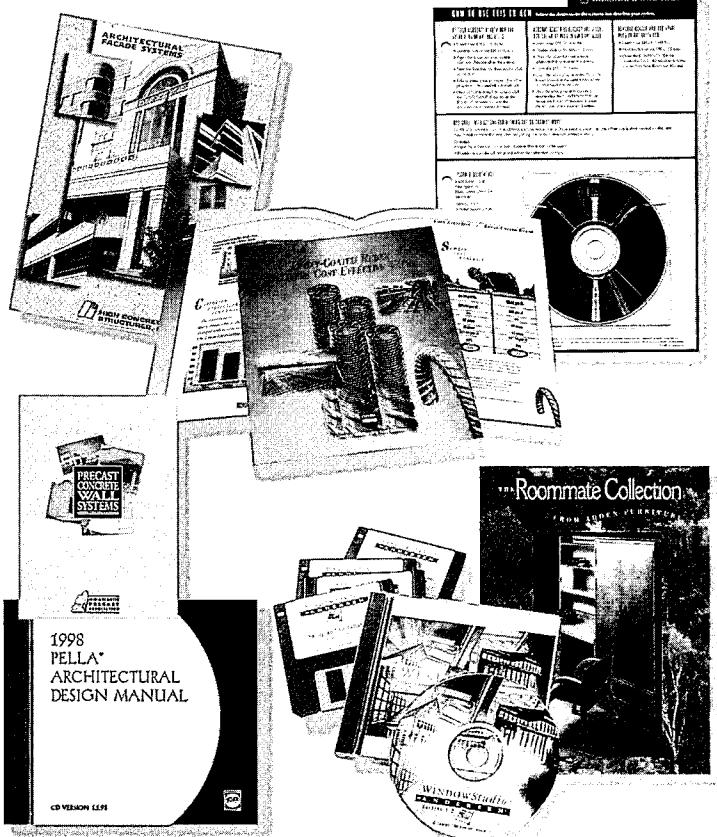
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Award-winning binder

EFCO's Architectural Reference Manual received an honorable mention award in the Construction Specification Institute's Category E competition for specification binders. The two-volume set is also available on CD-ROM. 800/221-4169. EFCO, Monett, Mo. CIRCLE 243

Commercial openings

Andersen Commercial Group's new CD-ROM includes all the information found in its print catalog. This includes the company's architectural detail file—which provides illustrations of how windows and patio doors fit into different wall types, CSI specification information, and joining details—and its 1998 commercial product catalog. 800/426-7691. Andersen, Bayport, Minn. CIRCLE 244

CRSI information

The new eight-page, four-color brochure from the Concrete Reinforcing Steel Institute (CRSI), called "Epoxy-Coated Rebar Delivers Cost-Effective Value," gives an overview of epoxy coatings used in concrete construction to protect against corrosion. 847/517-1200. CRSI, Schaumburg, Ill. CIRCLE 245

Design kit

Pella's Architectural Design Manual includes CSI specifications and residential and commercial product guides. Available on CD-ROM. 800/84-PELLA. Pella, Iowa. CIRCLE 246

Concrete wall systems

The Mid-Atlantic Precast Association has a detailed, full-color brochure demonstrating the durability and various uses of precast concrete wall systems. 800/453-4447. Mid-Atlantic Precast Association, Hockessin, Del. CIRCLE 247

Dorm furniture

A new color brochure by Adden Furniture features solid oak furnishings from the Low Loft Group, designed for residence halls. 978/454-7848. Adden Furniture, Lowell, Mass. CIRCLE 248

Facade systems

The latest literature from High Concrete Structures provides architects with information on facades of various shapes and sizes, as well as weathering analysis and reinforcement recommendations. 800/PRECAST. High Concrete Structures, Denver, Pa. CIRCLE 249

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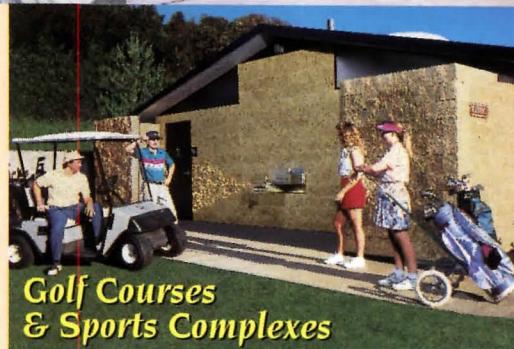


