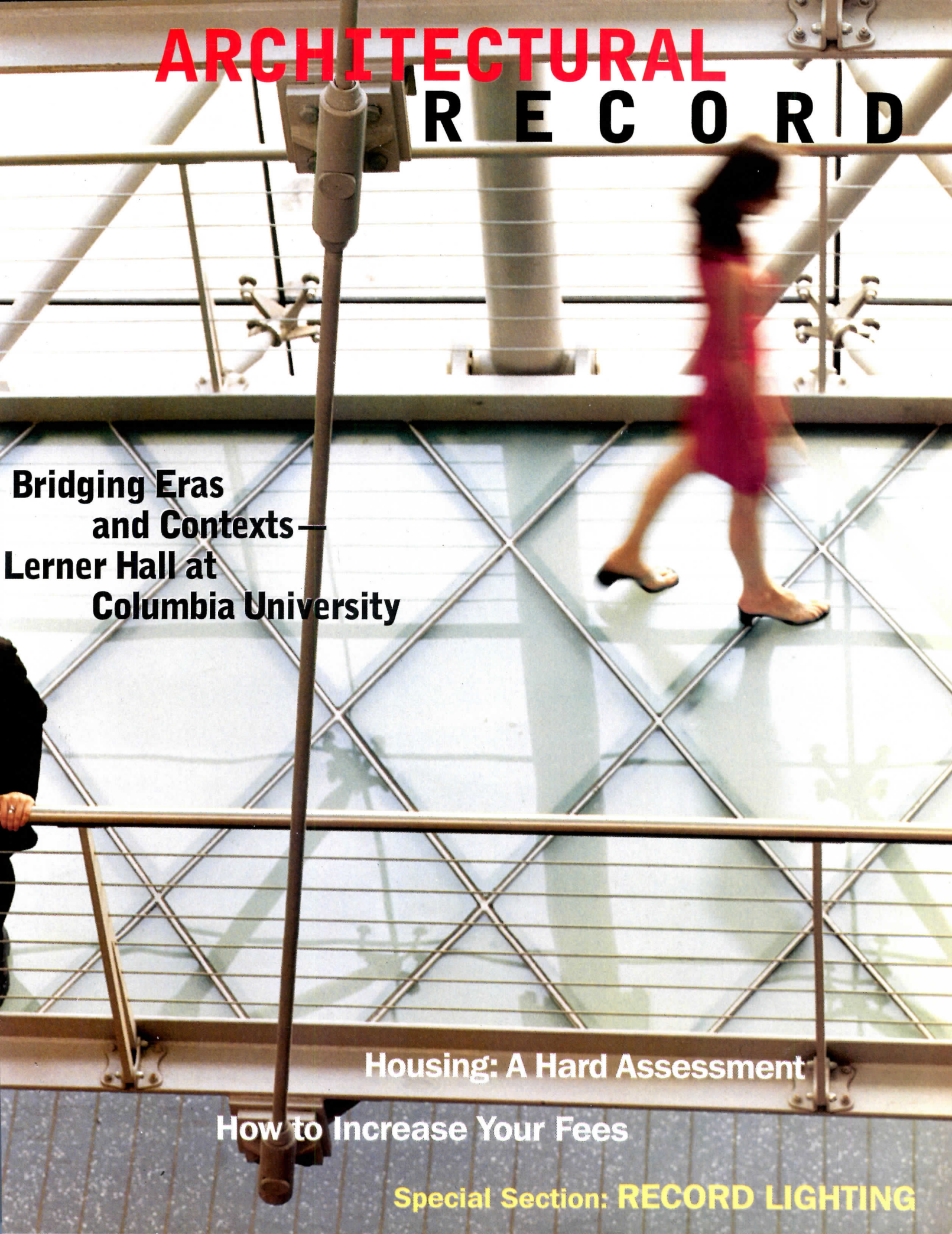


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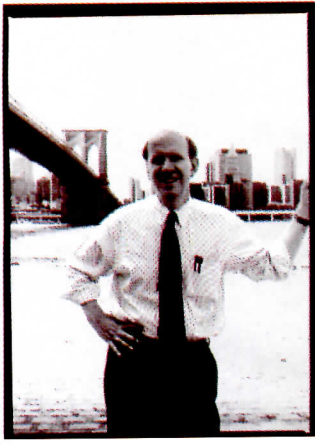
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## EDITORIAL

## Who Speaks for Architecture?

BY ROBERT A. IVY, FAIA



**T**he public doesn't understand architecture. They find the subject overly technical, difficult, or esoteric, we are told, and therefore fail to realize the value it brings to our daily lives. In fact, most people experience architecture as immediately and directly as running along Chicago's lakefront or walking into a school lobby. Architecture surrounds us, protects us, and sometimes makes us mad. Why, then, do we say so little about it outside of professional journals?

Traditionally, newspapers have assumed the role of forum, employing critics who sparked conversation that rebounded across the country in city halls and around kitchen tables. With the exception of a few major metropolitan areas, however, newspapers have shunted aside meaningful architectural criticism, replacing it with "lifestyle" stories tinged with blandness or relegating all building to the real estate section, as if controversy might anger readers or advertisers. We are poorer for their retreat.

Other media offer little comfort. The paucity of meaningful discussion about the public realm comes at an ironic moment when newsstands are exploding with niche publications related to the quality of private life, from *Martha Stewart* and the shelter magazines to carpentry. Except for Charlie Rose, television presents an array of feel-good and how-to programs, but they are home-centered. Web sites, sprouting out of thin air, offer an energetic, democratic alternative, but the unedited content can be merely cranky or verbose.

Who then takes up architecture's mantle in the larger society? Relatively few institutions disseminate information about the subject. Aside from schools of architecture, art museums have been lonely standard bearers, producing exhibits such as the provocative "Unprivate House" exhibit at MOMA earlier this year. They have been joined by a handful of organizations, such as the National Building Museum and the American Architectural Foundation, engaging architecture as a core topic for widening audiences.

We can look to Canada for a model, where, unique among institutions, the Canadian Centre for Architecture (CCA) in Montreal sets an

ambitious agenda for excellence. Child of the individual vision of founding director and patron Phyllis Lambert, this remarkable museum and study center celebrates its 20th anniversary in November. With unerring aim, fierce intelligence, and personal resources, Lambert has created a home for architecture in Montreal that is broadening and maturing into an enviable international institution.

From its signature building on the rue Baile, the CCA operates at three levels: locally, as a resource for Montreal; nationally, as a focal point for Canadian architecture; and internationally, through publications and exhibitions of architecture, urban design, and landscape studies. Respected scholar Kurt Forster has assumed Lambert's former role as director, overseeing burgeoning programs and extraordinary collections in architectural photography and drawings.

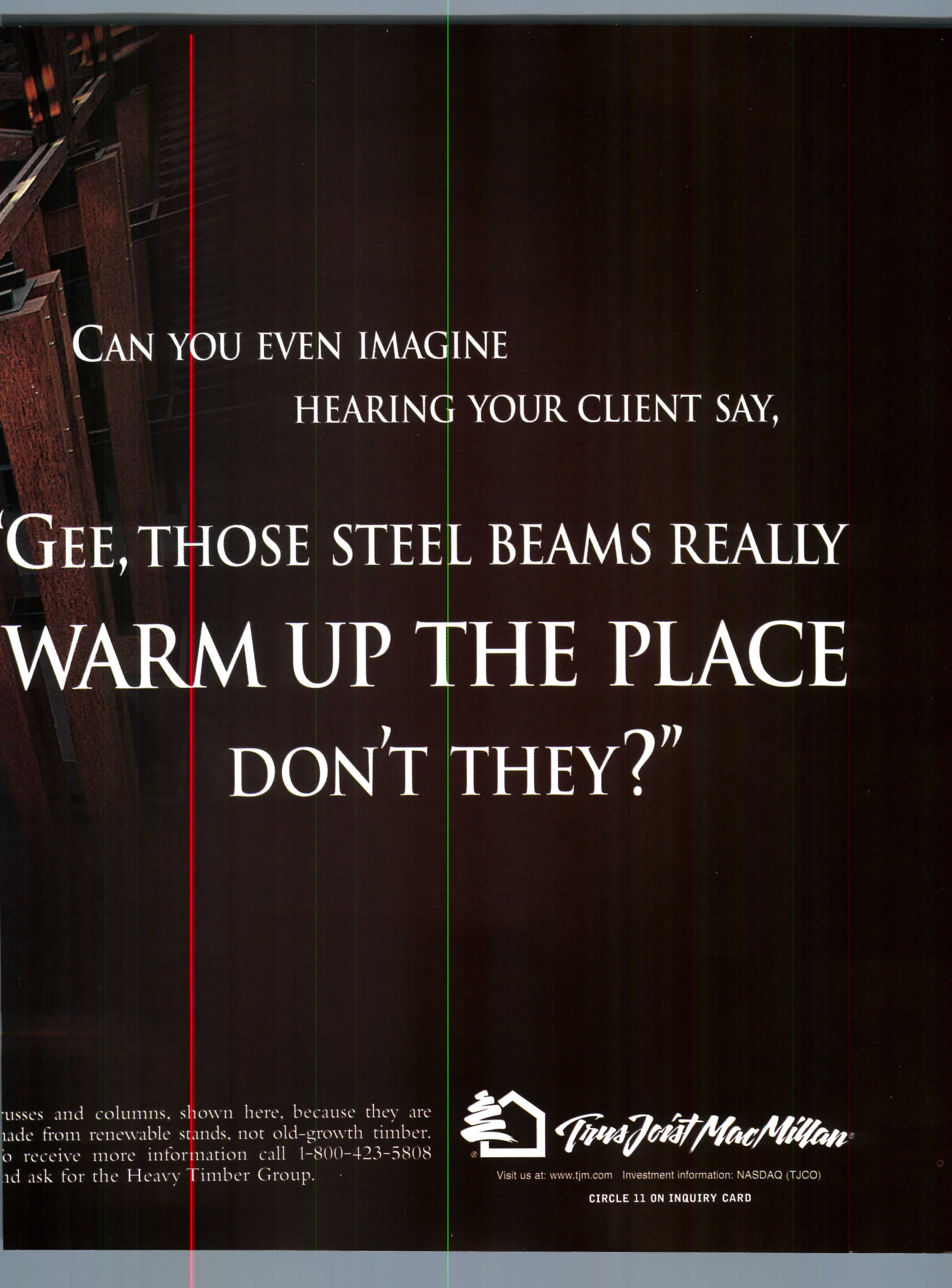
It is stirring public debate. Recently, the IFCCA, the fund-raising arm of the organization, sponsored an invited competition to reconceive a swath of Manhattan's West Side from Eighth Avenue to the Hudson River, an effort ultimately won by architect Peter Eisenman. The point of the exercise was not actual redevelopment but enlightenment, a high-minded civic engagement to provoke conversation about the future of the city. After widespread coverage in the media, the results of the competition were recently mounted in Grand Central Terminal, where legions of the public, those persons who supposedly don't understand architecture, will pass by and see for themselves.

Happy birthday, CCA. Thanks for 20 years of high standards, a point of view, and for trusting the public with the strongest and most challenging of our ideas. We need spirited discussion, more coverage in the general media, and more vital resources like you.



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CIRCLE 11 ON INQUIRY CARD

## LETTERS

**Keeping it real**

I'd like to relate an anecdote about the impact ARCHITECTURAL RECORD had on a client. My firm has been developing a nine-story office building, for which we presented several different concepts. Our favorite was a box defined by a series of masonry columns and panels. Over this box a series of glass plans floated—at times in front of the masonry and in other places behind the frame. It was a scheme that depended on the transparency of the glass to illuminate the underlying structure.

We kept developing the project, reducing the number of schemes at every presentation. Despite the preference for more conventional approaches by the developer, we kept "our" scheme alive.

Recently, we had another design meeting. Walking in, we were prepared for another battle to save our design. But the developer

dragged out ARCHITECTURAL RECORD and pointed out the two Herzog & de Meuron buildings [August, page 82]. He gave us a look that said, "Now I get it."

Thanks for performing an invaluable service to our design work.  
—*Joseph Valerio, FAIA*  
*Valerio Dewalt Train Associates*  
*Chicago*

**Hey, leave those schools alone**

Regarding "Back to School" [September, page 112], what frustrates me most about the critics of architectural education is the presumed responsibility they place on the architectural academy to produce profession-ready graduates. This has never been the role of our accredited programs in colleges and universities nor should it ever be.

It is the role of the academy to create critical thinkers equipped with the sensibilities and skills to become architecturally minded problem solvers. Such a position on the part of the academy has not

only yielded incredibly capable aspiring architects, but also capable individuals who ultimately pursue sibling design disciplines.

The profession must realize its role and take responsibility to educate recent graduates and interns. (The IDP program, at least in principle, is indicative of this realization.) It would not surprise me if these same critics of architectural education are practitioners unwilling to mentor recent graduates in the name of greater office efficiency and maximum financial profitability.

One must remember that architectural education is the result of both our discipline's academy and profession, together. Each serves a different role and, as such, teaches the future architect in different yet equally beneficial ways.

—*Chris Ford*  
*Richard Meier & Partners*  
*New York City*

**Scholarship down**

Your article on the state of archi-

tectural education [September, page 112] reminded me of teaching site planning at the Pratt Institute. A curriculum committee made up of almost entirely unlicensed, nonpracticing architects decided to get rid of the required course.

There would be no instruction at all in the undergraduate program about environmental issues, zoning, or site infrastructure that architects face every day. One member of the committee thought site planning meant planting trees after a project was completed. I guess we might as well get used to the fact that academics will always control what's taught in architecture schools.

—*Charles Belfoure*  
*Westminster, Md.*

**History never repeats**

Your August news story "Paul Allen Stakes a Claim on an Old Seattle Neighborhood" [page 57] underscores the problem that historic districts are experiencing. Our architectural heritage is under pressure

## YOU THINK YOU HAVE THE COLD HARD FACTS.



Your choices are limited. The budget can't support your imagination. The future looks exactly like the past.

from quick-buckers, short-sighted developers, and inexperienced designers. Why was it necessary for Allen to have a super modern facade in a period neighborhood? Is it ego, chutzpah, or ignorance of what a historic district entails that rammed an out-of-context edifice down the throats of Seattle's citizenry? Shame on Seattle's leaders for not living up to their mandate and allowing this to transpire and shame on ARCHITECTURAL RECORD for celebrating it.

—William Kahn  
*Architectural Renaissance  
 Watertown, Mass.*

**Nostra-dome-us**

The story "Retractable Roofs: The Cutting Edge" in your August issue [page 112] mentioned the technological advancements of American facilities, but there was no mention of the Skydome in Toronto, which predates all these by 10 years and is still a first-class facility for sports and entertainment. It would have been relevant to show how these

locales compare to the Skydome in style and design, because they are all reinventing the wheel when it comes to domes.

—Andrew Robinson  
*Toronto, Ontario*

**Leave criticism to clients**

Your September Mentors column [page 28] by Andy Pressman and the article on Education ["Back to School," page 112] struck a chord with me. In my opinion, both missed the fundamental essence of what we do as architects and how we should be educated.

What our firm's clients think about us, and their praise or criticism, means a lot more than the opinion of other architects and the esoteric elitist opinions of academics that have never had to meet a payroll or deal with building code officials. Neither the column nor the article discussed the relationship between architects and clients in a meaningful way. The answer to "Why do clients hire architects?" is a

fundamentally important question that should shape the education, career, and practice of an architect and his or her firm. We deal with this every time we submit a proposal and go to a selection interview. It may sound simplistic, but we think clients generally hire architects because of their reputation for exercising good judgment in three areas of planning logic, i.e., functional, economic, and aesthetic. Every decision we make about a project falls into these three categories. This is not an easy way to practice architecture, but it is an effective way to structure the need for "self-criticism" discussed in the column. Professional egos, a craving for critical acclaim, and insensitivity to our client's objectives will prevent this magical process from happening.

I have been a licensed architect for 40 years and a partner in my own firm for 20 years. I know that this process works and that it is an incredibly satisfying way to prac-

tice our wonderful profession.  
 —Tom R. Glover, AIA  
*Oklahoma City*

*Andy Pressman, AIA, replies: I greatly appreciate Mr. Glover's sensitivity in valuing the opinions of his firm's clients. There was no intention, however, to address the issue of architect-client relations in this column. If Mr. Glover is interested in pursuing my analysis of the topic further, I would recommend my book The Fountainheadache: The Politics of Architect-Client Relations [Wiley, 1995]. This volume describes the importance and potentials of evolving relationships between architects and clients and concludes with recommendations for architectural education in professional practice and design studios. ■*

*Letters may be E-mailed at www.architecturalrecord.com by clicking on News/Features/Dialogue. RECORD may edit letters for grammar, style, and length.*

**THINK AGAIN.**



Dagmar B. Epstein, AIA CCS, Architect

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CIRCLE 12 ON INQUIRY CARD



# SPEAK OUT Architects and planners concerned about the spread of sprawl should pay close attention to Portland.

BY TED KATAUSKAS

*Ted Katauskas is a writer with an interest in alternative architecture. He is based in Portland, Ore.*

Everyone is talking about sprawl. Al Gore invokes its menace in his proposed "smart growth" initiatives. The topic promises to figure prominently in the next presidential election (last November, voters approved nearly 200 state and local antisprawl ballot measures). Cities across the country are proposing growth boundaries. But how can architects follow through on these well-meaning ideas? All eyes should turn to Portland, Ore.

Gary Reddick, chief executive of local firm Sienna Architecture Co., has built a practice around high-density development in Portland, a city that's had an urban-growth boundary in place since 1973. As other cities erect growth boundaries, forcing developers to redirect their focus from suburbs to inner cities, it will become increasingly critical for architects to find innovative ways to plug "holes in the urban fabric," as Reddick puts it. "Cities are finally realizing that in their rush to get out to the edges, they've left a lot of parcels either undeveloped or underdeveloped."

Not so in downtown Portland, where the laserlike focus has been on the inner city for more than a quarter century and the greatest architectural challenge is to find new space in a tight context. Reddick is something of a whiz at it. Not long ago, while driving through Northwest Portland, an upscale inner-city neighborhood populated mostly with Victorian single-family homes, Reddick spotted a 100-by-200-foot parking lot outside a small medical building and envisioned a 60,000-square-

foot, four-story condominium complex with underground parking. To help convince the hesitant property owners that his vision made sense, Reddick's firm agreed to put off full payment for its services until the project was completed and the first 10 units were sold. And to satisfy the locals' desire to preserve scale, Sienna faced the condominium with a row of less intrusive two-story townhouses.

"A surface parking lot is an antiquated way of thinking, a suburban manifestation," explains Reddick. "We're looking for sites like these and developing them, so the doubters can touch and feel them and say, 'So this is how you do density.' As cities densify, architects need to lead the way not only as designers, but also as educators, coercers, counselors, wringers of hands, and sometimes developers."

## **An eye for experimentation**

Reddick admits his firm's 20-odd high-density projects in progress are "reality-based," and "hardly experimental," due largely to the fact that they involve more bureaucratic haggling and financial risk and cost more to design and build than traditional structures. But at Portland State University, Clive Knights, an associate professor of architecture who teaches undergraduate seminars on high-density design, delights in allowing students the luxury of dismissing such concerns. As a result, Knights says, he sees forward-looking, high-density designs that practical-minded professionals like Reddick might not have considered.

Recently, Knights had students design detached three-bedroom, two-bath speculative single-family homes that could be built on lots as small as 25 by 100 feet—lots often left undeveloped because they are either deemed unsuitable for condominiums or too small for the scale of single-family homes found in developers' plan books. The submissions ranged from Charles Duncan's utilitarian Datum House, a two-story starter home designed to be built in increments, to Zeljko Grahovac's schizophrenic Module House, a three-story cylindrical lodge connected via an outdoor staircase to a ziggurat-like rectilinear studio and garage.

"In Portland, if you weren't doing four- or five-story condominiums or rowhouses with big garages, there was nothing in between," observes Knights. "There needs to be much more exploration of what can be done. The fact that Portland has legislated that it will grow through densification rather than expansion makes this city an ideal laboratory for the architecture of future urban development." ■

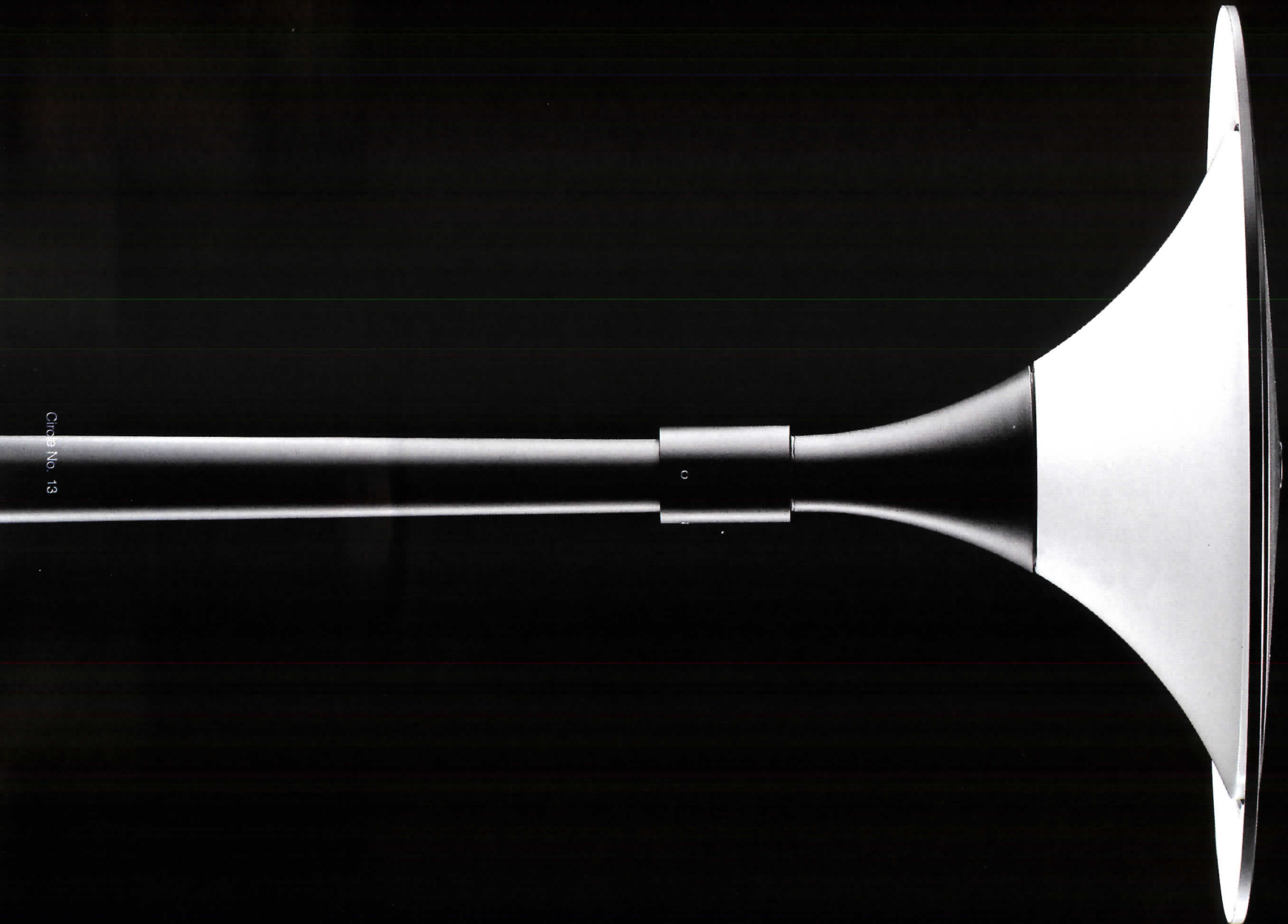
**Contributions:** *If you would like to express your opinion in this column, please send submissions by mail (with a disk) to Speak Out, Architectural Record, Two Penn Plaza, New York, N.Y. 10121; by fax to 212/904-4256; or by E-mail by visiting [www.architecturalrecord.com](http://www.architecturalrecord.com) 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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Circa No. 13

# MENTORS Good architects approach each challenge with a project-specific solution.

## Client contracts can be dealt with the same way.

BY JOSEPH DI MONDA

*Joseph Di Monda, AIA, has a bachelor of architecture degree from the City College of New York and a law degree from the Southwestern University School of Law. He runs a private law practice in Manhattan Beach, Calif., and can be reached at JDAIA@aol.com.*

As architects, we take pride in designing custom solutions to building challenges, rightfully emphasizing project-specific solutions over one-size-fits-all answers. Nevertheless, we often rely on standard form contracts to define our relationships with clients. Instead, we need to recognize that the first step in the design process should be a well-drafted owner-architect agreement unique to each project.

The construction industry is constantly evolving. Increasing site-acquisition and construction costs have amplified the magnitude of risks. Owners are sophisticated and retain a plethora of experts—from real estate consultants to project managers—to help them understand and deal with these risks. The owner-architect agreement should allocate such risks accordingly; after all, the owner benefits from the project's long-term appreciation and cash flow long after the architect's work is completed.

Architects should consider and negotiate for a clause that limits the architect's liability to a predetermined amount, usually based on the design fee. While some clients may not initially agree to such language, a candid discussion detailing the allocation of risk and its relation to potential profits is often all that is required to convince them. Because the client stands to profit from the project, the client should bear the risk. There are several issues related to a liability-limiting clause that vary from state to state, so be sure to review details with an attorney.

Waiver clauses can also limit the architect's liability. Architects are

under increasing pressure to find new methods and materials to decrease construction costs and, therefore, should negotiate a waiver of all claims that arise from the architect's specification of new or innovative construction materials and assemblies. The risks associated with the use of new materials may be unknown, but the architect may still be found to have breached the standard of care if those new materials and assemblies fail to perform as expected.

Once again, the owner—not the architect—stands to benefit from the short- and long-term savings associated with the use of new materials, making it reasonable to bargain for a waiver of any damages that may result as a consequence of the owner's desire to reap the potential benefits associated with the use of new technology.

A waiver clause should extend to all disputes rising from the architect's reliance on products provided to the architect by the owner's consultants. While the standard AIA B-141 contract states that the architect may rely on owner-provided information, it is silent as to who is responsible in the event that the information is inaccurate.

### Custom fittings

The AIA contract is a great place to start any negotiation. But it can also be a jumping-off point. For instance, the most recent AIA B-141 binds the architect to maintain the confidentiality of the owner's information. While this does not shift risk directly associated with the project to the architect, the ambiguity of the

clause could leave the architect exposed to litigation by an overzealous owner. For example, may an architect provide design services for competing developers? If so, would the work have to be conducted in different parts of the architect's office, using different staff? Because the confidentiality clause's operation is open to interpretation, consider deleting it from the agreement under certain circumstances.

While standard agreements provide excellent outlines, they should be modified to address each party's particular needs and the specific issues of a project. Drafting the owner-architect agreement is like a design problem whose solution is a plan for a continuing business relationship. The plan should anticipate potential disagreements and provide solutions before they become points of contention.

Architects without the luxury of in-house counsel or the ability to have a lawyer review every contract should at least have their owner-architect agreement reviewed on a regular basis. Almost without fail, a well-drafted agreement can increase an architect's profits and greatly improve relationships with their clients. ■

**Questions:** *If you have comments about your career, professional ethics, the law, or any other facet of architecture, design, and construction, send submissions: by mail to Mentors, Architectural Record, Two Penn Plaza, Ninth Floor, New York, N.Y. 10121; fax 212/904-4256; or by E-mail to rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*





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CIRCLE 14 ON INQUIRY CARD

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# PULSE RECORD readers were asked: Have architectural fees kept pace with the increasing costs of personnel and technology?

**No.** Our service level is increasingly set by our competition and our clients, not by ourselves, and we are increasingly out of sync with our costs. Our firm tacitly accepted this outcome by making it our goal to gain "great commissions," as the "Fee Dilemma" article states [October, page 110]. However, even if we could have received the anticipated fees on our projects at the point of negotiation, we would still miss our cost/profit targets.

Architects have a strong propensity to work beyond their means, an approach to service, a kind of AMO similar in function to the one HMOs set for doctors. Professionals of every calling obsess over the quality of what they do and are made to feel guilty about self-imposed fiscal limitations on their practice. Until the codependency that causes clients/commissions to assume the role of enabler is removed, no number of fiscal regimens will prevent architects from abusing their practice at the expense of their business and profession.

—Chris Williams  
Glastonbury, Conn.

## More answers to: Is interior architecture architecture's neglected stepchild?

**Yes.** Interior architecture should be elevated and praised because it has a psychological and spiritual appeal and satisfies the needs of the owner and everyday users of a space. I've heard non-art/architecture minded people communicate their response to great architecture by saying a

building is comfortable only after they had gained access to the interior spaces and garnered a whole experience of a completed process.

—Anthony Brown  
New York City

**Yes.** I've always imagined what must have been an amusing and stressful scenario: The well-to-do, enthusiastic, and well-intentioned client drags the interior designer to the next meeting with the Master. The client introduces the interior designer to the Master: "Mr. Wright, this is my interior designer, who will be helping me with all of the interior finishes and will select all of my furniture. They may also have some suggestions about the layout of the interior spaces."

Architects have sold an entire, and vital, segment of their practice down the river by being less than involved in the interior design of their buildings. It is in the interior that many people experience architecture most intimately. Can you imagine Frank Lloyd Wright, who routinely designed every aspect of his buildings—sometimes down to the place settings for the table—willing to sit still for the idea of anyone else designing his interiors?

Interior architecture speaks to a relationship with space, light, proportion, and an intimate connection to materials that is fundamental to the design and experience of human space. What else is being an architect all about?

—Howard M. Hill, AIA  
Brand + Allen Architects  
Houston

## More answers to: Should architects be more political?

**Yes.** Architects have the unique opportunity (and responsibility) not only to design structures, but also to design society itself. The environments created by architects shape the lives, morals, thought processes, and every other element of a society. So by definition, the architect is shaping the politics of society.

Architects should be ready and willing to step into the shoes of the entire political fray, from the local town-planning board to state and federal positions. An architect's training and thought process is ideal to serve as the basis for making decisions in the political arena. Architects need to retake their place in society as the master builders and developers of society.

—Kevin Jay Walls, AIA  
Hardwick, N.J.

## More answers to: Do American architects have much to learn from their British or European counterparts?

**Yes.** Europeans know that dark interiors with small windows are designed only for structural and security reasons. Europeans do not have the mobility that Americans have. Buildings pass through generations.

British and European architects deserve credit for addressing the real issues, such as daylighting, transparency, human needs and comfort, and timelessness. If these issues are not considered priorities by American architects in the United States, American students will be traveling to Europe to study architectural history in decades to come.

—Suat Gurtan  
Pompano Beach, Fla.

## This Month's Question

### In an era of prosperity, have architects abandoned social responsibility?

The national economy is at an all-time high, and federal and state coffers are overflowing, yet 2.7 million Americans live in public housing—much of which has either been pronounced "severely distressed" or been approved for demolition. And, as reported in this month's feature "Public Housing in 1999: A Hard Assessment" [page 76], the number of affordable-housing projects being built or renovated is not keeping pace with the need. Can architects take any of the blame? Is the profession averting its collective eyes in search of more lucrative or illustrious achievements?

**Fax your response to ARCHITECTURAL RECORD, 212/904-4256, or visit [www.architecturalrecord.com](http://www.architecturalrecord.com) and click on News/Features/Dialogue to voice your opinion by E-mail. Note:** Pulse reflects individual responses to each month's question and is not meant to be construed as formal research.

# CRITIQUE Olmsted's informal landscapes fit far better in a chaotic democracy than their formalist counterparts.

BY WITOLD RYBCZYNSKI

What kind of public spaces suit a sprawling democracy such as the United States?

Thomas Jefferson thought the capital of the new republic should be a modest grid of intersecting streets, but Charles Pierre L'Enfant's scheme, a much more ceremonial and formal plan of vistas and stately avenues, prevailed. L'Enfant's breed of formality in urban design reappeared in the World's Columbian Exposition in Chicago in 1893 and in Daniel Burnham's great Chicago Plan, which inspired the monumental civic centers of the City Beautiful movement early this century.

The formal aesthetic is present in McKim, Mead & White's campuses for Columbia and New York University and in the elegant town plans of John Nolen. It can even be glimpsed in the bleakly Modernist office-building plazas of the 1950s and '60s. The corporate campuses of the 1980s, which sometimes resemble Baroque palace compounds, are more literal in their use of formal devices, as is Friedrich St. Florian's controversial design for the World War II Memorial on the Mall in Washington, D.C. New Urbanist town plans include Burnhamesque axes, crescents, and ovals, albeit on a reduced suburban scale.

As a result, it is not surprising to find formality in the recently unveiled plans for Millennium Park

on Burnham's Chicago lakefront. This \$200 million project, designed by the Chicago office of Skidmore, Owings & Merrill, adjoins Grant Park. According to the *New York Times*, it will be "a conscious continuation of the Beaux-Arts style," with "antique street lights, formal garden paths and fluted columns in a grand peristyle." The centerpiece of the park will be a large, green space called the Great Lawn, an obvious reference to New York City's Central Park. Yet nothing could be more different from the formal geometry of Millennium Park than the picturesque irregularity of Frederick Law Olmsted's and Calvert Vaux's mid-19th-century creation.

## Clashing concepts

The contrast between the two American ideals of public space was brought home to me recently during a visit to Lawrenceville School (near Lawrenceville, N.J.), whose grounds were laid out by Olmsted in 1885. His original plan included a chapel, a classroom building, a headmaster's residence, and several "houses" for the students; Olmsted disliked dormitories. The focus of the campus was a public green, today called the Circle.

In time, Lawrenceville School outgrew its original plan and needed additional buildings. In the 1920s, the prominent firm Delano & Aldrich designed a major expansion south of the Circle. Times and fashions had changed. The new buildings were in the American Colonial—that is, Georgian—style. The new site plan, too, followed a colonial precedent: the College of William and

Mary in Williamsburg, Va. A rectangular depressed lawn (named the Sunken Garden and later rechristened the Bowl) was enclosed by two dormitory blocks, a library, and an administration building. At the head of the lawn, its facade dominated by a pedimented porch, stood a large classroom building.

ment in the Bowl may be preserved," he counseled.

The Circle is different. Despite its name, it is really an irregular shape, dotted with trees and divided by a diagonal footpath. If the Bowl is a nod to Jefferson's "academic village," the unassuming Circle evokes a village in New England. The main



The seemingly haphazard Circle at Lawrenceville School, laid out by Olmsted in 1885, draws people into the landscape.

I was struck by the contrast between Lawrenceville's Bowl and Circle. The Bowl is impressive; its main axis lines up with the temple-porch, while the central entrances to the dormitories create a secondary cross-axis. No pathways mar the perfect green surface. William Delano once complained that students were damaging the grass. "It is hoped that public spirit will make them take a few round-about steps in order that the simple lawn treat-

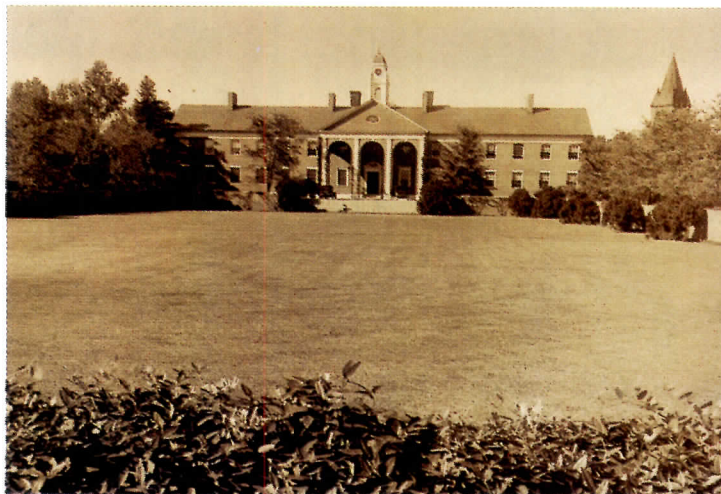
ment entrance drive swings casually around the green without fanfare. The space does not appear designed; on the contrary, it looks almost accidental.

Perhaps that's why the first time I visited Lawrenceville School, without making a conscious decision I found myself strolling across the Circle. I was simply drawn into the landscape. One of the house masters confirmed that the Circle is more popular with students than the

*Witold Rybczynski teaches architecture and urban design at the University of Pennsylvania. His latest book is A Clearing in the Distance: Frederick Law Olmsted and America in the Nineteenth Century.*

Bowl. I could understand why. It is not that the Bowl is intimidating—it is a pleasantly scaled space, the Georgian-style buildings are attractive—but it does not invite our presence. It is a complete “picture,” in Delano’s words.

The contrast between formality and picturesqueness is not merely aesthetic; there is a deep philosophical difference between the Circle and the Bowl. Charles Eliot Norton, celebrated man of letters and distinguished Harvard professor of art, said that the public designs of his friend Olmsted “answer the needs and give expression to the life of our immense and miscellaneous democracy.” Walking through the Circle, I realized that Norton had put his finger on a neglected characteristic of Olmsted’s work. At Lawrenceville, the buildings take their places around the green like friends at a table—a picnic table. Neither the headmaster’s house, nor the main classroom building, nor even the chapel is given pride of



**The formal Bowl at Lawrenceville, while pleasant, does not invite human participation and has proven less popular with students.**

place. Each shares importance—no more, no less—with the student houses. Of course, schools, like society, rely on rules, but the architecture and planning of the Circle do not enshrine or celebrate authority. The Bowl orders space; the Circle accommodates it—and us.

What I suggest is that

Olmsted’s picturesque and informal approach reflects a better understanding of America’s pluralistic, often chaotic society. The certainties of formal axial planning seem out of place in the U.S. because they elevate institutions and organizations above the individual. Olmsted’s is a more republican landscape.

In June it was announced that Frank Gehry would design a music pavilion for Chicago’s Millennium Park and will also be responsible for the design of the Great Lawn. I hope he draws inspiration not from adjoining Grant Park but from another Chicago park: Washington Park. This park was laid out on the South Side by Olmsted and Vaux in 1871. The centerpiece is a vast meadow Olmsted named the South Open Green. Its 100 acres of open turf, larger than Long Meadow in Brooklyn’s Prospect Park, are breathtaking, but the design is simple. The irregular space is surrounded by groves of trees. The ground is nearly level.

No formal geometry circumscribes the meadow. The space is empty, waiting for someone to walk into it. The center of attention is the individual—alone or in groups—as it is in all Olmsted’s public landscapes. Which, in an immense and miscellaneous democracy, is exactly as it should be. ■

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# DIGITAL ARCHITECT Linking software from different vendors will lower costs, ease schedules, and improve the quality of the design and construction process.

BY JERRY LAISERIN, AIA

Within the past decade, computer software has successfully applied cost-and-time formulas to manufactured products. This business-oriented approach is fine for factory-made widgets, but buildings are one-of-a-kind creations, pieced together in the field under varying conditions and from many thousands of parts and raw materials. Letting time and budget drive project delivery means ignoring these variables—and the many opportunities that come with them.

The architecture, engineering, and construction (AEC) industry has its own set of software vendors who understand the complexities of the process and are finding ways to connect all the elements of a project. Doing this successfully, however, means that AEC vendors must find a method to integrate the data contained in the different building models that each discipline develops. Allowing engineering software to communicate with the programs used by electricians, interior designers, and, of course, architects, would streamline the construction process. But making these links is not so easy.

## What is computer modeling?

From basic CAD to the most sophisticated construction scheduling system, all software must achieve one basic goal: to form a bridge between mathematical coding—the language that computers read—and the characters and pictures that

humans can see and understand. When software developers translate descriptions of the real world into mathematical code, they call that process “modeling.” The use of this term by computer scientists confuses architects, who are accustomed to thinking of models as chipboard and foam-core replicas.

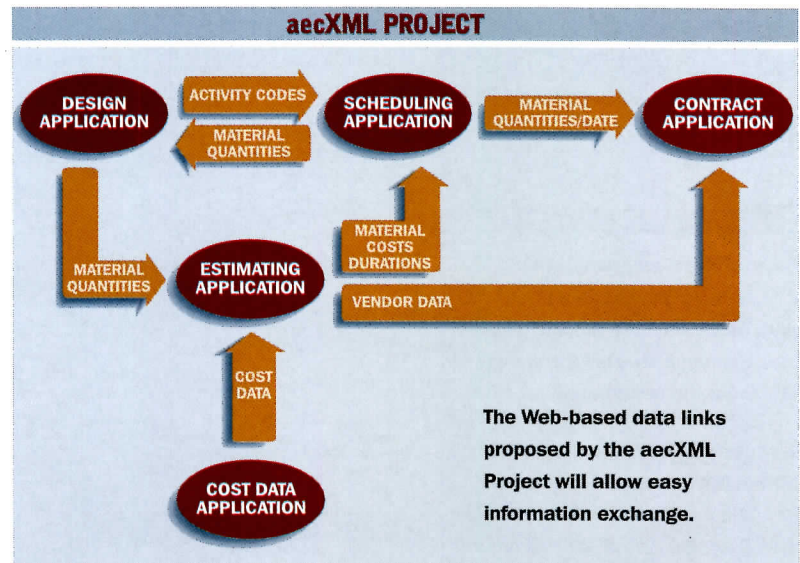
Basic CAD software that produces 2-D drawings is actually a model of the drafting process. Advanced 3-D CAD software creates what some vendors call a “virtual building.” To the extent that such virtual buildings include mathematical descriptions of a building’s geometry and parts, they do correspond to the physical scale models with which architects are familiar. Computer models of buildings, however, also can include the attributes of a building’s components, like the density of the concrete or the fire rating of the partitions.

Other kinds of design and construction software also rely on models, or representations of real-world objects. Specifications software, for example, defines the composition and quality of the parts of a building and often includes descriptions of how to assemble those parts. Estimating software uses mathematical models of the relationships among materials, sizes, quantities, and unit prices. Scheduling software combines representations of material, equipment, and labor resources into time-based models that represent the sequence of design and construction events.

These diverse software models of the same building should, ideally, be capable of communicating freely with each other. But, in most cases, they don’t.

Instead, software packages differ at many levels, including how they name, subdivide, and classify

inated. Architects and engineers could incorporate better cost and schedule information into early design stages, sparing themselves some of the agonies of redesign. Those involved in the construction phase would enjoy faster project documentation and smoother work-



building parts; the ways they organize the attributes of those parts; and their methods for linking parts and attributes. They also differ in the techniques they use to represent parts and attributes. The consequences of all this variation include lost or duplicated information, inaccurately transferred or converted files, and multiple databases of redundant information (the digital equivalent of two partners' Rolodexes containing different phone numbers for the same client). Plus, much time and effort are wasted in checking these possible sources of error.

Everyone would benefit if these communication problems were elim-

flow. Building owners and operators would benefit from more predictable time and cost estimates and would get a useful set of “as-builts,” along with other project information, when the job is done.

## Building connections

Given the potential benefits, it's surprising that so little has been accomplished in linking design information software to costs and schedules—though it is not for lack of trying. Just about every building-product trade association has a classification scheme. In the U.S., most classifications fit within the Construction Specification Institute's

Contributing Editor Jerry Laiserin, AIA, is the interim executive director of the aecXML Project.

Masterformat or the ASTM standard Uniformat II (for classifying assemblies like slabs or interior partitions). Other countries, including Germany, Japan, and Brazil, have their own classification systems, as well.

AEC software vendors have not, as yet, been able to build on these systems. Traditional data-linking tools, like file-conversion programs, are not general enough for

ways to make multiple off-the-shelf software packages communicate using an actual design and construction project—a biopharmaceutical manufacturing facility in Menlo Park, Calif., designed by Flad & Associates, based in Madison, Wis.

Fischer's group linked the building model, created in AutoCAD Release 14 and the ArchT architectural CAD add-on package (now distributed by EaglePoint), to

faster. The schedules that the CIFE demonstration generated uncovered conflicts that might not have been detected otherwise. While Fischer's work [see Digital Architect, August 1999, page 39] provides insight into the interplay of multiple software packages on a real project, it is still based on semicustom interfaces among compatible programs.

### Joining forces

Several groups, including CIFE, are now working on comprehensive systems that allow any design or construction software to operate compatibly. The best known of these groups is the International Alliance for Interoperability (IAI), launched in 1995 by software vendors, building owners, and design and construction firms. IAI is developing industry foundation classes (IFCs) that standardize software objects that correspond to the physical objects in

mous CAD software now bundles the Estimator for Windows program from CMS Estimating. Specifications software vendor ARCOM (MasterSpec), scheduling software vendor Primavera Systems (Project Planner), and cost database provider R.S. Means (CostWorks) have announced plans to link to each other and to Bentley Systems' TriForma CAD software.