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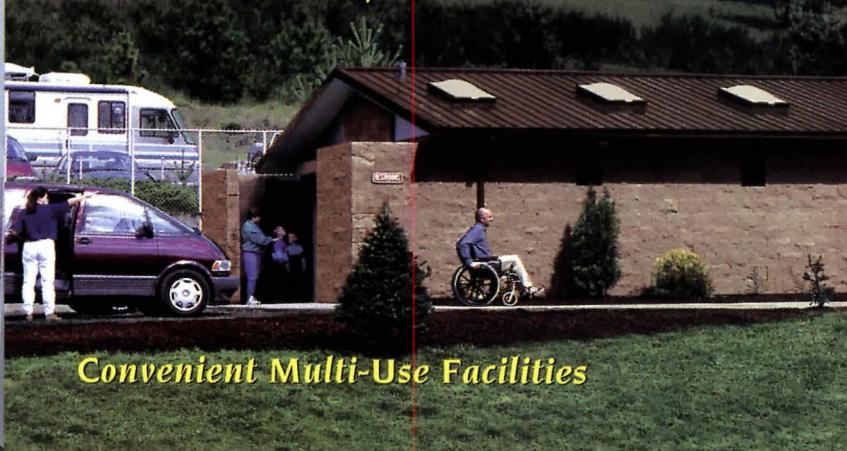
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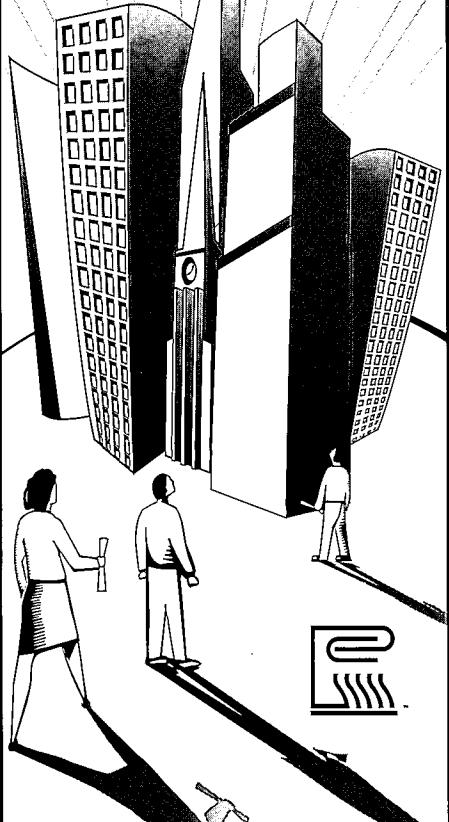
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(continued from page 71)

wood projects in two categories: completed wood buildings and architectural woodwork interiors. Projects must have been completed since 1995. Contact the Architectural Woodwork Institute at 703/733-0600, fax 703/733-0584, or E-mail jdurham@awin.org.

Concept House '99

Submission deadline: October 30

Architects, designers, and product designers are invited to create a scheme for a speculative British terraced urban home, to be located on a brownfield site. The winning project, which must address broad ecological issues, will be constructed as the centerpiece of the 1999 Ideal Home Exhibition. Administered by the Royal Institute of British Architects. For more information, call Louise McKinney, 011/44/958/601526.

Accent on Architecture Grants

Submission deadline: October 9

Matching grants of up to \$3,000 are offered to local organizations for outreach programs that result in an increased public awareness, appreciation, and understanding of how involvement in the design process can enhance the quality of life in a community. Write American Architectural Foundation, 1735 New York Avenue N.W., Washington, D.C. 20006, call 202/626-7300, or fax 202/626-7420 for information.

Tilt-Up Achievement Awards

Submission deadline: October 15

The Tilt-Up Concrete Association announces its sixth annual awards to recognize tilt-up structures that are outstanding in their aesthetic appeal, creativity of design, application of materials, or advancement of the industry. Construction must have been completed by September 1, and the building team must include at least one member of the Tilt-Up Concrete Association. Write TCA, 107 First Street West, P.O. Box 204, Mount Vernon, Iowa 52314, or call 319/895-6911.