### How the Web fits in

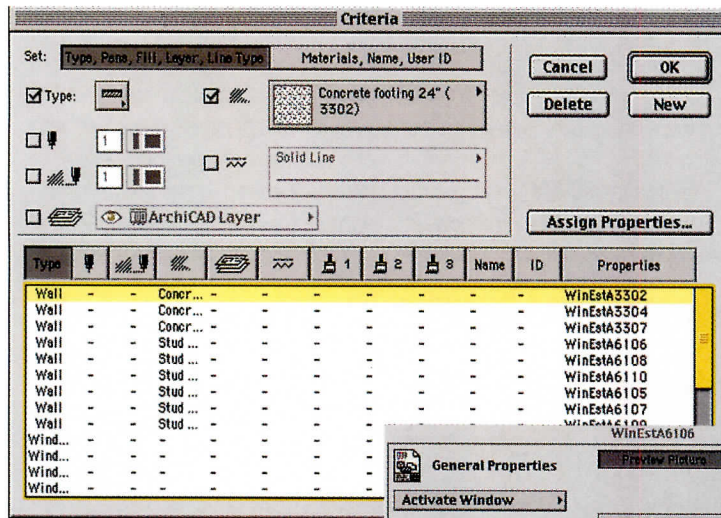
Any discussion of how disparate software programs will communicate must take into account the impact of the Web. An efficient tool for locating and viewing almost any kind of data, regardless of the software that created it, the Web may indeed make it easier for designers and other members of the AEC team to communicate.

The primary language of the Web is HyperText Markup Language (HTML). A newer Web language called XML, or eXtensible Markup Language, has features that HTML does not have, like the ability to describe and classify the data content—not just the appearance—of a Web page.

Dozens of companies, including AEC, will benefit from the data exchange possibilities XML offers. The McGraw-Hill Construction Information Group (which publishes RECORD), Primavera, and Bentley have joined with more than 130 other industry leaders worldwide to form the aecXML Project. The goal is to develop a framework for XML specific to the building and design industry.

The high percentage of overlap between aecXML advocates and IAI members means that the two will likely develop a supportive relationship—perhaps with aecXML serving as the Internet transporter for the IFCs. Regardless, emerging linkages among cost, time, and architecture will enable buildings in the near future to go up faster and more economically. ■

**WWW** For a list of interoperable software vendors go to [www.architecturalrecord.com](http://www.architecturalrecord.com) and click on Digital Architect.



Some software programs, such as ArchiCAD and WinEst (above right), provide built-in links to each other, making it simple to exchange data and avoid redundancy.

the multiple linkages that software vendors want.

As an interim measure, vendors of some of the most widely used software have attempted to forge direct links to one another. Some of these links rely on common file conversions or translations. Others rely on an application programming interface—one vendor publishes a set of software “hooks” to which other vendors write special connection routines that move data between the two packages. But these are still program-specific links that are only valid between specific applications.

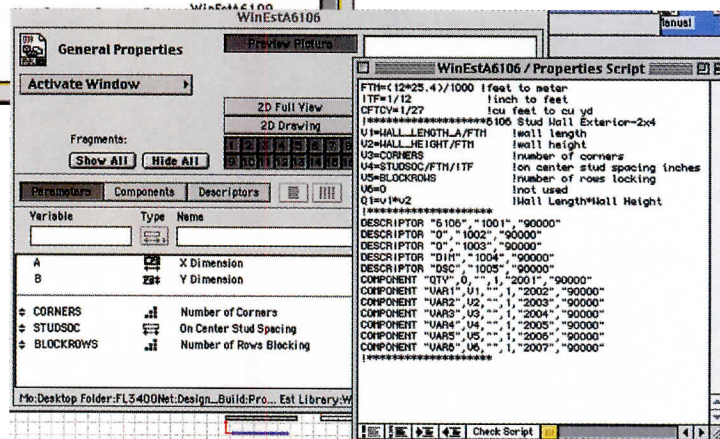
Dr. Martin Fischer and his colleagues and students at Stanford University's Center for Integrated Facility Engineering (CIFE) are pioneers in finding ways to link disparate software programs. Fischer has found

Timberline Precision Estimating software. This eliminated many time-consuming manual steps in quantity take-offs and definition of work packages. A construction schedule from Microsoft Project was linked to the AutoCAD/ArchT model through Jacobus Technology's Schedule Simulator to build a virtual version of the building and identify the most expeditious construction staging. This yielded an informative kind of 4-D CAD (3-D plus time).

The general contractor reported that the cost estimates that were produced came within 5 percent of those prepared by manual methods, but were completed 25 to 50 percent

actual buildings, such as wall assemblies, doors, and windows. Because IFCs are backed by the descriptions and attributes of each building object that they represent, they can be accessed by any IAI member with IFCs incorporated into their software.

But until IFCs are more widespread, many software developers offer their own proprietary pairings. For example, builder-oriented CAD programs like SoftPlan have complete bill-of-materials capabilities built in. Graphisoft's ArchiCAD has its own “object” language, complete with links to WinEstimator's WinEst estimating program. DATACAD LLC's epony-





# EXHIBITIONS At London's Royal Academy, a first retrospective of the work of Sir John Soane reconstructs a career—and a dome.

BY SUZANNE STEPHENS

**“John Soane Architect: Master of Space and Light”** will be on view at the Royal Academy of Arts in London through December 3, after which it will travel to Vicenza, Italy, in March and to Paris in July.

If you're in London before December 3, you should not miss the splendid retrospective “John Soane Architect: Master of Space and Light,” on view at the Royal Academy of Arts. Although this recommendation comes from a certifiable “Soaniac” (see below), pay it some mind.

Surprisingly, this is the first exhibition of the work of Soane, the original neoclassical architect who lived from 1753 to 1837. Assembled by Margaret Richardson, curator of the Sir John Soane Museum, and MaryAnne Stevens, senior curator of the Royal Academy, along with Christopher Woodward and Ptolemy Dean of the museum, the exhibition has been dramatically installed by Piers Gough of CZWG Architects. Gough, who designed the epochal show on Sir Edwin Lutyens at the Hayward Gallery in 1981, has again used the subject's architectural principles to create evocative settings in which to show the various works. While the device could become too cute if the architectural fragments were deployed blatantly throughout the installation, in its current locale, Gough's Soanic display design works well with the smallish scale of the 211 models, drawings, furniture, and architectural objects in the high-ceilinged rooms.

One of the highlights of the exhibition is a computerized walk-

**Pier Gough's artful installation of the Soane exhibition at the Royal Academy incorporates a number of the neoclassical architect's compositional and spatial principles, including Soane's skillful use of mirrors (above) to enhance the optical experience.**



*Suzanne Stephens serves on the board of the New York-based Sir John Soane Museum Foundation.*



The largest gallery in the Soane show contains a re-creation of a dome in the Bank of England, which hovers above models for the bank itself.

through of Soane's famous Bank of England, which was largely demolished when the bank was rebuilt in 1922. While the three-dimensional computer representation suffers from distorted camera angles, enough of an architectural you-are-there sensibility comes through to make the production mesmerizing.

In addition, a new cast acrylic model of the trapezoidal walled block from which Soane carved his famous spaces for the bank has been constructed for the show. It occupies a gallery chock-full of original wood and/or cork models of the bank and is topped by a re-creation of one of the bank's major domes at 70 percent scale.

Other works in the four galleries devoted to the show include drawings from Soane's student days and renderings by Joseph Gandy of Soane's spatially complex house-museum at 13 Lincoln's Inn Fields, Pitzhanger manor at Ealing, and the Dulwich Picture Gallery outside London. All told, the ensemble well

conveys the stunning use of natural light, strong abstract neoclassical forms, and idiosyncratic classical detailing that have caused Soane's work to be so revered almost 200 years later.

In the catalogue accompanying the exhibition, edited by Richardson and Stevens (Yale University Press, \$75), Robin Middleton cogently argues that "The emphasis of classical architecture is on form: Soane stresses space, and this he organizes in wholly unclassical ways." Another essay by Margaret Richardson notes that when Soane died in 1837 his contemporaries considered him important as a connoisseur and patron, but not necessarily as an architect. Not until the early 20th century was Soane's reputation resuscitated. The resuscitation continues: Also accompanying the exhibition is a comprehensive biography, *John Soane, An Accidental Romantic* (Yale University Press, \$45) by Gillian Darley. Now, if only the show would come stateside. ■

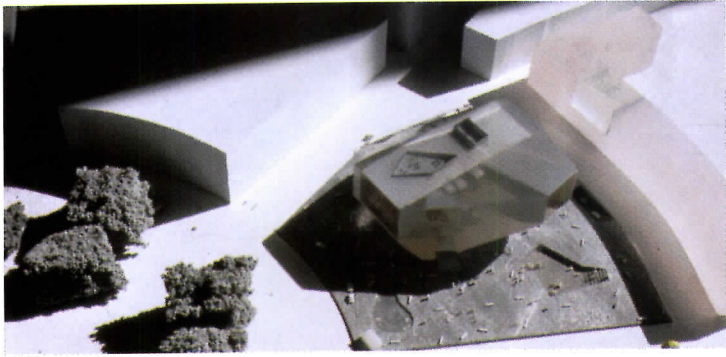
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## KOOLHAAS WINS COMPETITION FOR OPORTO'S CULTURAL SHOWCASE

Oporto, Portugal, and Rotterdam, Netherlands, are the two cities designated European Cultural Capitals for 2001, a rotating title awarded by the European Community to promote year-long special programs of cultural activities. In the case of Oporto, local and central governments have chipped in to endow the city with two new cultural facilities for the occasion, the Serralves Museum of Contemporary Art, designed by Alvaro Siza and opened this year (see page 102), and the House of Music, a new concert hall.

The latter project got off to a late start early this summer with the announcement that a design by Rem Koolhaas and the Office for Metropolitan Architecture in Rotterdam had been selected, in a limited competition with Dominique Perrault and Rafael Vinoly. The jury included Portuguese architects Siza,

Eduardo Souto de Moura, and Manuel Salgado.

### For music mavens

The freestanding building will occupy the Rotunda da Boavista, a Beaux-Arts-style circular plaza west of the city center. It will contain a 1,500-seat main hall, a 350-seat chamber music hall, educational facilities, a center for "cybermusic," and a roof terrace and restaurant.

The OMA design (above) is an expressive, angular, rocklike form. Much of the facade is glass, including the front and rear walls of both auditoriums, which overlook the city. Another glass wall separates the two halls. Porto 2001, the public consortium overseeing the House of Music, hopes to have it completed in the latter months of 2001, although the schedule and final budget are still under study. *David Cohn*

## URBAN LEADERS COVER THE WATERFRONT IN CITIES CONFERENCE AT HARVARD

Once centers of urban industry, waterfronts now often face problems such as diminished port functions, obsolete maritime infrastructure, pollution, decay, and environmental degradation. Because many cities now seek opportunities and ideas for reusing their waterfronts, political leaders and urban planners gathered in October to explore effective models for transforming these problematic urban areas into civic and economic assets.

The Harvard University Graduate School of Design, in collaboration with the City of Boston and Mayor Thomas Menino, hosted "Waterfronts in Post-Industrial Cities," a three-day conference examining international urban waterfront development. Attendees from several continents presented their cities' waterfront redevelopments as case studies. These ranged from Vancouver's almost fully implemented plan that gives priority to housing, to Bilbao's use of culture as a tool, to Havana, where plans are still in their infancy because of the struggle between modernization and preservation.

### Learning from the past

There were lessons to be learned from the presenters. For instance, Lord Mayor Frank Sartor of Sydney admitted that the redevelopment of Darling Harbor was probably carried

out too quickly and, as a result, remains relatively isolated from the rest of the city.

Despite the geographic, economic, and demographic differences between the cities represented, striking similarities emerged in terms of the challenges they have faced. Transportation, financing, finding a balance between industrial and other uses, and achieving political, business, and design consensus were issues in almost all cases.

According to Richard Marshall, assistant professor of Urban Design at the GSD and a co-organizer of the conference, "Waterfront redevelopment is often portrayed as a cure-all for a city's ills, as a kind of urban panacea. Sometimes we forget that these plans are born out of a process that at times requires critical evaluation. Frequently, planners and architects are brought into this process after critical decisions have been made. We are holding this conference because we believe that these developments are an opportunity to reflect new thinking about cities."

The importance of a master plan and a design philosophy was emphasized, but by featuring so many decision makers, the conference organizers implicitly advocated an inclusive approach that engages designers, politicians, developers, and economists.

*Elizabeth Kubany*



### RADIO CITY RETURNS TO ART DECO GLORY AFTER EXTENSIVE RESTORATION

New York City's Radio City Music Hall, opened in 1932, had been showing its age in recent years. The venue was in dire need of cleaning, repairs, and modern communications and structural systems. But last month, Radio City reopened triumphantly after closing for seven months and undergoing a \$70 million restoration overseen by Hugh Hardy, FAIA, of the New York firm Hardy Holzman Pfeiffer Associates. And restoration is the right word: the architects' goal was to return the hall to its original glory. Furniture, fabrics, carpeting, and lighting fixtures were cleaned, repaired, or remade. The ceilings have 720,000 new sheets of gold and aluminum leaf and the stage has a new 112-foot-wide gold-silk curtain. Almost 6,000 new seats were installed. The three-story-tall *Fountain of Youth* mural by Ezra Winter was cleaned of grime. And the famous sunlike proscenium (left) is once again Rockette-ready. *Soren Larson*

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## AMID A FLURRY OF ACCOLADES, MIT REDEDICATES AALTO'S BAKER HOUSE

Professors of a young Alvaro Siza dismissed the work of Alvar Aalto: "Too many curves," they said. Siza related this story at "Interpreting Aalto," a conference organized by the Massachusetts Institute of Technology on the occasion of the rededication of one of Aalto's few American works, Baker House. Aalto is now so revered that MIT took on the restoration of the 50-year-old dormitory with the reverence due a major landmark.

Restoration architect Perry Dean Rogers replaced nearly every system within the structure and augmented electrical and telecommunications services, discreetly extending Aalto's design language wherever alterations were visible. The design team, led by David Fixler,

AIA, went through Aalto archives in Finland for guidance, in the end completing some unbuilt details. The ceiling of the dining hall, for example, now conceals new systems above the wood-batten

surface that Aalto intended. More work must be done, including restoring windows with, Fixler hopes, duplicates of the original wood.

Aalto criticized the fetishization of building techniques that enamored other pioneers of Modernism. He wasn't afraid to prop a Modernist cantilevered

porch with a winsome bundle of saplings. But he also argued fervently for research-based design. More than one speaker cited the technical innovations of the seminal Paimio Sanitarium. The design of Baker House itself was assisted by MIT research on the relationship of space design to friendship formation, according to Lawrence Speck of the University of Texas.

MIT's dean of students, Rosalind Williams, talked of student experiences. "Baker attracts social people without imposing a tyranny of socialization," she said, citing the easy movement between floors encouraged by the cascading stair and the way the halls widen into numerous welcoming lounges. The building, Williams declared, sends a powerful message about "technology as a civilizing force."

*James S. Russell, AIA*



## STV NAMED DESIGNER FOR JFK AIRPORT'S LONG-AWAITED RAIL LINK



New York City's STV has been named the primary architectural and engineering designer on a design-build project to build a new rail link to John F. Kennedy International Airport in Queens. With 10 new stations and several ancillary buildings, the 8.4-mile AirTrain light-rail system will link the airport's terminals to one another and to rental-car and parking areas. The line will also create transfer possibilities with the Long Island Railroad and New York's mass transit network, pro-

viding a long-awaited connection for subway riders. The client is the Port Authority of New York and New Jersey.

Although JFK is a vast mix of architecturally distinct buildings, STV is attempting to provide a unifying identity through design. The light-filled terminals and corridors will be constructed with a shared kit of parts adaptable to each site. More than 12 million riders are projected to use the new line in its first year of operation, which should begin in late 2002. *Soren Larson*

## LONDON FIRM TO DESIGN REPLACEMENT SEATTLE AQUARIUM

Terry Farrell & Partners of London has won a competition to design the new \$150 million Pacific Northwest Aquarium in Seattle. The project will be a key part of the city's planned transformation of an underdeveloped section of waterfront into a new park reconnecting the downtown area to Puget Sound. The Deep, a Farrell-designed aquarium under construction on the River Hull in England, is expected to play a similar revitalizing role in its neighborhood.

Today, aquariums face increasingly diverse challenges, from fostering stewardship of wildlife to linking research with start-up business enterprises. Additionally, fragile aquatic ecosystems require complex and expensive building systems. In Seattle, the price tag is an estimated \$600 to \$650 per square foot. "An aquarium is almost a biological entity in its own right," says Farrell.

The first phase of Seattle's 200,000-square-foot project will be built on two piers next to an existing aquarium, according to a master plan developed by a citizens advisory panel. Lyons/Zaremba of Boston will design 52,000 square feet of exhibits combining large-scale habitats with high-tech simulations. The outmoded 22-year-old facility will be torn down and replaced with a third pavilion and a public loggia.

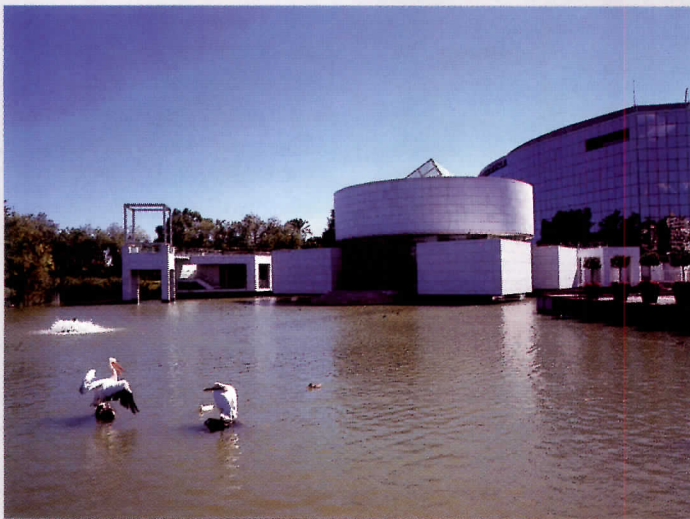
Only eight architects responded to an initial search, even though aquarium experience was not a requirement. Of the three short-listed firms NBBJ had no aquarium experience, while Esherick, Homsey, Dodge & Davis (EHDD) of San Francisco (with Hewitt Architects of Seattle), has designed 16 aquariums. Though they were competitors for this project, EHDD and Farrell worked together on the design for London's new British National Aquarium—a project that is currently on hold.

For the Seattle aquarium, Farrell teamed with Mithun Partners as the lead local architect. Seattle firms Streeter & Associates and Weinstein Copeland Architects are also members of the design team. About one-third of the construction costs will come from private donations. The building is expected to be complete by 2005. *Sheri Olson, AIA*

**KENZO TANGE'S ASIAN ART MUSEUM MAKING A SPLASH IN NICE**

The South of France seems an unlikely spot for a museum focusing on Asian art, but the new Musée des Arts Asiatiques in Nice is helping provide a cultural identity for the Alpes-Maritimes region.

The museum, the only building in Europe designed by Japanese architect and 1987 Pritzker Prize winner Kenzo Tange, is surrounded by an artificial lake, designed to produce an ambiance of calm. The structure itself is based on shapes of fundamental importance in Asia: the square, symbol of the earth, and the circle, symbol of the sky. The contrast of solid shapes and transparency provides dynamics: the white marble walls are separated by linear openings with glass panels, which are meant to add lightness. A first-floor rotunda, crowned with a glass pyramid, is intended to evoke the spiritual haven of Buddhism. *Soren Larson*



## AIA TAKES THE OFFENSIVE IN FIGHT FOR MORE SCHOOL AID

Secretary of Education Richard Riley took the podium at the AIA headquarters in Washington, D.C., last month to underscore the need to improve the nation's school facilities and to present the AIA's new publication, "Good Enough For Congress? A Pictorial Representation of Why Americans Deserve Better School Buildings."

The booklet documents the high schools attended by those members of the House and Senate involved in the legislative debate concerning interest-free bonds for school construction. A history of each school, including when it was built, any renovations or additions, and current enrollment, is accompanied by generally discouraging statistics about school conditions in each school's state. The photos in the booklet and the accompanying

information will "personalize the issue for these legislators," according to AIA president Michael J. Stanton, FAIA. He hopes it will "drive home the need to do something to save our nation's schools."

The booklet is intended to spur Congress toward approval of legislation to aid school construction and renovation. Several bills have been introduced in the last three years, but none has been enacted. Those legislators opposed to federal involvement claim that it's a local, rather than national, issue, while those in favor feel it's the best way to bring facilities across the country up to minimum standards. Regardless of the outcome, the booklet offers one conclusion: all the representatives involved attended public schools.

*Ellen Palmer Sands*

## DUANY PLATER-ZYBERK'S ZONING IDEA RUNS INTO ROADBLOCK IN FLORIDA

In 1991, the Miami firm headed by Andres Duany, FAIA, and Elizabeth Plater-Zyberk, FAIA, devised a model code for Miami-Dade County. The TND (Traditional Neighborhood Development) is a zoning overlay allowing higher densities in projects that take an urbanistic approach by incorporating housing, civic, educational, and commercial facilities into pedestrian-oriented environments.

Now a developer has proposed the first project using TND—and the process has become controversial. Though the proposed Pulte Homes development, which is called Salamanca, has the approval of local homeowners federations and Miami-Dade planners, it has encountered political snags and community resistance from the local community council formed to evaluate zoning questions. That opposition may end up derailing the project altogether.

Paradoxically, the prime reason given for the resistance to Salamanca is that the southwestern suburbs of Miami-Dade suffer from a near overdose of sprawl. Of course, that is exactly what TND is intended to counterbalance. That Salamanca should be Duany Plater-Zyberk's own design adds to the irony. The issue is further mired in political allegations, among them that community council members are using opposition to this high-profile project as a stump for political ambitions, denying it with

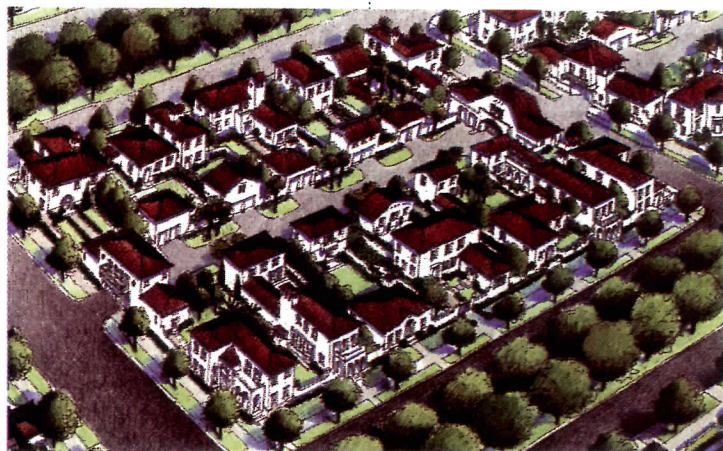
great fanfare while quietly approving projects of steeper densities. Salamanca is under 9 units per acre; other recent approvals have had densities of 10 and 12 units per acre.

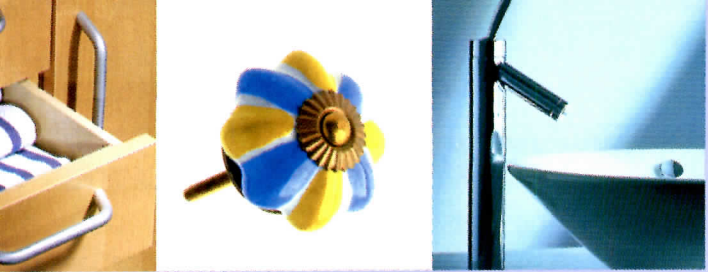
### The best-laid plans

The \$200 million Salamanca is designed for 1,440 dwellings on 160 acres with a range of housing types aimed at middle-income buyers. An eight-acre lake sits in the center of the site, which would also have nine acres of parkland with additional space devoted to a town square and community hall. Gridded blocks of gently curving streets are punctuated by 18 parks and playgrounds.

Florida has a statewide public-policy mandate to support projects that either involve urban infill or sustainability. And though Florida has, arguably, the two most high-profile New Urbanist towns in the country, Seaside and Celebration, critics say it has lagged in the building of such communities in more workaday settings.

"We must have the courage to support and approve projects that implement our plans and regulations controlling new development—projects that address density with mixed use and sensitive design," says James F. Murley, director of the Florida Atlantic University/Florida International University Joint Center for Environmental and Urban Problems. *Beth Dunlop*





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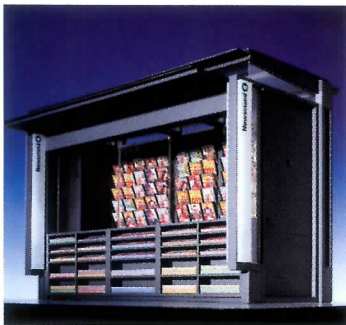
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## MEIER-DESIGNED BUS STOPS FIND A ROUTE IN WASHINGTON, D.C.



If, as author E. F. Schumacher proposed, "small is beautiful," then Washingtonians are in luck. AIA Gold Medal winner Richard Meier, FAIA, has designed a bus shelter, about 5-by-13 feet, that is starting to pop up on D.C. streets.

While not radically different from the city's bronzed-aluminum and glass shelters, which first appeared in the 1970s, Meier's version is sleeker than the present one, with expressed joints and connections. Washington erected its first Meier shelter in September in front of the new Columbia Heights Metro station and plans to have 100 more in place by the end of the year.

Meier's design was originally part of a complete street furniture line for New York-based Adshel. The firm, according to company spokes-

woman Kathy Kahng, offers high-end European-style street furniture to an international client base. The bus shelter was part of a line called Metropolis, originally pitched for New York City, that included a newsstand (left), public toilet, litter bin, and "info-booth," a sort of high-tech walk-in phone booth. Meier also designed a more traditional-looking line, the New Amsterdam, for more historical applications. New York passed on the contract, but Washington officials decided to pick up Metropolis.

While Washington did not pick up the entire Metropolis line, there is, according to Kahng, a growing interest in the U.S. for a consistent design scheme for public amenities. European capitals such as Paris or Stockholm routinely feature this kind of design, but the idea is just gaining a toehold here. Kahng cites Chicago as one American city currently implementing such a package. As for the Meier bus stops, could only an architect appreciate them? It remains to be seen if Washington's masses will react positively or simply wait for a ride as they've always done.

*Ellen Palmer Sands*

## TRYING TO CRAFT A NEW IMAGE, WACO PLANS A NEW ART CENTER

After an international search, Olson Sundberg Architects of Seattle has been picked to design the new \$6 million facility for the Art Center of Waco. "We hope to change Waco's undesired image from fire and death to a deserved one of creativity and new life with a world-class work of architectural art," says Joe Kagle, director of the center.

The 20,000-square-foot project will include a forum for artists-in-residence, galleries for emerging artists, art studios, and a high-tech learning center. Depending on fundraising, construction is expected to be complete in 2003. The center's existing facility on the Brazos River will remain, but the new building's downtown location will facilitate its model outreach program: establishing satellite museums in public schools for students to manage and curate.

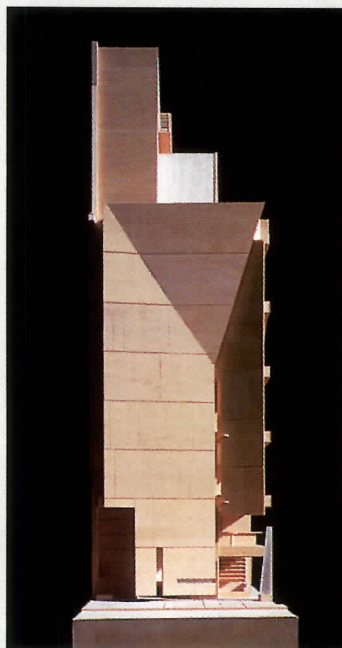
The center does not collect art, except for outdoor sculpture. "The

trend for small museums is to place less emphasis on permanent collections and more on cultivating emerging artists," says Rick Sundberg, FAIA. His firm's work includes the Frye Art Museum in Seattle and homes for arts patrons with extensive private collections.

Architects from as far away as Finland responded to the art center's initial search. From 48 proposals, 6 finalists were chosen, including Philip Johnson/Alan Richie, William McDonough, Frederick Fisher, Thompson & Rose, and Lake/Flato. The Waco project is part of a boom in new museum buildings in Texas. At least six such structures will open over the next five years, including Tadao Ando's Modern Art Museum in Fort Worth [see page 53], Herzog and de Meuron's Blanton Museum in Austin; and Rafael Moneo's Museum of Fine Art in Houston. *Sheri Olson, AIA*

## WILLIAMS AND TSIEN GETTING FOLKSY IN NEW YORK

The Museum of American Folk Art broke ground last month on a new 30,000-square-foot building on Manhattan's West 53rd Street that will display more than 500 of the 3,500 pieces in its collections. New York's Tod Williams Billie Tsien and Associates designed the eight-level structure, which will cost \$20 million and will likely open in 2001.



Williams and Tsien's design is capped by a skylight, with cut-throughs on each floor to allow daylight into the galleries and lower levels. Art will be integrated into the public spaces, including the lobby and stairwells, using a series of niches the architects have added to create interactions apart from the traditional gallery setting. Six of the eight levels will be above grade; seven will be public space, with an atrium, auditorium, classrooms, cafe, shop, and informal education areas in addition to the art displays. The museum will also maintain its current home in a gallery near Lincoln Center. *Soren Larson*





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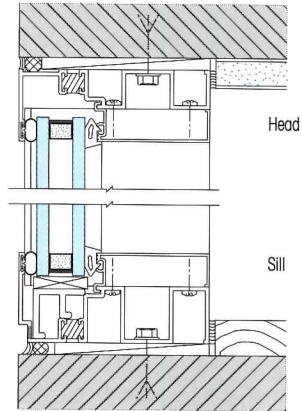
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## RARE PUBLIC EFFORT BY MURCUTT NABS TOP AUSTRALIAN HONOR

One of the few public buildings designed by celebrated Australian architect Glenn Murcutt has won the Royal Australian Institute of Architects' (RAIA) highest accolade: the Sir Zelman Cowen National Award for Public Architecture. The New South Wales RAIA jury, describing the Arthur and Yvonne Boyd Education Centre three hours from Sydney, said, "to visit this building . . . is to experience an architectural work of dignity and restraint, capturing the spirit of the Australian landscape."

Until now, Murcutt's reputation has rested primarily on his private houses for hand-picked clients and his low-cost housing for Aboriginal people in Arnhem land, in Australia's remote Northern Territory. Murcutt, who is seen as having defined the vernacular in Australian architecture, claims to be a perfectionist who cannot stomach the compromises often involved in the construction of large public or commercial buildings.

### Adhering to ideals

Despite the building's public nature, the Boyd Centre—designed by Murcutt with his wife and partner, Wendy Lewin, and architect Reg Lark—appears to embody many elements of Murcutt's philosophies. Approaching the structure, visitors encounter an angled corrugated-iron roof over the veranda, described by Lewin as "light, almost like a kite. It looks as if it has been held there by a string almost." It is angled to gather the northern light and also, says Murcutt, "lifts and

catches the [view of] the entire top of the mountain."

Past the veranda sits a 100-seat hall with huge glass doors north and east, framing river views. They slide away to form an open room when the climate allows. Sliding wooden-slatted screens can be adjusted to filter the light and the view. Outside, the ground drops away sharply, letting the river come right up to and into the veranda and hall, creating what Murcutt calls "a Greek island temple quality . . . a platform and then the sea."

Another wing follows the contours of the landscape and has rooms, using lots of recycled wood, that are like tree houses. In sharp contrast is their exterior, with white geometric projected fins breaking down the scale of the whole, as well as framing the views and providing privacy from bed to bed.

### A pursuit of nature

While Murcutt says he has never set out to create a specifically Australian architecture, his work has always been about "cracking the code," puzzling over and finding what is right for a place. For example, his inspiration for the light roof materials suitable for the Australian climate came from the "feathering" of native trees, the way nature "gets finer and thinner" toward the top. "You wouldn't want to straighten the leaf out. The seed, the code that is in the seed, determines how it will grow. And that is what I am trying to find the whole time, that code."

*Anne Susskind*

## INTERNATIONAL SCHOOL IN HUNGARY TO BUILD A BACKWOODS CAMPUS

Higher education is coming to the bucolic Hungarian village of Nagykovácsi, nestled in the Buda Hills a few miles northwest of Budapest. The American International School of Budapest (AISB) has planned a sprawling, \$12 million campus, to open next fall just outside the small town. Some 50 nations are represented at AISB, which has been educating expatriate kids in Budapest for 25 years.

Designed by the Budapest firm Iparterv Épülettervező Rt in partnership with the Princeton, N.J.-based Hillier Group, the 160,000-square-foot complex sits on a gently sloping site bordered on three sides by forest

and overlooking Nagykovácsi in the valley below. "It's a mix of traditional Hungarian architecture, using natural materials such as brick, wood, and stone, and a Frank Lloyd Wright influence, with low, sloping roofs and large overhangs," says Iparterv's Marina Annus, who heads the design team with her husband, Ferenc. Copper gutters and downspouts will adorn the overhangs, the buildings will be accented with leaded stained-glass windows in a geometric motif, and natural colors will be used in the interiors. "We wanted the campus to fit into its natural surroundings and not clash with the village," Ferenc Annus explains. *Carl Kovac*



### MAYA LIN TO DESIGN WINTER GARDEN IN MINNEAPOLIS

American Express Financial Advisors has commissioned Maya Lin to design a "winter garden" for the company's new 6,000-employee client service center, now under construction at 9th Street and 3rd Avenue South in Minneapolis. Lin's greenhouse and conservatory—expected to rise three stories and include indoor and outdoor gardens and a waterfall—will adjoin the entrance of the new service center. The garden will be lighted at night, creating a glowing beacon next to the center's stone and glass facade. Both projects are expected to be completed in 2002.

The American Express project ties into the city's new "Avenue of the Arts," a public-private beautification project for a two-mile span of Third Avenue. Plans call for \$20 million worth of public art installations, performing arts spaces, information kiosks, landscaping and new bridges.

Still best known for the Vietnam Veterans Memorial, Lin has been working more with buildings lately, designing private homes and renovating the Museum for African Art in New York City. *Soren Larson*

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## NORTHWEST ARCHITECTS GATHER TO DISCUSS NATIVE AMERICAN DESIGN



A group of Pacific Northwest architects is celebrating Native American architecture and attempting to ensure that native architects and clients are given more support. Citing the difficulties native architects have receiving recognition and getting native-oriented projects built, AIA Seattle and regional groups are convening seminars to study native topics.

Earlier this year, the AIA Seattle Diversity Roundtable started "Northwest Native Architecture at the Millennium," a series of programs involving native officials, architects, and others involved in projects for native populations. The discussions were brought to a larger audience in September in Yakima, Wash., where AIA Seattle sponsored an exhibition and conference as part of the AIA's regional gathering,

which was themed "Designing for Diversity."

Attendees discussed the findings of AIA Seattle's Nancy Gallery, AIA, including a trend toward policies of self-direction and sovereignty in native design. Conference speakers included former Oregon governor Victor Atiyeh—who has worked with native groups to implement sovereignty and economic initiatives—and Johnpaul Jones, FAIA, who detailed the design of the Museum of the American Indian on the Mall in Washington, D.C.

Another session centered on the struggle to complete projects on native lands. Bernie Whitebear, chief executive for the United Indians of All Tribes Foundation, described a decades-long quest to create Daybreak Star Center at Seattle's Discovery Park. Rick Huxley, AIA, and Tom Truesdell, AIA, of Bassetti Architects discussed the Wa He Lut School, designed with extensive community input and respect for native traditions.

Rich Dallam, AIA, of NBBJ and Henry Hardnett, AIA, of the Public Health Service followed up the conference with a presentation on their Alaska Native Medical Center in Anchorage, the largest project in the history of the Indian Health Service. If local architects have their way, presentations and discussions like these will continue. *Soren Larson*



## KNOTT'S BERRY FARM UPGRADES WITH NEW THRILLS AND THEMES

Knott's Berry Farm, America's first theme park, is in the midst of the biggest expansion in its 79-year history. Last year, the park—located in Buena Park, Calif.—opened two new attractions: what it calls the world's tallest descending thrill ride and the longest wooden roller coaster in the West. New structures slated to open in 2000 include a 13-acre water park called Soak City USA, a Radisson Resort Hotel, and the Perilous Plunge, which the park bills as the world's tallest, steepest water ride.

The Perilous Plunge (above), being developed by Kishimoto Architects, will have a 1920s

California boardwalk theme. The 24-passenger boats will climb 121 feet before plunging down a 115-foot water shoot at a 75-degree angle. On the way, boats pass by California icons, including a 90-foot-tall oil derrick, a 1920s Art Deco building reminiscent of a casino at nearby Catalina Island, and a man-made version of a California harbor. "The overall intent was to master plan and bring together cohesive themed attractions that complement the park," says Kaz Kishimoto, AIA.

The changes are part of a long-range plan by Cedar Fair LP, which bought Knott's in 1997 and plans to turn it into a multiple-day vacation resort. The park is about 10 minutes from Disneyland and an hour from Los Angeles.

Knott's has plenty to compete with. Among many new developments, Florida's Walt Disney World just added the 65,000-square-foot Millennium Village to its World Showcase at Epcot Center. The company's "imagineers" and architects designed a space where visitors wander freely among exhibits from more than 50 countries—such as a journey through a Brazilian rainforest or a simulation of Sweden's four seasons—and see scaled-down architecture from each culture. *Susan R. Bleznick*

### OFFICIALS IN TAIWAN POINT FINGERS AT ARCHITECTS AND DEVELOPERS AFTER EARTHQUAKE DAMAGE

The recent earthquake in Taiwan has led to questions of whether architects and contractors shirked codes and irresponsibly constructed shoddy buildings. As of this writing, Taiwan's justice ministry was investigating dozens of people in the building industry on suspicion of involuntary manslaughter and endangering public safety after the earthquake, which leveled more than 10,000 buildings. In a wide-ranging crackdown to root out negligent architects, contractors, and other officials, prosecutors have forbidden several people to leave the island. The prime minister has urged that those responsible be brought to trial as soon as possible.

Taiwan's building code is modeled after Japan's stringent seismic requirements. Because structures in Taiwan are mainly reinforced concrete, investigators attributed some destruction to the use of inferior materials such as a diluted concrete mix and undersized rebars. Investigators also suspect that excess reverberation between the structures and the ground may have worsened the damage. Emergency shelters are being erected to house the homeless in the affected area. Members of the Architects Institute and Association of Structural Engineers are helping to evaluate the damaged buildings to determine whether they should be torn down or can be repaired.

A similar outcry arose in Turkey this summer after an earthquake toppled buildings there. Shoddy construction and flouting of building codes were blamed for near-total destruction. *Rick Hsu*

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## NEWS BRIEFS

**The go-go Guggenheim** The Solomon R. Guggenheim Museum has reportedly submitted a proposal to New York City for a new building designed by Frank Gehry, FAIA, that would rise as high as 45 stories on a platform over four East River piers. The project has been budgeted at about \$850 million and would contain large exhibition wings, a theater, a skating rink, and other public amenities, according to an article in the *New York Times*. The new complex would be substantially larger than the \$100 million, 250,000-square-foot Gehry-designed Guggenheim in Bilbao, Spain. The proposal is apparently one of nine for the site; the city's Economic Development Corporation is expected to select one within the next few months. Guggenheim officials declined to comment on the reports.

The Guggenheim might also be looking at South Africa. A new

museum is part of a range of initiatives that are part of the redevelopment of Newtown, a section of Johannesburg. The city council is reportedly negotiating with the Guggenheim about plans.

**Thumbs up for de Young** Trustees of the M. H. de Young Memorial Museum in San Francisco voted on October 14 to move forward with plans to build a controversial new \$135 million museum in Golden Gate Park. The board endorsed Herzog & de Meuron's conceptual design of a low-rise building of glass, wood, and stone. The next step is to create a schematic design to flesh out details of the proposed 280,000-square-foot building. Trustees have raised about \$82 million toward the total cost, and groundbreaking for the new de Young could begin in late 2001, with the museum open by late 2005.

**Embassies to be rebuilt** A team of Hellmuth Obata + Kassabaum

and J. A. Jones Construction Co. has won a State Department contract to design and build new U.S. embassy buildings in Dar es Salaam, Tanzania, and Nairobi, Kenya, to replace facilities severely damaged by terrorist bombings in 1998. An official at Jones says the contract value is \$64.5 million. Construction is to start next spring and the projects are scheduled to be completed by November 2002. The scope includes the design and construction of a new office building along with a U.S. Agency for International Development office at each site.

**Mall politics** Concerned that the grand vista envisioned by Pierre L'Enfant is being diminished by over building, a Joint Task Force on Memorials has proposed a "no build zone" down the spine of the National Mall in Washington, D.C. New construction would be prohibited along the axis from the Capitol to the Lincoln Memorial and along the cross axis formed by the White

House and the Jefferson Memorial. Restrictions would also be applied to the periphery of the Mall. Instead, according to task force member Ron Wilson, new projects would be dispersed among federally owned lands throughout the city, to maintain the integrity of L'Enfant's original scheme. After a comment period that runs through early November, the Task Force will vote whether to adopt the new policy.

**Michael's medal** Michael Graves, FAIA, has been awarded the 1999 National Medal of Arts. The architect was one of 11 recipients from various artistic fields. Candidates are nominated by the National Endowment for the Arts and then chosen by President Clinton.

**Fun in Philly** The New York-based firm Ehrenkrantz Eckstut & Kuhn has designed an extensive waterfront redevelopment scheme in Philadelphia called the Penn's Landing Project. The 572,000-

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square-foot initiative includes an amalgam of mass entertainment facilities, retail stores, and cultural venues, with sponsorship coming from a mix of public and private sources. At the center of the project will be a large central space, inspired by the grand scale of European plazas and intended to be a locus for public gatherings. The existing esplanade will be expanded and reconfigured as a city wall in the shape of a ship's hull, and the maritime motif will be repeated throughout the complex.

**Ando is on** Now that budget negotiations with the contractor, Linbeck Construction, are complete, work has begun on Tadao Ando's new Modern Art Museum of Fort Worth. The

154,000-square-foot concrete, metal, and glass structure should open in 2002.

**Boxed out** So-called big-box retail designs, such as those used by



Costco and Wal-Mart, are not welcomed by the local government in Rockville, Md. Addressing concerns

about the huge, blank look of their architecture and potential increases in traffic congestion, the city's mayor and council have passed a six-month moratorium that halts development of big-box projects until a study of their effects can be done.

#### Pittsburgh plans

Pittsburgh mayor Tom Murphy has proposed a revitalization plan for the city's historic Fifth and Forbes corridor. Murphy's \$480.5 million proposal would replace the local flavor of the corridor with a state-of-the-art "entertainment destination" that will bring the latest shopping trends to the region's retail market. Under the

proposal, the city's Urban Redevelopment Authority would buy 62 properties along the corridor

and sell them to Urban Retail Properties, a Chicago-based developer. The plan has come under attack because it contains no provision for creating housing downtown and spares only four or five buildings around Market Square and just the facades of 10 more historic buildings.

**High standards** The Centex Building at Harwood International Center in Dallas (left) earned the highest score among 20 buildings given the Environmental Protection Agency's Energy Star label this year. The structure scored 99 out of 100. Designed by Richard Keating, AIA, and completed in 1976, the building serves as the corporate headquarters for Centex, one of the nation's largest home developers. The EPA's Benchmarking Tool rating system gauges energy performance as it compares to actual energy use, making it possible to compare the overall efficiency of buildings on a nationwide basis. ■

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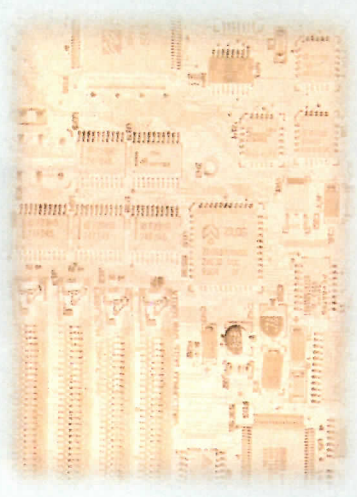
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# DATESEVENTS

## Calendar

### Breaking Through: The Creative Engineer Miami, Fla.

Through December 31

A look at the role and process of creativity in the field of engineering. Miami Museum of Science and Space Transit Planetarium. 305/854-4247.

### The Lamps of Tiffany: Highlights from the Egon and Hildegard Neustadt Collection Wilmington, Del.

Through January 2, 2000

More than 45 objects provide an overview of the achievements in glass by the Corona, N.Y., workshops of the Tiffany Glass and Decorating Co. Delaware Art Museum. 302/571-9590.

### The Work of Charles and Ray Eames New York City

Through January 9, 2000

A retrospective of the work of these midcentury pioneers of design. Cooper-Hewitt, National Design Museum. 212/849-8400.

### The Corner Store Washington, D.C.

Through March 6, 2000

An exhibit tracing the history and cultural impact of a vanishing American typology: the local grocery. National Building Museum. 202/272-2448.

### Build Boston Boston

November 16-18

America's largest AIA chapter holds its annual convention and tradeshow for the building industry. World Trade Center Boston. Call 800/544-1898 or register online at [www.build-boston.com](http://www.build-boston.com).

### At Home in Chicago, Part II Chicago

Through November 28

An exhibition of different types of housing designed by Chicago architects. The Art Institute of Chicago. 312/443-3600.