Library for the Information Age

Registration deadline: October 15

Submission deadline: January 31, 1999

The first international Web-based architectural design competition, sponsored by the Association for Computer-Aided Design in Architecture, calls for the design of a library that takes full advantage of information technology while still serving the library's roles in culture and society. Proposals may incorporate spatial simulation and/or physical solutions. Open to both student and professional designers worldwide. For information, visit www.acadia.org/competition/.

Design a Conservatory, Win a Conservatory

Submission deadline: October 26

Sponsored by David C. Bishop and Co., this contest focuses on a garden room theme, including the creative use of furnishings in both the interior and exterior landscape. The winner will receive a freestanding 12-foot octagonal conservatory created for this event. Call the Merchandise Mart at 847/729-9812 or visit www.conservatories.net.

Steel Joist Institute Design Awards

Submission deadline: November 13

These awards recognize outstanding design in steel joist construction. Projects, which will be judged on the basis of flexibility, speed of construction, cost, and aesthetics, must have been built in the U.S., Canada, or Mexico within the last three years. Write Steel Joist Institute, 3127 10th Avenue, North Extension, Myrtle Beach, S.C. 29577, or visit www.steeljoist.org.

Rudy Bruner Award for Urban Excellence

Submission deadline: December 18

This award is given to urban places that demonstrate a successful integration of effective processes and meaningful values into good design. The Gold Medal winner receives \$50,000; each silver medalist receives \$10,000. For more information or an application, call 617/492-8401 or E-mail info@brunerfoundation.com.

London AIA Excellence in Design Awards

Submission deadline: January 15

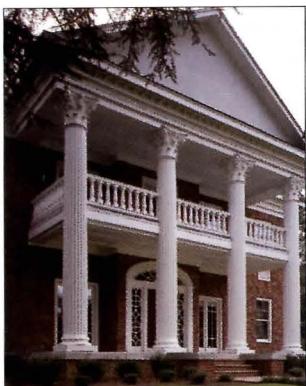
The awards program honors excellence in architectural design for work completed between January 1, 1993, and December 31, 1998. Eligible are projects by U.K.-based architects working anywhere in the world; projects in the U.K. by architects from anywhere in the world; and projects in the U.K. by U.K.-based students. For more information, write AIA, Kent House, 14-17 Market Place, London W1N 7AJ, or fax 011/44/171/636-1987.

James Beard Foundation/Interior Design Magazine Awards

Submission deadline: January 29, 1999

Established in 1995 to honor excellence in interior and graphic design for restaurants, these awards are for projects in the U.S. and Canada. For information, write the James Beard Foundation, 6 West 18th Street, 10th floor, New York, N.Y. 10011 or visit www.jamesbeard.org. ■

Please submit information for events and competitions at least six weeks prior to the magazine's publication date (e.g., October 15 for the December issue).

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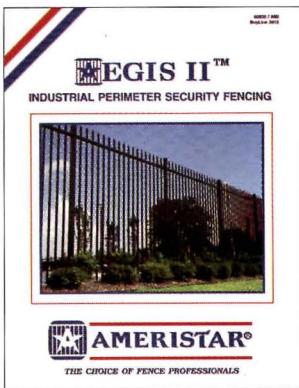
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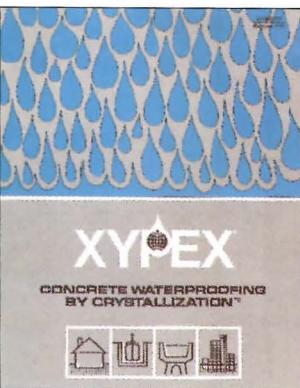
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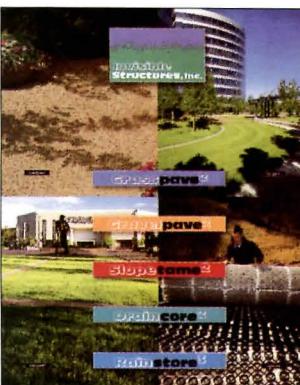
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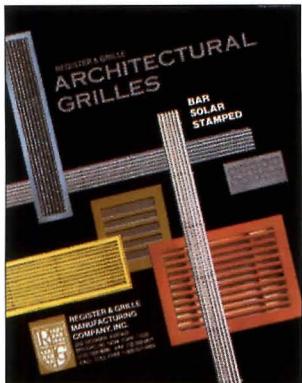
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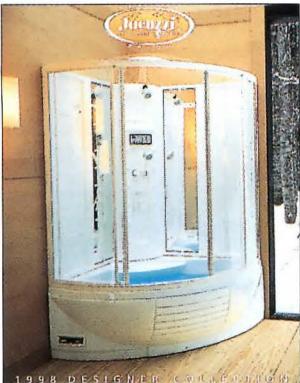