### Atelier van Lieshout North Miami, Fla.

Through December 5

Visitors to this exhibition of the work of the Dutch collaborative—designers of mutant mobile

homes and sensory deprivation units—get to enter a few of the firm's creations. Museum of Contemporary Art. 305/893-6211.

### The Sense of the City: Louis Kahn's Design for an Office Building in Kansas City, 1966-73

Manhattan, Kans.

Through November 28

An exhibition featuring Louis Kahn's drawings and models centered around institutional and public architecture, as well as his design for the unbuilt Kansas City Office Building. Beach Museum of Art. 785/532-7718.

### Big Buildings New York City

Through December 31

This exhibition explores a dimension of the skyscraper just as impressive as its height: sheer volume. The Skyscraper Museum. 212/968-1961.

### School Architecture of Perkins & Will Chicago

Through December 5

An exhibition of school designs by the Chicago-based firm. Chicago Architecture Foundation. 312/922-3432.

### AIAS Annual Convention: Forum '99

Toronto

November 24-28

This year's convention of the American Institute of Architecture Students—the first to meet outside the U.S.—features speakers Michael Graves and Moshe Safdie, as well as the Career and School Fair. Royal York Hotel. 202/626-7472.

### The Work of Daniel Libeskind New Haven

Through November 20

An installation featuring the design and construction processes of the Jewish Museum in Berlin and other new projects. Yale Art & Architecture Building. 203/432-2292.

### Two Views of Venice New York City

Through December 19

An exhibition of rare etchings of Venice by Canaletto and Mortimer Menpes. Cooper Hewitt, National Design Museum. 212/849-8400.

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all together discussing the

drawings  you're all together

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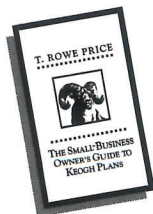
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December 7 to January 1, 2000

A look at 100 years of the interior arts produced in the Rambusch family's lighting studio and workshop. National Arts Club. 212/475-3424.

### A Way Station

#### New York City

Through November 13

An architectural critique of the temporary space of the migrant. Storefront for Art and Architecture. 212/431-5795.

### Alvar Aalto's Private Residences

#### Albuquerque

Through November 30

An exhibition of the legendary Modernist's residential work, photographed by Jari Jetsonen. University of New Mexico. 505/260-0433.

### Constant's New Babylon

#### New York City

Through December 30

The first major U.S. exhibition of Constant Nieuwenhuys' magnum opus, an urban utopia imagined through models, paintings, films, and sound. The Drawing Center. 212/219-2166.

## Competitions

### Architecture in Perspective 15

Submission deadline: December 6

The American Society of Architectural Perspectivists announces its annual drawing competition. Entries can be made in two categories: formal drawings and informal sketches. Among the awards will be the Hugh Ferriss Memorial Prize. Winning entries will be included in a traveling exhibition. For more information, call 202/737-4401.

### The Dryvit International

#### Design Competition

Submission deadline: December 1

Dryvit Systems Inc., a manufacturer of exterior insulation and finish systems, is seeking entries in the annual Dryvit International Design Competition. A \$5,000 first prize will be awarded to the architect whose work best reflects the design freedom Dryvit provides in the building process. The winning design will also be featured in a two-page spread that will appear in the February 2001 issue of ARCHITECTURAL RECORD. 1/800/4DRYVIT. ■

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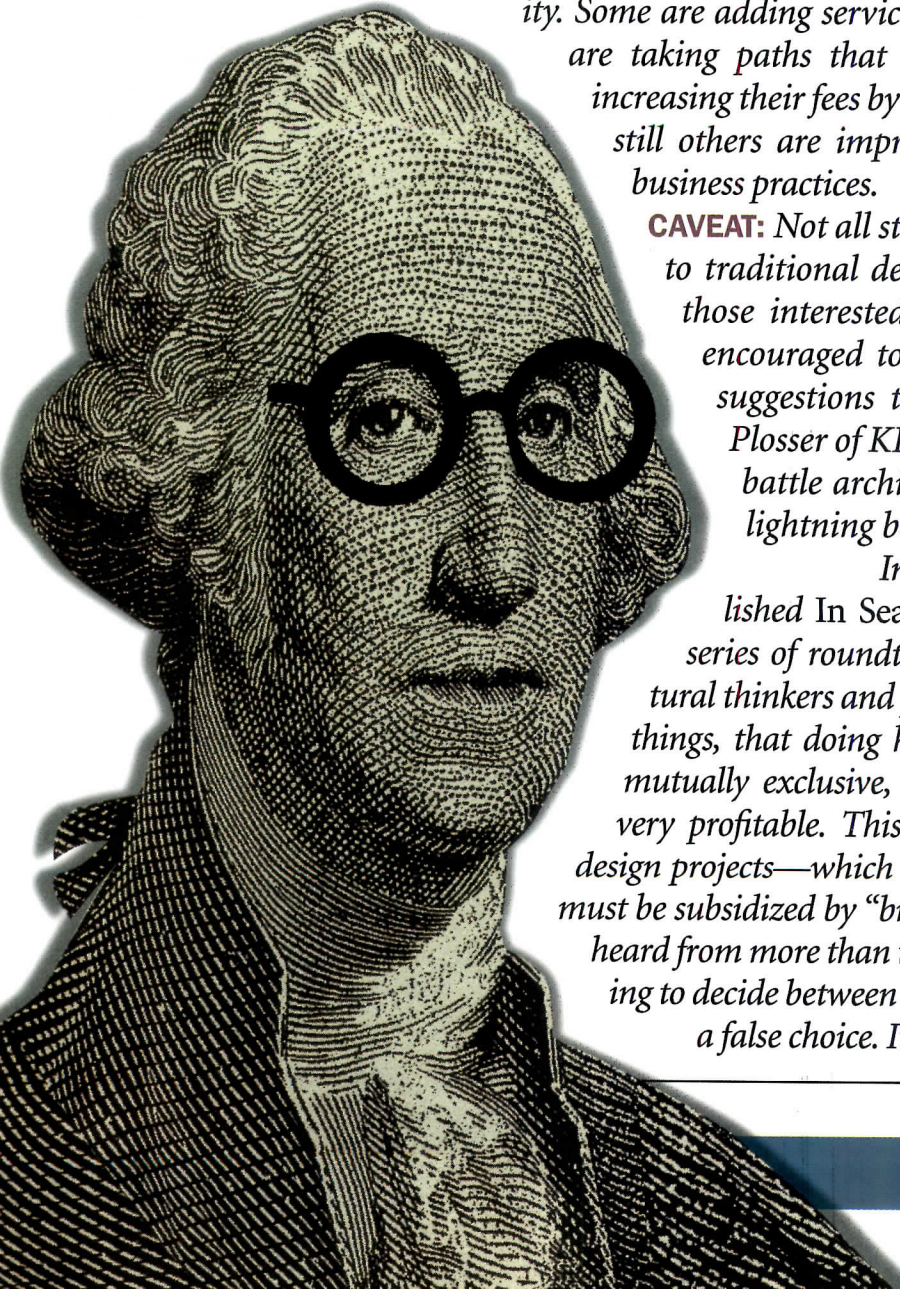
# How to Increase Your

by Elizabeth Harrison Kubany and Charles D. Linn, AIA

**T**hese are busy times for architects. The irony of today's hot construction market is that even as firms are walking away from projects and actively recruiting new talent, fee levels are as tight as ever. To stay afloat in the recession of the early 1990s, firms cut their fees and clients became accustomed to paying less for the same work. Although the costs of doing business have gone up, architects have realized that they cannot wait for clients to accept higher fees. Instead, they are actively thinking up new ways to serve their clients and market themselves that will enable them to increase profits even as fees decline. Architects are using a variety of strategies—ranging from progressive visions to more conventional wisdom—to increase their fees and improve their profitability. Some are adding services to position their firms in the marketplace or are taking paths that diverge from traditional practice; others are increasing their fees by selling clients on the notion of added value; and still others are improving their profitability by instituting simple business practices.

**CAVEAT:** Not all strategies apply to all architects. Some are suited to traditional design firms while others would appeal only to those interested in assuming certain kinds of risk. You are encouraged to read the following and pick and choose the suggestions that might apply or appeal to you. As Gray Plosser of KPS Group in Birmingham, Ala., says, "This is a battle architects fight on multiple fronts. There is no one lightning bolt."

In 1989, the American Institute of Architects published *In Search of Design Excellence*, a book based on a series of roundtable discussions involving several key architectural thinkers and practitioners. The book concluded, among other things, that doing high-quality work and making money are not mutually exclusive, that design-award-winning firms can also be very profitable. This contrasts with the time-honored notion that design projects—which demand more time and may exceed budgets—must be subsidized by "bread-and-butter" work. Based on what we have heard from more than two dozen architects, we are convinced that having to decide between making money and making good architecture is a false choice. It is possible—and preferable—to do both.



# Fees in a Tough Market

## 1 BREAKING OUT OF THE BOX

There are architects who are reclaiming their piece of the financial pie by creating new business models that rely on nontraditional services, such as site selection, development, financing, design-build, construction management, and facilities management. Some firms even take an equity position in their projects to ensure that they are built. In some cases, these firms spin off separate businesses that handle only these ancillary services.

In others, the firms act as turn-key operations.

### CASE STUDY NONTRADITIONAL SERVICES: OWP&P

"One of the markets where we have been able to innovate is the elder-care market," says Gary Wendt, AIA, CEO of O'Donnell Wicklund Pigozzi & Peterson Architects (OWP&P) in Chicago. "Our clients are frequently the lay boards of independent, nonprofit organizations. They don't have support from a centralized organization and generally have no experience with building projects. We often found ourselves being asked to provide front-end services to assist those clients."

OWP&P created the Continuum Group, which does nothing but strategic and financial planning for this market. The Continuum Group hired a hospital administrator and another person who had experience running an elder-care facility. Both had strong business and financial backgrounds and related well to the clients because they had worked on the client side for many years. According to Wendt, "They can answer the clients' questions about the logistics of getting their projects built better than the architects in the firm."

There are numerous benefits to this proposition. "When we have provided the front-end services before the architectural commissions," Wendt says, "we are able to complete the architectural work properly and profitably because we don't have to spend any of our architectural fee on nonarchitectural work. Even if we aren't sure there will be an architectural commission at the end of this predesign phase, we still provide this service. We are paid on a fixed-fee basis and almost always make money on these services. But even more important, if our client has enjoyed the relationship, they are very likely to hire us for the architectural portion. Providing this service puts us in front of the client. Because part of this service involves educating the client about the total building process and the scope of work involved, the client is then in a position to make an educated decision about the value of the architectural service we will provide."

### Spin off

Although this business model is exceptional and quite progressive for the architectural profession, many architects are thinking out of the box



as a defense. Competition in the profession has grown ever fiercer as specialists invade the

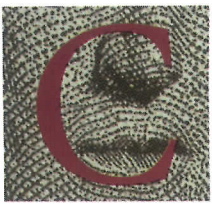
territory once occupied by architects alone. Sometimes, the architect recognizes the opportunity before the specialist gets there. Rather than wait for someone else to take over the market, the architect capitalizes on the speciality first. This approach requires an inclusive view of architecture. While many architects—particularly "designers"—tend to narrow the scope of services they provide, those thinking out of the box are constantly adding new services to their definitions.

### CASE STUDY SPINNING OFF: LOEBL SCHLOSSMAN & HACKL

"I'm constantly trying to think of what our clients will need tomorrow," says Donald Hackl, FAIA. Over the years, Hackl's Chicago firm, Loebel Schlossman & Hackl, has seized many opportunities to provide services for clients that extend beyond the bounds of traditional architectural practice, including design-build and a division that helps its clients relocate. The newest venture is the Performance Group, whose goal is to integrate information technology into the workplace.

"There are many technology providers cropping up out there," continues Hackl. "I was concerned that these emerging specialists might become the client's prime consultants, taking the lead in defining how a place works. The architects would be hired as subcontractors, just to put a skin around the technology. Our goal was to take the initiative."

And it turns out that the inherent skills that architects have developed in listening to clients and using their input to write programs has given the Performance Group a competitive advantage over several giants in the information services industry. Recently, the Performance Group was selected over AT&T, Ameritech, and Cisco Systems to "wire" an entire community in Illinois. "They selected our group," says Hackl, "because we offered them an



## Competitive bidding of architectural, engineering, and other consultant services for a project is usually not in the Owner's best interests . . . The best way to buy almost anything—certainly professional services and construction—is on a relationship basis. —George T. Heery, FAIA, The Brookwood Group

agency relationship as opposed to a vendor relationship. As their agents, we sat down with them and helped them determine what they consider optimal for their community. As architects, we were used to the idea of customizing something that would meet the requirements. I look at this as electronic urban renewal. We wire a district or a town, and that leads to upgrading buildings to accept technology infrastructure."

For Loeb, Schlossman & Hackl, developing new businesses allows the firm to take itself beyond its competition. "If you shift the client's understanding of what the end product can be, you are no longer considered the same as traditional design firms," Hackl says.

### Turn the key

Mark C. Friedlander, an attorney in the Construction Law Group of Schiff Hardin & Waite in Chicago, believes that design-build provides "an opportunity for architects to return to the status of master builders . . . designer-led, design-build allows the architect to reclaim status and control, returning the profession to its historic role as leader of the construction industry."

**CAVEAT:** Design-build is not for everyone. Christopher R. Widener, AIA, of Widener-Posey Architects in Springfield, Ohio, predicts that "design-bid-build won't go away, but it will become the less traditional mode of project delivery." Still, he feels that architects may be left behind because the entity leading the design-build process needs to be bonded. "Very few architects are capable of being bonded because architects treat their companies as service businesses where the profits come out at the end of the year. Contractors, on the other hand, are product oriented. They build assets and, therefore, can apply for bonding. Architects would have to reorganize their businesses to be eligible to take the lead in this arena."

**CAVEAT:** There is another issue with design-build. At present, simpler, more straightforward buildings that are schedule-driven make ideal candidates for design-build. In August 1999, *AIArchitect* listed the top five markets for design-build projects: industrial plants, refineries, warehouses, commercial, hazardous/toxic waste treatment, transportation, and solid waste treatment. Building types that might be more design driven—such as museums, theaters, civic centers, or performing arts centers—are less suited to this process. Consequently, many architects associate design-build with cheap, badly designed, undesirable buildings. But it is worth mentioning that Widener believes that his

buildings are better as a result of the expanded role they play. And his profitability is many times what it would be if his firm were a traditional design practice.

During the past six years, Louis & Henry Group, an architecture firm based in Louisville, Ky., has added construction management and real estate development divisions. Rick Kremer, president of the firm, hopes Louis & Henry will become a "one-stop shop" for clients. He claims that the money brought in by the other divisions helps pay for the large amount of time spent on the design process. To prove his point, he compared the new fees and profits for architecture, construction management, and development and found that architecture allowed for a 6 percent profit on a 4 percent fee, construction management allowed for a 20 percent profit on a 5 percent fee, and development a 50 percent profit on a 6 percent fee.

### CASE STUDY DESIGNER-LED CONSTRUCTION: BUCHANAN YONUSHEWSKI GROUP

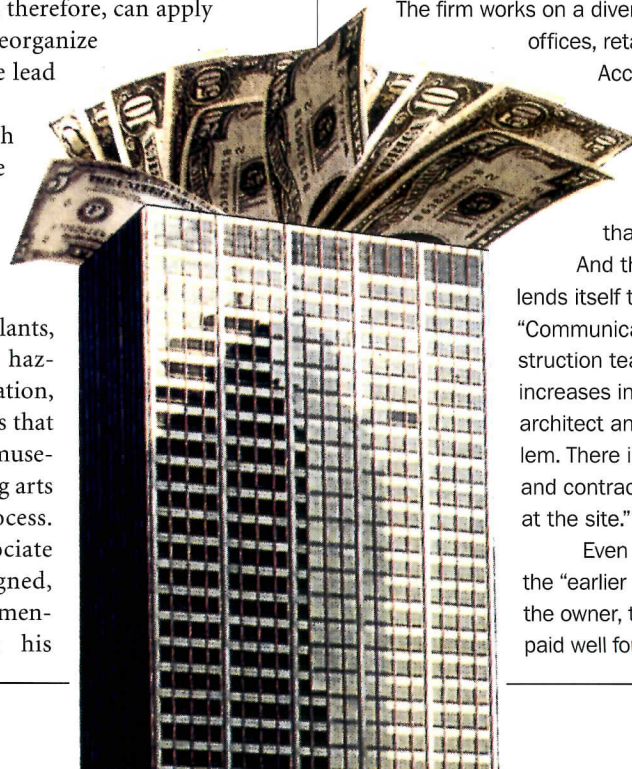
In 1989, Brad Buchanan, AIA, and his partner, John Yonushewski, AIA—both licensed architects and licensed general contractors—formed the Denver-based firm, Buchanan Yonushewski Group LLC. From the outset, Buchanan and Yonushewski decided to make leading the construction process part of their mission. They brought all general-contractor capabilities in house, hired construction superintendents, obtained full contractor's liability insurance, and learned to do estimating and pricing. In addition, during the past two to three years, they have brought in some trades—such as carpentry, painting, and drywall.

The firm works on a diverse assortment of project types—including offices, retail, multifamily housing, and banks.

According to Buchanan, the partners have worked on perfecting the process and making it adaptable to any project. "If the market changes," he says, "we could apply what we have learned to any sector that is strong."

And the more complex the project, the more it lends itself to this designer-led construction process. "Communication between the architect and the construction team becomes more difficult as the project increases in complexity. Because we are both the architect and the contractor, we don't have that problem. There is no finger-pointing between the architect and contractor; we can solve any problem that arises at the site."

Even more important, Buchanan has found that the "earlier the architect can get into discussions with the owner, the better the chances of being selected and paid well for a job. We have the ability to speak to our





clients in languages other than the language of design, so we are sometimes invited into the boardroom to help make decisions—about site selection, facilities, financing, and other front-end issues. We become the client's partner and are there when the project actually happens." Buchanan stresses that these skills are totally learnable; "I learned at the school of hard knocks," he says. Today, the Buchanan Yonushewski Group acts as general contractor for 90 percent of its projects; the other 10 percent are built by outside contractors.

According to Buchanan, the firm's profits are five times what they would be if they only did design. "The profit margin for construction work is much, much larger than it is for design work. This allows us to do more up-front work and spend more time on the design without worrying about losing money."

And this has a very positive effect on the quality of the firm's work. "There is no question that our buildings are better because of our designer-led-construction method. We can subsidize extra design with the construction dollars. In addition, the people doing the design work closely with those who know how the building will go together. Then, because we are the ones designing and building, we essentially give our clients free on-site construction administration. It has had an unbelievably positive impact on the quality of the final project."

## 2 REALIZING YOUR VALUE

In his book, *Competitive Advantage: Creating and Sustaining Superior Performance* (The Free Press, 1985), Michael E. Porter explains, "Competitive advantage grows fundamentally out of value a firm is able to create for its buyers . . . Value is what buyers are willing to pay, and superior value stems from offering lower prices than competitors for equivalent benefits or providing unique benefits that more than offset a higher price." So there are two types of competitive advantage: cost leadership and differentiation. The notion of comparing and purchasing architectural services on the basis of cost is fundamentally flawed because the services, relationships, and products firms provide are never the same.

Since the consent decrees of 1972 and 1990, one of the biggest problems architects have faced is being compared to each other as commodities. Clients who shop for architectural services based on price are operating under the assumption that "all architects are equal." Architecture firms can create competitive advantage, or value, by differentiating themselves from other firms.

**CAVEAT:** The top 1 percent of the profession—the "star architects"—does not have to be concerned with adding value. Their signature designs and the cachet they bring to a project allow these architects to command higher fees than most of their fellow professionals. Unfortunately, there are only a handful of architects who fit this description. Other firms have had to differentiate themselves on the basis of other services—besides design—that they can offer a client.

## It's all in your relationships, baby

The answer to the question of how to create value seems to lie in one word: relationships. If architects create and maintain relationships with their clients, the clients will come to understand the value of the services the architect provides. As a result, the architect can charge more.

George Heery, FAIA, of The Brookwood Group in Atlanta, who frequently acts as an owner's representative, advises his clients not to require competitive fee proposals when purchasing architectural services. As he says, "Architectural and engineering services have a very high content of intellectual services and a very low content of commodity delivery. Conversely, a construction contract has a very high content of commodity delivery ("brick and mortar") and a relatively low content, in dollars, of intellectual services. It follows that competitive bidding of architectural, engineering, and other consultant services for a project is usually not in the owner's best interests . . . The best way to buy almost anything—certainly professional services and construction—is on a relationship basis."

Good relationships lead to higher fees. "Time and time again, our firm has provided architect-of-record services for Cesar Pelli, Kohn Pedersen Fox, Robert A.M. Stern, and many others," says Ron Brame, AIA, of HKS Architects in Dallas. "We compete against other architects that provide similar services, and our fees are frequently the highest. We have been able to convince clients that our services warrant a higher fee."

## Practice makes perfect

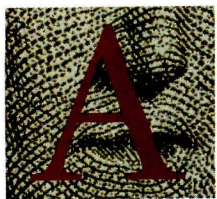
According to the 1997 AIA Firm Survey Report, 86 percent of firms say repeat work is their most reliable method of acquiring new business; next comes referrals, mentioned by 64 percent of firms; personal or professional contacts, listed by 55 percent of firms; and firm reputation, say 42 percent of firms. Requests for qualifications ranked a distant fifth, listed by 17 percent of firms.

Repeat work is the most reliable way of getting new work for one reason—say it with me—relationships. Once you have established a relationship based on trust and service with a client, that client is far more likely to understand the value you bring to a project and to hire you for the next one. As KPS' Gray Plosser says, "chasing one-off projects all the time is not a great way to make money," because the marketing costs are formidable and because entering into a project with a new client makes you an unknown quality, unable to charge on the basis of value.

## Stop selling aesthetics


"Architects are selling something clients don't want," says Michael Alost, AIA, of the Shreveport, La.-based Slack Alost Miremont and Associates. "Clients want help with the building process—financing, site selection, developing a business plan; they want their projects on time and on budget; and they want the building to enhance their business goals. Good design, for many clients, is a bonus."

Architects believe their value lies in their ability to deliver design



**s architects, we must assume that we are facilitators and integrators whose role is to do whatever the client needs. Anything and everything the client needs should be considered**

**an architectural service. —Michael Alost, AIA, Slack Alost Miremont and Associates**



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but, according to Alost, “an architect’s value lies in the ability to give the client what he needs.” Most clients, says Alost, have design at the bottom of the list of things they need.

“When you understand the underlying business goals of the client to such an extent that what you do is enhancing their competitive advantage, the building isn’t an end, it is a means,” Plosser explains. “This differentiates you in the marketplace and is worth something to the customer. When you come to understand the customer, they come to understand you and become your advocate.”

Almost all of the architects we interviewed define value this way: Value is having the experience and insight to understand your client so well that you can actually improve his or her business. Plosser goes so far as to define professionalism this way. He believes that clients sometimes perceive that architects’ loyalties are focused on their art rather than on the person who has hired, and is paying, them. To Plosser, “true professionals put the client’s needs above their own.”

**CAVEAT:** This approach severely deemphasizes the importance of the built product in favor of the building process. Understandably, many people in the profession would disagree vigorously. Architects are taught that the quality of the built environment is paramount. In fact, many people become architects because of this conviction. And the most important and most visible architects in the world are, in fact, selling aesthetics.

According to Alost, however, “when you realize that you are out to sell service, and design is a tool to deliver service, that allows numerous opportunities for you to take a leadership role. We must start assuming that we are facilitators and integrators whose role is to do whatever the client needs. Anything and everything the client needs should be considered an architectural service.”

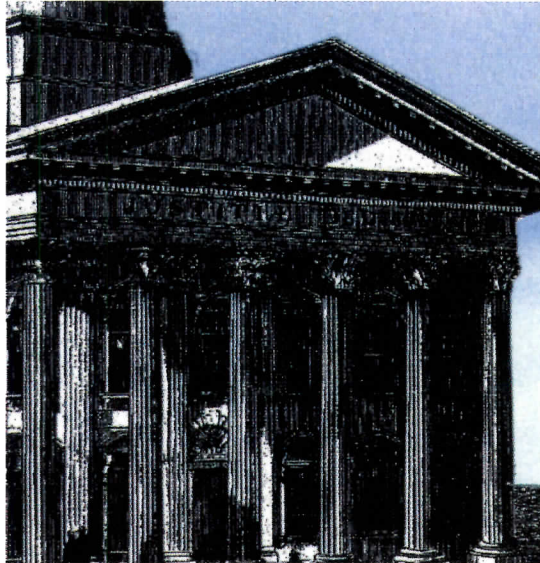
## Vive la difference

As we just stated, it is entirely understandable that some firms might have a difficult time letting go of the notion that design alone is what they have to sell. If that is the case, firms should try to differentiate their design. “We made a conscious decision several years ago to sell our design, not our service,” says Don Hackl. “We try to show our clients that, just as no two individuals are the same, no two architectural practices are the same. We demonstrate, by example, how the quality of the design that we invest in our projects impacts the client.”

## Value your staff

One way to keep costs down is to hire lots of recent graduates, but John Gering, AIA, of HLW International in New York City advises architects to resist the temptation: “We do hire the most talented junior people we can find, but we can’t flood the office with them and expect them to provide the level of quality our clients need, and quality is what we’re selling.” Hackl estimates that it takes about four weeks of off-the-clock training to teach a new employee all the procedures that are used at his firm. “We are using training as a means of empowering many people in the firm to make decisions on their own,” he says. “If we spend less time talking about what we are going to do, we will do it faster.”

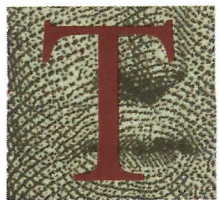
Highly trained staff is one of any firm’s most valuable assets, but it is intangible. To provide superior service, everyone working on a job must understand their client’s needs. Heavy employee turnover may erode a client’s confidence in the service being provided. In addition, the quality of documents and observation are bound to suffer.



### CASE STUDY CREATING VALUE: HLW INTERNATIONAL

Like most firms, HLW believes that its work is thoughtful and contributes to the emotional and financial well-being of its clients. Atypically, though, the firm has set out to quantify the value of its work through a program it calls PPR—Project Performance Research/Reporting.

The beginnings of this undertaking were relatively modest. For many years, as part of the firm’s standard procedure, a group of strategic planners and programmers—trained not in architecture but in business or human behavior—would gather information about the client at the beginning of a project to inform the design. Then, 12 to 18 months after the client moved into the new building, the same team would conduct a postoccupancy study. According to Susan Boyle, AIA, a partner at HLW, “there were lessons in this for us and for our clients. It was particularly useful in long-term relationships; we learned what we had done well and what could be improved for the next time.” Then, about two years ago, Boyle and her colleagues took the idea a step further with PPR and hired a dedicated staff of behavioral scientists. The process goes something like this: the project team introduces the concept at the first client meeting. If the client is interested, a second meeting—with the human-behavior expert, the programming staff, and the partner-in-charge—is held. Then the PPR staff works with a client representative to customize a questionnaire to the



**he profit margin for construction work is much, much higher than it is for design work. This allows us to spend more time on the design without worrying about losing money. This has had an unbelievably positive impact on the quality of the final project.**

—Brad Buchanan, AIA, Buchanan Yonushewski Group

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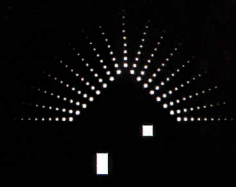
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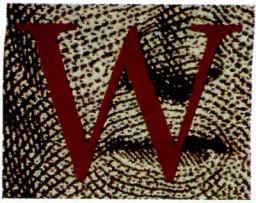
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## try to build relationships with core clients and offer incentives for them to spend money with us, instead of taking the work to other firms. —Susan Boyle, AIA, HLW

client's needs and organization type, and the client distributes this questionnaire throughout his or her organization. The data is then collected and analyzed. Twelve to 18 months after occupancy, the same questionnaire is distributed and the data is compared.

Boyle says her firm is trying to quantify the extent to which "the design can affect the client's bottom line. We are dedicating resources to show how the built environment affects business—how people interact, which adjacencies are effective, how many sick days employees take, and how recruiting and retention are impacted." While the idea is still in its infancy, Boyle already calls it "an investment HLW has made to validate its work."

### Focus, focus, focus

In this age of specialization, it is becoming increasingly difficult to remain a generalist. A firm has much less trouble convincing a client of the value it can bring to a project if it has several similar projects in its portfolio. The firm has a proven track record and, therefore, will lose less time and money on research.

Ron Brame discussed his firm's ability to get better fees based on specialization. "Among other things, one of our focuses is designing space for the commercial lease market," he says, "and we sell our knowledge of the aesthetic and functional issues involved with making space attractive to prospective tenants. We're selling our technical expertise as well as the knowledge that our clients will be able to sell the building to their clients."

Repetition can also equal profitability for a firm because the learning curve for each job is shortened. Probably the most extreme example of this is a firm specializing in big-box retail stores that can deliver documents for a new one in 36 hours.

**CAVEAT:** Although experience with a given building type inspires client confidence, beware of firms that simply stamp out the same product time and time again. The challenge for the architect who depends on a kit-of-parts approach is to keep designs from becoming mundane or repetitive.

### Be expansive

By expanding their scope of services, architects can increase the life span of relationships with clients. This can involve everything from setting up preprogramming and facilities management groups to simpler strategies. For instance, HLW—one of America's largest firms—takes the attitude, surprisingly, that no job is too small. Stan Stark, AIA, says, "We work with organizations that have many, many small projects that require the same attention as larger ones. It would not be affordable to give them the level of service they require if we were doing only one of these projects. So we work with clients on a continuing basis under a master agreement; we can keep a small core team that can serve all of the projects, pool reimbursables, share details, take advantage of redundancies, and find efficiencies." Susan Boyle of HLW feels that this approach adds value for the client: "We will try to build relationships with core clients and offer

incentives for them to spend more money with us, instead of letting them take the work to different firms."

### CASE STUDY PUT YOUR MONEY WHERE YOUR MOUTH IS

Some firms are able to establish value for clients on the basis of exceptionally fast project delivery and the ability to meet strict budget targets. After establishing a reputation for such feats, they may be in a position to bump up their fees by negotiating incentive contracts. The basic principle involved in all incentive contracts is essentially the same: the front end of the contract basically covers the cost of doing the work. At the back end, the architect and contractor risk their profits to create an incentive to meet the schedule and fee goals. Sometimes, the amount of the bonus is based on a contingency fund that is the difference between the owner's originally budgeted sum for the job, minus the construction-contract price established after documents are finished. In other circumstances, the bonus is a flat fee split between contractor and architect.

Owners like incentive contracts because they can encourage teamwork between the architect and contractor. Architects are motivated to keep costs down, and the contractor's profit is based on meeting building deadlines.

Some architects have argued that these incentive contracts based on schedule and budget alone could encourage corner cutting. HLW International and Sordoni Skanska

Construction Company challenged this notion a few years ago when they built a lab for Ciba-Geigy in Tarrytown, N.Y. Members of the design/construction team

were so confident that they could meet the time and budget requirements and make the users happy that they risked their profit on the outcome of a user survey. A poll of scientists and support staff taken six months after the building was occupied rated the building very highly in terms of user satisfaction, and HLW and Sordoni Skanska collected on the bet. Not every architect we interviewed would be willing to take such a risk. Said one, "I wouldn't do that unless I could have the time to work with many of the client's staff members on programming and design development. Without that investment in time, you never get buy-in from the people who are ultimately going to answer the survey."

**CAVEAT:** Doctors complain that managed care undermines their professional judgment because essentially unqualified people make decisions about care based on business rather than years of experience. An analogy can be drawn to incentive contracts. The best buildings may cost more money to build and take more time to complete. Focusing on first cost and schedule may distract from important long-term performance considerations such as ease of maintenance and energy efficiency. Andy Pressman, AIA, author of *The Fountainheadache*, makes the following analogy, "If a heart transplant gave you two more years of life, instead of five, would you pay the doctor only two-fifths of his fee?"

### Let every eye negotiate for itself

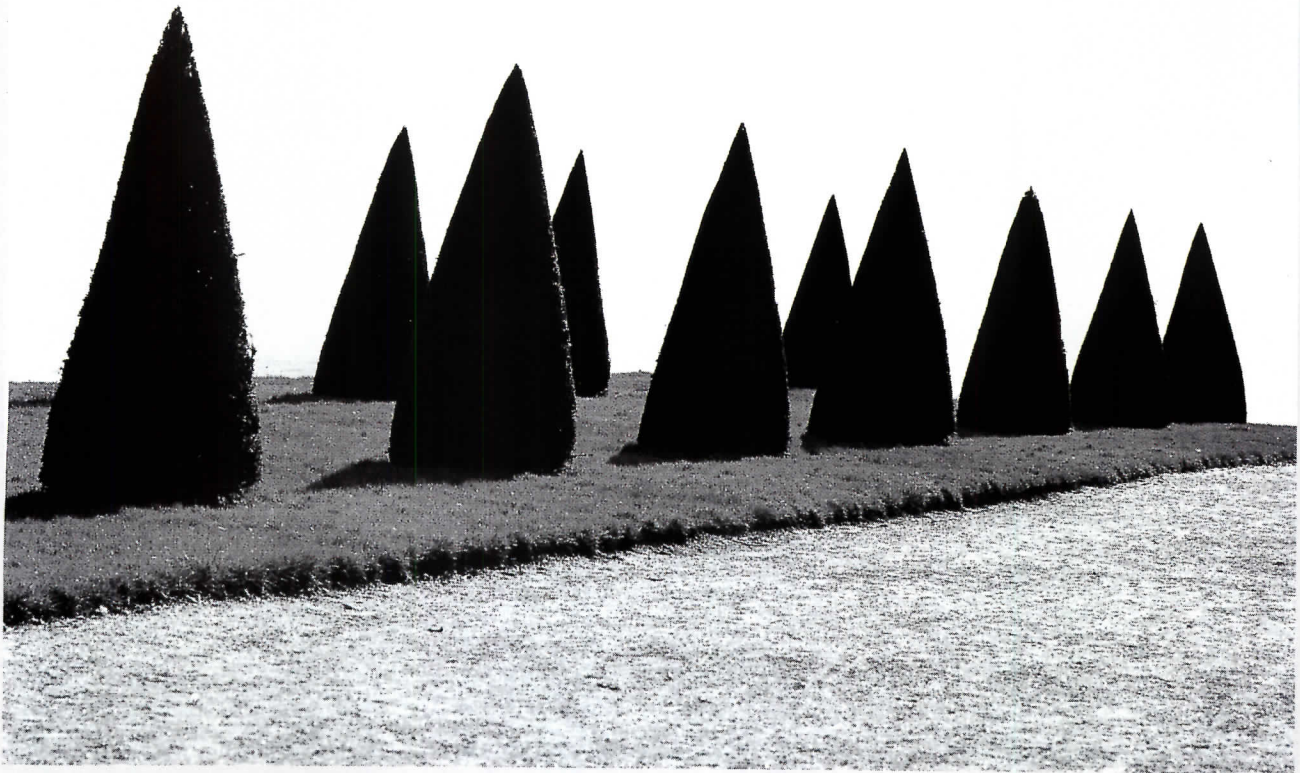
It may sound like psycho-babble, but understanding your own value is empowering. Once a firm understands and can communicate the nature and the worth of the service it provides, it will (continued on page 198)





## A Lens into the Gardens of Le Nôtre

Photographer Becky Cohen's images of Louis XIV's mid-17th-century gardens at Versailles, Vaux-le-Vicomte, and Parc du Sceaux capture landscape architect André Le Nôtre's passion for transforming the wild randomness of the earth, water, and woody plant materials into strictly formal, polygonal tableaux. So vast were the gardens that Le Nôtre feared they would discourage visitors from exploration, so he used his knowledge of optics and perspective to visually foreshorten them. Yet, even with this visual trickery at play, Cohen's photographs reveal how this landscape architect transformed the woods into a quiet yet powerful message from the Sun King himself: that he could totally dominate nature and the world with his vast resources. *Charles Linn, AIA*



*Double row of conical topiaries at Versailles, 1994.*

*Opposite. Still fountain at Parc du Sceaux, 1994.*



*Above: Stairs in the Potager du Roi at Versailles, 1994.*

*Left: Within the Orangerie at Versailles, 1993.*





*Above: Canal, trees, and reflection at Vaux-le-Vicomte, 1995.*

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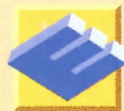
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# PUBLIC HOUSING IN 1999: A Hard Assessment



A \$700 million plan to tear down high-rises, build thousands of housing units in low-rise buildings, and create a mixed-income community at Cabrini-Green in Chicago is

stuck in neutral. While private development has begun just outside the project, the hulking presence of a 19-story *apartment building* still towers over a desolate landscape.

**FOR THE LAST SEVEN YEARS FEDERAL AND LOCAL AGENCIES  
HAVE APPLIED NEW URBANIST IDEAS TO THE TASK OF  
REMAKING PUBLIC HOUSING. THEY CAN SHOW SOME SUCCESSES,  
BUT THE NUMBERS JUST AREN'T BIG ENOUGH.**



PHOTOGRAPHY: © SCOTT McDONALD/HEDRICH BLESSING, EXCEPT AS NOTED

by Blair Kamin

*The third in a series of articles on efforts to transform public housing, this special report provides an overview of progress that has been made in some places and the shortcomings of HUD's program to replace high-rise projects with low-rise, mixed-income neighborhoods. Over the past seven years, HUD and local housing authorities have engaged architects and planners, especially those from the New Urbanist camp, to rethink housing for the less affluent people in our society. Previous articles looked at plans to redevelop Cabrini-Green in Chicago [February 1997, page 84] and offered a follow-up on that project [September 1997, page 62].*

**T**o grasp what architects are up against in the fight to transform the nation's public housing, come walk around the Henry Horner Homes on the Near West Side of Chicago, just north of the United Center, where Michael Jordan once thrilled crowds with his soaring slam dunks. A few blocks northwest of the arena, the goal of turning troubled housing projects into thriving communities is proving painfully elusive.

A year and a half ago, the optimism was palpable as former residents of five demolished high-rises at Henry Horner moved into brick rowhouses with front stoops and other trademark features of New Urbanism. Yet now, hope has given way to concern that the rowhouses, built on the very superblock where the towers once stood, may simply have replaced a high-rise ghetto with a low-rise slum.

Take the boarded-up, five-bedroom apartment at the corner of Hoyne and Maypole streets. A few weeks after a fatherless family moved in, children playing with matches accidentally started a fire that engulfed the apartment. It was "the first to go south," says John Tuey, the Chicago Housing Authority's (CHA) redevelopment manager at Henry Horner. Another apartment, a few doors away, allegedly harbored drug dealers that the housing authority has now evicted—but only after a year of court fights. Encouraged by the long delay, drug-dealing gangs have infiltrated the neighborhood, brazenly gathering on stoops that were supposed to give tenants a place to watch out for illicit street activity.

The result: Intimidated residents are moving out. One-fourth of the apartments on Maypole Street—9 of 36 units—are vacant. And there are fears that the problem will spread like a bad case of the flu, sending the entire 380-unit complex of townhouses and rowhouses

*RECORD contributing editor Blair Kamin is the architecture critic of the Chicago Tribune and the 1999 recipient of the Pulitzer Prize for criticism.*



## R E P O R T

Here's one sign that architects have helped transform Milwaukee's once-troubled Hillside Terrace housing project into a normal neighborhood: When the NCAA Midwest Regional men's basketball tournament was held last spring in the nearby Bradley Center, fans parked their cars and sport utility vehicles along Hillside's lushly landscaped streets and walked to the stadium.

New Urbanist principles were instrumental in the turnaround of the 15-acre, 494-unit development. That should come as no surprise because Milwaukee mayor John Norquist, perhaps the leading New Urbanist among U.S. mayors, became personally involved in the redesign. He insisted, for example, that front porches be big enough for

chairs so residents could both talk to passersby and supervise the sidewalks. Architecture "has a big effect," Norquist says. "All of a sudden people want to live there. You get competition for renting apartments, so then the housing authority can reject people who have criminal histories."

Once a prototypical superblock with a maze of dead-end streets that made it easy for drug dealers to escape from police, Hillside was remade from 1994 to 1998 using a \$44.6 million federal grant. To encourage informal surveillance, the plan by Larsen Engineers of Milwaukee restored streets that had been eliminated from the hilly site.

To make the apartment buildings resemble single-family homes, the engineers graced Hillside's faceless two-story brick buildings with porches that, by virtue of their different colors, lend each part of the development its own identity.

In the same New Urbanist vein,

Aldrian Guskowski Architects of Milwaukee designed individual entrances for Hillside's three-story buildings, interior renovations, and an expanded community facility. The latter now provides a range of social services, from day care to job training. To reduce density, more than 100 apartments were demolished; replacement housing was built in the surrounding neighborhood while some residents used vouchers to find new homes.

To be sure, the renovation did not confront the dire obstacles typical of Chicago and other large cities. Indeed, when Milwaukee applied for a federal housing grant, a top HUD official told Ricardo Diaz, director of Milwaukee's housing authority: "The stuff you're tearing down is what we're building in Chicago."

The results have been dramatic. Today, 61 percent of Hillside's households have at least one person who works, compared to 15 percent in 1993; Wisconsin's tough

welfare-to-work law, no doubt, contributed to this improvement. The number of arrests at the development has plummeted to 36 in 1998 from 132 in 1994. "No one who comes here from out of town thinks this is public housing," says resident leader Ann Wilson. "They think it's a smaller suburban community."

Attention to detail was critical in reshaping Hillside and keeping it in good condition. Dumpsters that once spewed trash onto the street were hidden behind brick walls. And Milwaukee's historic street lights, which have distinctive acorn-shaped fixtures, were brought back, replacing Modernist globes that practically said, "hit me," according to Diaz.

While Hillside hasn't succeeded in transforming the area around it—the goal of later, more ambitious HOPE VI projects—it has made a major difference in the quality of residents' lives. Now, instead of gunshots at night, they hear the bells of the Good Humor truck. *Blair Kamin*

lurching into chaos. In response, the housing authority has approved a radical new management, social services, and policing plan for Horner, where still-to-be-demolished towers loom menacingly over the new homes. "We want to reintegrate public housing into the community," says John Roberson, the authority's chief of development. "We're not going to sit here and lose the war because of problem tenants and burnt-out units."

When a wrecking ball tore into the Horner high-rises on August 11, 1995, then-U.S. Department of Housing and Urban Development (HUD) Secretary Henry Cisneros issued this prophecy, "As goes public housing in Chicago, so will go public housing for America." Today, his

words have come true, though certainly not in ways that Cisneros or his successor, Andrew Cuomo, would have hoped.

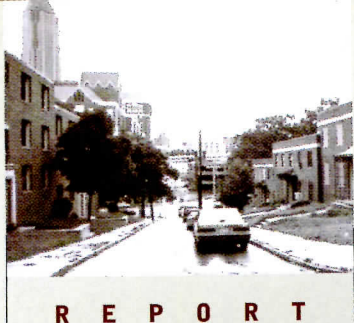
Seven years into a noble experiment to transform the nation's crime-plagued, public-housing projects into normal neighborhoods, the visions of vibrant communities sketched by architects and planners are running headfirst into daunting obstacles—and ferocious gangs like those at Henry Horner are the least of those hurdles. Simply put, a nation enjoying one of its greatest periods of prosperity has little time or money for the poorest of the poor. HUD's total budget for fiscal 1999, \$27.7 billion, is less than half what it costs American taxpayers to fund the mortgage-interest and real estate tax deductions—which chiefly benefit the middle class and the wealthy.

So while HUD can point to public-housing success stories in places like Baltimore, Milwaukee, and Atlanta, these efforts have yet to achieve a critical mass. For every tale of transformation, delays have caused thousands of homes to go unbuilt. And there are equally unsettling questions about poor people who have optimistically left the projects with Section 8 rental-assistance vouchers in hand only to relocate to neighborhoods just as dangerous and segregated as the ones they left.

Worse, in Chicago, which has the nation's heaviest concentration of problem projects and is thus a potent political symbol,



New rowhouses at the Henry Horner project, designed by Solomon Cordwell Buenz, engage the street with stoops (above right). But some units are already boarded up (above left), owing to fires and gangs.



**In 1935 President Franklin Roosevelt traveled to Atlanta to dedicate the country's first public housing project. Constructed on a site cleared of slums, Techwood provided temporary housing for needy families—a leg up until they could move on to their own version of the American dream.**

Over the years, the housing project devolved into a welfare sinkhole. Efforts to rethink it moved at a glacial pace. Then Atlanta won the 1996 Olympics. The prospect of the media focusing on the glaring disparity between the housing project and the Olympic village across the street at Georgia Tech goaded all parties into action.

Developed by the Integral Group and McCormack Baron Associates, the 60-acre property, which includes Techwood and the adjacent Clark Howell Homes, is the first project in Atlanta to be transformed under HOPE VI. The old buildings were razed, and Centennial Place with 758 flats and townhouses is rising instead: 40 percent rented at market rate, 40 percent rented to welfare recipients, and 20 percent to those with Section 8 vouchers.

Only 10 percent of the original residents have returned. Many were relocated to their satisfaction during construction, and others couldn't meet the stringent new requirements, which include having a job or being in school or job training. "Those who were displaced were fairly relocated," says Dennis Goldstein of the Atlanta Legal Aid Society, who represented some of the families. "My concern is that the new requirements favor working families and don't help the neediest—the elderly and the dis-

abled, among them."

Those who have stayed are supported with a network of service providers, offering day care and job training. "It's a big transition and it's hard," says Diane Bellem, family support director of a nearby day-care center. "But agencies and the community are working to create a safe and stable neighborhood."

Unlike the gated communities sprouting up all around the city, Centennial Place is open. The main challenge, says Jon Carlsten of Carlsten, Pucciano & English, was to reinstitute the city grid lost when the projects were built in the 1930s. The design vocabulary of the new buildings is taken from the New Urbanist play-book: front doors facing the street and walks leading up to them, pitched roofs and porches.



Developer Egbert Perry's vision of bringing together multi-income families seems to be working. Centennial Place is fully leased. And it is changing lives. Ask Andrell Crowder Jordan, one of the 74 original residents who moved back. She had opposed redevelopment but is now convinced it's the only way to attack the welfare mentality. "If you continue to warehouse people, you get the same result," she says. "This is a continuing rebirth, and I'm not just talking about the buildings." *Catherine Fox, visual arts critic for the Atlanta Journal-Constitution*

HUD's efforts are foundering, particularly at the notorious Cabrini-Green development. There, a bitter battle between resident leaders and officials has put the most ambitious mixed-use plan for public housing in the nation on seemingly permanent hold. The legal logjam is a political embarrassment for Cuomo, who needs dramatic turnarounds to persuade the Republican-controlled Congress to save HUD and the public-housing reform program from the budget ax.

### **Housing plus help in becoming self-sufficient**

Heralded by agency officials as a major pillar supporting the Clinton Administration's policy for urban America, the reform program is formally known as HOPE VI, which stands for Housing Opportunities for People Everywhere. (The program is now in its sixth phase, which explains the use of the Roman numeral.) It aims to replace decaying public projects with new housing and to help long-time welfare recipients get education, training, and jobs to become self-sufficient. Much of the new housing is built on the New Urbanist model, which advocates a traditional way of making cities through standard-size blocks, pedestrian-friendly streets, and mixed-use neighborhoods.

"HOPE VI has helped us understand the importance of human scale and mixed-income [housing]," says Nicolas Retsinas, the director of the Joint Center for Housing Studies at Harvard University. Yet "it would be wrong to think that HOPE VI is the functional equivalent of a housing policy for poor people in the United States. HOPE VI is constrained by simple numbers . . . I don't think HOPE VI *hasn't* made a difference. But a difference is not the same as the answer."

When Congress created the program in 1992, the federal gov-

ernment classified 6 percent of the nation's public-housing stock, or roughly 86,000 of 1.3 million units, as "severely distressed." That definition referred to developments plagued by crime, obsolete mechanical systems, and high vacancy rates. Invariably, these projects were laid out in superblocks that followed the Modernist paradigm, developed by Le Corbusier, of separate towers in parklike settings. But as short-sighted federal policies packed these buildings with chronically poor people, rather than those temporarily down on their luck, they became isolated clusters of poverty, breeding everything from high crime to low test scores. Today, about 2.7 million Americans live in public housing.

Since the early 1990s, HUD's policy has been brutally straightforward: Bring in the wrecking crews. As Cuomo explained in announcing a \$35 million grant to demolish the Stella Wright Homes, the last high-rise public housing project in Newark, N.J.: "When public housing makes the statement of exclusion and isolation, President Clinton has said, 'Tear it down and don't repaint it, put in new windows or new fences.' It had the wrong intent from the beginning and should be replaced with smaller, low-rise, low-density places where people to want to live."

Yet that has proved easier to say than to do—at least in great numbers, particularly because HUD's funds are limited by a president and Congress who constantly court the middle class. Since 1992, 53,000 units have been approved for demolition under HOPE VI, but only 20,000 actually have been torn down, according to the agency. Moreover, just 5,600 homes have been built or renovated nationwide—less than the 6,000 units of public housing built from 1958 to 1962 in a notorious stretch of high-rises along Chicago's State Street. Compare the 5,600 HOPE VI units with the 2.3 million housing starts and sales generated by

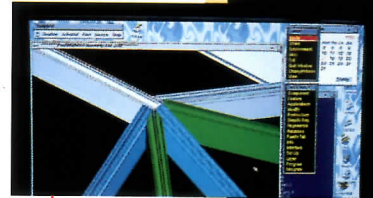
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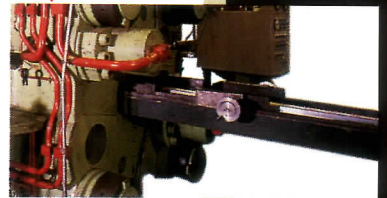
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## REPORT

On a hot summer morning in 1996, 20,000 people gathered in West Baltimore to see the city's housing authority blow up Lexington Terrace, a slum of 667 units lodged in a mix of high-rise and low-rise buildings.

Lexington Terrace's replacement, a HOPE VI project, which is almost half complete, will have 302 rowhouse units—100 for sale, the rest for rent—and a midrise building with 88 apartments for seniors, a community center, and a 30,000-

square-foot business center.

"It's a neighborhood, rather than a project," says Serena Morris, a former Lexington Terrace resident who recently moved into a rowhouse. "My children can play in their own backyard without getting shot at. It feels much safer."

Public funding for the \$78.4 million project came from HUD's HOPE VI program, the Housing Authority of Baltimore City, and Fannie Mae. Private lenders provided \$19.3 million in mortgage money and loans. Baltimore's housing authority manages the rental units, while Cooperative Services Inc. runs the senior housing.

The remaking of Lexington Terrace, says John Torti, president of Torti Gallas-CHK, the architecture firm in charge of the project, was a team effort involving the developer, a social scientist, a psychiatrist, financiers, realtors, and prospective residents. The developer itself is a

joint venture, involving three building companies—Stuever Brothers, Eccles, and Rouse Inc.—along with Mid-City Financial.

Following New Urbanist principles, the project tries to fit with its red-brick surroundings and form a "mixed-income, mixed-use, mixed-age, mixed-financing, mixed-everything neighborhood," in Torti's words. Baltimore-style stoops mediate between private and public space. Some units have porches; all have private backyards and access to a park and public transportation.

Instead of mimicking details of old rowhouses, the architects used their scale, proportion, and massing. To prevent the barrackslike appearance of most inexpensive two-story apartments, the designers stretched the buildings upward by about 60 inches, raising the floor slab by about 30 inches and adding height to the attic. They varied the facades but made no distinctions between

rental and for-sale units.

But "it's only bricks and sticks," says Torti, explaining that without social programs the place would probably soon decline into a slum again. Social services, such as day care, counseling, and job training, are available, and every renter gets a built-in computer workstation plus a free computer, computer training, and Internet access.

What happened to those from the old project who couldn't qualify for its successor? The housing authority can't track former tenants, says Wesley, but Baltimore accommodates all who need housing—at other projects, through Section 8 subsidies and through private charities. While the tenant-selection process prevented some old residents from returning, Torti says the majority is better off in a community that excludes troublemakers than in one that exerts no such controls.  
*Andrea O. Dean, contributing editor*

the Federal Housing Administration's mortgage insurance program at the tail end of the Great Depression and you see in bold relief how today's effort pales to that of a previous generation.

Among the reasons for the paltry output: From New York City to New Orleans, tenant leaders have delayed at least 15 projects, fearing

## JUST 5,600 HOMES HAVE BEEN BUILT OR RENOVATED UNDER HOPE VI.

that "mixed-income housing" is bureaucratic code for kicking them off their land. At Cabrini-Green, where 2,300 units have gone unbuilt, \$50 million worth of federal grants has sat idling in bank accounts for years.

"There are years of distrust and inappropriate action that have taken place," acknowledges housing consultant Gayle Epp of Abt Associates of Cambridge, Mass. "It takes a long time to create a dialogue where people feel comfortable. [Residents] have to take out all the baggage of the past. They have to beat and stomp on it before there can be a future."

To some extent, the delays are rooted in HOPE VI's evolution from a simple model of low-rise residences meant solely for public housing residents and financed only by the federal government to a more sophisticated approach that seeks to create entire neighborhoods attracting a range of income groups and funded by public and private sources. Used to the old way of doing things, residents have dug in their heels.

Yet when plans do go forward, design is, for the most part, working as a social tool, helping HUD achieve its goal of creating neighborhoods inhabited by the very poor, the working poor, and the middle class. Restoring streets that were lost to superblocks and allowing architects to break out of the one-size-fits-all straitjacket, the agency has come a long way from the days when public housing strove to stand apart—and



A new school is being built as part of the master plan at Cabrini-Green.



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CIRCLE 37 ON INQUIRY CARD



## R E P O R T

At first glance, it seems that the master plan for Cabrini-Green, the nation's most ambitious attempt to transform a troubled project into a thriving neighborhood, is finally taking shape. A new park has sprouted on the eastern fringe of the development, which sits just north of downtown Chicago. The park has a green-and-yellow clock tower that beckons to yuppies who shop in a fashionable nearby district. And there's a fountain that shoots water jets into the air, entertaining motorists who once hit the gas as

they drove by the notorious Chicago public-housing project.

Yet looming beside the park is something that doesn't appear in the New Urbanist plan prepared three years ago by a team that included Boston's Goody, Clancy & Associates [September 1997, page 62]. It's a 19-story, red-brick high-rise Cabrini residents call "the Rock." Windows in the vacant building are covered with reddish-brown wood bearing the stamp of the Muhammad Ali Board-Up Service. The towering eyesore "defeats the whole purpose (of the park)," says Chicago Park District instructor Marvin Tolbert, 37, who grew up in "the Rock," the oldest of six children.

In fact, all six red-brick high-rises that Chicago mayor Richard M. Daley wanted torn down are still standing. And not one of the townhouses and rowhouses that were to have replaced them has been built.

While tenant groups have tied up the project with lawsuits, real-estate developers are bringing luxury townhouses right up to the borders of the 65-acre, 3,200-unit island of poverty and fueling tenants' fears that they are about to be kicked off their land.

The legal logjam over the proposed \$700 million redevelopment—which is to include schools, parks, shopping, and a police station as well as housing—isn't close to breaking up. And according to those familiar with the bitter battle between tenant leaders and housing officials, no end is in sight.

Just how long has the stalemate at Cabrini dragged on? When the federal government approved a \$50 million grant for the project on November 30, 1993, the Dow-Jones Industrial Average closed at 3,683. At this writing, even after a steep drop, the Dow stands above 10,000.

Of course, Cabrini's impoverished tenants are unlikely to use such a yardsick. Gradually, they have been emptying out of the project; nearly half of its apartments are vacant.

True, Chicago can point to signs of progress at Cabrini. Near the park, for example, a new police building and two schools are under construction. There's even a faux Prairie School shopping center across the street from the park.

But with the towers still standing, the heart of the redevelopment plan—tearing down more than 1,300 high-rise apartments and putting up 2,300 low-rise units, including 700 for public-housing residents and 195 for lower-middle-class families—remains unfulfilled.

Without a legal breakthrough, Cabrini stands—more than ever—as a monument to failed hopes. *Blair Kamin*

was supposed to look cheap to avoid offending American taxpayers.

From Baltimore's Lexington Terrace, where handsomely proportioned new homes evoke the city's 19th-century rowhouses, to Seattle's Holly Park, where townhouses are to have steeply pitched dormers and gables fit for the rainy Pacific Northwest, HUD officials are pushing quality—and contextualism—on a budget.

"The communities that are being created are beautiful, sustainable communities that do blend into the broader neighborhoods of a city," says Elinor Bacon, a HUD deputy assistant secretary and director of the HOPE VI program. "This is not special housing for a special sector of the population."

Agrees Chicago architect Chris Lee of Johnson & Lee, which has designed housing for the agency: "One of the great things that has happened to HUD is that—as long as you're within budget—you can have a lot of latitude. HUD understands now that it can't have a blanket aesthetic. What's appropriate for Louisiana doesn't work here."

To be sure, some of the New Urbanist public housing—like the renovated brick apartment buildings at Milwaukee's Hillside Terrace, which are surrounded by lushly landscaped lawns—is neither new nor urban. Even residents of the 494-unit development north of downtown Milwaukee say it reminds them of suburban subdivisions. Yet that's the way neighborhoods in many American cities look today. It's the kind of housing that draws working families. That these projects are unlikely to grace the covers of design magazines is less important than their ability to attract a range of income groups—thus breaking up the pockets of poverty that sociologists say are at the root of the projects' woes.

"Design makes a huge difference," says Milwaukee mayor John Norquist, a leading proponent of New Urbanism. "It was harder to enforce the rules when no one wanted to live there."

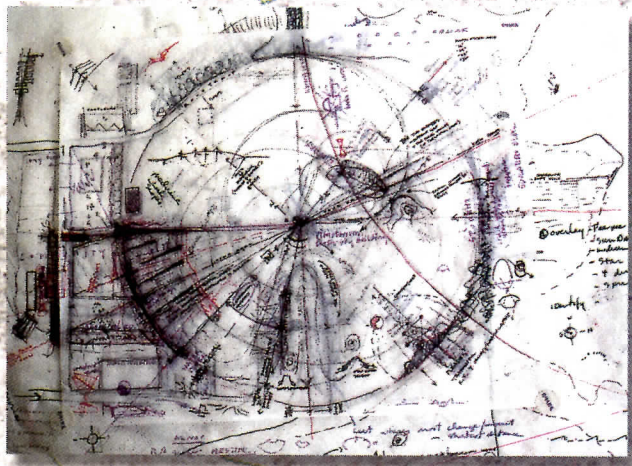
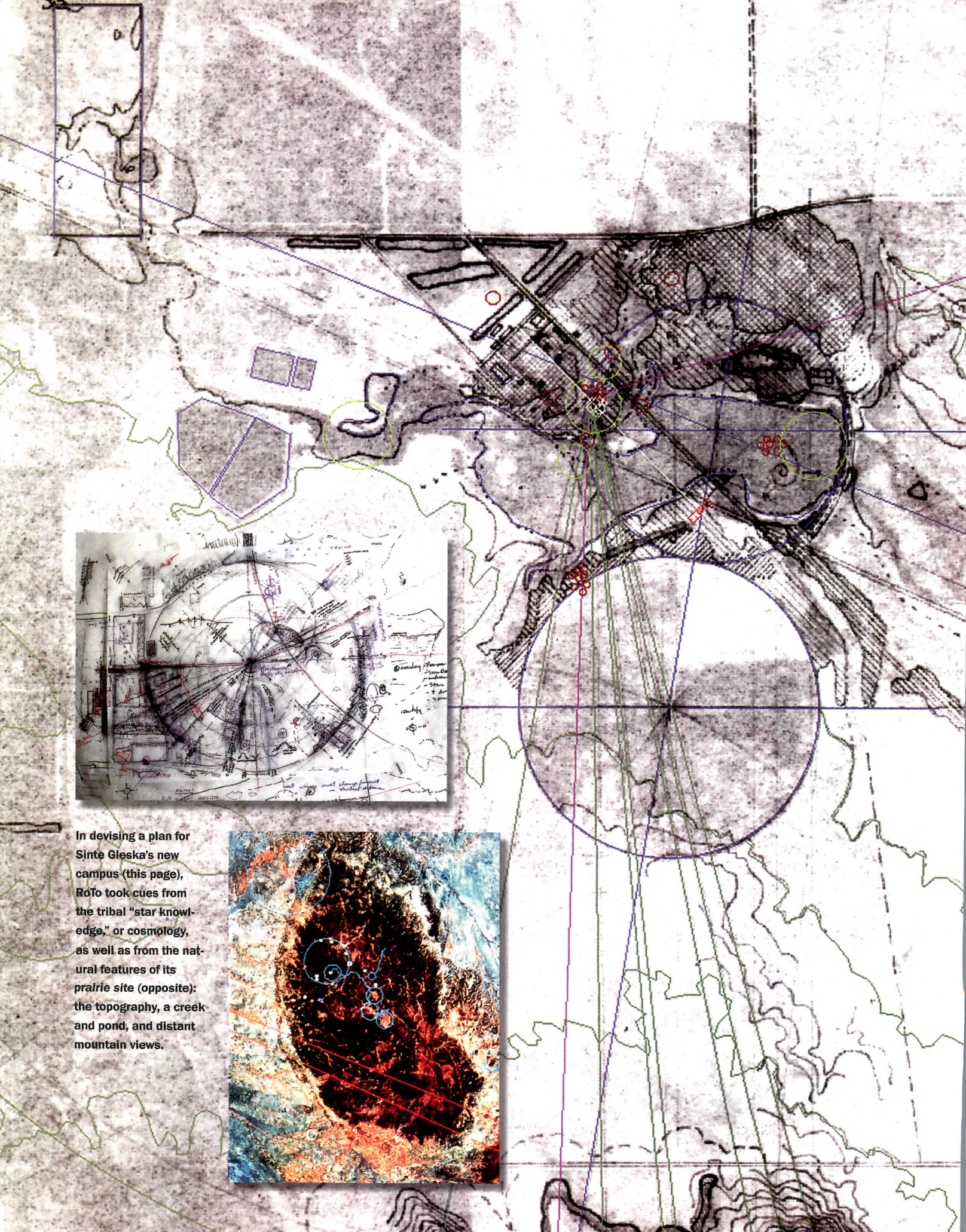
Interiors—which must appeal to working families who can



The old towers remain at Cabrini-Green, even as development starts nearby.

choose where they live—also have improved, with enticing features like central air-conditioning and washers and driers in utility rooms. Many apartments have thermostats that let residents control the heat in their apartments—a shift from the days when someone at a central heating plant determined how hot or cold it would be. On the whole, the quality of design and construction is on the rise—a key element in the effort to lift the stigma from public housing.

"There is no question that the program has created a sea change in attitude nationwide," says Joseph Shuldiner, former HUD assistant secretary for public housing. "The whole concept of mixed-income communities, which basically before was almost unheard of, is now pretty much accepted as the way to go." (continued on page 200)



In devising a plan for Sinte Gleska's new campus (this page), RoTo took cues from the tribal "star knowledge," or cosmology, as well as from the natural features of its prairie site (opposite): the topography, a creek and pond, and distant mountain views.



# PROJECT DIARY On the Great Plains of South Dakota, **ROTO ARCHITECTS** helped reenvision a campus for Sinte Gleska, the first Native American university.



by Sarah Amelar

**1971-1991** RoTo didn't arrive on the scene until 1994, but this story begins as far back 1971, when Sinte Gleska first opened its doors. Not yet a university, it began as the nation's second tribal college. (Today, there are 31 tribal colleges and universities.) Its founders saw a pressing need to reclaim the Sicangu Lakota culture at a time when Native American languages, lore, and rituals, across the

country, faced danger of extinction.

Long before, white conquerors had forced these nomadic people onto reservations, lopped off the men's braided hair in an act of virtual castration, and insistently altered the native diet, replacing the Great Plains buffalo with cattle. Ultimately, boxy, federally funded housing substituted for tipis. The Black Hills, the Lakota tribes' most sacred site, had been taken from them and carved with American presidents' heads (at Mt. Rushmore). For decades, the U.S. government enforced assimilation by shipping Native American children to boarding schools that some graduates still describe as "prisons for young Indians"—and legally restricted tribal religious freedom. Even the oral tradition of storytelling, an essential and integral part of tribal life, was gradually slipping away.

Sinte Gleska College, named for "Spotted Tail," a 19th-century Lakota leader, began with humble means and lofty aspirations. One of its primary goals was to promote tribal autonomy, but obstacles lay in the path. Sinte Gleska's founding and current president, Lionel Bordeaux, a powerful-looking figure with strong Native American features and hair swept back in a style reminiscent of Elvis Presley, initially encountered opposition when he sought federal funds for the college.

"What initially attracted me to South Dakota was the great scale of the landscape—the earth and sky," recalls Michael Rotondi, FAIA, of Los Angeles-based RoTo Architects. When Rotondi and partner Clark Stevens first drove down the straight stretch of Route 18 on South Dakota's Rosebud Sioux Reservation and caught a glimpse of an illuminated marquee flashing college offerings, they could not have anticipated the cultural wealth they'd encounter behind it.

Rotondi and Stevens had come to the reservation to design a building for Sinte Gleska, the first Native American university, but their project acquired unexpected dimensions. Instead of creating one building, they ended up designing two and an entire campus plan. As architects, planners, researchers, economic think-tank operators, and occasional construction workers, RoTo took on the challenge of guiding the 1,600-student institution from its origins in trailers toward a more expansive and ambitious campus.

The process of reinventing the campus was complex, at times difficult. It is, after all, extraordinary that an institute of higher education formed, and flourished for 28 years, on a remote reservation in some of the nation's poorest counties—a place where unemployment exceeds 70 percent. Complicating matters, Rotondi and Stevens came to Rosebud as cultural outsiders, as white men from Los Angeles. "I kept wondering," says Stevens, "if what we had to offer was appropriate." At first, he recalls, "we were unable to ask the right questions, and the [Sicangu] Lakota people seemed unable to tell us what they wanted. Perhaps because nobody had asked them before, but more likely, they knew exactly what they valued and chose not to say. They felt, I suspect, in light of their cultural and life experiences that we were not to be trusted with that knowledge."

The architects realized they had at least as much to learn as to teach. They would need to earn their clients' trust in more profound ways than in typical architect-client relationships. The buildings they would ultimately complete—a student and a technology center—would stand as small pieces within the broader history of whites in Native American territory and the visionary tale of Sinte Gleska's existence and survival.

**Project:** Sinte Gleska University  
Technology Building

**Architect:** RoTo Architects Inc.—  
Michael Rotondi, FAIA, and Clark  
Stevens, principals; Michael Volk, project  
architect; Jim Bassett, on-site representa-  
tive; Jim Bassett, Kenneth Kim, Michael  
Volk, collaborators; Carrie DiFiore, Qu  
H. Kim, Jarkko Kettunen, Craig Stewart,  
James Malloch Taylor, project team.

**Engineer:** Ove Arup & Partners (struc-

tural, mechanical, electrical); Dakota  
Railway Consultants Inc. (civil)

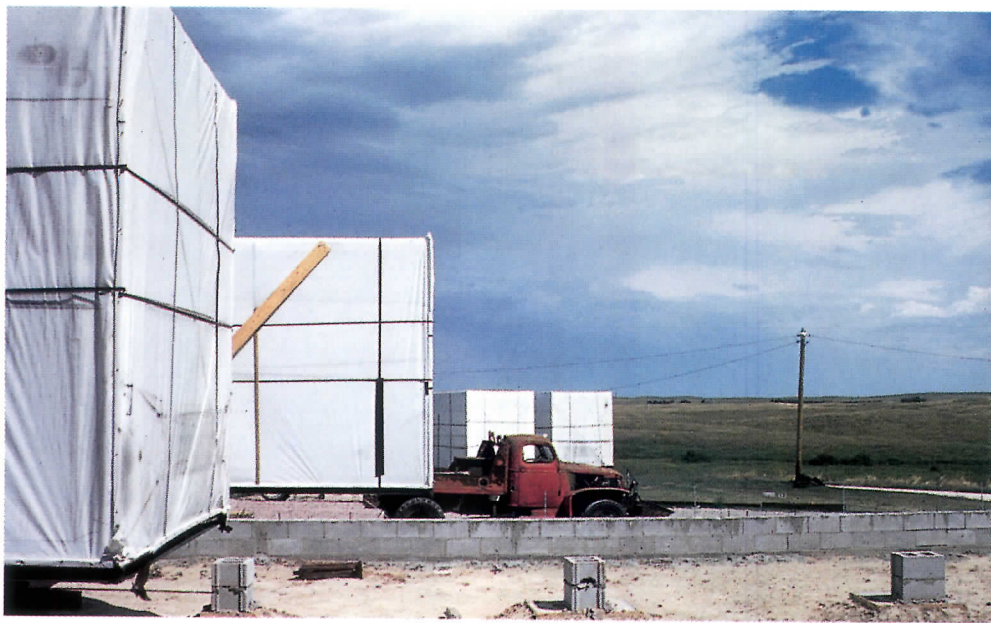
**Design consultant:** April Greiman

**Project management:** Bruce Biesman  
Simons

**General contractor:** Shingobee  
Builders

**Timber construction:** Paul Baines  
Timberframe Construction

**Concrete and rammed earth:** Native  
American Construction



“Just forget higher learning,” he was told. “You people would be better off doing arts and crafts—beadwork—or raising hogs.” But Bordeaux saw education as a critical means for tribal triumph over adversity, and he persevered.

Sinte Gleska gained university status in the early nineties with bilingual courses in Lakota and English, ranging from tribal government to Lakota history, from much-needed human-services training to environmental sciences. The campus, sited in Mission, S.Dak., evolved with scant funding on an ad hoc basis: more trailers were simply added, as needed, along the way.

**1991-1994** In the fall of 1991, a quasi-miraculous event befell Sinte Gleska. Patrick Lannan Jr., president of the Lannan Foundation, a family fund supporting contemporary art and literature, was driving cross country and stopped in unannounced at the campus. Lionel Bordeaux happened to be there and welcomed the visitors. Soon after, this encounter led to grants ultimately exceeding \$10 million. (The visit also inspired the foundation’s formation of its Indigenous Communities Program, which now supports Native American culture, language, and land reclamation, as well as tribal education.)

By March 1994, Lannan had invited Michael Rotondi—an

architect he knew from the days when Rotondi headed the Southern California Institute of Architecture (SCI ARC) and the Lannan Foundation was its next-door neighbor—to travel to Sinte Gleska and design a building there.

The architects came away from that first visit with the conviction that Sinte Gleska University (SGU) needed an entire campus plan, not merely a single building. “They’d never had a chance,” observes Stevens, “to define how their physical plant relates to their goals and view of themselves as a tribal college within the community.” The Lannan Foundation agreed to hire RoTo to devise a strategic campus plan, but recalls Rotondi, “conventional programming meetings—trying to gather a lot of information from many people in neatly allotted parcels of time—just didn’t make sense out there.” Also, the community seemed to view RoTo with suspicion and distrust, based perhaps on past experience. The university’s previous attempt to construct a major large-scale building had foundered 18 years earlier, due in part to loss of funds. This structure’s unfinished hexagonal, concrete-block shell remained as a monument to its failure, leaving tribal members skeptical of RoTo’s commitment to produce more satisfying results.

At an impasse, Rotondi and Stevens changed course. Conversation alone was not producing answers, so they decided to make something. Not a building of their own design, but a 16-by-24-foot straw-bale house for a

tribal elder, a project akin to a barn raising, initiated and executed by tribal members. Stevens and another RoTo architect, Jim Bassett, spent a week on the reservation as construction laborers. They went to learn, not to direct, and, as their coworkers slowly opened up, they began to hear stories, jokes, and myths that would inform their architecture at Sinte Gleska.

RoTo’s student center integrated prefabricated building modules (above left), stripped to their steel frames. Straw bales (above right and opposite left) became an infill wall, built by local junior high students. During construction, other tribal members honed such skills as timber framing and carpentry (this page, bottom).





**The insulating straw-bale infill (left) was later coated with gunnite. An existing foundation and hexagonal concrete-block shell (above) were incorporated into the student center. The hexagon became an open-air gathering space with a firepit.**

**1994-1996** RoTo's campus-planning research took on a similarly informal character. The architects invited tribal members to dinners, listened to more stories, gained respect for what the Sicangu had already accomplished, and gradually heard the community's grievances with the existing campus. The current location, some suggested, blocked "spirit paths," and since the old campus lay on territory under civil jurisdiction (though on the reservation), it never really felt like tribal property. To find a new site, the architects journeyed across the landscape as elders explained the meanings of different locations. Finally, the university selected a site in Mission's adjacent twin town, Antelope, which lies on tribal land.

As the planning proceeded, RoTo embarked on its next SGU project, a student center, which Rotondi maintains, "We didn't intend on doing—but we decided we needed to build something right away." The tribe still seemed wounded by the unfinished-building fiasco 18 years earlier: Clearly, the typical two-to-three-year period of design and construction would not yield tangible results fast enough.

"We thought it would be good to show them, without delay, what they could do," says Rotondi, "with a little imagination, using materials and methods already available to them." For the student center, the architects encouraged the university to order four trailerlike, 12-by-60-foot building modules from downsizing Defense Department contractors. With no construction drawings per se, RoTo used the 18-year-old concrete-block shell as partial foundations, and straw bales coated with gunnite as infill for the modular frames. The construction crew consisted of SGU's maintenance staff, with local junior high school boys doing the straw-bale work. A disused tribal sawmill was gradually reactivated. This design-build project provided a year's employment for a mostly tribal crew and trained a local workforce to erect the next Sinte Gleska building.

Enthusiasm grew. "People started crawling out of the woodwork to see this funny thing going up on the 'Res,'" says Rotondi. "And when the straw bales went up, there was joking that the cows would eat the building. When it was done, everyone seemed really pleased." One milestone in earning tribal trust was RoTo's decision to relocate architect Jim Bassett to the Rosebud Reservation to work on the project. Bassett stayed three years. "They said it was like sending one of our own into a hostile neighboring tribe," Rotondi recalls. "At that point, they saw we were serious."

**1996-1998** Meanwhile, RoTo Architects began to learn about "star knowledge"—an astronomy and astrology that shapes traditional Lakota worldview, religion, and everyday life—which inspired the campus plan. In this cosmology, the earth's features mirror the constellations. A Lakota symbol of the nature of the universe is the Kapemni: two cones joined at the apexes, representing the meeting of sky and earth worlds at the horizon. The tipi, with its crossed poles, embodies the Kapemni. Each spring, for three months before the equinox, this nomadic people would make a ceremonial journey, following the sun's path through constellations corresponding to sacred Black Hills sites. The pilgrimage would symbolically reenact the creation of the universe. Throughout the year, star knowledge told tribes where to encamp. They drew imaginary lines emanating from constellations and sacred earth sites, placing importance on the points of intersection.

When the architects discovered that many young tribal members knew nothing of this cosmology, they resolved to make the campus plan an instrument of teaching, an embodiment of sacred stories and myths. Though the idea of creating permanent structures for a nomadic people may seem paradoxical, Stevens and Rotondi recognized the importance of the spaces between buildings. They sought to design a campus that would encourage its inhabitants to wander the territory and generate more stories. The selected site, however, was initially problematic because a boarding school had once occupied it and left painful associations. But the land also had sacred aspects—natural beauty, a creek and pond, and distant mountain views—and was finally accepted after a purification-by-fire ceremony.

At last, RoTo was ready to erect its first building on the new campus. Once again, however, the plans abruptly shifted course. Right after the architects had completed construction documents on a large multipurpose building—to include ceremonial assembly space, as well as athletic facilities—Sinte Gleska received a National Science Foundation (NSF) grant to refit an existing building with state-of-the-art computer technology for expanded general and computer science curriculums. The grant would upgrade a distance-learning program that the American Indian Higher Education Consortium had begun at SGU. Distance learning links tribal colleges by interactive live-video facilities—two-way broadcasting studios/classrooms—that significantly expand the course

The technology building's two pre-engineered standing-seam structures are painted earthy brown to blend with the landscape, while the

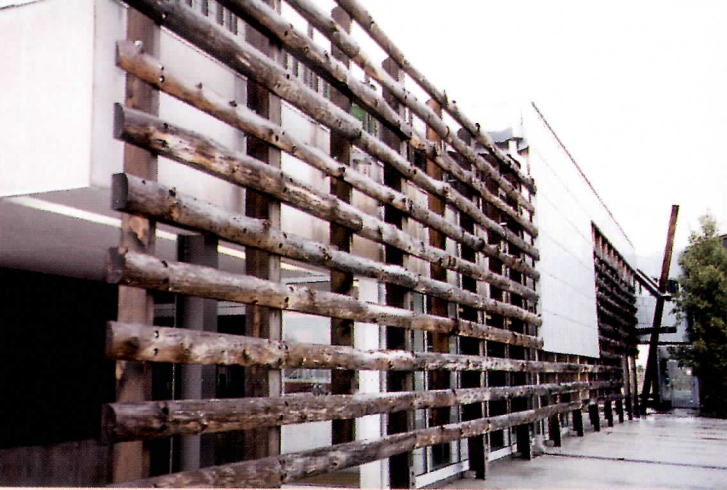
enclosed bridge reflects the steely sky. (Clad in zinc, this connecting element recalls the titanium-skinned Guggenheim museum in Bilbao,

Spain.) The steel-skinned buildings were customized to eliminate the off-the-shelf eaves and impart the buildings with a more monolithic solidity.









## A MAINE BOAT BUILDER TEACHES TIMBER FRAMING TO A TRIBAL CREW



The predominantly tribal construction crew crafted the building's wooden components with indigenous pine timbers. While working on the student center, RoTo learned of the reservation's deactivated sawmill and initiated its revival.

The mill had operated in fits and starts, corresponding to the sporadic nature of construction projects on the reservation. Since the beginning of work on the technology building, the sawmill has functioned almost continually.

Looking for local talent and skilled craftspeople, Rotondi and Stevens met Paul Baines, a Maine boat builder and experienced timber framer, who had worked on the neighboring Pine Ridge Reservation. Baines agreed to come to Rosebud, where he led a carpentry crew and taught timber framing.

For the technology building's smaller steel-skinned structure, to the east, RoTo experimented with a hybrid of readily available pre-engineered steel cladding and hand-hewn timber framing. Thus, the interior's pegged, nail-free joinery juxtaposes the exterior's standing-seam steel.

The architects also incorporated rustic half-sawn timbers, remnants of the squared timber-making process, into a brise soleil. S.A.



offerings at each campus. Unfortunately, no existing building was available, and the university risked losing the NSF grant.

Suddenly, a new technology building became the priority. The Lannan Foundation agreed to reallocate funds for RoTo to design it. To save time, the architects integrated into their scheme two pre-engineered steel-skinned structures, the type often used in agricultural and light-industrial settings.

The building's program breaks into two major components: labs or classrooms (including three interactive video studios) and public-oriented student-gathering areas with faculty offices. These components, respectively, occupy two steel-skinned structures linked by an enclosed zinc-clad bridge. Painted an earthy brown, the pre-engineered skins blend with the landscape, while the steely-gray zinc reflects the big sky. RoTo set out to employ as many tribal workers as possible, hiring craftspeople and foremen who were willing to teach construction methods. Given the steep learning curve for much of the workforce, the architects tried to schedule the most skilled tasks late in the construction process.

Like the campus plan, the 17,000-square-foot, two-story technology building drew inspiration from stars and planets and was conceived as a teaching tool. With the two steel-clad structures sited along the sun's solstice paths, the building's bridged cleft frames the summer sunrise and winter sunset. The connector, or bridge, follows the shape of a major constellation in plan, and its vertical panoramic window, like the Kapemni, reveals equal expanses of sky and earth.

The placement of windows and relative transparencies of materials allow the sun to track a course through the building. This relationship to the sun is especially evident in the interior's most inventive and sculptural elements: two slightly skewed stairways (one in the east structure and the other in the west) and an inverted tipi (on the east building's second floor). A lounge within a lounge, the tipi is clad in translucent rice-paper-like polycarbonate sheeting. When the rising summer-solstice sun and setting winter-solstice sun pass through the Great Pipe constellation (known in other cultures as the Big Dipper), the Lakota say it "lights the pipe," signaling the start of the ceremonial spring journey. When this celestial event occurs, the technology building's inverted tipi, like a pipe bowl, is lit by the sun. Its glowing form becomes visible to the outside through surrounding windows.

Because the west stair also stands along the solar path, RoTo gave it perforated risers to filter the sun's rays. Adding to the cosmological metaphors and alignments, the architects placed simple pendant halogen fixtures throughout the building's main circulation route in the configuration of specific constellations.

Whether the multiple celestial and poetic allusions will be experienced, or even noticed, remains an open question. With a nonjudgmental shrug, one laconic faculty member recently referred to the building's "gadgets—you know, the leaning poles, the tipi." Rotondi briefly considered making an explanatory booklet telling visitors exactly where to stand, but he now says, "I hope people will gradually start to decode the work like archaeologists, in the same way they read the land and sky. One day, someone may find him- or herself standing there at sunset and suddenly see all kinds of things."

**1998-1999** Completed in two years and dedicated in the spring of 1999, the new building with its technological offerings has generated much excitement on campus. An unprecedented number of Sinte Gleska students have flocked to the computer sciences department. Perhaps some day, through distance learning, the university will broadcast courses in Lakota studies, taught by its own



A timber brise soleil shades extensive glazing on the building's south face (above). Looking east from the west structure's roof deck (below), the

inverted tipi—a lounge within a lounge—is visible. Its translucent skin glows with the setting and rising solstice sun, or when lit electrically at night.

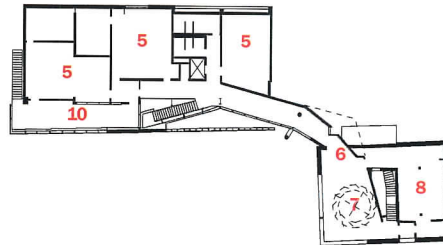




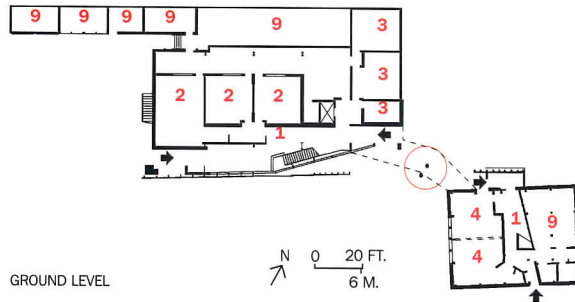
Over the technology building's main circulation path (below right and above), simple halogen fixtures hang in the configuration of constellations. The

west stair's perforated risers (below left and right) filter the sun's rays. From the inverted-tipi lounge (opposite), prairie views unfold.

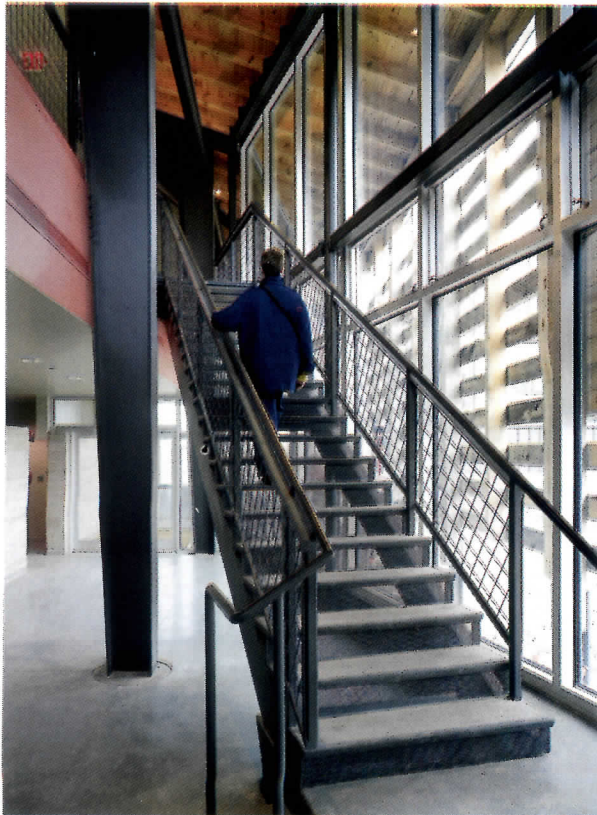
- 1. Lobby
- 2. Distance learning
- 3. Video
- 4. Classroom
- 5. Laboratory
- 6. Study lounge
- 7. Conference (inverted tipi)
- 8. Offices
- 9. Mechanical or utility
- 10. Roof terrace



UPPER LEVEL



GROUND LEVEL





native experts, to nontribal universities across the country.

Though the potential of the campus plan and technology center are tremendous, it would be misleading to present them as cure-all solutions. The flip side of this bright new building is the challenge of attracting technical science faculty on tight salaries, overcoming student attrition, and covering the added operations and maintenance costs. To trim energy costs, RoTo purposefully gave the building a passive-solar orientation to the south with extensive glazing, an exterior brise soleil, and an interior rammed earth wall that acts as a heat sink. Nonetheless, the facility is large scale by SGU standards, and postconstruction expenses remain significant.

RoTo went on to clear a site for the large multiuse building, but partly in a cost-cutting measure, the university hired others to finish the job. “Our intent,” says Stevens, “was always to set up something they could finish and implement on their own. They’re the ones who’ll live there and continue learning, long after we’ve gone.”

Indeed, there is much beauty in what RoTo left behind: not only the buildings themselves, but also a revived tribal sawmill, a generation of newly skilled construction workers, and even some former junior high school students whose straw-bale work inspired them to enter building

professions. There is talk at Sinte Gleska of starting a prearchitecture curriculum—to be linked with a professional degree program at the New York Institute of Technology (NYIT)—to train tribal architects.

Buffalo now roam the prairies around the new campus—Lionel Bordeaux brought in a herd as part of a campaign to reclaim the native ecology, its flora and fauna. The regenerative character of the campus is already palpable.

At a recent Sinte Gleska graduation ceremony, Rotondi was pleased to hear Bordeaux say, “This project is helping us rebuild a nation.” But, ponders Rotondi, “I realized that architecture and social change don’t move at the same pace. This is a slow, slow process. Yes, it’s going to happen, but not in the time frame that I had in mind.” ■

#### Sources

**Metal building system:** *American Buildings Company*

**Metal roof and wall panels:** *American Buildings Company; ACS*

**Windows:** *Kawaneer (aluminum)*

**Acoustical doors:** *Overly*

**Polycarbonate sheeting:** *American Acrylic Corporation (Lumasite)*

**WWW** For more information on the people and products involved in this project, go to **Projects** at: [www.architecturalrecord.com](http://www.architecturalrecord.com)

The glass ramps on the north wall of the "hub" are illuminated at night by cold-cathode tubes set within the triangulated truss.



# CRITICISM Modernism and contextualism meet at Bernard Tschumi and Gruzen Samton's **LERNER HALL** with provocative results.



by Robert Campbell

Bernard Tschumi, AIA, explains the building another way. "I want to make a building do something, not look like something," he says, "I'm more into Duchamps than Matisse." He calls the McKim context a "ready-made"—an already existing presence he had to reckon with, the way Duchamps took everyday objects and made them art by framing and titling them.

The result is three buildings in one. Materials range widely: granite, brick, imitation limestone, glass-block masonry, and punched windows on Broadway; more masonry, including some nearly black units in the campus wing, and a spectacular glass wall and zigzag pile of steel-framed ramps as sandwich filling in the middle, in what you can't help thinking of as the Tschumi part of the building.

Further complicating the problem faced by Tschumi and Peter Samton, FAIA, of Gruzen Samton Architects LLP, was that they had to join the building with what president Rupp accurately calls "the extant but quite egregiously ugly building behind it," Carman Hall, a high-rise dormitory of 1958.

Poured into this extraordinarily diverse context is an extraordinarily diverse program. Lerner is 225,000 square feet of mixed functions: food service; party space; bookstore; auditorium big enough to seat an entire class (1,500 students), including a balcony for a cinema; plus an art gallery; radio station; black-box theater; box office; computer labs; offices for 90 student organizations; 6,000 mailboxes; a lot of student hang-out space; and a variety of services, including counseling and health education, along with the staff offices that support these offerings.

At Columbia, everyone begins any description of Lerner by citing the most prominent element of the old campus: the grand, south-facing outdoor steps of Low Library, the Spanish Steps of Columbia. "The Low steps are like an urban beach," says Rupp. "In late April and May they're just

**L**erner Hall, the student center at Columbia University, can't make up its mind, in any simple way, about what it wants to be. That's its strength and also its weakness. Like the Roman god Janus, Lerner faces in two directions: out to the city on Broadway, and in toward the campus. On the city side, Lerner wants to be contextual, to be just another tall, handsomely uniformed soldier in what a university administrator calls the "stately half-mile long procession" of traditional Columbia buildings along Broadway. On the campus side, it wants to be companionable with the architecture and planning of the original McKim Mead & White campus of 1894, as well as to defer to the adjacent building, Butler Library.

But the Broadway wing and the campus wing are only bookends. In between them lies something entirely different. This middle section, Lerner Hall, aspires to be on the cutting edge of technology and to embody the talents and ambitions of its designer, Bernard Tschumi, AIA, dean of Columbia's School of Architecture, Planning and Preservation.

The result is a series of clashes of material and style. You can say Lerner Hall is the perfect and inevitable expression of the pluralism of our culture. Or you can say it lacks confidence in its own character. Maybe it doesn't matter.

Austin Quigley, dean of Columbia College, reasons, "We knew we'd lose either way, whether we copied the past or went all new. So we decided we'd learn how to do it both ways. McKim Mead & White is alive in the building. Bernard, too, is alive in the building."

George Rupp, Columbia's president, says: "We told the architects that the building had to be in the vocabulary of the McKim Mead & White plan."