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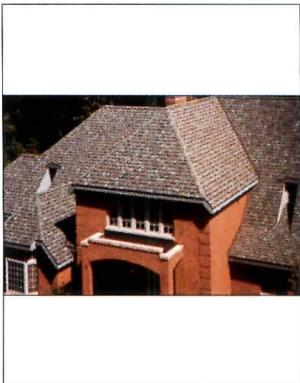


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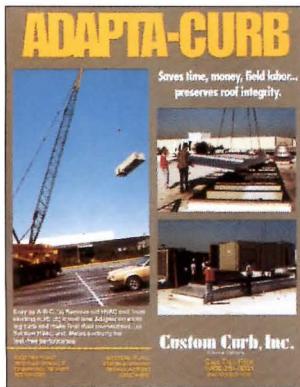


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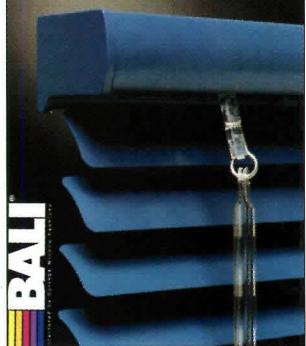
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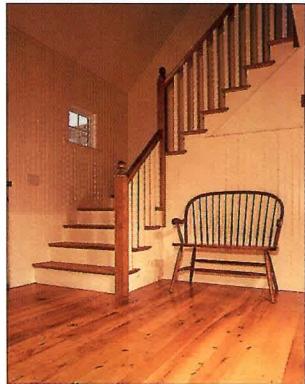


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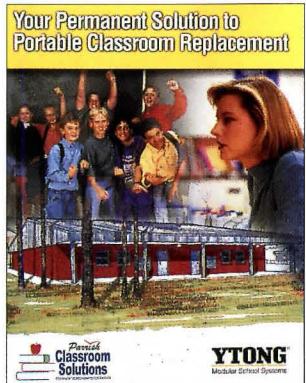
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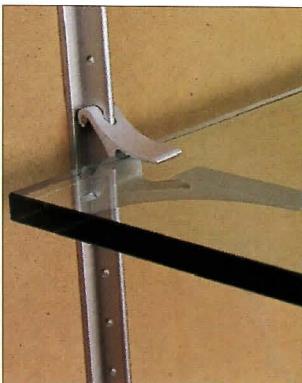


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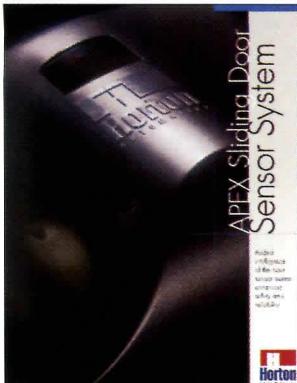


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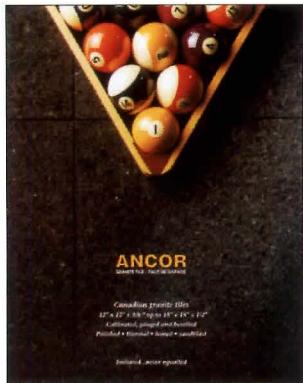


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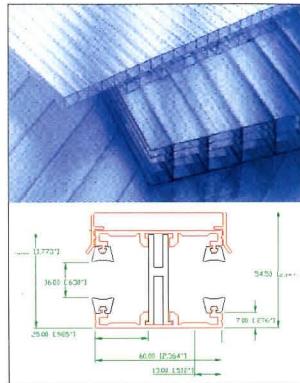


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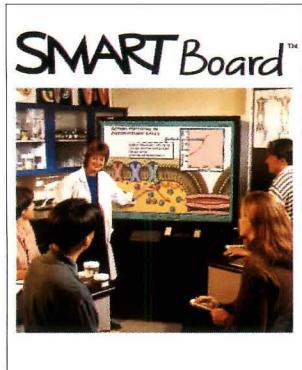