**The new student center stalwartly occupies the corner of the main campus between Butler Library (left in photo) and Broadway.**

**Project:** Alfred Lerner Hall, Columbia University, New York City

**Architect:** Bernard Tschumi/Gruzen Samton Associated Architects—Bernard Tschumi, AIA, and Peter Samton, FAIA, principals

**Engineers:** Ove Arup and Partners (glass wall and ramp system, building

services, fire); Severud Associates (steel and concrete)

**Consultants:** Hugh Dutton Associates (glass wall and ramps); Ove Arup (lighting); David Harvey Assoc., Peter George Assoc., theater acoustics

**Contractor/CM:** Barney Skanska Construction

filled with people from top to bottom. You see the enormous diversity of this place all captured in one visual. The series of ramps at Lerner are a way of having the interaction of Low all year-round.”

Columbia’s student population, like that of other universities, grows ever more diverse. So the need to get students to meet one another, instead of withdrawing into various affinity groups, becomes stronger. Student services and clubs (“there’s been an explosion of clubs, some 200 now, chess to fly-fishing,” says an administrator) were formerly scattered all over campus. Gathering them in one building should encourage more student encounters, hopes Dean Quigley. Lerner isn’t the only tactic he uses: Columbia undergrads are required to change dorms every year to encourage what Quigley calls “lateral mobility.”

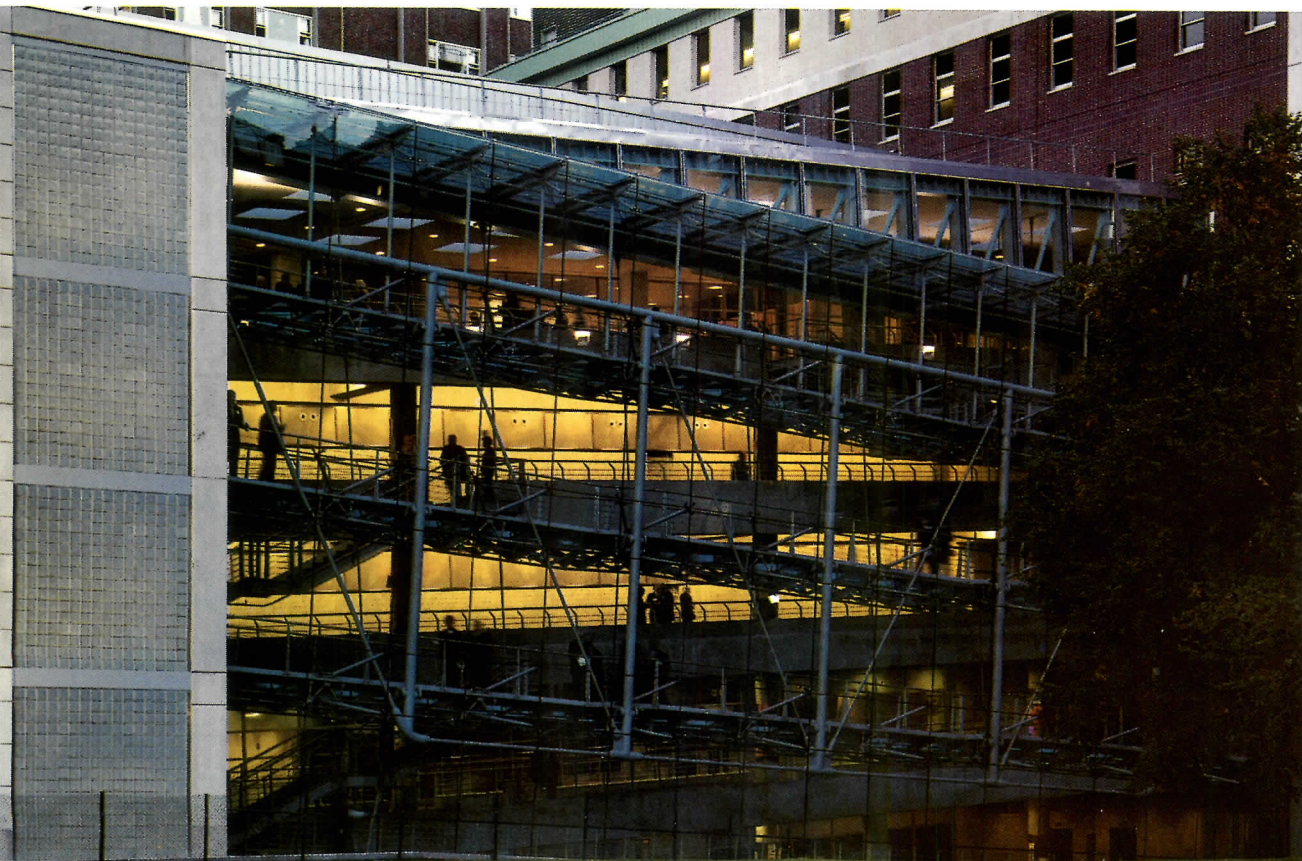
The pulsating heart of Lerner, the indoor equivalent of the Low steps, is the amazing ramp system. On a sloping site, Tschumi connects the two bookend wings with a criss-cross of ramps behind the great glass wall. Every student has a mailbox somewhere along the ramps. And you pretty much have to use the ramps, which are wheelchair accessible, to get from one part of Lerner to another.

The bet on the ramps is large: if they don’t work, Lerner will be a flop. A big part of that bet is on the mailboxes. “It’s where you go and bump into your neighbor. Sooner or later, everybody will see just about everybody,” says an administrator. But will they? Or are the mailboxes hopelessly retro? Every student’s grandmother seems to send E-mail these days. Even the university E-mails its students. Columbia estimates students on average will visit a mailbox several times a week, but

they’ve done no survey, and one student thinks it would be more like once every two weeks. “Snail mail still plays a very important role,” argues President Rupp. And it’s true that student grades arrive in the mailbox.

Spatially, the ramps are spectacular. At night they glow from within, and students moving on them unwittingly perform, as Tschumi points out, a shadow play against the glass wall. The entire ramp-and-glass-wall assembly is high tech to the max. Huge, laminated 800-pound glass panels are joined at their edges by only thin beads of silicon. Each panel is supported independently by steel brackets—Tschumi calls them “claws” or “spiders”—that reach out from the ramps to grab the glass. The ramps, in turn, are supported by—indeed are part of—an enormous multistory truss system that spans the 60-foot-high atrium. The system was designed by Hugh Dutton, formerly of RFR; engineered by Ove Arup in New York; and fabricated by Eiffel in Paris. (Lerner is Eiffel’s second New York building, the first was the Statue of Liberty.)

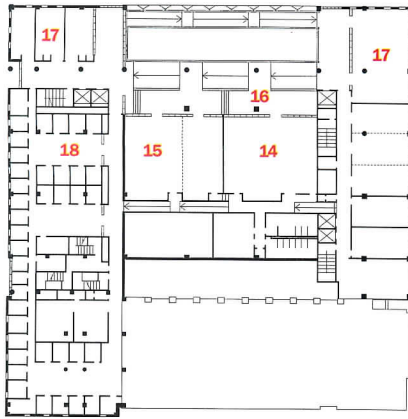
Tschumi describes the glass as the last word in transparency, but that isn’t quite how it reads. So intricate is the steelwork of the ramps and trusses that what you get, instead, is a sense of enormous complexity. The feeling, as you walk the ramps, is that you’re threading your way through a kind of architectural sculpture not unlike the great bridges of the industrial era, an erector-set world of struts and bolts and clamps and joints and turnbuckles, all the lovely stuff of life that the poet Gerard Manley Hopkins called “gear and tackle and trim.” This is a rich, exhilarating experience, not at all the minimalist transparency Tschumi describes. Brightly lit through the north-facing glass, the ramps pull you onto them by a kind of tropism. Tschumi makes a good point about the ramps and their construction, too, when he points out that many architects considered avant-garde in a formalist sense are using ordinary drywall and other conventional technologies. Still, the glass may require a lot of maintenance: the turnbuckles, for instance, may need to have their tension adjusted regularly.



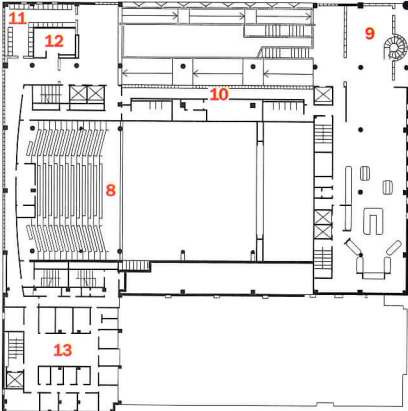
The center began as an expansion and renovation of Ferris Booth Hall by Gruzen Samton Architects. After George Rupp became Columbia’s president, he wanted a new structure and brought in Tschumi to work with Gruzen Samton. The two firms “worked side by side” throughout the process, reports Peter Samton. The result is a three-part building: an eight-story brick and granite end facing Broadway (above left), a glassed-in ramp structure that accommodates the change in grade (left and opposite), and the four-story brick and granite end.







FIFTH FLOOR

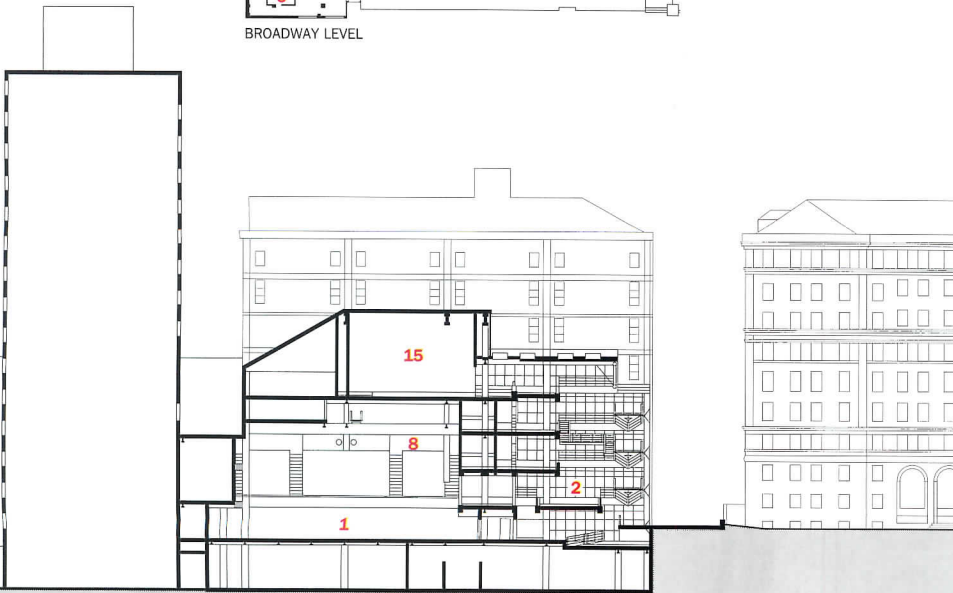


THIRD FLOOR



BROADWAY LEVEL

- |                                   |                               |                             |
|-----------------------------------|-------------------------------|-----------------------------|
| 1. Auditorium                     | 6. Main kitchen/Catering      | 12. Copy center             |
| 2. Campus auditorium lobby/Lounge | 7. Party space (second level) | 13. Double Discovery Center |
| 3. Bookstore entrance             | 8. Cinema/Auditorium balcony  | 14. Black-box theater       |
| 4. Broadway auditorium lobby      | 9. Dining                     | 15. Multipurpose room       |
| 5. Mail services                  | 10. Student mailboxes         | 16. Lobby/Lounge            |
|                                   | 11. Computer lab              | 17. Conference rooms        |
|                                   |                               | 18. Student clubs           |

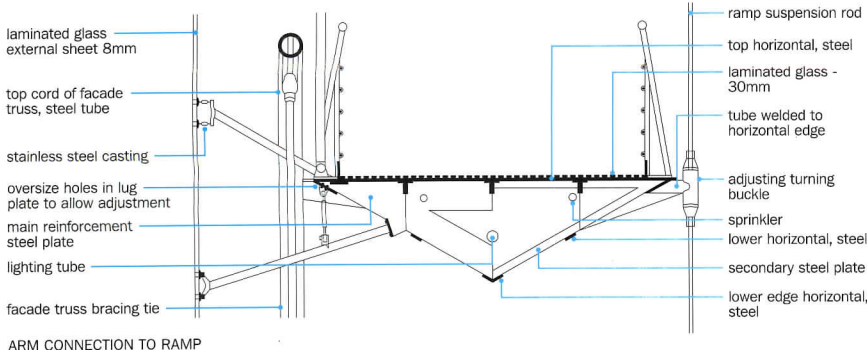


SECTION THROUGH AUDITORIUM AND LOBBY

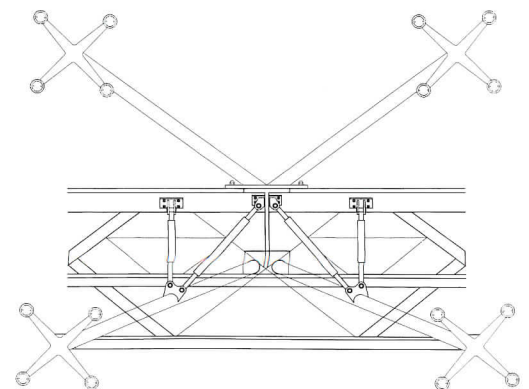
The glass wall, which has no glazing bars, is a clear laminate fixed by bolt connections to the four-pronged claws of the cantilevered arm supports. The arms, in turn, are welded onto the ramps, supplemented by turnbuckles for adjustability. The claws convey the wind and dead loads from

glass panels to the building through the ramps. For all the obsessive detailing, one lapse is obvious: The glass roof section was projected over the flush-glass facade without a suitable closure. An unsightly translucent compressible gasket had to be installed.

The steel ramp structure is suspended primarily from a truss system behind the glass facade. Paved in translucent glass, each ramp is formed from a triangulated truss made of steel plates (opposite). On the outer half of the ramp, hefty brackets transfer some loads to a three-story-high “facade truss,” which is anchored from the top in the frame of the building. (It is the most visible element of the ramp system on the exterior.) Tubular rods (right), hung from a second massive truss that fills the triangular setback above the fifth floor, support the inner half of the steel ramp. Brackets and additional suspension rods hold up the stairs attached to the ramps. The ground level under these ramps is, therefore, column-free.



ARM CONNECTION TO RAMP

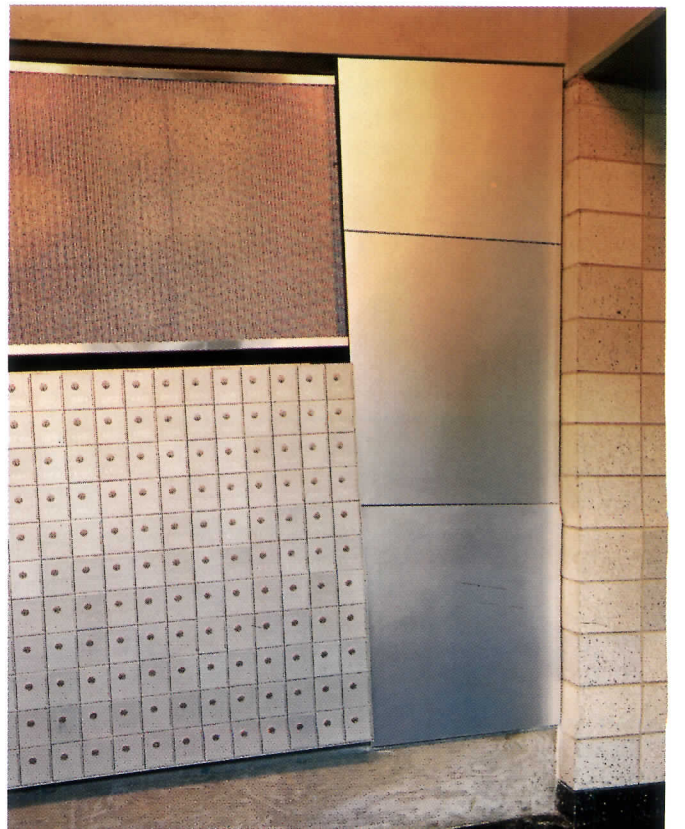


DETAILS OF SUPPORT ARM



Glass blocks line the corridor behind the bowed wall of the auditorium's balcony (above). Along the slope of the inner ramp are 6,000 stu-

dent mailboxes (below) designed to follow the incline of the ramps and offer a counterpoint to the orthogonal grid of the concrete frame.





The auditorium (left) is designed to accommodate between 1,100 and 1,500 people, depending on whether

the balcony is open. Lounges overlook the auditorium through glass in a seemingly sloping wall (below).



Tschumi speaks of Lerner as a return to the McKim campus plan, which originally called for pairs of similar buildings separated by quads. Except in one case, the campus developed in a different way, and no such pairings occurred. Tschumi believes his two bookend wings form such a pair, with the glassy ramp atrium reading as a void between them: the equivalent of a quad. This writer can't buy it. Neither in daylight nor at night do the ramps read as a void. Nor do the wings, of different heights, shapes, and materials, read as a pair. Perhaps if someone built a mirror-image clone of Lerner on the other side of Butler Library, there would be some recollection of McKim's Beaux-Arts concept. But there isn't now.

A couple of Lerner's other features also raise minor questions. The long wall along the Broadway sidewalk is blank except for two low canopied doors. One leads to the basement bookstore (like other college bookstores, it's also a Logo-land for tourists), the other to the auditorium (which will be, one supposes, usually locked). The blankness of the sidewalk frontage feels

## THE ATRIUM SHOULD READ AS A VOID, SAYS TSCHUMI. THIS WRITER CAN'T BUY IT.

boring and defensive. "Columbia wants to be behind this wall," says Tschumi, and Rupp notes: "We take security very seriously. Columbia undergraduates feel completely safe inside the campus." Older Columbia buildings also have a slightly fortified look, to be sure. But perhaps, in today's less elitist world, Lerner might have been an opportunity for a more visually pervious relation to the city. Another problem is that Lerner often picks up details of the older buildings around it in a Postmodern way that sometimes is arbitrary. Along Broadway, for instance, the old granite bullnose string course is imitated by a pretty illogical (and, as it turned out, tough to build) bullnose course of glass block. The old parapets reappear in an uninteresting, radically stripped-down form. On the campus side, a truly weird cylindrical brick column is supposed to carry the theme of Butler Library around a corner. Indoors, one student complains that your brain starts to read the ramps as level and the mailboxes (which are vertical) as slanted (quite true), which in her case led to vertigo. But most users seem not to be

bothered. A final problem is the depth of the floor plate. Few of the student clubrooms or staff offices enjoy any natural light or views: once you penetrate beyond the ramps, you feel you're in the back of the house. "Having windows these days in an office setting is an extreme luxury," said one administrator. (Tell that to the Germans.)

Colors everywhere are bland grays, blacks, and whites. Tschumi says the students will bring the color, which I suppose they will—the typical Columbia student, according to Quigley, being "an independent intellectual maverick with a sense of humor."

The most intriguing thing about Lerner is the way the architecture reflects or embodies the program. The program says the building is supposed to mediate among different kinds of students, to mix and match them. The architecture is a similar mediator: between past and present, between a Beaux-Arts era and a technological new millennium, between Broadway and the inner campus. It's mix and match all over again. As observed at the beginning, that's the timeliness, the strength, and the weakness of Lerner—a good building that would be better if it were not contextual with a few too many contexts. ■

### Sources

#### Suspended ramps and glass wall:

*Eiffel Construction Metallique, Nanterre; New Jersey Window Sales*

**Brick:** *Pine Hall J*

**Cast Stone:** *Ariscraft*

**Glass Block:** *Pittsburgh/Corning*

**Glass Block Panel System:** *Circle Redmont*

**Exterior/interior storefronts and curtain walls:** *Leed Him*

**Precast concrete:** *DiSanti Concrete*

**Granite cladding:** *New York Stone*

**Built-up roofing:** *G.A.F.*

**Metal:** *Merchant and Evans*

**Glass wall glass:** *Sun Glass, Italy*

**Ramp glass:** *Saint-Gobain France*

**Printed glass:** *Cesar Color*

**Other glass:** *Viracon*

**Skylights:** *Naturalite*

**Paneling:** *Wilhelmi (acoustic wood panels); Alpro Acoustics (corrugated metal panels); Laminators (aluminum panels).*

**WWW** For more information on the people and products involved in this project, go to **Projects** at: [www.architecturalrecord.com](http://www.architecturalrecord.com)

Getting there is half the fun: The museum's entry sequence (this page and opposite) offers a combination of tight thresholds and expansive outdoor spaces reminiscent of the walled gardens of Suzhou, China. The plan takes visitors on an indirect route that zigs and zags.



# In Oporto, Portugal, Álvaro Siza's SERRALVES MUSEUM takes visitors into a majestic walled garden filled with art.



by David Cohn

The Serralves Museum, the latest work of Alvaro Siza is set on the grounds of a 45-acre estate in the western suburbs of Oporto, Siza's hometown and Portugal's second largest city. With its Art Deco mansion, formal gardens, romantic lake, woods, and fields, the formerly private estate embodies the latent aspirations of the surrounding landscape in many ways. Modern growth has largely bypassed the historic center of Oporto, extending instead westward across these verdant hills overlooking the Douro River and the nearby Atlantic Ocean. Dense new developments jostle for place among old villas, small industries, and languishing vegetable plots, overtaking winding rural tracks and turn-of-the-century suburban boulevards. This untidy but appealing landscape resembles nothing so much as a lush but neglected garden, like a forgotten extension of the Serralves estate itself, with labyrinthine paths, secret corners, and surprising vistas.

This image also makes a good metaphor for the work of Alvaro Siza, especially the 140,000-square-foot compound he has built to house the museum here. Like a garden walk, the visitor's path through the galleries is replete with branching routes, sudden turns, spatial clearings and pauses. At a deeper level, the relaxed idiosyncrasies of the local landscape offer important clues to the shaping of Siza's sensibility, his endlessly inventive approach to form, space, and light. Explorers of the Serralves Museum will be surprised and rewarded at every turn by his spare geometries and elegantly off-balance symmetries, and by the way daylight is reflected and re-reflected from walls and horizontal planes, creating an expansive, luminous containment of space.

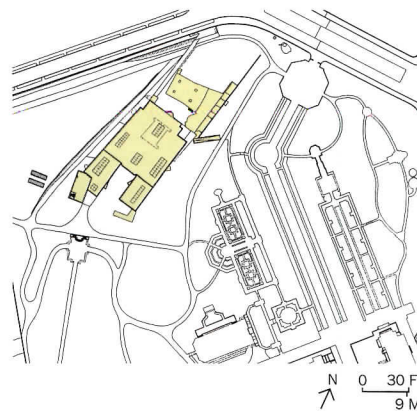
Other unmistakably Sizian qualities are the slightly quaint, dignified air of certain proportions and materials in an otherwise Modernist vocabulary—the polished marble wainscoting of the lobbies and stairs; the heavy windows, framed in wood and steel—and the awkward, rustic grace of many details, such as the custom-designed

David Cohn is RECORD's Madrid-based correspondent and writes about architecture and design for many European magazines.

furniture, the balustrades, and even the door pulls.

The Serralves Museum is Portugal's first center dedicated exclusively to contemporary art. It was established by the Portuguese state in 1986 and is supported by a public-private foundation that includes more than 90 of the nation's leading banks, corporations, and public companies. The museum

first opened its doors in the Serralves mansion, which was built in 1940 for a local patron of the arts by French architect Charles Sicilis, with the



participation of leading French decorative designers, such as René Lalique and Emile-Jacques Ruhlmann.

In 1991, the Ministry of Culture asked Siza to add a new building to the grounds. The state funded its \$25 million cost and provides an annual operating budget of \$4 million. The project is one of the main institutional investments in Oporto's preparations to

become the European cultural capital in 2001 (together with a concert hall to be built by Rem Koolhaas). It is also part of a state initiative to build cultural projects outside the country's traditional center, Lisbon.

As Portugal's most distinguished architect and winner of the Praemium Imperiale in 1998 and the Pritzker Prize in 1992, Siza was the undisputed choice for the job. The museum is his most important commission to date in his hometown, where he also designed the Oporto

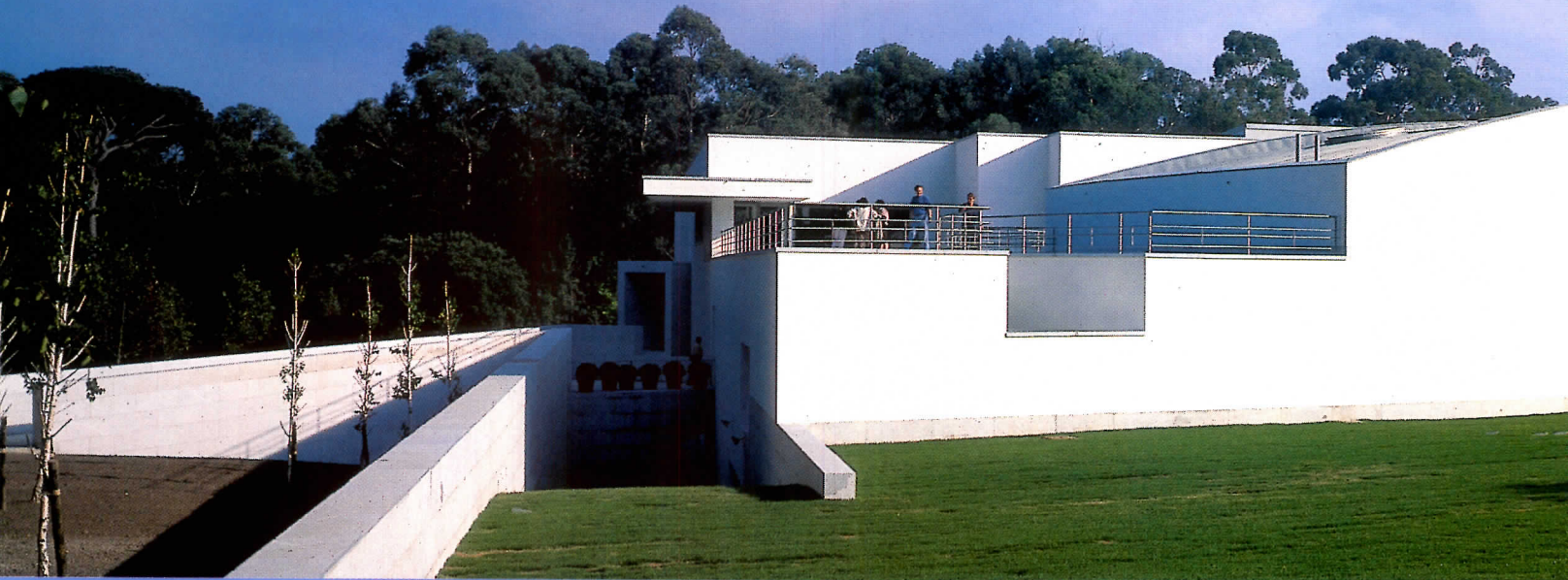
**Project:** Serralves Museum of Contemporary Art, Oporto, Portugal  
**Architect:** Álvaro Siza—Álvaro Siza, principal; Clemente Menéres Semide, project director; Tiago Faria, Christian Gaenshirt, Sofia Thenaisie Coelho, Edison Okumura, Abílio Mourão, Avelino Silva, João Sabugueiro, Cristina Ferreirinha, Taichi Tomuro, Daniela

Antonucci, Francesca Montalto, Francisco Raina Guedes de Carvalho, project team

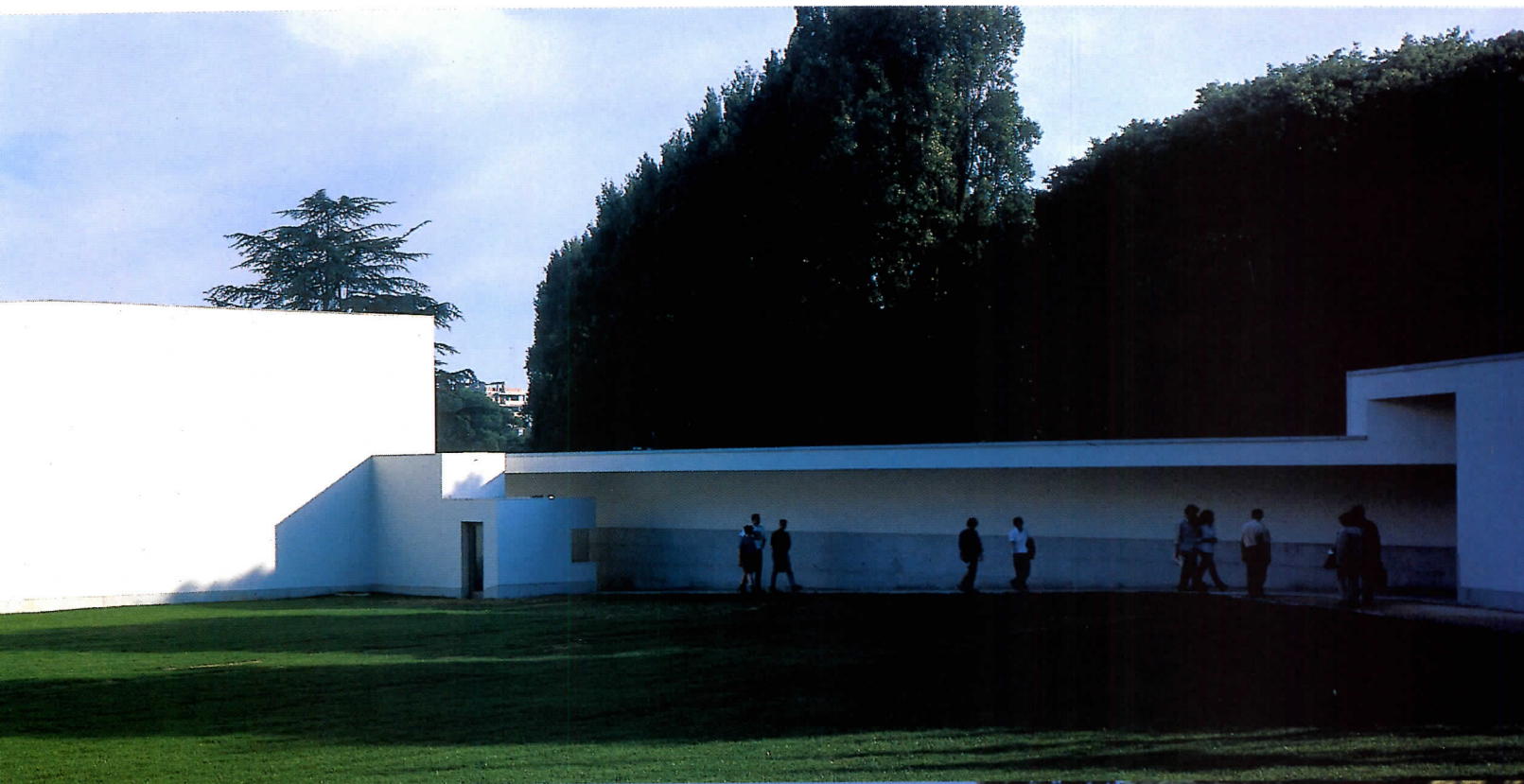
**Engineers:** GOP-João Maria Sobral (structural); GET-Alfredo Costa Pereira (mechanical)

**Landscape architect:** João Gomes da Silva

**General contractor:** Edifer, S.A.







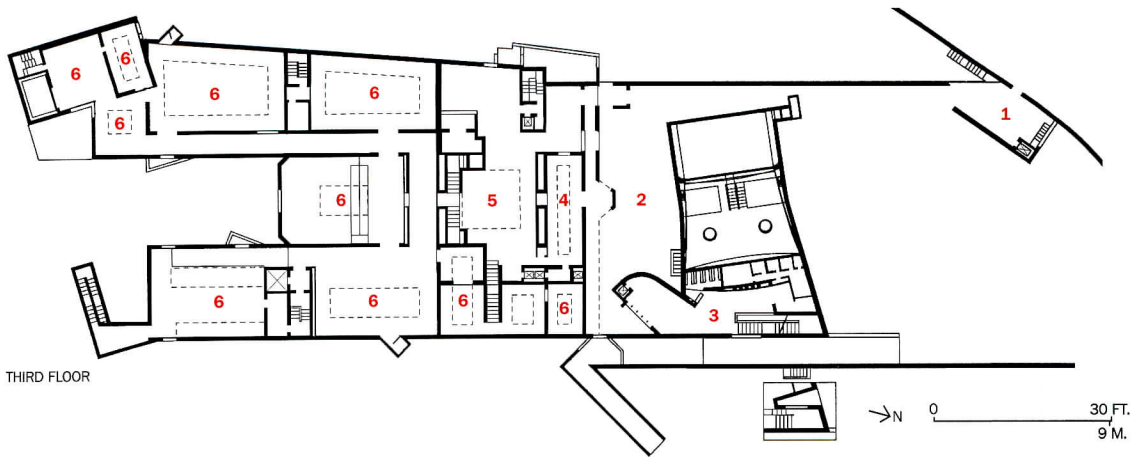
The museum is an independent compound out of sight of the Art Deco mansion, which had been the focal point of the 45-acre Serralves estate.

Encompassing courtyards and surrounded by lawns, the museum stands in contrast to both Oporto's medieval quarter and its dense modern development.



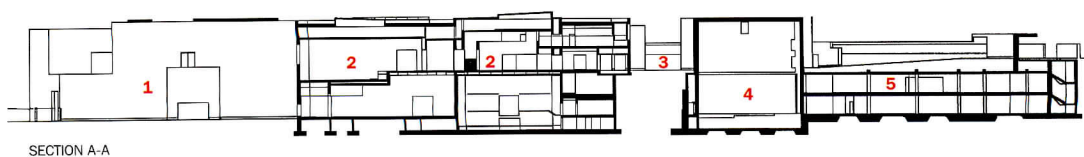
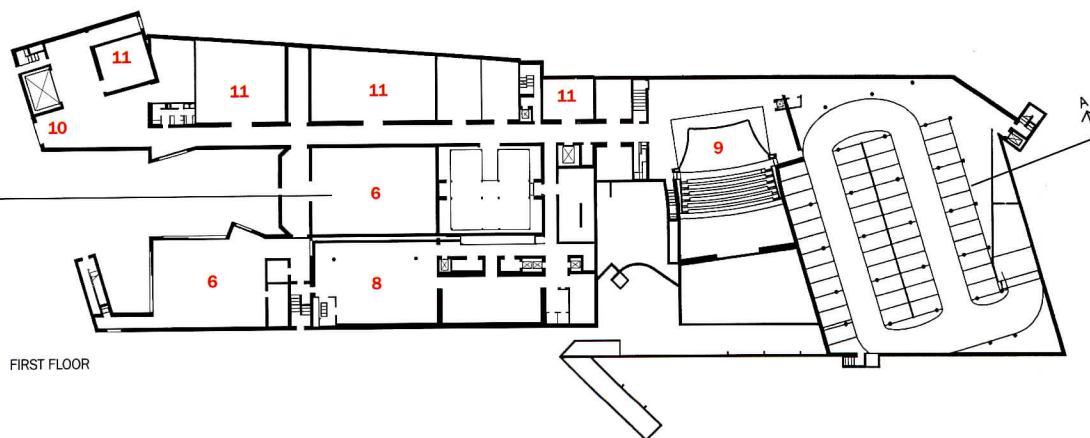
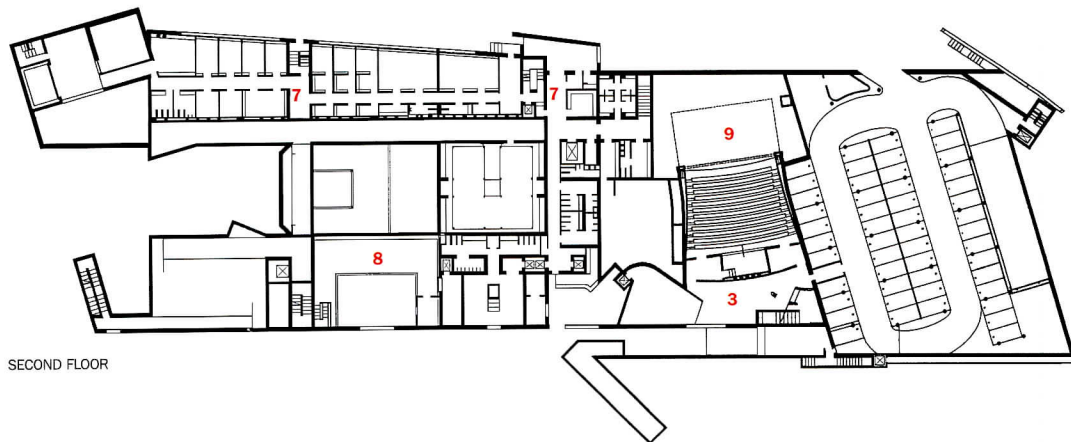
The courtyard on the south end of the museum (above) contrasts with the enclosed patio near the north end of the building (right).





Visitors enter the 140,000-square-foot museum on the third floor, where ramps and stairs lead from skylit galleries to nondisplay spaces.

1. Entrance
2. Patio
3. Lobby
4. Bookshop
5. Atrium
6. Exhibition gallery
7. Offices
8. Library
9. Auditorium
10. Service entrance
11. Storage



1. Courtyard
2. Gallery
3. Patio
4. Auditorium
5. Parking

**David Cohn visited Álvaro Siza** earlier this year at the architect's new studio, located on a steep hill near the Douro River, not far from his Serralves Museum and the Oporto School of Architecture. The studio is in a building designed by Siza, which he shares with friends and colleagues such as Eduardo Souto de Moura and Fernando Távora. Throughout the conversation, Siza illustrated his ideas with thumbnail sketches and diagrams. Here are some of his comments:

**On the visitor's experience approaching the Serralves:** "There is a perpendicular axis from the street, a beautiful axis. Here, you can see the house. And there is a tennis court. And then, to the right, there is a strip of thick brush and trees, which I maintained. You go off the axis, down some steps, through the trees. Zig, zig, zig. You almost don't see the museum."

**On the museum's auditorium seats:** "I made them out of maple, like this. With velvet backs and leather trim, here and here. It is something I saw in the opera house in Naples. Side by side, like armchairs. It's very intimate. You feel more at home. You feel decadent."

**On the problems of working with big contracting companies:** "Now almost always when you go to the works you get angry. Because things are not well made. You say, 'No, this is not correct.' And there is a construction management team working for the owner, and they say, 'No, no, it's okay.' They don't care about quality at all. And they have tremendous power. It is a big danger for architecture."

**On working conditions early in his career:** "It was always a pleasure. I must tell you, I could go to a work site and if something wasn't right, I didn't have to say anything. The builder was ashamed to have built something badly. And he would say to the workers, 'This is wrong, take it down.'"

School of Architecture (1995) and several smaller works, such as seaside swimming pools and a teahouse in nearby Matosinhos.

Despite the harmony between architect, site, and solution, Siza had to overcome fierce opposition from local preservationists to build the museum. These individuals worried about maintaining the pristine character of the estate and took their case as far as a European Community commission in Brussels. As Siza sadly observes, "To be realistic, people today are afraid of contemporary architecture. They don't like it. And that brings up the themes of the defense of the patrimony and so on, which are used to make contemporary architecture almost impossible to build."

Over a six-year period, Siza eventually produced four designs for two sites in the park—"Smaller, bigger, smaller, bigger again," he sighs. The building was finally located at the edge of the estate in a former vegetable garden and sunk into the slope to diminish its impact on the surroundings.

Siza's museum thus forms an independent compound, out of sight of the main house and with a separate entry gate from the street. It is contained between two nearly parallel walls, punctured by window openings

## THE MUSEUM GIVES THE ILLUSION OF CONTAINING MANY WORLDS.

and a moatlake bridge into the park. The walls also enclose the separate volume of a 300-seat theater, the entry court, and a patio off the main lobby. The 50,000 square feet of galleries are organized within these walls in two wings around a central court. The wings frame a visual axis that points toward the dense tree cover of the park's southern slopes, where a path descends toward unseen fields and greenhouses—a view in pointed contrast to the powerful axial machinery of the terraced gardens and fountains at the main house. "I like this indirect relation with the main house," Siza explains. "It is more a relation of memory, as you walk among the woods and paths. And it opens a wider tour through the park."

This same visual axis runs through the entire building, from the lobby court and the handsome skylit vestibule to a large central gallery, the first formal pause or "clearing" on the visitor's itinerary, where a window hung high on the wall offers an abstract view of the treetops ("like a picture," Siza suggests), and a switchback ramp descends to the gallery floor. The wings on either side of this gallery unfold in asymmetrical harmony, one ending in a beautiful knot of small galleries, the other in a magnificent span of space, where a small, almost secret passage descends to the lower floor. Each route takes visitors through spaces lit by central skylights; some are baffled by the upside-down table soffits Siza first developed for his museum in Santiago de Compostela, Spain [October 1994, page 102]. The itinerary is interrupted by large windows overlooking the grounds and small balconies, where Siza imagines himself slipping outside for a smoke.

These public spaces are only the visible superstructure of a formidable technical machine. Below deck are two levels of staff, service, and storage spaces, including a garage under the entry court, a truck dock, and a double-height library, one of the building's most beautiful spaces. On top, trusses 6.5 feet high span the largest galleries and serve as part of a structural system that combines concrete and steel. Enclosing the building are masonry cavity walls finished in stucco over a granite base.

In the end, Siza uses to advantage the severe terms under which the building was admitted to the estate. The museum is, after all, too large to be treated as a pavilion or folly. In Siza's hands, it works more like one of the walled gardens belonging to the aristocrats of Suzhou, China, in which a variety of spatial experiences are compressed into a small area, giving an inwardly focused precinct the illusion of containing many worlds. ■



The galleries (above) are alive with daylight: from skylights, reflected off upside-down table soffits, and entering through large planes of glass. Distracting details are

minimized: air grilles are thin slots at floor level and electrical outlets are behind the finished gypsum board, which must be cut out for access and then replaced.

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by Steven Bingler, AIA



1

**Minneapolis**

*A new downtown school by the Cuninghams Group fosters diversity and helps students take advantage of urban amenities.*



2

**Middletown, Conn.**

*In a woodsy setting, Jeter, Cook & Jepson Architects design a school addition that integrates public pathways and a nearby historic estate.*



3

**San Francisco**

*After an earthquake damages an 82-year-old structure, Kwan Henmi builds a replacement, retaining classical elements of its predecessor.*



4

**Far Hills, N.J.**

*Ford Farewell Mills and Gatsch designs a white, sun-louvered school addition that plays up an outdoor amphitheater as an additional learning setting.*

Architects face a national challenge in designing educational facilities. The numbers are staggering: This year's public and private school enrollment in grades K-12 will reach a record 52.7 million students, surpassing last fall's all-time high by 500,000. New enrollment records will continue to be set for the next eight years. In 1999, nearly \$19 billion will be spent on renovating and building new environments for learning.

The pressing need to renovate or replace our schools presents an opportunity for citizens, educators, and planners to incorporate the latest research on student achievement, which points to learning strategies that are more unifying and collaborative than previous methods. A movement toward integrated curricula encourages combining subjects from previously discreet disciplines like math and science into a common teaching strategy that requires architectural spaces that support interdisciplinary collaboration, teacher interaction, and student engagement.

**A long evolution of educational ideas**

Many of the ideas now coming into play were initiated by John Dewey, the late-19th- and early-20th-century psychologist, philosopher, and educator. Dewey's work, which centered on what he called instrumentalism or experimentalism, was built around the model of human experience. Dewey advocated project-based, hands-on, and "real world" learning. He believed in a collaborative approach to planning and implementing decisions about learning and learning environments, saying that not only do we need education in a democracy, but we also need democracy in education. This is borne out in a recent outline, called "National Design Principles for Developing Schools as Centers of Community," developed by the U.S. Department of Education. The principles—endorsed by organizations like the AIA and the Council for Educational Facilities Planners—also advocate an approach to school design that is more collaborative, integrated, and participatory.

Educators and architects are now challenging the traditional concept of the freestanding school as a mere container for learning.

*Steven Bingler, AIA, who was trained as an architect at the University of Virginia, is the founder of Concordia Inc., a planning firm, and Concordia Architects. Both firms are in New Orleans. He is also special consultant to the Office of the Secretary of the U.S. Department of Education for policy related to the design of schools as the center of the community.*

Instead, many new designs—both for public and private schools—encourage a stronger connection between the school site and its educational mission. One innovative approach long advocated by Dr. Anne Taylor of the University of New Mexico calls for architects and planners to embody educational content in building designs so they can serve as “three-dimensional textbooks.” Among the best examples of this concept is still Thomas Jefferson’s design for the University of Virginia,

a health-care clinic, day-care center, a restaurant for both the community and the students, and 15 academic “houses,” where classes will be taught by interdisciplinary teams. In Nashville, Everton Oglesby Askew Architects included ideas derived from a charrette with first graders—including a central structure dubbed “Eddie’s Tower”—in the design for Inglewood Elementary School. Cragmont Elementary School in Berkeley was developed by ELS/Elbasani & Logan Architects in a series of work-

## EDUCATORS AND ARCHITECTS ARE NOW CHALLENGING THE CONCEPT OF THE SCHOOL AS A MERE CONTAINER FOR LEARNING.

where 10 major pavilions were constructed to manifest classical orders and styles of architecture, while the accompanying formal gardens were landscaped to double as botanical laboratories. Other educational planning ideas extend the learning environment into the surrounding community by locating schools in shared nontraditional settings like museums, parks, or zoos. Parents and community members are also lobbying for a more collaborative use of educational facilities for recreation, performing arts, health, libraries, and other diverse community needs.

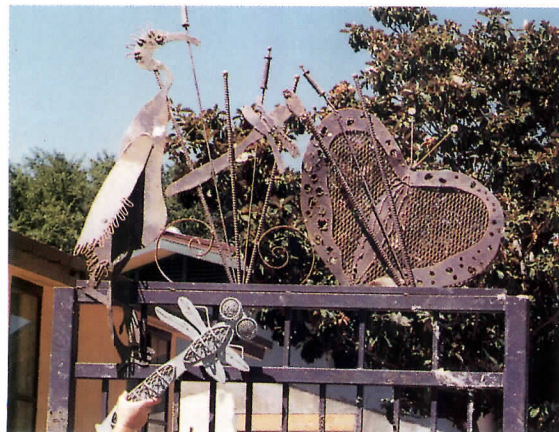
Community integration and participatory learning are making their way across the country. In North Berwick, Maine, Harriman Associates has designed a 250,000-square-foot high school that will have

shops with parents, teachers, administrators, neighbors, and students. The result is a cluster of distinct forms that is aesthetically compatible with the surrounding homes. In Silicon Valley, architect Bill Gould, AIA, works with school districts, students, and artist Glen Rogers Perrotto to create unique installations at individual schools. Another structure in the Bay Area, Esherick Homsey Dodge & Davis’ new Tenderloin school, accommodates community uses and is a symbol of safety in a troubled area.

The projects presented in this month’s Building Types Study also illustrate these trends. The Wilbert Snow School was designed through a series of workshops that included parents, community members, and civic groups. The architectural solution uses a single unifying



The student-inspired Eddie's Tower forms the centerpiece of Inglewood Elementary School in Nashville (left). A fence at Theuerkauf Elementary School in Mountain View, Calif., was created by an architect and artist in conjunction with school students (below left). The Jean Parker School incorporates an old terra-cotta doorway and reinvents it as the new main entrance (below right).





structure to integrate indoor and outdoor learning environments and to maintain unimpeded neighborhood access to the recreational amenities of the site. The design also preserves and expands a neighborhood park and adds new walking trails that link the school building to an adjacent historic estate. Educational content is integrated through the use of cast-stone medallions representing plants and animals indigenous to the area. The medallions also serve as a way-finding system throughout the school. The Jean Parker Elementary School has a separate entrance through which community members can access the multipurpose room, auditorium, music room, and community kitchen without disrupting classes.

Perhaps the most compelling and contemporary of the projects is the Interdistrict Downtown School in Minneapolis by the Cunningham Group. By locating the facility adjacent to a university education department, the school's already diverse K–12 community was expanded to include the university faculty and students. By embracing its downtown location, the school provides valuable opportunities to extend the learning environment even further, by enhancing interdisciplinary programs and field trips and developing mentoring and community-building relationships with neighboring businesses.

Cash-strapped districts cannot always afford new schools advancing the latest education theories, but they can share resources. In Dearborn, Mich., 300 students go to school in the Henry Ford Museum.

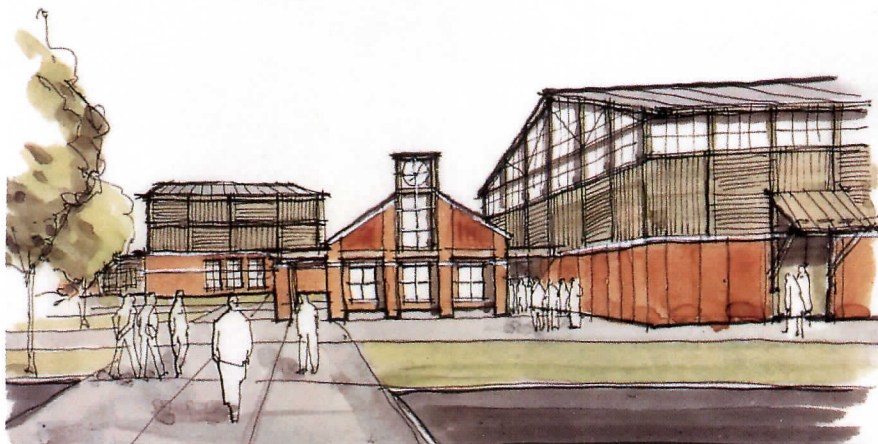
The curriculum links objects in the museum with math, science, languages, and social studies. Since the building already existed, costs have been about one-third what they would have been to build a new school on a greenfield. Hayward, Calif., a community with 88 ethnic groups, plans to put a new high school downtown near a BART station and have it double as a multicultural fine arts museum and community center.

#### **A return to ideals**

The opportunity to accommodate ever-expanding integrative and participatory concepts is a boon for architects and planners. As Walter Gropius wrote in the *Bauhaus Manifesto*: “A vital architectural spirit rooted in the entire life of a people represents the interrelation of all phases of creative effort, all arts, all techniques. Architecture today has forfeited its status as a unifying art. It has become mere scholarship. The art of Architecture is dependent upon the cooperation of many individuals, whose work reflects the attitude of the entire community.” These early modern principles, coupled with ideas like those of John Dewey, are changing the planning and design of schools. These new humanistic and interdependent approaches to learning environments, when created in harmony with their diverse constituents, lie at the core of a 200-year-old democratic revolution in which we are still vitally engaged. ■



**Above and top left: Cragmont Elementary School in Berkeley was developed by ELS/Elbasani & Logan Architects during workshops with parents, teachers, administrators, neighbors, and students. The result is a cluster of distinct forms that is aesthetically compatible with the surrounding homes and landscape.**



**Left: In North Berwick, Maine, Harriman Associates designed a 250,000-square-foot high school that will have a health-care clinic, day-care center, a restaurant for both the community and the students, and classes taught by interdisciplinary teams.**

## 1

# Interdistrict Downtown School, Minneapolis

**FOR A FRENETIC URBAN SITE, THE CUNINGHAM GROUP DESIGNS A SCHOOL BASED ON DIVERSITY AND COMMUNITY INTEGRATION.**

by **Bette Hammel**

**Project:** *Interdistrict Downtown School, Minneapolis*

**Owner:** *West Metro Education Program*

**Architect:** *The Cuningham Group—John Cuningham, FAIA, partner-in-charge; John Pfluger, AIA, project manager; Darryl Pratte, Jeffrey Manoyck, Mohammad Lawal, AIA, Grant Reiling, project designers; Janet Dray, interiors*

**Engineers:** *Clark Engineering Corp. (structural and civil); Michaud Cooley Erickson (mechanical)*

**Consultants:** *Michaud Cooley Erickson (lighting); The Weidt Group (energy use); David Bijadi, AIA*

**General contractor:** *Knutson Construction*

**Total construction cost:** *\$11.56 million*

**Size:** *125,000 square feet*

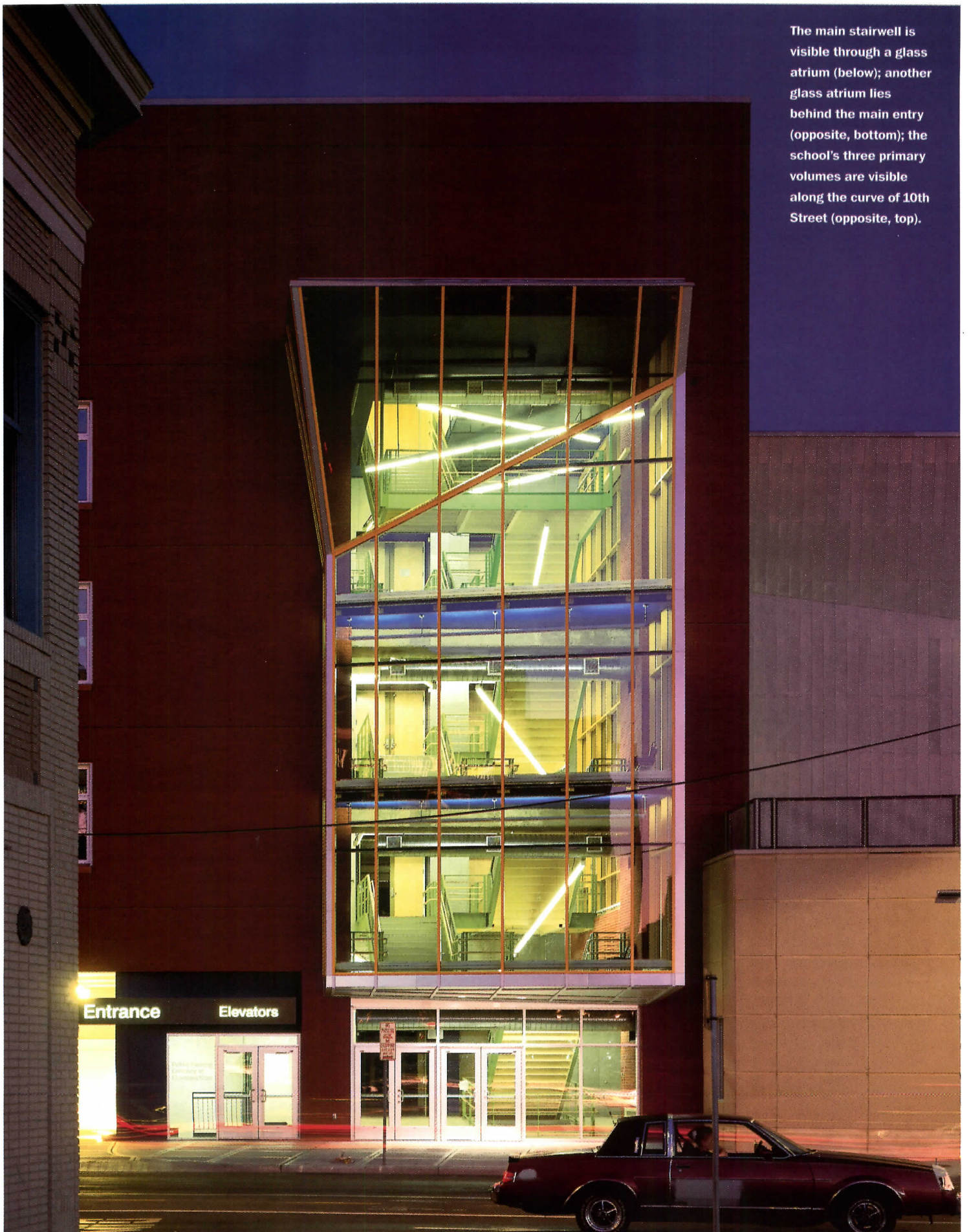
Befitting its site on a busy corner in Minneapolis' downtown theater district, a new school designed by the Cuningham Group accents intercultural diversity and hands-on learning. Working closely with forward-looking educators, the local architects have created a school that takes full advantage of its urban environment. The Minneapolis Interdistrict Downtown School, which opened September 6th and serves kindergarten through 12th grade, has flexible spaces where students of varying ages, races, and backgrounds mingle. Daylight pours in and vivid colors enliven the interiors, from which skyways will soon connect students to neighboring buildings.

The design reflects the diversity of the public magnet school's students (applications for admission have come from nine Minneapolis and suburban school districts). The north portion, built over an underground public parking ramp, is a four-story red-brick rectangular form that wraps around a glass atrium. The atrium juts out of the facade toward the street, exposing a bright yellow and purple stairway. On the south side, above a curving, soft yellow precast concrete base that

*Bette Hammel is a freelance writer living in Wayzata, Minn. Her late husband was Minnesota AIA gold medalist Richard F. Hammel, FAIA.*



The main stairwell is visible through a glass atrium (below); another glass atrium lies behind the main entry (opposite, bottom); the school's three primary volumes are visible along the curve of 10th Street (opposite, top).



The brightly colored staircase has open views of downtown (right); partitions of varying tints (below) divide the classroom bays, which have no doors, though many teachers close off their bays with movable storage units.



parallels 10th Street, the structure turns into a grey zinc box with operable wood-frame windows. On top of the curving base, on the second level, is an outdoor terrace enlivened by an apple green trellis.

The design of the school, which has a current enrollment of 520 children, challenged the architects with its restrictive urban setting. Flexibility, easy connections between the various areas, and a relatively small enrollment were the goals. "We have turned the corner on the big-school concept," says John Pfluger, the Cunningham Group's project manager.

The 102,000-square-foot school has no gym, auditorium, cafeteria, or locker corridors. Instead, the school uses nearby city resources: a local YMCA, the MacPhail Center for the Arts, the public library, St. Thomas University (currently the only direct link by skyway), the County Government Center, and even local businesses such as a Dayton's department store. Downtowners recognize the students, who wear a uniform of khaki pants topped with polo shirts. Principal Barbara Shin says the uniforms "promote social equality and identify our students."

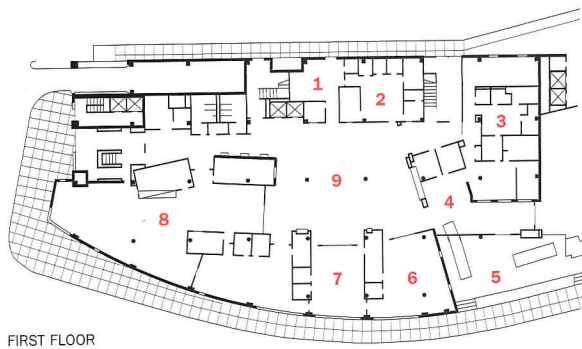
### Cooperative spaces

In planning the interiors, Cunningham Group CEO John Cunningham says the architects "were convinced by the teachers that children learn not so much by sitting and listening but by doing things together in a cooperative way." The designers organized the school accordingly. On each floor they provided a brightly painted shedlike shop for hands-on projects and wide open resource areas or communal spaces.

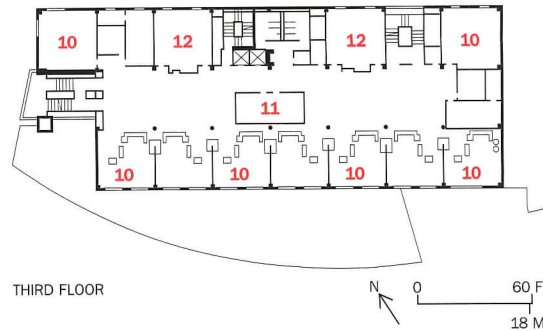
Grade levels are organized into "houses" of 100 students apiece,

two per floor, that bring together students from three or four grades. The second floor houses K-5, including two kindergarten rooms. The third floor has middle grades 5-8, and the fourth level holds grades 9-12. This arrangement relies on the old-fashioned premise that older pupils will help younger ones if placed in the same vicinity.

Open-ended classroom areas facing the south window wall are divided into bays, arranged by a teacher. Some rooms have traditional seating arrangements, others use semicircular configurations, while



FIRST FLOOR



THIRD FLOOR

- |                 |                 |                   |
|-----------------|-----------------|-------------------|
| 1. Maintenance  | 5. Courtyard    | 9. Gathering area |
| 2. Kitchen      | 6. K-5 lab      | 10. 5-9 base unit |
| 3. Nurse        | 7. Sound lab    | 11. Arts area     |
| 4. Welcome area | 8. Media center | 12. Project area  |



some have floor pillows. Colored partitions of red, blue, yellow, and green divide the bays. There are no doors, but teachers can close off their bays with movable storage units, also designed by the Cuningham Group. The curving second-floor terrace provides safe outdoor playground space.

One of the school's hallmarks is the "gathering" room, at street level. During lunch, it becomes a cafeteria, its movable tables spread with multi-colored tablecloths. At other times, it's used for general assemblies, performances, or special events. Alongside this gathering space are two wood-

floored rooms: one for dance and music, the other for exercise. When a huge glass garage door opens, the music room converts to a stage. Other peripheral rooms provide space for welding and physics and industrial technology, as well as for a multimedia center with books, computers, and a TV studio.

Because the building stands at a busy intersection, the architects installed electronic filtration systems to clean air coming from outside. Most of the mechanical and electrical systems are exposed and coded throughout to help students learn how

buildings work. For security, visitors have only one entrance, while bused-in students are dropped off safely in a wide alley behind the building.

As youngsters enter the school they pass a poster that proclaims: "I hear and I forget, I see and I understand, I do and I remember." With its design, the Cuningham Group has implemented this philosophy. ■

**Sources**

- Cast-in-place concrete structural system:** Knutson Construction
- Precast concrete:** Spancrete
- Cladding:** Canada Brick—

*Amsterdam MKII*

- Curtain wall:** Rheinzing metal panels, Efc0 5600 aluminum wall
- Glazing:** Viracon
- Windows:** "H" Windows of Norway
- Metal doors:** Curries
- Wood doors:** Weyerhaeuser
- Interior lighting:** Lithonia
- Exterior lighting:** Vega
- Paneling:** Tectum
- Carpeting:** Lees

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# 2 Wilbert Snow School Middletown, Connecticut

**A BACK-TO-NATURE SCHOOL ADDITION CREATES COHESION  
AND PRESERVES FOREST PATHWAYS FOR PUBLIC USE.**

**by William Weathersby Jr.**

**Project:** Wilbert Snow Elementary School, Middletown, Conn.

**Owner:** City of Middletown

**Architect:** Jeter, Cook & Jepson Architects—James E. LaPosta Jr., AIA, design principal; David G. Jepson, AIA, principal in charge; Peter N. Stevens, principal, community relations; Robert A. Andrade, AIA, project manager; David S. Spencer, AIA, project manager; Lisa G. Kavarnos, AIA, job captain; Barbara Hubbard, graphics and signage; Terrance Connolly, construction administration. Project team: Scott Persing, AIA, David Newman, AIA, Fernando Andrada, Mel Diegor, Grace Fabian, Melissa Merrill, Sherry Ann Oxley, Janis Newell, Steven Therault, Leo Gonzales

**Engineers:** Girard & Company Engineers (structural); Bemis Associates (mechanical, electrical, plumbing, fire protection); A-N Consulting Engineers (civil)

**Consultants:** Ferraro/Hixon Associates (landscape); Robert Celmer, PhD (acoustics); Educational Technology Infrastructure; CCR/Pyramid

**General contractor:** Haynes Construction Company

**Construction cost:** \$8.1 million (building and site construction); \$9.8 million (total project cost)

**Size:** 71,600 square feet

When it was built in 1954, the Wilbert Snow Elementary School in Middletown, Conn., embodied the era's progressive thinking regarding modern architecture's role in public education. The school, named for a former Connecticut governor and Middletown native and designed by Warren H. Ashley, adhered to a campus plan in a wooded, 14.5-acre setting. In an unusual layout, five free-standing classroom buildings stood in a horseshoe formation behind three main administration buildings. Each flat-roofed, brick-and-glass satellite structure contained four classrooms wrapped around a bathroom-and-utility core; students trekked to the main buildings for lunch, gym, and other activities. By integrating outdoor and indoor learning environments, the architects sought to create a back-to-nature ethos. In practice, however, young students sometimes had to battle the elements during inclement weather.

A recent renovation by Hartford-based Jeter, Cook & Jepson Architects maintained the campus character while integrating the separate buildings into a more efficient, unified whole. "The new building plan and detailing are a direct response to the wooded site," says James LaPosta Jr., AIA, principal design architect. "The

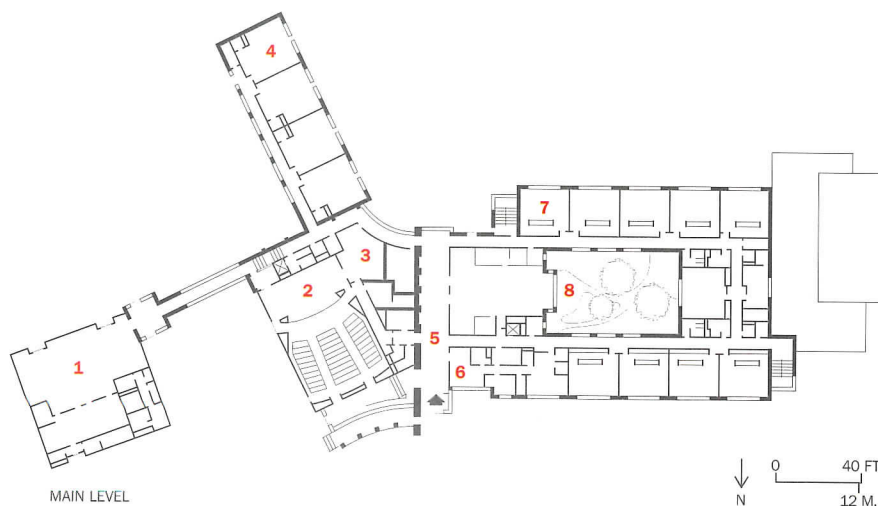
*William Weathersby Jr. is a freelance writer living in Westport, Conn.*



The new lobby corridor is the north-south circulation spine of the school (below); an elevated bridge connects the main building to an existing brick classroom structure that the architects converted to

a dining hall (opposite top); a new portico fronting the refurbished gym provides arrival and transition spaces leading to the two classroom-wing additions (opposite bottom).





1. Dining hall
2. Auditorium
3. Music area
4. Kindergarten
5. Lobby
6. Administration
7. Classroom
8. Inner courtyard

A music classroom (below), computer workshop (opposite, top left), and library/media center with built-in storage and seating (opposite, top right) are new amenities. A curved corridor connecting the school's old and new sections offers abundant views and daylight (opposite bottom).

community has historically used the school grounds as a neighborhood park, so we modeled our forms after a nature center or park recreation building.”

#### A variety of voices

Before construction, the architects held a series of design workshops for parents and members of the community. Presentations before a variety of civic groups further refined the design. Site plans were also coordinated with the adjacent historic property, being developed simultaneously as a public park. LaPosta says he welcomes the advocacy that arises with school projects. “The teachers and administrators were instrumental in developing and then modifying the programming of the spaces,” he says. “As clients, experienced educators hone in on the function of each space, as well as its relationship to the whole.”

On this project, preschool teachers pushed for integrating their young students with the older classes to *eradicate feelings* of separation; the architects adapted the former preschool building into a dining hall and relocated the prekindergarten class to a new wing. Likewise, storage outside the classroom was on every teacher’s wish list, so a large walk-in closet accommodating instructional materials stands at the end of every classroom corridor. And *kitchenettes*

near the classrooms ease the preparation of snacks and craft ingredients for the youngest students.

The school’s three anchor buildings, which form an east-west axis, were retained and renovated while the outdated satellite classroom pods were razed. A pair of parallel two-story classroom wings now lie perpendicular to the west side of the main administration building, establishing a link to the vaulted gymnasium. On the east side of the administration building, a glass-enclosed bridge passes to the new dining hall. The bridge helps preserve a popular public walking trail that passes beneath.

A playground in front of the building was relocated to the rear to make way for additional parking and to heighten security. A range of learning environments was also created from both natural features and remnants of the razed building footprints. A hillside was tailored as a natural amphitheater, fieldstone walls were rebuilt along an enhanced path leading to an adjacent environmental center, and an old concrete stairway now rises to a plateau of grass.

A new double-height lobby functions as a central axis and circulation hub between wings. Interior walls here and throughout the classroom corridors are stained concrete block scored in an 8-by-8-inch square pattern. Cast-stone medallions at children’s-eye level



feature reliefs of local plants and animals that aid way-finding. The lobby also creates a new focal point along the school’s facade, via the roof’s exposed wooden support members and overhangs. “We wanted to express the school’s structural components in a straightforward manner,” LaPosta says. “In a way, the school is a three-dimensional textbook on architecture and construction for kids.”

The building’s levels hew to the existing hilly topography and preserve mature plantings, includ-

ing the town’s oldest oak tree. Since the building was also required to support community activity, its new configuration allows the dining hall, gym, auditorium, and classroom wings to be isolated and opened independently, with separate entries and parking. The classroom wings are self-contained, so that children never need to go around a corner without adult supervision. The single-loaded corridors provide varied views of the grounds, with some classrooms featuring doors that open directly onto





a landscaped courtyard enclosed between the wings.

The \$9.8 million renovation budget combined state and local funding and monies raised through a bond referendum. Measures to keep the project under budget included prefabricated truss roofing over the classroom blocks and the use of shed forms, which reduce framing and roofing costs. Other details lower energy costs for long-term operation. And the campus format enabled the architects to easily zone construction over a year and a half while school days continued uninterrupted. ■

#### Sources

**Curtain wall, aluminum windows, and entrance doors:** *Kawneer*

**Built-up roofing:** *GAF*

**Elastomeric roofing:** *Sarnafil*

**Tile/shingles:** *Celotex*

**Wood doors:** *Graham*

**Locksets and hinges:** *Sargent*

**Acoustical ceilings, suspension grid, resilient flooring:** *Armstrong*

**Cabinetwork and custom woodwork:**

*Chandler Lewis*

**Interior lighting:** *Hubbell, Louis*

*Poulsen*

**Plumbing:** *Bobrick*

**Signage:** *ASI Sign Systems*

**Office and reception furniture:** *HON*

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## 3

# Jean Parker School San Francisco

**CLASSICAL ELEMENTS FROM AN EARTHQUAKE-DAMAGED SCHOOL  
LEND HISTORICAL DETAIL TO A MODERN REPLACEMENT.**

by Soren Larson

**Project:** Jean Parker Elementary School, San Francisco

**Owner:** San Francisco Unified School District

**Architect:** Kwan Henmi Architecture and Planning—Sylvia P. Kwan, FAIA, principal-in-charge; Kiyoshi Matsuo, AIA, project manager and architect of record. Reid & Tarics Associates: Nancy Severns, project architect; John Lum, project designer

**Interior designer:** John Lum

**Engineers:** Sandis & Associates (civil); Lok Kwan & Associates (structural); Grant Wong/Gayner Engineers (mechanical and electrical)

**Consultants:** Melvin Lee Associates (landscape); Robert Hodgson (construction costs); Smith Emery Company Testing Laboratory

**General contractor:** S.J. Amoroso

**Electrical contractor:** Edward W. Scott Electric Co.

**Plumbing:** O'Brien Mechanical

**Total construction cost:** \$8.8 million

**Size:** 37,200 square feet, plus a 6,500-square-foot garage



When the Loma Prieta earthquake hit San Francisco in 1989, the students of the Jean Parker School in Chinatown found themselves with no place to attend class. Their unreinforced masonry building—built in 1907 to replace a structure on the same site that was destroyed in the traumatic 1906 earthquake—had been damaged beyond repair.

Temporarily, the 500-plus students were bused to makeshift classrooms in an old building in the Marina district, and the San Francisco Unified School District turned its attention to constructing a new building—one that would live through the next earth tremors. But Claudia Jeung, who retired this year after serving as principal of Jean Parker for 14 years, had a wish list

that went beyond seismic support. “One of our stipulations was that we wanted some of the old to be incorporated into the new,” she says. “The old building had such character, and we thought it would be a shame not to include some of those elements.”

#### A touch of the classical

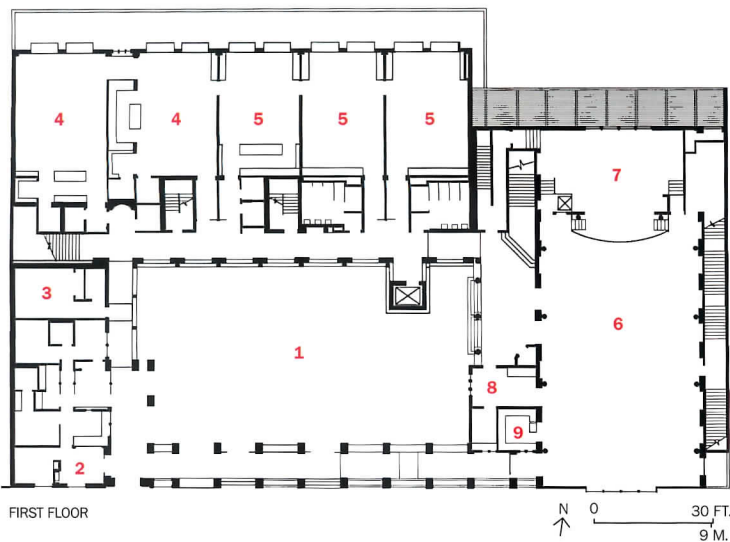
Jeung expressed her desires to the replacement school’s designers, Reid & Tarics (a firm that has since dissolved) and Kwan Henmi, and a strategy was outlined to salvage certain details of the old structure as it was scrapped. The firm then included the saved pieces as counterpoints to the contemporary aesthetic of the remainder of their design. “We’re lucky [the school district] had the foresight and sensitivity to allow this,”

says Sylvia Kwan, FAIA, the firm’s partner-in-charge, noting that the procedure was somewhat painstaking. But now classical columns stand in the new school’s courtyard and multipurpose room, and a terracotta Winged Victory is the centerpiece of the new library. Marble wainscoting from the old staircase adds dignity to the walls of the administrative offices. In the most dramatic gesture, the original arched, terracotta portal was restored and bolted to the new masonry, providing a frame for the new main entrance.

Careful salvaging constituted the first strenuous undertaking before any new construction took place. Making the site earthquake-ready was another. “This was a two-year project, but the entire first

The school is centered around a courtyard on Chinatown's busy Broadway (opposite); a rooftop playspace offers superb views of the Transamerica building and downtown (right); the classroom section is fronted by walkways that overlook the courtyard (below).





1. Play court
2. Administration
3. Storage
4. Kindergarten
5. First grade classroom
6. Multipurpose room
7. Stage/music room
8. Facility kitchen
9. Community kitchen

year was spent fixing the site," says Kiyoshi Matsuo, AIA, the project's architect of record. "Half the cost of the building is under the first floor." The construction team drilled piers into the bedrock, 20 to 30 feet down, and then attached the piers to a steel frame. The school went up from there.

While the previous buildings occupied the center of the small, 0.6-acre site, Kwan Henmi tried a new tactic. The firm placed the classrooms along the north edge, the administration offices and visitors' center in the west, and a multipurpose room on the east, with the three portions surrounding a courtyard/playground that faces busy Broadway. A see-through metal fence topped with wooden slats fronts the playground, opening up views to the street and nearby buildings while maintaining a secure border. "The scale is the same as the surrounding neighborhood," notes Matsuo.

Because of the school's densely populated, noisy location, classrooms have no windows on their south side, which faces the street. Instead, large, green-trimmed, modern versions of the area's traditional bay windows—which appear throughout the new structure—are placed on the north side of the classrooms, admitting ample light and a minimum of street sounds. The heating units are disguised neatly as wood window nooks where students can congregate in

small groups. Additional playground spaces are provided by a rooftop play terrace above the third-floor classes.

Open arcades along the southern edge of the northern section lead to other classrooms, stairways, bathrooms, and the library, which has a double-height ceiling and a large bay window—using double-glazed, noise-repelling glass, like the others—that makes a relatively small room seem spacious.

The hub of activity is the 5,000-square-foot multipurpose room, which contains a raised stage at one end and a bay window at the other. Small windows along the top of the west wall allow in more light, while special tables can fold up into the walls. The room can be used as a meeting hall or performance space for the student body or neighborhood groups, who use it for meetings and night school. At night, sliding wood panels cover the front window to block out street light.

The architects added a community kitchen off the multipurpose room and a separate entrance for the public to use. Jean Parker is "the last school with a separate kitchen for the community that will be built in San Francisco," says Kwan. "Community outreach is such an important part of [inner-city] schools, and this one has a history of interacting with the community."

To comply with the district's budget limitations, the architects



Salvaged classical columns ring the courtyard (opposite); the stage in the multipurpose room has a classroom behind it (right); large bay windows admit an abundance of light into the library (below).



placed a classroom at the north end of the room behind the stage and equipped it with a movable partition that can divide the space. In this way, the multipurpose room could be called a classroom and financed under the district's restrictions.

To hear it from the school's occupants, the architects achieved the overall goal: a quiet, light-filled school that fits its urban context without being overwhelmed. "It's great to come in off the street," says Janet Dong, the school's principal. "There is such a feeling of serenity here." ■

#### Sources

**HVAC:** Bay City Mechanical

**Fireproofing:** Monokole, Grace Corp.

**Brick veneer:** Glen-Grey

**Roofdeck:** Mer-kote Products

**Built-up roofing:** Manville, 4 arc

**Shingles:** ASC Pacific

**Aluminum:** Herzog Aluminum

**Acoustical ceilings:** USG, Auratone

**Paints and stains:** Dunn/Edwards

**Wall coverings:** Koroseal

**Wood floors:** Hillyard Rally Gym

**Resilient flooring:** Azrock

**Sprinklers:** Bay Area Fire Protection

**Elevators:** Otis Elevator Company

**Plastic laminate:** Nevamar

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## 4

# Far Hills Country Day Far Hills, New Jersey

**IN UPSCALE SUBURBIA, A SPARTAN SCHOOL FROM THE 1940S EXPANDS INTO A SLEEK, SUN-LOUVERED ADDITION.**

**by Julie Moline**

**Project:** *Far Hills Country Day School (Upper School addition), Far Hills, N.J.*

**Owner:** *Far Hills Country Day School*

**Architect:** *Ford Farewell Mills and Gatsch, Architects—Michael Farewell, FAIA, designer and partner in charge; Michael R. Schnoering, AIA, project manager; Chris Boyer, project architect; Andrew Guzik, Robert Forwood, Catherine Sellers (architectural team)*

**Engineers:** *Ford Farewell Mills and Gatsch (Ira Guterman, director of MEP Engineering; Richard Olszewski, electrical engineer); Harrison-Hamnett, PC (structural); AMM Technical (plumbing and fire protection)*

**Consultant:** *Anthony T. Baionno*

**General contractor:** *E. Allen Reeves*

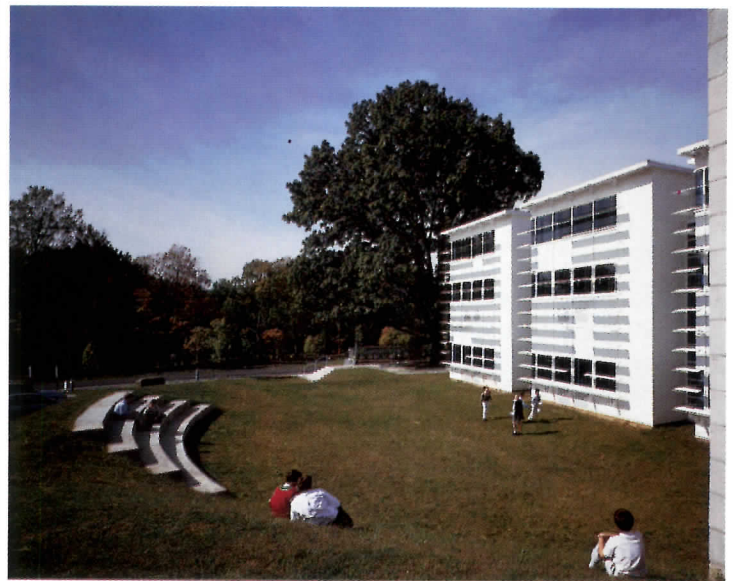
**Total development costs:** *\$2.9 million (including renovation)*

**Size:** *12,000 square feet (addition)*

Far Hills Country Day School—despite its tony location in the horse country of Somerset County, New Jersey—doesn't have the quaintness of a traditional brick-and-ivy private school. The architects who built it in the 1940s used cinder block and little apparent imagination. "It was spartan," says a diplomatic Michael Farewell, FAIA, of Ford Farewell Mills and Gatsch, the Princeton-based firm hired to design an addition and make site improvements. While taking cues from the older structure—more cinder block and the same low-sloped roof as its predecessor—the new building has bright white exteriors and louvers on both stories that make it look like a hip oceanside apartment building, bordered by playing fields instead of the sea.

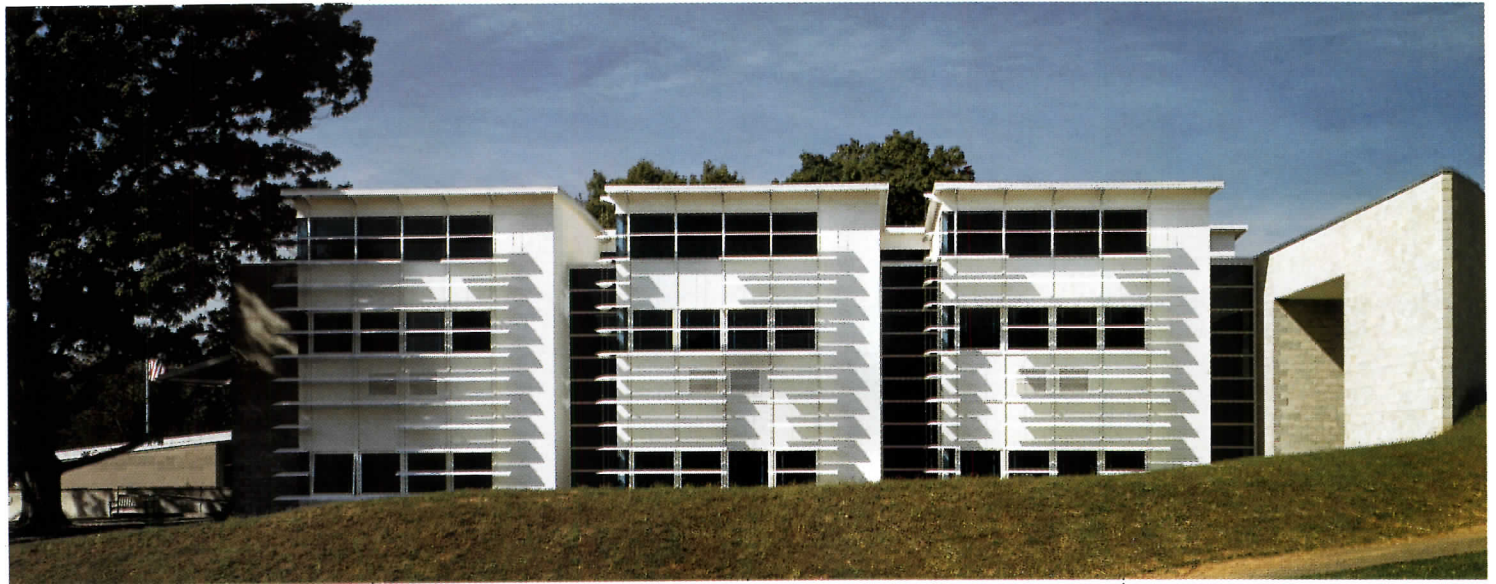
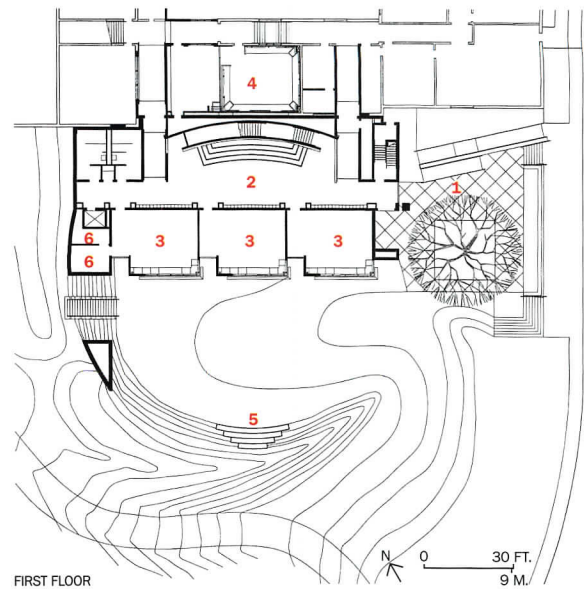
The three-phase project began in 1994 and addressed the school's needs for more classroom space, a safer and more efficient traffic flow, and code improvements. Phase one, completed in 1996, included a new arcaded entrance, an improved parking and traffic pattern, and landscaping and utilities work. Phase two, completed in January 1998, involved the construction of a 13,000-square-foot addition to the Upper School (grades 6–8). Phase three, finished in September 1998, included renovations to the original

*Julie Moline is a freelance writer living in New York City.*



The landscaped embankment along the west facade—extending the arc of the indoor commons—provides a four-row amphitheater for outdoor learning (opposite, top left); a new entrance court surrounds a mature oak tree (opposite, bottom left); louvers cover both of the east facade's floors (below).

1. Entrance court
2. Commons
3. Classroom
4. Computer center
5. Amphitheater
6. Mechanical room



13,000-square-foot Lower School (grades K–5).

The new wing was configured to give the Upper School a clear identity while linking it to the two levels of the existing building. There are six new classrooms, a computer instruction and resource lab, and a striking, double-height indoor commons, with a stepped, maple platform facing the ground-floor classrooms and the balconies ringing the classrooms upstairs. The commons, lit by an angled roof opening akin to a newfangled clerestory window, gives access to the classrooms on both levels. “The idea was to provide a dynamic series of spaces that proclaim the excitement of the kids’ mission and incorporate the whole drama of a

school day,” Farewell says, describing the drama as “the rush to class, the new information they’re absorbing, the whole interaction of dozens of kids who know each other well.” The idea of the new building, he continues, is “to make something grounded and solid. The lowly, humble cinder block is a thick, solid container for the porous and open architecture within, full of air and space.”

#### A stylish sparseness

The classrooms were designed to handle relatively small groups—15 students is the maximum—in keeping with the school’s high faculty-student ratio. Separate learning areas are marked by different ceiling heights. Rooms with lower

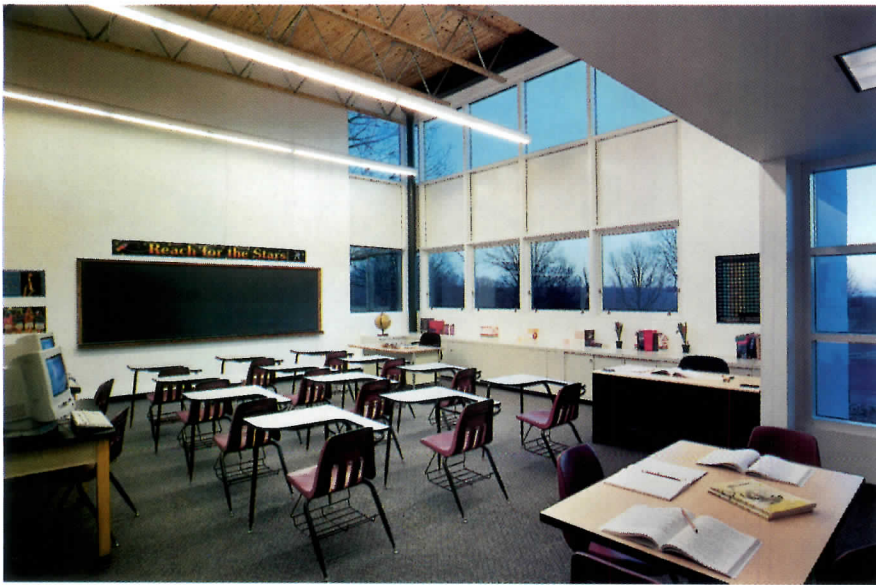
ceilings house computers, television monitors, books, and small-group discussion areas. The more traditional classrooms have higher ceilings and enough square footage to handle many seating configurations. “The rooms are designed to foster close relationships among teachers, mentors, and students. Intimacy and a certain sparseness are key,” explains Farewell. Light coming through the windows can be controlled by working the louvers.

The landscaping is similarly minimalist and functional: a new entrance court surrounds a mature oak tree, and a semicircular embankment along the west facade—extending the arc of the indoor commons—provides a four-

row amphitheater for outdoor learning. It also offers a place to read, do homework, or eat lunch with friends.

“A lot of the school’s programs in the arts and sciences are taught outside,” Farewell says. “The idea was to blend pedagogy and architecture in a way that’s unconventional for a day school. We deliberately reduced things. We wanted it distilled to a few essentials. In that environment, a framed opening, an L-shaped portal, or a niche for a private discussion becomes very important. The kids notice [the details], think about them, connect intuitively to the tone we’ve tried to establish.”

Both parents and children have responded enthusiastically to that tone, Farewell claims. “The parents



The classrooms were designed to handle about 15 students (left); a clerestory window lights the double-height indoor commons (below).

were excited by the commission: they know they've done something unusual." As for the kids, "there's a sense that they're always moving on a stage, that there's an important relationship between the purpose of the building and the purpose of the student body."