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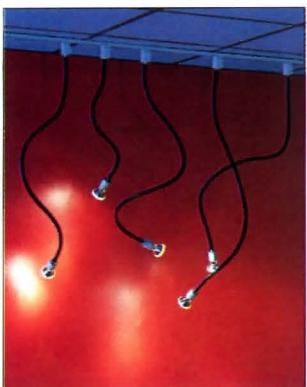
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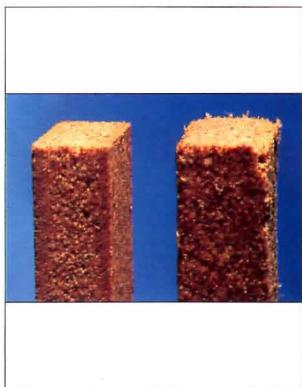


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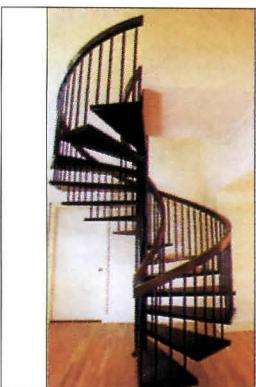


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Structural Steel An Architect's Guide

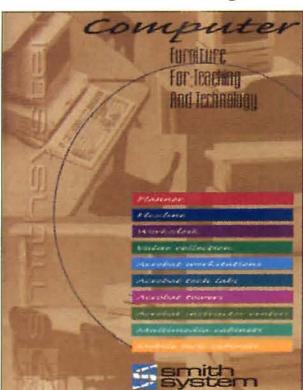


Designing with Structural Steel, A Guide for Architects provides the needed information to design everything from manufacturing facilities to high-rise buildings. Over 300 pages & 100 illustrations, the manual covers design ideas, systems, details, material & a list of industry resources & standards. Published by the American Institute of Steel Construction, Inc., (AISC), & written for architects by practicing architects & engineers. To order call AISC Publications: 800-644-2400 or at: www.aisc.org.

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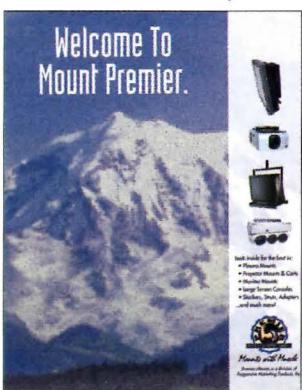


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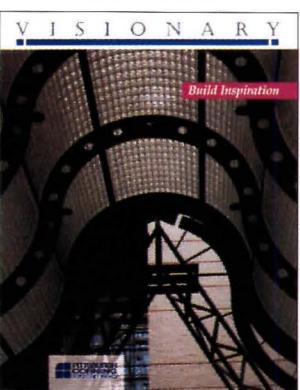


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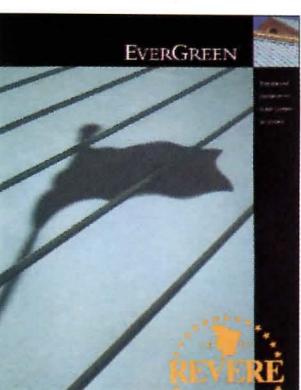


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THE FUTURE At home and adrift in a permanent—and permanently moving—residence at sea.

BY KIRA L. GOULD



In Edward Hale's 1865 story, "Man Without a Country," an extraordinary punishment is meted out to Philip Nolan, who, convicted of treason, curses his country: "Damn the United States! May I never hear her name again!" His jury complies, exiling him to a life at sea, a sentence of placelessness that eventually causes him to long for his homeland.

Things have changed. Today, rootlessness is global and glamorous. With a cell phone, laptop, and E-mail, there is no reason for the new elite (or the middle class) to stay in one place. Two new projects, the *World of ResidenSea* and the *Freedom Ship*, aim to bring a roving lifestyle to the next level, providing permanent—and permanently moving—ocean homes for the wealthy (and even the not so wealthy).

The project that's closest to realization, the *World of ResidenSea* (above), is scheduled to begin construction within months, according to Robert Burnett, president of ResidenSea USA. Bigger than most cruise ships (958 feet long, 15 percent larger than the *QE2*), the *World* will have 250 condominiums and



will dock for a week at a time as it tours the globe, stopping at Cannes for the film festival, for instance, or in Rio during Carnival.