"Students need to have ideas and images of modern art and architecture around them," says Farewell. "Schools aren't just nostalgic, familiar environments; they should also connect with the real world." ■

#### Sources

**Exterior masonry:** Clayton Block  
**Stucco:** California Stucco  
**Curtain wall and entrances:** Efcó  
**Elastomeric roofing:** Carlisle  
**Metal entry canopy:** Berridge  
**Glazing:** Tempglass and Lurie  
**Wood doors:** Eggers  
**Locksets:** Schlage  
**Acoustical ceilings and resilient flooring:** Armstrong  
**Suspension grid:** Chicago Metallic  
**Woodwork:** North Whales  
**Carpet:** Karastan Bigelow  
**Interior downlights:** Lightolier  
**Roof trusses:** Trus Joist MacMillan  
**Metal louvers:** ASCA  
**Lockers:** Classic Wood Lockers  
**Plumbing:** American Standard

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# Understanding New Paint Products and Formulations

**PRODUCTS ARE CHANGING—PARTLY IN RESPONSE TO INCREASING REGULATIONS, BUT ALSO TO PROVIDE MORE SPECIFIC FORMULAS FOR SPECIAL NEEDS.**

by Charles Wardell

Chattanooga's 20,000-seat Finley Stadium, which hosts soccer and football games for the University of Tennessee, is emblazoned with the school's colors, brilliant gold and a rich, vivid blue. Achieving these vibrant colors and getting them to last, especially on the south-facing exterior walls of the stadium, required some careful research into various types of paints and coatings by the architects, Chattanooga-based Derthick, Henley, and Wilkerson. Blue paint, like that of other primary colors, is particularly vulnerable to ultraviolet-induced fading, says Bill Wilkerson, AIA. "With field-applied paints certain primary shades change rapidly under direct sunlight. You may select one color, and five years later it's another," he says.

After doing some research, the architects decided to order the metal exterior panels with a factory-applied fluoropolymer coating, an oven-baked finish that offers superior color uniformity, gloss, hardness, and adhesion. "Factory-applied coatings are always the ideal choice," Wilkerson adds. But they are costly. As a result, most architects specify standard, field-applied oil, latex, or finishes.

For instance, the rest of the steel on the outside of Finley Stadium was finished by the fabricator, who used a high-quality epoxy primer and then topped it with one layer of solvent-based urethane paint. A second coat was applied on-site. The metal components used



**To keep the vivid, exterior colors at Finley Stadium in Chattanooga looking good, architect Bill Wilkerson, AIA, specified two coats of urethane paint, which holds up under exposure to ultraviolet light.**

Charles Wardell is a freelance writer based in Vineyard Haven, Mass., who specializes in technology-related subjects.

inside the building arrived from the fabricator with a single coat of epoxy primer. A top coat of urethane paint was applied on-site.

As the formulations of paints and coatings become increasingly complex, architects are faced with more choices, more specific formulations, and new methods of application. "Manufacturers are more specific about how and where a particular coating should be used," Wilkerson says. "Architects are exploring the use of fairly vibrant colors in outdoor exposures. And we're beginning to see what does and doesn't work." Designers must understand which type of paint is suited to the job, how the application of the coating can be controlled, and how to make sure the prep work is done correctly. They must also understand the regulatory environment and how it affects paint components.

## VOC woes

On September 13, federal legislation took effect that forces paint and coatings manufacturers to lower emissions of volatile organic compounds, or VOCs. The term "volatile" refers to the liquids in coatings that readily evaporate at room temperature, and "organic" refers to a class of compounds that contain hydrogen and carbon, better known as hydrocarbons. These compounds are carried in the solvents that most

## 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 204 and follow the instructions.

## LEARNING OBJECTIVES

After reading this article, you should be able to:

1. Explain how federal and local legislation impact the amount of volatile organic compounds contained in paint.
2. Describe the role of each of the ingredients in paint.
3. Explain the differences between oil- and water-based paints.
4. Summarize the changes in paint formulas that have taken place within the past 30 years.
5. Explain some ways to minimize the environmental impact of paint.



During the renovation of the 112-year-old Wyatt-Edison Charter School in Denver, Root Rosenman Architects recognized that a scrubbable, low-VOC paint would be the best choice. Budget pressures, however, limited the choice of paint—low-odor paints cost about 15 percent more. A high-quality acrylic latex was specified for the grand entry (above) and the hallways (right).

coatings contain, including mineral spirits, naphtha, xylol, toluene, and ketones. Particularly high percentages of VOCs, measured in grams per liter, are contained in alkyd, urethane, and some types of epoxy coatings, as well as in lacquers, varnishes, and stains. Most latex paints have a small amount of VOCs, depending on the product.

The new law is only the latest in a series of regulations that started with the Clean Air Act of 1972. This legislation set acceptable levels of ozone and required states to formulate plans to deal with the problem. When VOCs are released into the air during the application of a coating and subsequent drying, they react with nitrous oxides and sunlight to form ground-level ozone, which can impair breathing, irritate the nose and throat, and depress the body's immune system. Architectural coatings are not a significant source of ozone—automotive exhaust is much worse—but it is, nonetheless, a contributor.

Some states and localities are exceeding the new federal guidelines with even more stringent requirements. David Zelch, manager of architect and engineering services for PPG Architectural Coatings, says the different VOC restrictions, which vary from state to state or county to county, are confusing and sometimes vague. "If you're painting a bridge in

New Jersey, you have one set of VOC regulations. If you're painting a garage floor in Pennsylvania, you have another."

California's South Coast Air Quality Management District (SCAQMD), for example, approved new VOC limits for architectural coatings in May 1999 that are even lower than the federal ones. These limits take effect in stages between now and July 2006. Floor coatings, for instance, will have their emission limit cut from 400 to 50 grams per liter of VOCs; interior and exterior stains are reduced from 350 to 240 grams per liter; and interior and exterior primers from 350 to 100 grams per liter. The National Paints and Coatings Association, an industry group that represents coatings manufacturers, suppliers, and distributors, is challenging the new SCAQMD limits in court, but the clear national trend is toward more stringent restrictions.

Some low-VOC, oil-based or alkyd products are still permitted. And high-VOC products, such as the factory-applied fluoropolymer Wilkerson used for the stadium project, are still allowed because many of the VOCs are burned off during the closely controlled application process. Still, manufacturers are, for the most part, focusing their research and development on water-based or latex coatings and moving their product lines away from alkyd formulations.

#### What's a specifier to do?

"The average architect looks at paint as nothing more than color," says Paul Simonsen, AIA, a spec writer and architect in Phoenix. "Some don't know an alkyd from a latex. Nor do they know where to use each." That's

not an indictment; Simonsen finds that most architects already have too much to think about without pouring paint chemistry into the mix. One solution is to lean heavily on manufacturers' technical reps. "I rely on them more than ever," Wilkerson says. "While we as architects don't need a chemical-engineering degree to understand the products, we do need a broad understanding of the limitations of the different coatings." The manufacturers' ultimate goal may be to sell their products, but they are still honest about the limitations of certain products. Specifiers must still understand enough about the subject, chemistry notwithstanding, to pick their paints properly.

In the past, architects tended to work with a single coatings

## "PAINTS AND COATINGS HAVE GROWN FROM A SMALL SECTION IN SPECIFICATION DOCUMENTS TO A 12-PAGE MINIMUM."

manufacturer for all their needs. But as paint products have become more specific, with certain formulations more suitable for some applications than others, designers have been forced to diversify. "I've seen paints and coatings grow from a small section in the specification documents to a 12-page minimum," says Robert Caldwell, an interior designer with the Washington, D.C., office of Gensler and Associates. This past April, in response to increasing product changes by manufacturers, Gensler updated its standard paint spec form. The biggest change was the inclusion of a matrix format that lists several approved manufacturers for each category of finish. The matrix lists substrates down the left-hand column and manufacturers across the top. Following this chart helps the company's architects narrow the list of manufacturers and choose the right type of paint.

### A coating for every need

The new, low-VOC latex formulas are often superior to their oil-based predecessors, says Lane Blackburn, vice president of architectural marketing at Sherwin-Williams. His company, like many others, is developing more niche products for specific surfaces and environments, such as acrylic coatings that can be put on concrete a week after it has been poured. Other examples include formulations that offer:

- improved adhesion for surfaces subject to chronic peeling;
- UV blockers and stabilizers that help prevent fading and paint degradation;
- elastomers for surfaces where a coating that can bend or stretch with temperature changes is more important than hardness;
- block resistance, which prevents adjacent painted surfaces from sticking to one another, as on window frames;
- increased hardness for use on abused surfaces like door frames; and
- temperature-sensitive paints that can go on when surface temperatures are extreme.

"All of these specific formulations require trade-offs," Blackburn cautions. "If you maximize a coating for one of these situations, it might not perform as well under other conditions." A single project may require a dozen or more different types of paint.

### Picking paint

While a paint's exact makeup is proprietary, most are a mix of finely ground solids—including binders, pigments, and additives such as drying oils and mildewcides—dissolved or suspended in a liquid carrier. The pigment in a paint adds color and determines how well a paint covers, or hides, the underlying surface. The binder forms a film that knits the particles of pigment together and, given a good prep job, clings to the

underlying surface. The carrier evaporates as the paint dries, leaving the solids behind as a thin (.002 to .003 inches) surface film.

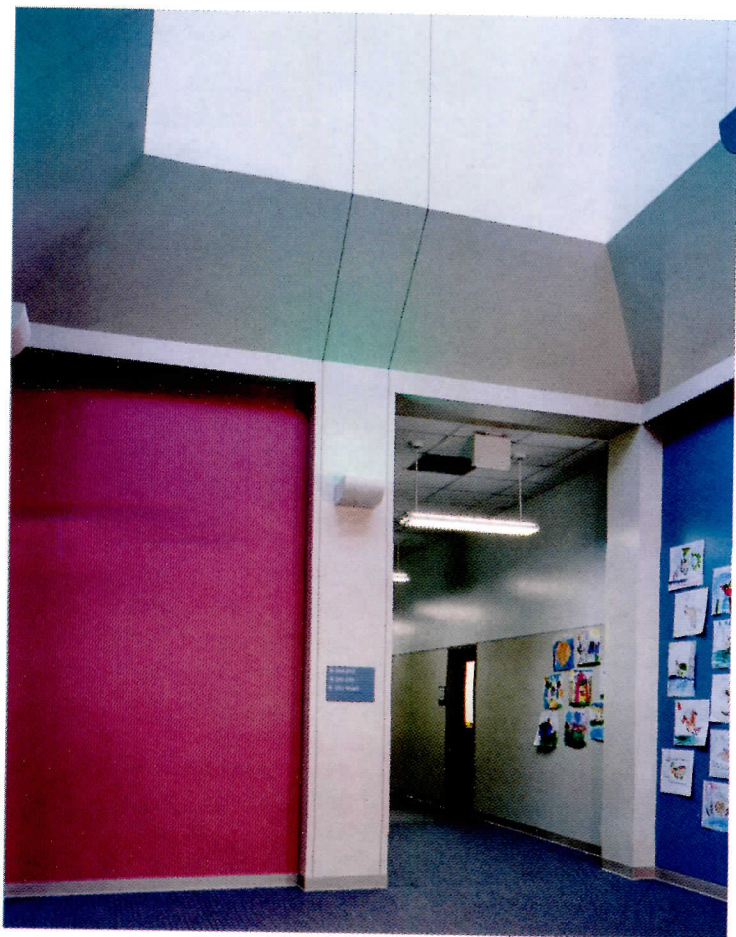
Paints have a solids content ranging from 25 to 45 percent. Better paints generally have a higher solids content, providing superior coverage and a thicker paint film. The solids content may be listed on the technical data sheet; if not, calculate it by dividing the paint's dry-film thickness by its wet-film thickness (both of which are available on the data sheet).

There are two kinds of pigments: organic and inorganic. The latter are mined and are often metallic oxides, such as titanium dioxide. Almost all paints use powdered titanium dioxide for their primary pig-

ment because of its superior hiding power. The more of this powder a paint contains, the better its coverage ability.

Organic or petroleum-based pigments make brighter, clearer colors. Paints made with organics are more expensive to produce than those made with inorganics, partly because the pigments are more volatile. Paints with organic pigment don't cover as well, particularly in the red-yellow-orange range, and are less durable. Inorganics are best for earth tones and muted colors. They also give the paint body, helping it adhere to the walls and the paintbrush and hiding the former color better than a paint made with organics.

According to John Stauffer, director of the Paint Quality Institute in Philadelphia, paint companies use more extenders to increase



## PROJECT SPECIFIC PAINT GUIDELINES

TYPE OF ROOM OR PROJECT	SUITABLE PAINT TYPES	CHARACTERISTICS
1. Health-care facilities, restaurants, schools	1. Low-odor, low-VOC interior satin or semigloss acrylic latex	1. Absence of paint fumes, dries quickly for minimal downtime; ease of cleaning and durability
2. Office buildings, hotels, retail	2. Interior flat, satin, or semigloss acrylic latex; alkyd; or semitransparent stain	2. Dries quickly for minimal down time
3. Walls in high-traffic areas, such as hallways, stairs, workshops, and kitchens	3. High-gloss latex or alkyd enamel, water-based acrylic epoxy, urethane enamels	3. Durable and easy to clean, stands up to scrubbing
4. Garage floors and areas where vehicles are parked	4. Solvent-based acrylic coatings specially formulated for floors, moisture-cured urethane coatings, water-based acrylic epoxy, and acrylic urethane coatings	4. Durable, stands up to traffic and resists stains from petroleum products; some of these coatings pose environmental hazards if improperly disposed of; some dry slowly
5. Exterior walls, siding, and trim	5. Acrylic latex or alkyd, urethane enamels	5. To enhance performance, specify formulas with UV blockers

## OIL- AND WATER-BASED LATEX PAINTS: RELATIVE BENEFITS

OIL-BASED	LATEX	
1. One-coat coverage	1. Cleans up with water	5. Color retention
2. Adhesion to difficult surfaces	2. Low odor	6. Chalk resistance
3. Good leveling characteristics	3. Nonflammable	7. Gloss retention
4. Hardness of film means resistance to abrasion and tackiness	4. Nonyellowing (interior formulas)	8. Long-term flexibility

## COMPOSITION OF A TYPICAL ACRYLIC LATEX SEMIGLOSS PAINT: BY WEIGHT

Titanium dioxide and other pigments: 25 percent	Water: 40 percent	15 percent
Acrylic polymer binder: 20 percent	Additives, including soaps, defoamers, cosolvents, thickening agents, and preservatives:	Total solids by weight: 50 percent
		Total solids by volume: 35 percent

the percentage of solids. These materials can provide bulk and help keep costs down, and, when used correctly, they can also enhance certain qualities. For instance, calcium carbonate enhances chalk resistance, while silicas and silicates make the paint stand up better to scrubbing.

**Oil and water**

For years, architects, professional painters, and others involved in the building trades spurned latex in favor of oil-based products. The best interior or exterior paint jobs, they knew, were oil, due to its superior leveling, which eliminated brushmarks and allowed the paint to flow into voids; its slower drying times, which gave the painter time to even out the finish; its wide range of application temperatures; its ability to hide knotholes, colors, or stains on the wall beneath; the hardness of the finish; and its ability to penetrate deeply into wood fiber and adhere to a range of surfaces.

While most fans of oil paint have switched to latex, there are holdouts, including John Franzen, AIA, of Southport, Conn. He uses latex on walls and ceilings, but specs oil for trims and built-ins. "It's partly because I'm old fashioned," he says. "But most painters tell me oil-based paint sands better and leaves a smoother finish. Latex is softer, so the sandpaper gums up." Latex paint manufacturers insist that they've licked

the hardness problem. New water-based enamels, such as Sherwin-Williams ProClassic, dry immediately and, according to the company, are actually harder than oil enamels.

The base of a paint, whether oil or water, is the medium in which the other ingredients are suspended or dissolved. Oil-based paints use petroleum-derived hydrocarbon or natural oil solvents (such as linseed oil); water-based paints use, of course, water. But an equally important distinction between oil- and water-based paints is the type of binders they use. In the 1940s, manufacturers began using synthetic resin binders called alkyds. Paints that contained alkyds spread easily, dried

**MOST FANS OF OIL-BASED PAINT HAVE SWITCHED TO LATEX BY NOW.**

fast, and were durable and resistant to mold and mildew. Latex, a type of vinyl binder, hit the market about the same time as alkyds. Early formulations were clumpy, thick, and unappealingly shiny. They took a long time to dry and failed to bond with the substrate.

In the process of reformulating their coatings as water-based products, manufacturers have had to look at everything that goes into their paints. As part of the switch, they've put a lot of effort into improv-

**THERE ARE WINDOWS AND THERE ARE MIRRORS.  
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Ordinary glass



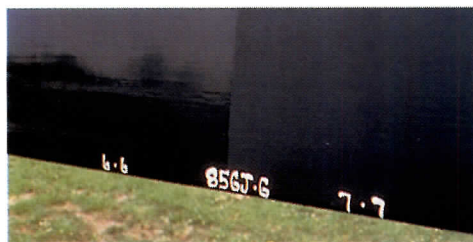
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ing the quality of the film that is formed by the acrylic binders used in water-based paints. An alkyd paint forms an impermeable film through constant surface oxidation, a process that can go on for the life of the paint. This process causes alkyd films to lose their color over time, while making them ever more brittle and likely to crack and flake. Acrylic paints, on the other hand, don't undergo chemical reactions as they dry; the acrylic particles simply draw together as the water evaporates, forming a stable yet flexible film that can expand and contract with the underlying wood. At the molecular level, this film resembles a fine mesh that's loose enough to pass vapor but tight enough to shed liquid water. Acrylic paints also hold their color longer than alkyds and are less susceptible to cracking.

That doesn't mean that nonacrylic paints are inferior, says Carl Minchew, Benjamin Moore's director of technical services. "What matters

**Quality exterior latex paint retains its gloss better than alkyd paint, particularly in south-facing exposures (top right). Exterior elastomeric coatings (below) must be formulated to have the proper balance of flexibility and dirt resistance. The paint on the right uses a conventional binder, while the one on the left has a binder specially designed for this type of coating.**



is how much acrylic or latex is in the paint and how manufacturers formulate that product." A 100 percent acrylic paint that uses 1/2 pound of resin per gallon may not be as good as a competing product that uses 1 pound of resin per gallon.

Urethane is also used as a binder, when dispersed in a petroleum-based solvent or in water. Urethanes are noted for their overall balance of high performance properties, such as toughness, flexibility, high impact resistance, and textile strength, Stauffer says. They offer excellent abrasion resistance and will stand up when exposed to a wide variety of chemical solvents and stains.

There are two types of urethanes: aliphatic and aromatic. The latter is designed for interior applications because it tends to yellow after long exposure to sunlight. The more costly aliphatic urethane is more flexible and more UV resistant, which is why Wilkerson specified this type of paint for the field-applied coatings at Finley Stadium. Water-based urethane may also be paired with an acrylic binder to increase the resistance properties of the coating, making it useful for high-traffic areas, such as floors and stairways.

#### Other characteristics

The level of sheen also separates one paint from another. Flat paints contain more pigment than glossy paints, so they hide better. But glossy paints contain more binder, making them harder, more washable, and more resistant to mildew. The latter usually cost more, though that's not

#### PAINT THE WORLD GREEN

To choose coatings with a minimal impact on the environment, considering everything from the origin of the raw materials to how the paint is sold, used, and disposed is a must. The *AIA Environmental Resource Guide* includes some simple guidelines to help architects reduce the environmental impact of the coatings they specify. The following was adapted from those guidelines.

1. The best way to reduce life-cycle costs is to specify the most durable coatings possible, even if the surface is likely to be recoated before the initial coating fails. A coating that can support additional layers will eliminate the pollution associated with stripping.
2. Opt for light-colored surfaces whenever possible. Inside, they will reduce lighting needs. Outside, they will lower

the need for cooling energy by reducing solar gain.

3. Specify water-based coatings. They cause less pollution during production and release fewer VOCs during application and curing.
4. To reduce demand for raw materials, embodied energy, and disposal problems, use recycled paint (batch leftovers and paint that was ordered but never used). Available from some manufacturers and paint stores, recycled paint often comes in a narrow range of colors but is inexpensive.
5. Donate unused coatings to nonprofit organizations. Encourage paint manufacturers to do the same.
6. Write into specifications that all oil- or solvent-based coatings must be handled and disposed of as hazardous waste and that all empty steel and plastic containers be recycled.

a rule. Glossy white paints from the same company may differ in price, but that doesn't mean their formulations vary greatly. The pricing may reflect lower manufacturing and marketing investment. "If I make a paint that only comes in white, the cost of supporting that product is relatively low," Minchew says. "But if I want a white, a line of ready-mixed colors, a base that can be colored tinted, and a series of color cards, that adds to the cost of the product."

The quest to minimize VOCs spawned a whole new product category: low-odor paints. These are used when a building, such as a hotel, health-care facility, office, or even prison, cannot be evacuated during the paint process. Simonsen tells about attending a luncheon with a representative of ICI Paints. "After we had been sitting there for an hour, he pulled out a can of ICI's Lifemaster 2000 paint, which is completely free of VOCs, from under the table," he recalls. "It was open the whole time, but nobody smelled it."

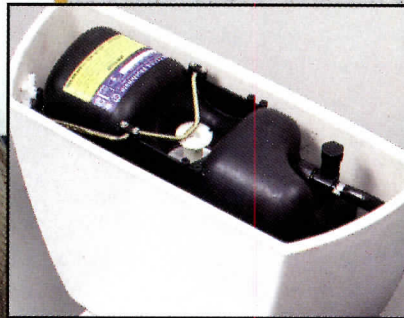
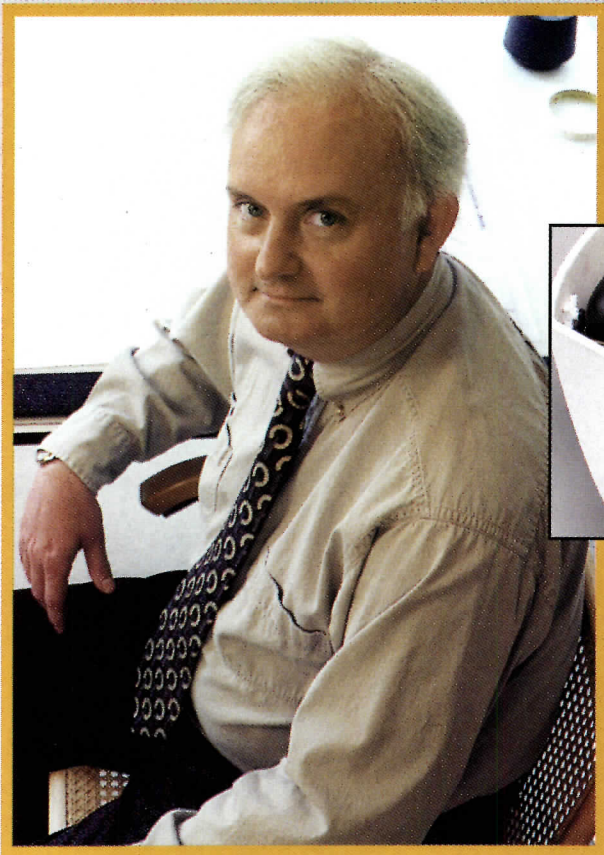


Paints appropriate for this type of visible, high-traffic area include scrubable latex acrylics, urethanes, and low-VOC, oil-based formulas.

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*Jerry has been in the architectural business for over  
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CIRCLE 42 ON INQUIRY CARD

Low-odor paints are formulated with few or no solvents. Latex paints have always included a small amount of solvent to temporarily plasticize the binder. The solvent softens the binder's particles and facilitates film formation at low temperatures. The paint smells for six or seven hours after it's applied, however. Low-odor paints use softer binders that don't require solvents for film formation and, therefore, emit no odors. A potential downside to a softer binder, says Stauffer, is that the finished film may be tacky and attract dirt. Manufacturers say they have created additives that solve these problems, but these have added 15 to 20 percent to the price. Still, for firms with a large health-care clientele, such as Gensler, low-odor paints are worth the cost.

Mixing paints with various properties is one way to achieve good results and save on costs. Seth Rosenman, AIA, of Root Rosenman Architects in Denver, pairs a high-quality primer and basecoat with a UV-resistant urethane top coat on building exteriors. Budget plays a part in this as well. At the 112-year-old Wyatt Elementary School in Denver, Rosenman tried to use an epoxy primer followed by several coats of a low-odor, scrubbable paint. The combination, he says, would have meant the children wouldn't be smelling paint fumes, while masking tape, lunch boxes, and sticky hands wouldn't destroy the finish. Unfortunately, the cost was so high, a standard latex paint was used. "But I think we all learned, next time, to set more money aside for the paint job," he says.

**What next?**

More new formulations are on the way as VOC restrictions tighten and special needs become more apparent. Paint companies are looking particularly at how their products are applied and are trying to find ways to put the finish on in less time and with less effort. For instance, water-



**In a health-care facility, there's no opportunity to close down operations and paint the walls. Specifiers must select fast-drying, low-odor latex formulations that stand up to a lot of traffic.**

based paints don't adhere well to marginally prepared surfaces, walls or floors that are chalky, grimy, or peeling, for example. But, as any painter will say, it is the prep work that makes a paint job pricey. A paint that would stick to a messy wall would save money.

Better hiding ability, leveling capabilities, all-temperature formulations—these are assets that make for a better bucket of paint. Few things will make a beautiful project look worse than peeling, discolored, or splotchy paint, Gensler's Caldwell says. "Solving these kinds of technical details is what allows a design to come to fruition." ■



**AIA/ARCHITECTURAL RECORD  
CONTINUING EDUCATION**

**INSTRUCTIONS**

- ◆ Read the article "Understanding New Paint Products and Formulations" using the learning objectives provided.
- ◆ Complete the questions below, then check your answers [page 204].
- ◆ Fill out and submit the AIA/CES education reporting form [page 204] or file the form on ARCHITECTURAL RECORD's Web site at [www.architecturalrecord.com](http://www.architecturalrecord.com) to receive two AIA learning units.

**QUESTIONS**

**1.** What is the purpose of each ingredient in paint?

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**2.** What is the difference between alkyd and latex paints?

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**3.** What are the advantages of water-based paints?

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**4.** How are low-odor paints made?

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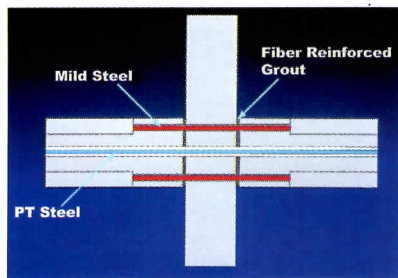


# TECHBRIEFS

## NEW EARTHQUAKE-RESISTANT FRAMING SYSTEM ROLLS WITH THE SHOCKWAVES



Concrete-framed buildings in high-risk seismic zones have, in the past, been limited in height. It was always believed that concrete wouldn't absorb shock waves with the same voracity as steel moment-resisting frames. But thanks to a new precast, hybrid, moment-resistant



Mild steel, paired with posttensioned steel cables, runs through ducts in the beams and columns.

framing system, developed by a California contractor with researchers at the University of Washington in Seattle and the National Institute of Standards and Technology, the tallest precast, concrete-framed high-rise (rendering above) is climbing into the San Francisco skyline.

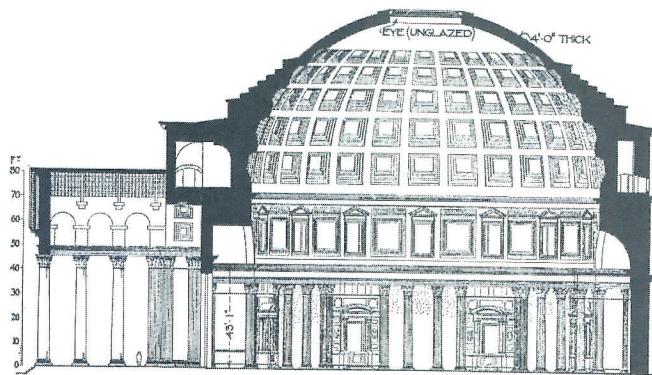
The 39-story Third and Mission Luxury Apartment tower, designed by Elkus Manfredi Associates in Boston, is scheduled for completion in the summer of 2001. The 420-foot-high tower includes 485 apartments, as well as some retail, parking, and office space.

The contractor, who helped to develop the framing system, is Charles Pankow Builders of Altadena, Calif. The company will use precast concrete beams and columns fabricated off-site and trucked to the downtown building site. The members are joined with mild reinforcing steel and posttensioned steel cables, which are routed through ducts in the centers of the beams and columns. It is the combination of these two materials, concrete and steel, that keeps the building together during a quake. The stretchy mild-steel rods absorb the seismic load as the columns shift. The cables, in turn, pull the columns and beams that are disturbed back into alignment.

The precast elements double as part of the building's exterior cladding. Aside from its seismic advantages, the hybrid system is credited with saving 5 to 7 percent of construction costs over a standard system of shear walls and steel framing. Pankow began developing and testing the system in 1991. It

has received approval from the International Conference of Building Officials, though a special peer review of the building plans was required in San Francisco before construction could go ahead. Pankow attributes this cautiousness to the conservatism of the construction industry, as well as to the fact that concrete-framed structures require more design calculations than steel-framed projects. *Wendy Talarico*

**WHERE TO TURN FOR GREEN INFO** *The Green Building Advisor*, a CD-ROM by E Build Inc., publishers of *Environmental Building News*, and the Center for Renewable Energy and Sustainable Technology (CREST), a nonprofit publisher, delivers advice for designing buildings that go easy on the planet. The user inputs the job's specs, and the CD provides strategies for minimizing environmental impact. These strategies are grouped by site and ecosystem, energy use, and other categories. The information can also be sorted by CSI category, level of difficulty, expense, or project stage. Clicking on a strategy provides costs, benefits, conflicts, and references to related publications. The interface is consistently attractive and fast. As a way to quickly create cost-effective, comprehensive strategies that cover the environmental bases, the *Green Building Advisor* is useful. Available from CREST, 888-442-7378; [www.crest.org](http://www.crest.org). *David Dobbs*



## MINERAL WASTE MAKES "GREEN" CEMENT

By now, most people recognize that CO<sub>2</sub> emissions from automobiles, power generation, and manufacturing contribute to global warming. Architects can lessen these emissions by designing more efficient buildings and employing alternate energy sources, for example. But researchers now think that specifying cement made with mineral admixtures may be a significant means for reducing CO<sub>2</sub> emissions.

The production of Portland cement releases about one ton of CO<sub>2</sub> for every ton of cement produced. Worldwide, about 1.5 billion tons of cement were made last year, generating an equal amount of CO<sub>2</sub>. Production of cement is expected to double in 25 years. The high volume of CO<sub>2</sub> comes from the chemical reaction that occurs when limestone, the primary ingredient in cement, is crushed and heated. The mining of the limestone also produces CO<sub>2</sub>.

Mineral admixtures are derived from industrial waste. The most common admixture is fly ash, the particulated mineral impurities that

remain after coal is burned. Other mineral admixtures include blast-furnace slag, silica fume, and rice-hull ash. They also occur naturally as volcanic rock—a by-product of the earth's combustion. Ground volcanic rock was used in the Pantheon (above) in the 2nd century A.D.

Each admixture affects concrete differently. Fly ash improves workability and reduces the amount of water that's needed. Silica fume and rice-hull ash reduce permeability. Manufacturers now limit the amount of mineral admixtures to about 20 percent of the mix, though tests show that an 80 percent fly ash mix may perform adequately.

Using admixtures in cement saves energy, cuts CO<sub>2</sub> emissions, reduces the limestone that's mined, and uses material that is otherwise landfilled. But there are drawbacks, chiefly a lack of field research on how admixtures affect concrete, according to the Civil Engineering Research Foundation. The foundation recently launched a study that concludes next year. *W.T.*

*DuPont Commercial Flooring*

# UNDERSTANDING INDOOR AIR QUALITY: BIOAEROSOLS



Photo courtesy of CS Group © Heinrich Blessing

**H**istorically, the subject of air quality has been focused on outdoor air. Billions of dollars have been spent in the U.S. alone on the monitoring and clean up of ambient air quality.

More recently, attention has been drawn to the indoor environment, where most of us now spend the majority of our time. The personal and economic impact of poor indoor air quality may be substantial. The Occupational Health and Safety Administration

(OSHA) estimates that companies lose as much as \$8 billion annually in lost productivity in the workplace and in increased medical costs.


Furthermore, OSHA believes that as many as 30 percent of all U.S. buildings have some type of indoor air quality problem. Indoor air quality problems, federal officials estimate, affect up to 20 million people each year.

Because people have less control over the indoor environment in their offices than they do in their homes, and for a number of other reasons associated with today's office buildings, reported health problems are on the rise. Problems are not limited to our offices, however. Asthma rates, especially among children, have risen each year for the past 20 years, according to federal health officials. The likely reason: children spend an increasing portion of their days indoors.

Health and comfort are influenced by those who design and manage buildings. Science and common sense generally drive good indoor environmental management. The science of indoor air quality is in its infancy. So little is known, in fact, that the U.S. Environmental Protection Agency recently began two major studies of indoor air quality in more than 150 public and commercial buildings.

EPA studies of human exposure to air pollutants indicate that indoor air levels of many pollutants may be 2-5 times, and occasionally more than 100 times, higher than outdoor levels. Recent comparative risk studies by the EPA and its Science Advisory Board rank indoor air pollution among the top five environmental risks to public health.

The choices made by architects and designers impact both short-term and long-term indoor environmental quality. Consideration must be given to ventilation, building materials and furnishings. VOCs from new products may be important in the short-term, but the long-term performance of a building will be influenced more by the ventilation and care a building receives.



**AIA/ARCHITECTURAL RECORD**  
Continuing Education

Use the learning objectives below to focus your study as you read *Understanding Indoor Air Quality: Bioaerosols*. To earn two AIA/CES Learning Units including one hour of health safety welfare credit, answer the questions on page 146 and follow the reporting instructions on page 204. Or use the Continuing Education self report form on [www.architecturalrecord.com](http://www.architecturalrecord.com).

**Learning Objectives:**

After reading *Understanding Indoor Air Management: Bioaerosols* you will be able to:

- Describe possible sources of indoor air quality problems.
- Explain what can be done to treat indoor air quality problems.
- Describe the effects of dust and particles on indoor air quality.
- Describe to what extent carpet is a contributor to indoor air pollution.

## WHAT ARE VOCs?

Aside from buildings being too hot or too cold, a majority of complaints of indoor air quality problems stem from two primary sources: what are known as volatile organic compounds and what we may broadly refer to as "particles."

Volatile organic compounds are found in everything from paints and coatings to underarm deodorant and cleaning fluids. They are a major concern of the EPA and of state air quality regulators. New furnishings, building supplies and cleaning agents are frequent sources of indoor air quality complaints.

There is a body of published research indicating that individuals are more likely to report a higher number and variety of symptoms in the presence of objectionable odors than when not exposed to such triggers. Odors can create stress and may lead to headaches, nausea and other symptoms as a result. Although VOCs have been speculated to cause non-specific health-related complaints in chronic problem buildings, studies have not found direct cause-and-effect relationships. More recently, research has turned toward dusts and particles. Several recent studies suggest that "dusts" are associated with many of the human health symptoms reported in "sick" buildings.

There is considerable debate over the value of both building "bake-out" and pre-airing of products. Science does not provide much support for the effectiveness of bake-outs. In most cases, the temperature differential is not high enough or long enough to have any significant impact on emissions. For most materials, VOC emission rates will be diffusion-rate-controlled. That means that the amount of VOC emitted cannot exceed the amount that can migrate from the interior of the material to the surface, a relatively slow process (typical VOC half-lives are several days to weeks). As a result, one could expect only a modest increase in the diffusion rate for each 10-degree C increase in temperature. It, thus, makes more sense to ventilate more aggressively during the first few weeks of a building's occupancy. For most building materials, VOC contributions to indoor air quality will decline naturally within a few weeks.

Pre-airing, which involves unpacking materials and letting them sit for several days to off-gas, is also a process of little tangible benefit. For many materials, the majority of VOCs measured in the first 24 hours have accumulated on surfaces while stored in packaging. These emissions can be much more easily managed by ventilation on site. After the surface VOCs have dissipated, the emission properties of the material will follow the

same diffusion rate control model we just alluded to. Letting the material sit in a warehouse for a few more days has relatively little additional impact.

Off-site airing out of carpet is a poor investment of time and money. Emissions from adhesives exceed carpet emissions by orders of magnitude.

## WHAT ARE BIOAEROSOLS?

Particles, like dust, can be relatively benign. But the category also includes "bioaerosols," airborne pollutants that either are or were living organisms. The list includes molds and other fungi, bacteria, viruses, pollen and dust mites. Particles can be irritating to eyes and upper respiratory systems. Also, some of the bioaerosols we encounter are "pathogenic" (e.g. Legionella—"Legionnaire's Disease"), allergenic (e.g. pollens, animal danders) and toxic (e.g. mycotoxins from molds and endotoxins from gram negative bacteria).

There are no laws regulating bioaerosols. But there soon may be, say federal officials. Increasing scientific data indicating there are health risks associated with bioaerosol exposure may lead to enforcement. Presently, however, assessing risk of bioaerosols and determining what may be a "safe" level of exposure is a fledgling science, and extremely difficult one.

Where the human immune system is involved, reactions to bioaerosols are very individual-specific and can be highly variable across the population.

Because microorganisms need water to grow, moisture plays a critical role in many indoor air quality problems. Accumulation of moisture via leaks, broken pipes or poor dehumidification by HVAC systems can lead to microbial growth. Fungi are most common because require less moisture to readily grow. Relative humidity of 75-85% is sufficient for significant growth. Bacteria do not begin to aggressively amplify unless the humidity is very high, on the order of 95%, or if standing water is present.

Ventilation must accommodate day-to-day VOC and particle contributions from building occupants. This means displacing respired carbon dioxide, body odors, fragrances, skin flakes and other particles shed from clothing and from office equipment like copiers and printers. The other crucial role of ventilation is dehumidification. Improperly specified heating, ventilating and air conditioning equipment may induce moist air into the room. Condensation can occur, which will, in turn, provide the water necessary for microorganisms to grow.



**Choices made by architects impact both short and long term indoor environmental quality**

**Give consideration to ventilation, building materials and furnishings**



Take preventive measures to keep indoor environments clean

## HOW BIOAEROSOLS ENTER THE BUILDING

It is important to understand how most of the bioaerosols we encounter enter our buildings: most appear to come in with us. The microbiology of indoor air in most buildings looks like outdoor air. The types of fungi typically found indoors are the same as those found outdoors, albeit at lower levels. If higher levels and different distributions of fungal species are found indoors than out, it is likely there is an indoor fungal source. Implicit in this observation is a moisture problem in the building.

Aside from obvious water leaks, fungal growth sustaining moisture can enter a building in some subtle ways. For example, hot humid air carries a considerable amount of moisture. If this moisture laden air works its way into the building, the likelihood of water condensing on cooler surfaces (temperatures below the dewpoint) increases.

Condensation can happen on interior surfaces or behind walls next to the exterior of the building. Moist air enters the building via inadequate de-humidification by the HVAC system or infiltration through the building shell as a result of negative internal pressures. A balanced ventilation system, which provides uniform positive pressures, will minimize moist air infiltration. In addition, chilling incoming air to 50 - 55 deg. F will remove sufficient moisture to provide a relative humidity of 50-60% when raised back to a comfortable room temperature. Finally, recognize that drier climates can also have problems with moisture condensing indoors if dehumidification is inadequate - air at 100 deg. F and 40% RH will condense moisture on a 70 deg. F surface.

## CAN WE ELIMINATE BIOAEROSOL POLLUTION?

It is critical to consider in the design phase how a building will be maintained. Therefore, it may be useful to include a cleaning professional or facility manager early in design to provide insight into possible long-term maintenance problems.

The focus of those who manage buildings typically has been on cosmetics and a devotion to extending the life of materials. Only recently has "cleaning for health" become a consideration for facilities managers. Owners and designers also are generally guilty of ignoring the long-term effects of their buildings. The most egregious example may be the design of office cubicles, which from an indoor environmental health standpoint are considered by some to be the scourge of contemporary commercial practice.

From a clinical health viewpoint, clustering workers

in adjoining cubicles is like clustering children in grade-school classrooms, a ripe environment for the communication of various illnesses. Cubicles also are difficult to keep clean; reducing cluttered areas is helpful in reducing exposure to dust.

The more difficult an area is to clean, the less likely it is to be cleaned. Vertical piles of papers and books have the potential to accumulate substantial quantities of dust. When they are moved, particles are discharged into the air, and short-term exposures can be high.

Some of the most effective steps toward keeping indoor environments clean are preventative: designing entryways and sidewalks for ease of maintenance and, thereafter, keeping them clean will help. Walkoff mats are important at entrances.

These should be of sufficient size to assure at least four footfalls before stepping onto interior flooring. Walkoff mats also require frequent vacuuming and regular deep cleaning.

Routine maintenance and cleaning of the ventilation system also is important, and it is critical that HVAC systems are designed and installed with long-term maintenance considerations in mind. Filters must be replaced regularly, and systems need to be inspected for standing water. Leaks or plugged drains can lead to fungal and bacterial growth, creating the potential for microbiological debris to be periodically aerosolized and dispersed into the building. Fresh air intakes must be located away from possible sources of pollution, and should be inspected frequently. It is important that they be located in a way that makes periodic inspection as easy as possible.

Most commercial cleaning methods can reduce accumulated microbiological debris from carpets. Some are very effective. Good quality vacuums with high-efficient filters remove up to 99 percent of particles, and hot water extraction has a significant impact on total soil in the carpet and on subsequent airborne bioaerosol levels, even from heavily contaminated carpet.

There is a substantial amount of research underway addressing the efficacy of various cleaning methods and the relationship between flooring types and the release of particles. The research is taking place both in industrial laboratories and in university environmental research facilities.

One of the questions under study is whether carpet is a contributor to airborne contaminants or a deterrent: do materials present in carpet present a potential risk because they can enter the breathing zone when disturbed? Or does carpet act as a sink, to trap and hold particles, and if so, under what circumstances could carpet become a secondary source of airborne particles?



Photo: Modular Hi-Rib Interlocking rubber floor mat: Pawling Corp.

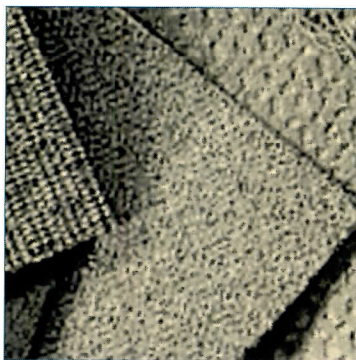
## CARPET: A CONTRIBUTOR TO BIOAEROSOL CONTAMINATION?

Researchers at the Harry Reid Center for Environmental Studies at the University of Nevada Las Vegas have studied the release of settled particles from flooring materials after a "disturbance." Two interesting observations were made: the first is that a relatively small proportion of settled particles are discharged into the air by foot traffic (less than 0.002%); the second is that successive disturbances raised dramatically fewer particles than previous ones.

The Reid data implies that easily re-suspended particles will not accumulate on active surfaces. Particles will move deeper into the carpets, they will be removed from the building via ventilation and filtration, or they will settle on a more quiescent surface. The latter most likely provide the greatest opportunity for significant short-term exposures. Therefore, from a human health standpoint, it may be more important that little-used or infrequently cleaned areas receive more attention. From a design standpoint, avoid creating spaces resistant to maintenance.

A study released earlier this year by Atlanta, GA-based Air Quality Sciences Inc. (AQS) evaluated the impact of soiled carpet on the indoor environment and attempted to determine the effectiveness of carpet cleaning in the removal of biological contaminants.

In the experiment, soiled carpet was removed from two buildings, one where environmental conditions had been maintained at "normal" conditions of 70-75 degrees F and 40-60% relative humidity, and one where "extreme" conditions of 80-90 degrees F and 85-95% relative humidity existed. In the latter, fungal growth was rampant and affected all surfaces including wood and masonry. The carpets were removed from



the buildings and installed in controlled environmental chambers where original building temperatures and humidities were replicated.

While in the environmental chamber, airborne contaminants were measured prior to, and following, cleaning. Extractable carpet dust was collected and evaluated for biocontaminant levels before and after cleaning. The study measured fungi, bacteria, dust mite allergens, cat allergens and cockroach allergens.

Data indicate that the carpet removed from the "normal" environment had no impact on the presence of airborne contaminants, said AQS. The carpet from the "extreme" environment with visible surface mold could contribute fungi to the surrounding air, but did not contribute dust mite allergens or bacteria. Carpet cleaning effectively removed biocontaminants from the carpet, and the cleaning processes themselves had little impact on pollutant levels within surrounding indoor air, AQS concluded.

In many cases, potential indoor air quality problems may be discovered through "virtual" walkthroughs of buildings prior to construction to determine if obvious pollutant sources exist and whether deficiencies in HVAC systems exist that may lead to long-term difficulties.

The EPA and the National Institute for Occupational Safety and Health have created a reference guide: Building Air Quality: A Guide for Building Owners and Facility Managers. Although intended as a post-construction resource, the guide may serve designers by providing a blueprint for long-term building health. The guide can be downloaded from the EPA website at [www.epa.gov](http://www.epa.gov).

**Design affects health and comfort**

**Little-used areas need considerable attention**

As a manufacturer of many products used in interior furnishings and building construction, DuPont has taken an active interest in the study of indoor air. Over the past 10 years, DuPont has conducted research into how building materials relate to indoor air quality. In the early 1990s, DuPont created a highly specialized testing facility to study emission properties of carpets and other materials. This laboratory utilizes small environmental chambers and is one of only a couple dozen labs in North America with this research capability. This is the only widely accepted technology for the determination of material emission rates, which can be used in human exposure models and risk assessments. DuPont is also actively involved in sensory irritation research on chemical mixtures—i.e., levels of exposure that could lead to irritation of the eyes and upper respiratory tract. Recent research has investigated relationships between floorcoverings and airborne particles.