Thought it looks like a cruise ship, Lonnie Schorer, vice president of design for ResidenSea, insists that the *World* won't feel like one. "The atmosphere will be sophisticated and subtle, without the glittery features and fantasy," she says. A team of designers will collaborate with owners on furnished apartments (top right), which are selling (by invitation only) for \$1.2 to \$4.3 million. "These people won't be tourists," Schorer says. "The apartments—there are no cabins—will be their private homes; the public

spaces are their village; and the decks are their neighborhoods. This is very much an urban project."

ResidenSea's *World* could hit the waters within two years, but even if the idea is a wild success, it probably won't have a great impact on traditional real estate trends—at least at first. "It's an interesting idea," comments Karen Danielsen, director of residential policy and

practice at the Urban Land Institute in Washington, D.C., "but it's likely to be a fairly small market. It's basically a new kind of vacation or retirement package. For retirees who consider age-specific communities and even recreational vehicles, it could be another alternate lifestyle. On a ship,

transportation and living arrangements are taken care of. And the lack of local and state taxes will surely appeal to many."

The *Freedom Ship*, planned by Engineering Solutions, Inc. (ESI), takes the concept of ocean living much farther. At 4,320 feet—longer than 14 football fields and nearly five times the size of the *World*—*Freedom Ship* resembles a tanker more than the *Titanic*. Norman Nixon, ESI's CEO and an engineer in Sarasota, Florida, says the design "is fairly simple. It's a flat-bottom barge." The 423 airtight cells will make *Freedom*, powered by 100 diesel engines and 100 propellers, "the safest vessel to ever set sail."

Nixon says he envisions a "real community," not a floating luxury

resort. The superstructure, rising 25 stories above the water, will contain condominiums, stores, light manufacturing, hotels, restaurants, casinos, a library, schools, a hospital, and recreational facilities. "We want to make it an environment where people will want to spend time," he explains. They found, as many municipalities have, that people often associate open space with quality of life. "There will be nearly 200 acres of open space where people can run and ride bikes."

Eventually, Nixon envisions some 100,000 people living on the ship year-round. One of the biggest hurdles Nixon's company faced was bringing down the price of the dwellings. "Living on a ship with a bunch of rich people would have been a very sterile experience," he says. And though there won't be rental units, condos start at \$100,000. "We have teachers and nurses who are interested in working on the ship and those folks need to be able to buy there."

Will the *Freedom Ship* be built? Compared to the cruise-line efficiency of the ResidenSea effort, Nixon's floating utopia seems a long shot. But if interest begins to translate into property contracts, *Freedom* could move forward; Nixon is hopeful that construction will begin this year. The magnitude of such a project's costs and complexities makes the risk of oceans becoming clogged with floating cities—leaving the brick-and-mortar ones empty—seem minor indeed. ■

Kira L. Gould is a freelance writer living in New York City.



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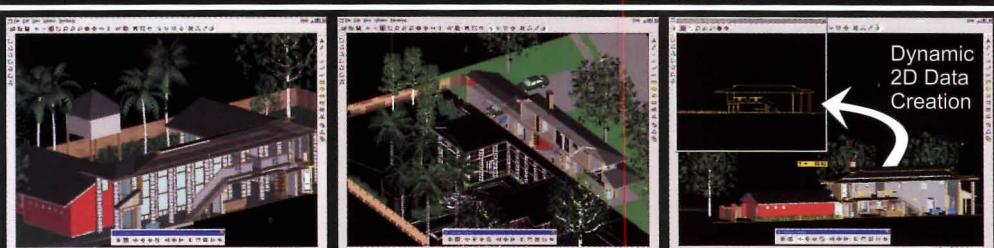


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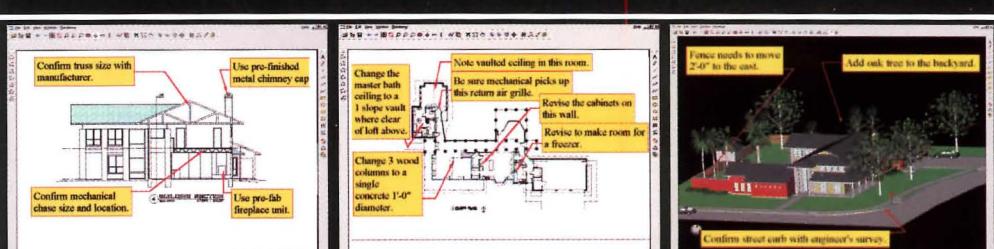
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