DuPont manufactures Antron® nylon, which is used in a large percentage of the carpet installed in commercial interiors today. A carpet of DuPont Antron® nylon provides superior resistance to wear and excellent cleanability for the most demanding commercial installations. DuPont also provides flooring installation, carpet maintenance and carpet reclamation/recycling through its subsidiary, DuPont Flooring Systems.

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## LEARNING OBJECTIVES

After reading *Understanding Indoor Air Quality: Bioaerosols* you will be able to:

- Describe possible sources of indoor air quality problems.
- Explain what can be done to treat indoor air quality problems.
- Describe the effects of dust and particles on indoor air quality.
- Describe to what extent carpet is a contributor to indoor air pollution.

## INSTRUCTION

Refer to the learning objectives above. Complete the questions below. Then turn the page upside down and check your answers. Fill out the self report form (page 204) and submit it or use the Continuing Education self report form on *Record's* web site, [www.architecturalrecord.com](http://www.architecturalrecord.com) to receive two AIA/CES Learning Units including one hour of health safety welfare credit.

## QUESTIONS

1. What role do dust and particles have on indoor air quality?

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\_\_\_\_\_  
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2. Is carpet frequently a contributor to indoor air quality pollution?

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3. What role does ventilation play in indoor air quality?

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4. Is "bake-out" an effective practice prior to occupying a building?

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5. How can architects "design" for the long-term health of a building?

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6. What is the effect of cleaning on indoor air quality?

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1. Dust and particles include bioaerosols. These often come into a building with its occupants. Particles are shed from skin, clothing and shoes. Other particles come in on the air, either through open doors and windows, or through ventilating systems. Moisture in buildings can support the growth of microorganisms with potential for health problems.

2. Research suggests that easily re-suspended particles will not accumulate on active surfaces. Particles will move deeper into the pile in the case of carpet, they will be removed via ventilation and filtration, or they will move to a more quiescent location.

3. Ventilation expels the build-up of VOCs and particles, well as respired carbon dioxide, body odors, fragrances, heat build-up and humidity. Controlling humidity reduces microorganisms and bacterial growth.

4. Science provides little evidence of the effectiveness of bake-outs. In most cases, the temperature differential is not high enough or long enough to have any significant impact on emissions.

5. Evidence suggests that less-traveled areas of public buildings frequently are greater contributors to indoor air quality problems than highly traveled areas, and structures that contribute to piled papers are a repository for potential pollutants. Architects should design with help in mind, avoiding cubicles when possible, keeping work areas open and avoiding tight spaces.

6. Cleaning very simply removes bioaerosols and other dusts which reduces exposures of building occupants. Lower exposures translates to lower probabilities of adverse health effects.

## ANSWERS

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# LIGHTING...

What the four photographs on this page have in common, besides their use in stories in this month's Record Lighting section, is that they all use indirect lighting. What is indirect lighting? Maybe I can best explain by illustrating what it isn't. There is a small rotisserie on the back counter at the deli in my neighborhood. Except for its front door, which has a glass-viewing panel, the interior is matte black. Inside, chickens rotate on skewers a few inches away from bright reflector lamps. The lamps aren't necessarily needed to keep the chickens hot—that could be done with gas or electric heating elements. What they do is light the chicken directly, bringing out its golden-brown color and giving the skin a delicate sheen. You might want to light actors, jewelry, or crystal the same way. But not everything should be lit like a rotisserie.

Maybe the best way to think of indirect lighting is that the light is visible, but the source is not. At a conference center at the Blue Cross Blue Shield of Illinois headquarters in Chicago (1) lighting designer Steven Margulies of Cosentini Lighting Design used an indirectly lit slot in the ceiling to trace the main circulation route in a hallway. Likewise, Ann Kale of Ann Kale Associates lit a grand stair hall at the Xerox offices in New York (4) using downlights tucked into a cove that runs around the perimeter of the room. The lights rake the wall at a low angle, throwing the inset, red-lacquered panels that form the logo into relief.

Grenald Waldron Associates used uplighting to illuminate an outdoor arcade at the University of Pennsylvania in Philadelphia (3). Of course, downlights could have been used, but the more even, indirect light chosen by the designers produces little glare, if any, and is easier on the eyes. People moving through space at night seem to feel safer if they are not lit as if they were on stage—I bet the chickens would agree. At other times, the effect of stagelike light is perfect: Michael Hooker of MSH Visual Planners used shades of blue light to flood the area in front of the House of Blues Hotel (2) at Marina City in Chicago, bouncing light off the building onto the sidewalk. The light also emphasizes some of the details on Bertram Goldberg's original Marina City towers (left in the photo) and the riblike projections on the cornice of the hotel. It looks spooky in the photo, but when you're there, the effect is great. Charles Linn, AIA

**159 Creative Uses**  
**161 Blue Cross Blue Shield of Illinois Headquarters**

*Cosentini Lighting Design*

**166 House of Blues Hotel at Marina City**

*MSH Visual Planners*

**169 Master Lighting Plan for the University of Pennsylvania**

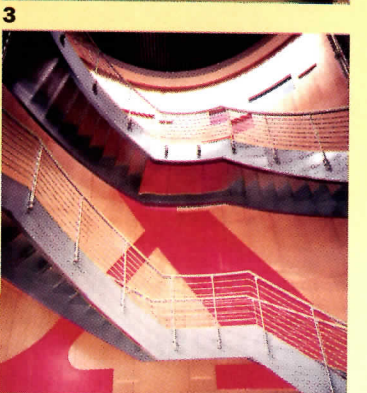
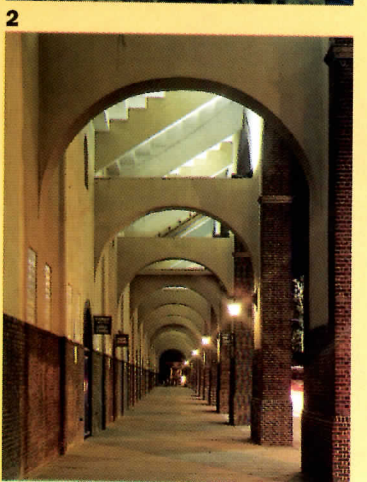
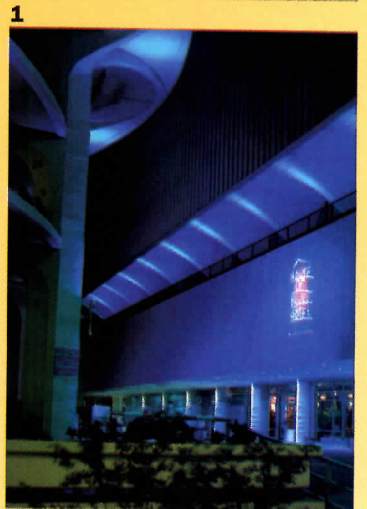
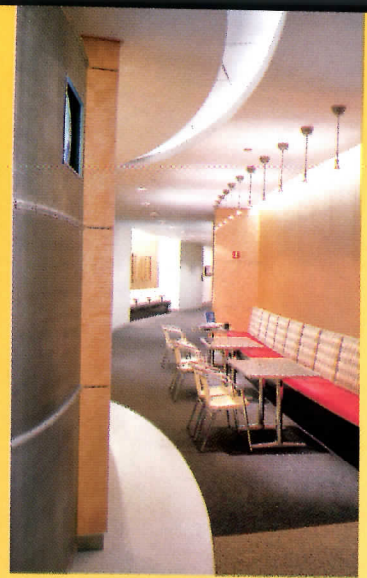
*Grenald Waldron Associates*

**174 Xerox Corporation Showroom**

*Ann Kale Associates*

**177 Technology: New Fiber-Optic Luminaires by Adam Tihany**

**179 Lighting Resources**



1

2

3

4

Manta C2S Series

## ULTIMATE ILLUMINATIONS

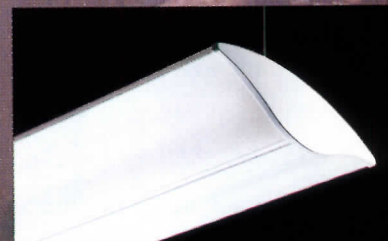
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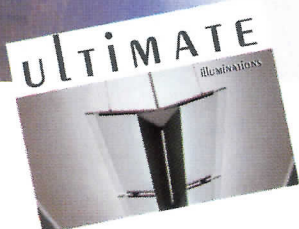
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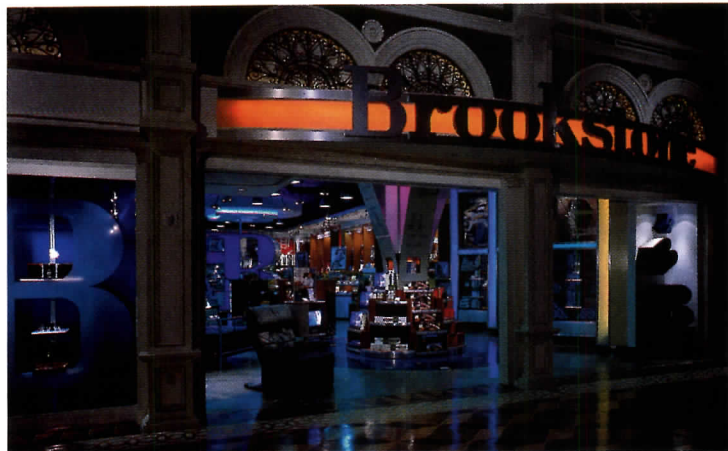
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# CREATIVE USES



## STORE OUTFITTED WITH THE NEXT BIG THING: VARIABLE-COLOR-OUTPUT LEDs

Whether you are looking for an interactive Star Wars telephone, a chef's fork with a built-in temperature gauge, or an electronic shoe polisher, the Brookstone store is the place for you. The company that started out marketing tools for left-handed people and now sells hard-to-find tools and other artifacts for the upscale and eccentric buyer, wanted the design of its new flagship store at the Venetian Hotel in Las Vegas to enhance its adventurous image.

Designer James Mansour, of the New York-based firm Mansour Design, specified a new kind of lamp made of light-emitting diodes (LEDs) for use in Brookstone's display and signage lighting.

Color Kinetics, a Boston-based company, designs and manufactures the lamps using what it calls "Chromacore" technology. The new lamps generate colored light using red, green, and blue LEDs. A built-in microprocessor mixes the colors by varying the brightness of the LEDs, making it possible to create 16.7 million colors (these are 24-bit RGB colors, similar to those produced by a computer monitor), an almost infinite variety.

In contrast, conventional lighting techniques use gels or dichroic filters to absorb all light except the desired color. To change colors in

conventional lighting, a mechanism must move different filters in front of the light.

These new lamps have no moving parts, operate at 24 volts DC, and can last up to 100,000 elapsed hours—about 11 years of continuous use. The lights also operate at very cool temperatures, so they can be used close to fabric, artwork, or in other areas where ordinary heat- or UV-emitting lamps might damage fragile objects.

There are three styles: one has a bipin mount and can be used in

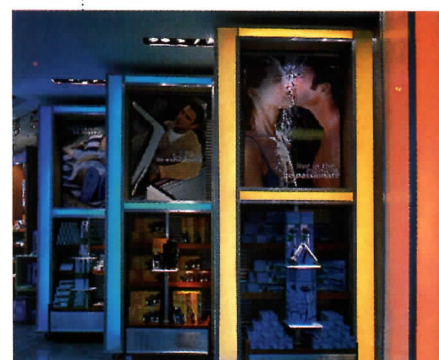
many standard low-voltage track lights; one is a cove light with a row of LEDs mounted on it and comes in 6- or 12-inch increments with a 100-degree beamspread; and the third is a C-series fixture, an enclosed assembly that looks like a tiny track light and comes with built-in sockets for controllers. The C-series has a 22-degree beamspread and includes a model for outdoor use.

The Brookstone store, with its broken, sculptural shapes, exposed ceiling and hand-ground terrazzo floor, has approximately 150 color-changing LED lights. "This is the next generation of lighting," predicts Mansour. "It was one of the ways of calling attention to the store. We've used it to frame the products in changing colors."

The Brookstone logo that is part of the store's entrance marquee is backlit by strips fitted with the LED lamps behind acrylic panels. The color of the band changes constantly from blue to violet to orange. Customers' attention is drawn from the marquee into the interior of the store by a 12.5-foot tall column just

inside the entry. It is uplit with four C-type fixtures, programmed to cross-fade at different speeds, and creates a full range of colors.

Brookstone's products are divided into four categories based

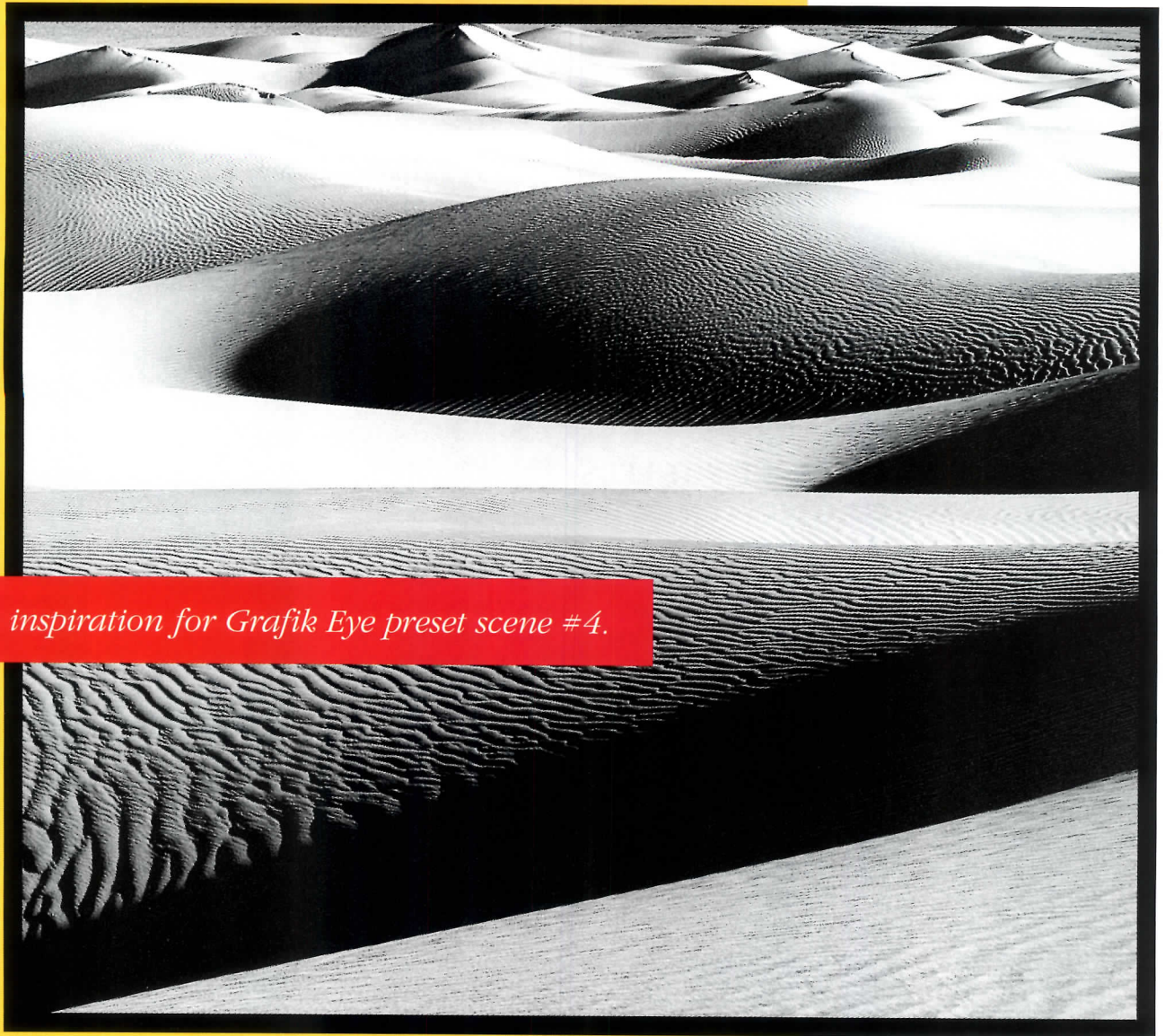


**LED-based lighting frames the marquee (above left) and the product displays at Brookstone. Individually programmed with different colors, effects, and timing, the displays pulsate with color and energy.**

on their areas of use: home, lawn, health, and auto. The displays for the four products are housed in a series of pivoting walls that have been framed in changing colors coded red for home, green for lawn, blue for health, and yellow for auto. The four display units—each with its own program—pulse with colored lights from these four different color palettes.

Since all the lamps have their own built-in microprocessors, each also has a series of switches that can be set to operate a variety of different programs. They can be set to change at different speeds, creating not only a multitude of colors but an assortment of shows—color washes, random color changes, cross fades, and strobes, varied by speed, direction, saturation—activated by various switch settings.

The lamps can also be programmed using input from theatrical dimming boards, personal computers, or controllers marketed by Color Kinetics. *Nayana Currimbhoy*



*The inspiration for Grafik Eye preset scene #4.*

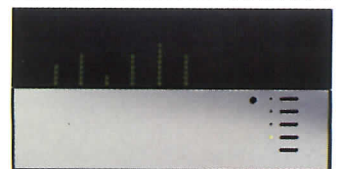
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CIRCLE 52 ON INQUIRY CARD

# Lighting Sets the Scale at a Vast Insurance Company Headquarters

by **Nayana Currimbhoy**

Lighting designer Steven Margulies, president of Cosentini Lighting Design of New York City, knew that the 43,000-square-foot-plus floors of the Blue Cross Blue Shield of Illinois headquarters were going to seem overwhelmingly large. “To deal with such huge floorplates, we thought it wise to begin with a module that was slightly larger than usual,” says Margulies, explaining why a five-foot-square space-planning module was chosen, rather than the more common four-foot-by-four-foot grid. Responding to the large area, he designed a custom, five-foot-by-one-foot recessed fluorescent troffer especially for this application. It uses a hybrid louver assembly that combines white-finished rails with brush-finished aluminum cross-blades. The effect of the louver is to increase the apparent brightness in the space by eliminating the dark rectangular “black holes” that appear on the ceiling when conventional all-anodized aluminum louvers are used. Margulies explains that in addition to helping deal with the scale of the building, the five-foot module allows space-planning changes to be made with fewer fixture relocations and other disruptions than would be required with a smaller grid.

The front of the 1.3 million-square-foot built-to-suit office building is distinguished by a series of U-shaped atria along its front ele-

vation. The atria, built on every fourth floor, were conceived to bring daylight deeper into the interior and to create lounge areas at regular intervals. At night, fluorescent tube lights and metal-halide downlights punctuate each atrium and create a vertical pattern on the front of the building that helps it stand out on Chicago’s night skyline. In addition, color-changing floods backlight columns at the roofline.

The building’s interior designers, VOA Associates, provided an upscale executive floor designed to showcase a collection of Shaker furniture that belongs to the corporation’s chief executive officer, Raymond McCaskey. Just off the elevator, the visitor is greeted by a sloping stone wall that signals a change in sensibility, from modern to rustic. An old stone barn, for example, with large wooden roof beams was relocated and now serves as a conference room. Fireplaces, slate floors, and wood used

**Project:** Blue Cross Blue Shield of Illinois Headquarters, Chicago

**Architect:** Lohan Associates

**Interior designer:** VOA Associates

**Lighting designer:** Cosentini Lighting

*Design—Steve Margulies, president and project lighting designer*

**Electrical engineer:** Cosentini Associates

**General contractor:** Walsh of Illinois



The Blue Cross Blue Shield of Illinois headquarters (above) has atria located on every fourth floor. These are illuminated by fluorescent uplights. MR-16s built into the canopy structure light the building’s entry.

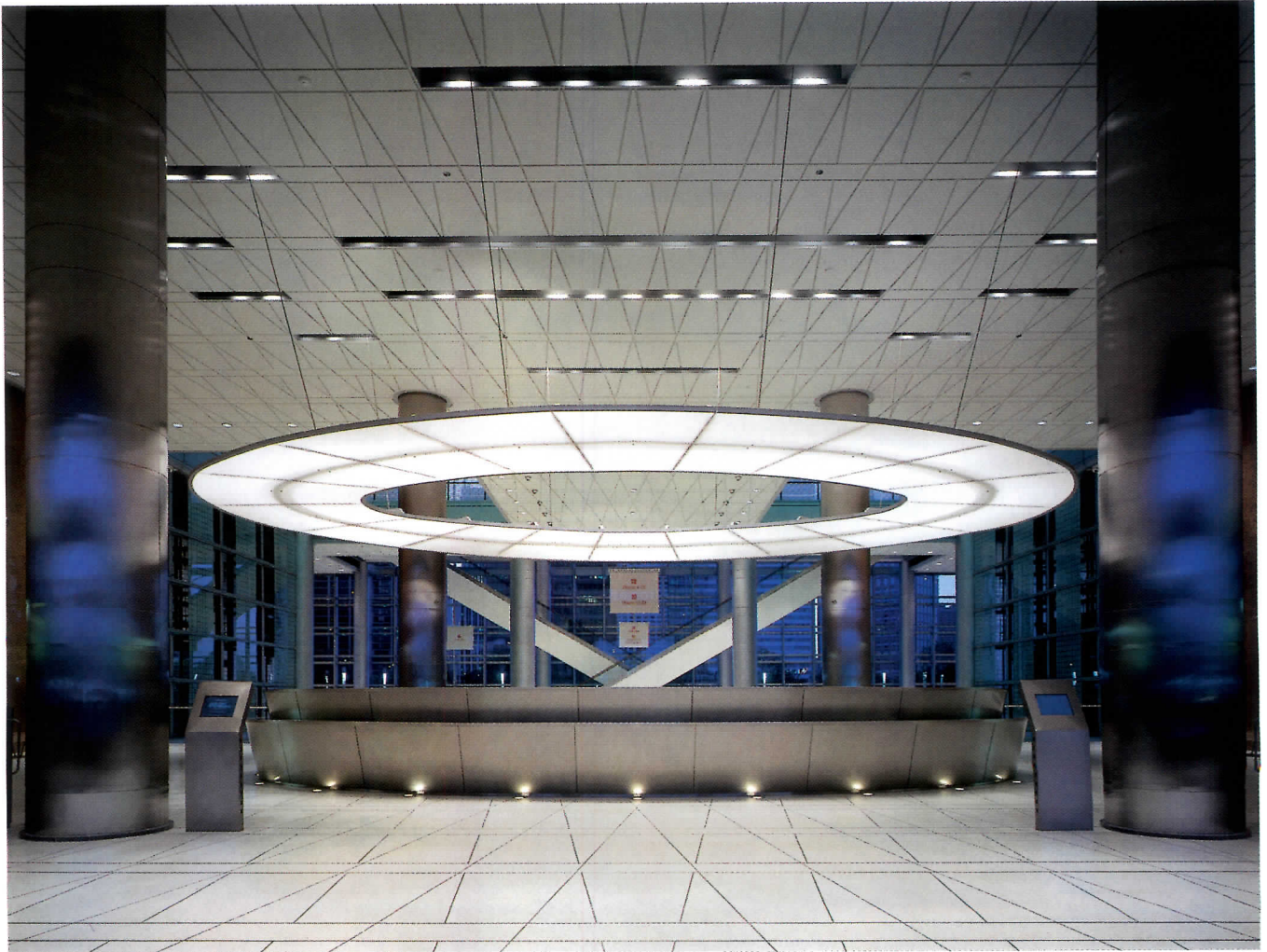




On an upper executive floor (left and opposite), where Shaker furniture is displayed,

finishes are less formal. Indirect, incandescent light was used to mimic lanterns.

Track lighting in ceiling slots gives the reception desk (below) a glow.





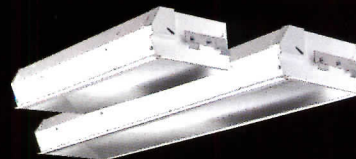
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Lighting in the conference center requires flexibility, so dimmable compact-fluorescent wallwashers, pendant-mounted T8s, and fluorescent downlights were used.



throughout the floor extend the metaphor.

“Since the Shakers used candles and lanterns, the challenge was to integrate lighting as subtly as possible into the architectural design,” says Margulies. Using, for the most part, indirect light sources, the executive floor’s incandescent luminaires are concealed in coves and discreet light troughs. MR-16 spots draw attention to the numerous works of art, while executive offices are lit with a combination of T8 strip lights and PAR-38 fixtures. “Our intention was to keep it from looking like a museum,” says Margulies. The angled stone wall is highlighted with halogen wall washers, and the executive boardroom is illuminated with a combination of MR-16 downlights, halogen wallwashers, and 13-watt compact fluorescents.

Fifty thousand square feet of below-ground conference areas are used for meetings and educational purposes. Here, the flexibility needed for all the activities that take place in the meeting rooms—audio-visual presentations, face-to-face learning, and video conferencing—is

provided by a combination of dimmable compact-fluorescent wallwashers for chalkboards. Pendant-mounted T8 fluorescents and dimmable, incandescent PAR-38 downlights were used over the classroom seating. Outside the meeting rooms, the decor departs from the neutral colors and finishes typical of the office floors, and lounge areas have been outfitted in bright furnishings. Curved hallway walls are outlined by compact-fluorescent cove strips for straight runs and concealed cold-cathode sources where coves curve. Over the lounge areas, wood walls are washed by tungsten halogen lamps mounted on pendants. ■

**Sources**

**Custom one-foot-by-five-foot**

**fluorescents:** *Lightolier*

**Downlights:** *Lightolier*

**Curved compact-fluorescent strips:**

*Belfer Lighting*

**Semirecessed incandescent**

**wallwashers:** *Elliptipar*

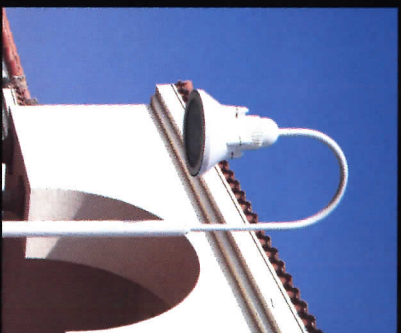
**Fluorescent strips:** *Legion*

**Color-changing lights:** *Irideon*

**Canopy lights:** *Bega*

**Exterior torchers:** *Michael’s Lighting*

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# House of Blues Hotel a Harmonious Spot in Revived Marina City Complex

by **Nayana Currimbhoy**



**T**he vision of the House of Blues' founder, Isaac Tigrett, is reflected in the company's mission statement, which says it should promote racial and spiritual harmony through love, truth, righteousness, and nonviolence and celebrate the diversity and brotherhood of world unity. The enterprise even has a red heart in its logo. The restaurant and nightclub chain's first hotel, built in the recently revived Marina City complex in Chicago and designed by the Beverly Hills-based firm, Cheryl Rowley Interior Design, reflects Tigrett's ideals with artifacts from cultures all over the globe.

To affect the melding of influences, different kinds of art are displayed: a golden Burmese Buddha is enshrined with glass panels from a temple in India; 100-year-old Indian pillars line the reception area; Gothic wrought-iron cathedral gates lead to the lobby; Moroccan-

type tents house meeting alcoves, and original Southern folk art is displayed throughout the lobby and in the guest suites. Farther along, visitors encounter more original artwork, ranging from 12-foot-high sculptures to Eastern-inspired stencil patterns and pictures made of mud and molasses.

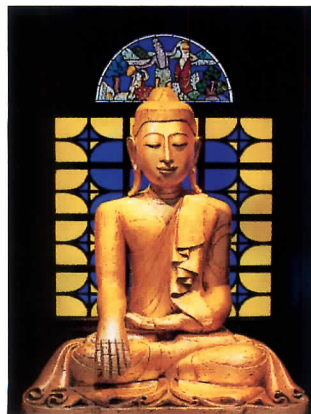
"The guiding principle is authenticity. The Buddha is not plastic; it is a genuine teak" says Michael Hooker, of MSH Visual Planners of Berkeley, the lighting designer for the 367-room hotel. Hooker's task was to achieve focus, balance, and cohesion within this eclectic environment. The challenge was to create interest from afar and maintain the comfort level of a hotel.

Hooker lit rooms and objects as if they were displays in a museum. For example, six MR16s sculpt the 125-year-old Buddha in three tones of amber, while two PAR36s highlight its face and hands. In the lobby, 12 stained-glass panels are illuminated from the rear with

end-lit fiber optics. Different colors of light cross-fade over 15-minute intervals, deepening the color of the blue glass and transforming the yellow glass to red. "We chose end-lit fibers because they have a superior ability to direct beams of light with uniformity," says Hooker.

In the lobby, as well as up the stairs in the main bar area, are enclosed, tented spaces that create small-scale, intimate meeting areas. Fashioned after Moroccan tents, these enclosures are constructed of wrought-iron frames draped with imported fabric. Decorative sconces with 75-watt halogen lamps provide functional illumination within the "tents." The combination of fabric tones and dimming results in a very warm 2,300 Kelvin glow within the tent. Contrasted with the very cool lavender and blue tones of lighting elsewhere in the lobby and bar, the tents beckon as cozy alcoves.

Four colossal statues dominate the center of the lobby. The 12-foot-tall figures, created by master stonecutter Walter Arnold, were inspired by ancient East Indian limestone sculptures. Recessed MR16s with linear-spread lenses illuminate the faces and chests of the figures,



**Project:** House of Blues Hotel, Chicago

**Owners:** Marina City Redevelopment Corp., Chicago; House of Blues Inc., Hollywood

**Hotel operator:** Loews, New York City

**Project management:** Program Design Management

**Marina City complex architect:** Bertrand Goldberg Associates

**Hotel architect:** VOA Associates

**Hotel interior designer:** Cheryl Rowley Interior Design

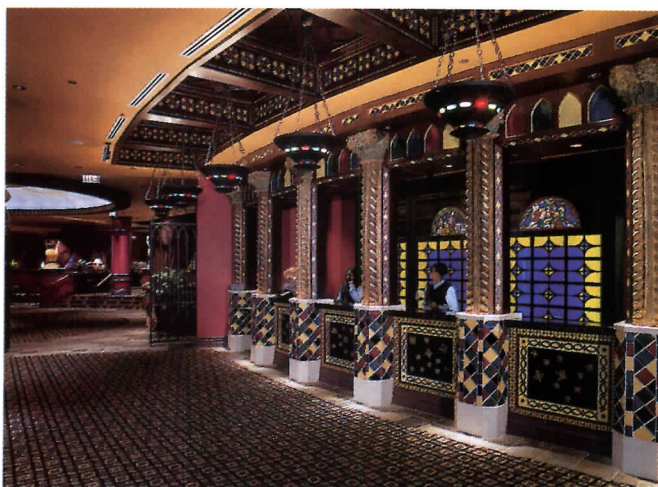
**Lighting designer:** MSH Visual Planners—Michael Stewart Hooker, principal

**Contractors:** Power Construction (general), Gurtz Electric (electrical)





The logo of the House of Blues Hotel is projected over the entry. Seventy-five watt sconces and torcheres light Moroccan-style tents (opposite, below left) used as cozy alcoves. A golden Buddha is grazed by light from amber-toned MR16s (opposite, below right). Four large limestone statues (left) are grazed by MR16 uplights and downlights. Gothic chandeliers hang over the registration counter (below left). PAR36s accent the sculptures at each end of the bar (below).



while MR16 uplights and downlights, fitted with color filters, tone the sides of each figure. MR16s illuminate the domed ceiling above, so that the sculptures become the focal point of the space.

The large blue and white marble bar, one flight above the lobby, came from Italy. Custom-designed Gothic chandeliers complement this ornate bar, while statues of a merman and mermaid that support a lighting valence over the bar recall the figureheads of ancient ships. "Although it is not visible, the wood below the bar is from church pews," says Hooker. The lighting in the bar area has been carefully composed to create a visual balance between these elements. PAR36 and MR16 uplights and downlights accent the antique mermaid and merman corbels. Two tones of blue accent the glassware, while a single MR16 fitted with a linear-spread lens highlights the center of the bar.

A projector fixture fitted with a 1,000-watt metal-halide lamp provides the entry signage for the hotel. A 6-volt, red incandescent, narrow spotlight beamed into the center represents the House of Blues

logo, the red heart. The facade itself is washed by 150-watt and 35-watt metal-halide floods covered by glass filters in two different shades of blue. ■

**Sources**

**Blue-glass porte cochere downlights:**

*Contrast*

**Blue metal-halide porte cochere**

**accent lights:** *Kurt Versen*

**Metal-halide downlights and accent lights:** *Prescolite*

**Vault accent lights:** *Hubbell Lighting*

**Vault wash lights:** *Special FX Lighting*

**Color filters:** *Abrisie Industrial Glass; Lighting Services*

**Hotel sign projector:** *Phoenix*

**Background wash and spot lights:**

*Altman Stage Lighting*

**Hotel Lobby:**

**Recessed accent lights and downlights:**

*Kurt Versen*

**Telephone statue ceiling-cove lights:**

*Specialty Lighting*

**Telephone statue accent uplights:**

*Hydrel*

**Telephone statue accent downlights:**

*Prescolite*

**Tent indirect sconces:** *Bega*

**Fiber optics for stained glass:** *Glass Illuminations*

**Lighting controls:** *Leviton*

*Nayana Currimbhoy is a frequent contributor to the RECORD LIGHTING section.*



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CIRCLE 55 ON INQUIRY CARD

# Lighting Plan Sparks Improvements in Campus Circulation and Security

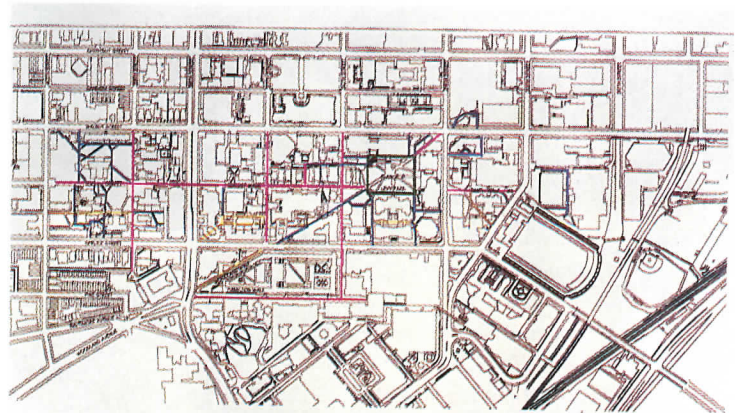
by William Weathersby Jr.

**W**ith roots dating back to a college founded in 1744 by Benjamin Franklin, the University of Pennsylvania occupies a 262-acre, tree-shaded campus just outside the center of Philadelphia. This Ivy League enclave in the inner city consists of a complex landscape of historic buildings and modern structures, which serve 20,000 students in 16 schools. Recently, university administrators commissioned Grenald Waldron Associates (GWA) to develop a comprehensive exterior lighting program that would help unify the appearance of the campus and adapt to its future growth.

“The wide range of architectural styles on campus visually disappeared at night,” observes GWA senior lighting designer Courtney Sarge. “Our initial intent was to concentrate on lighting the historic buildings along the campus perimeter to increase their presence within the community.”

After a series of violent assaults occurred on campus during the project’s early planning stages, however, “the thrust of the assignment turned toward improving nighttime security,” says GWA chairman Raymond Grenald, FAIA. “We were also asked to develop a standard lighting vocabulary of fixtures and lamps that could be implemented campuswide to improve energy and maintenance costs.”

Working with university architects and facilities managers, the lighting team evaluated every component of the existing illumination program. “The campus lighting had all the aesthetic charm of a prison



- Primary pathways
- Secondary pathways
- Tertiary pathways
- Special area

The campus’ new exterior lighting includes integrated layers of light for paths, facades, and landscaping (plan and above) and clearly

marks walkways and building entries. Also, supplemental illumination eliminates dark zones around shrubs and sculptures.

**Project:** *Campus Lighting Master Plan, University of Pennsylvania, Philadelphia*

**Owner’s representatives:** *Dr. Judith Rodin, president; John Fry, executive vice president*

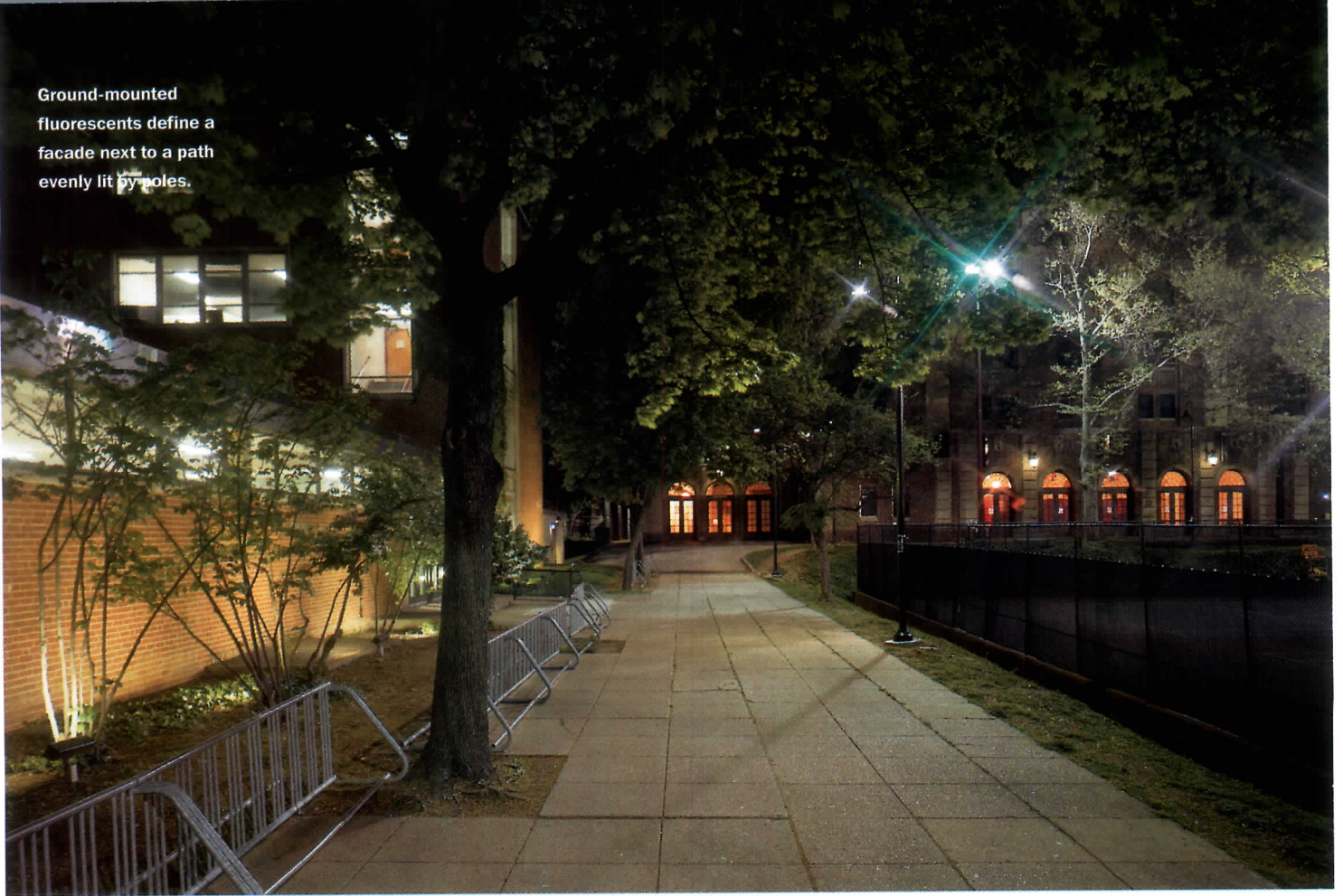
**Lighting designer:** *Grenald Waldron Associates; Rayman Grenald, FAIA, chairman; Sandra Stashik, principal; Courtney Sarge, senior lighting designer*

**Electrical contractor:** *Riggs Distler & Company*

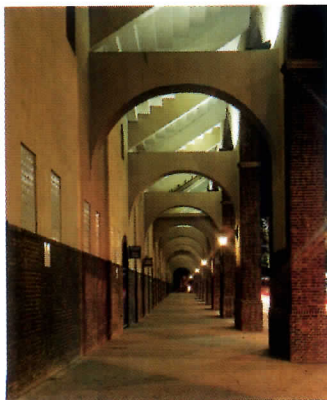
**Consultants:** *Mulhern Consulting Engineers; Kease & Hood Company (structural)*

**University facilities services:** *Arthur Gravina, vice president, facilities management; Titus Hewryk, university architect; Anne Froehling, landscape architect; Robert Lundgren, university landscape architect; Charles Boyle, chief electrical engineer; Dominick Fantozzi, project manager*

Ground-mounted fluorescents define a facade next to a path evenly lit by poles.



Pole-mounted metal halides light the facades of a church and the campus police station (middle). In the street-level arcade of Franklin Field (right), metal-halide uplights mounted atop archways provide indirect pathway illumination.



yard,” says Grenald. “There was an overall grid of light, but the fixtures were very bright and glaring. The response to security issues had always been to create brighter levels with floodlights along pathways and entrances, which put pedestrians on stage and made them feel even more exposed than in less light.”

The revised master plan incorporates complementary layers of light that enhance building facades, landscaping, and pathways to “express the campus as a unified entity,” as design principal Sandra Stashik puts it. “Not only are facades and pathways clearly defined,” she adds, “but each zone that pedestrians move through has a clearly demarcated scale and range of navigation options.”

Pathway lighting is the linchpin of the new plan. A hierarchy of nighttime campus circulation routes was established, with primary and

## THE NEW LIGHTING ENHANCES FACADES, LANDSCAPING, AND PATHS.

secondary walkways then illuminated in different ways. Owing to the juxtapositions of campus buildings, utilities, and other obstructions, many pole and luminaire locations required adjustment in the field.

The existing plan had placed the majority of pole-mounted metal-halide lamps along major promenades. As a budget consideration, GWA decided to modify rather than replace these luminaires, commissioning a local fabricator to extend the aluminum poles by 2.5 feet. Yellowed polycarbonate globes were replaced with new acrylic models, new ballasts were fitted, and the metal-halide lamping was adjusted from 175 to 100 watts. The taller height of the fixtures help reduce glare, while placement of the lampposts in paired runs, as opposed to their previous staggered formation, distribute light more

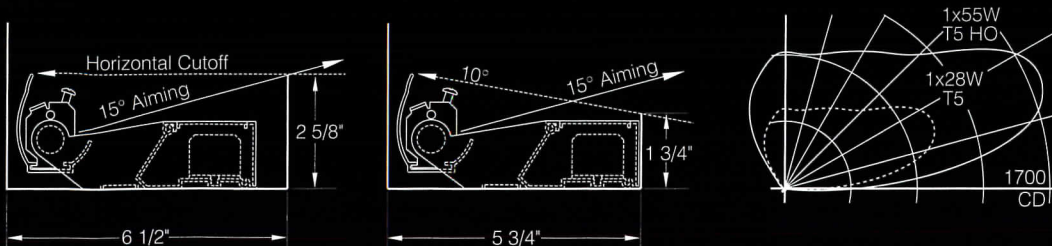
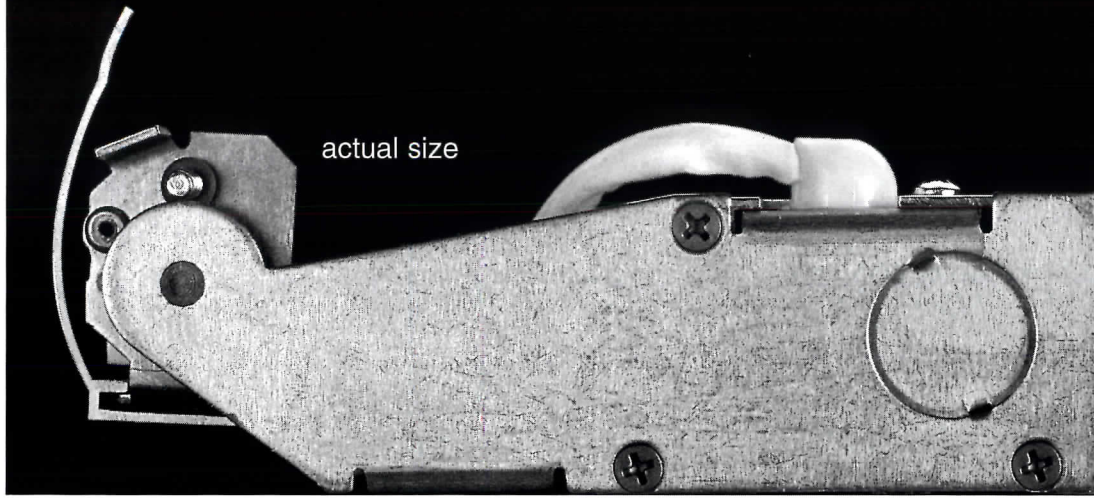
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A prominent sculpture titled "The Covenant" is spotlighted by 1,000-watt metal halides mounted atop adjoining high-rise dormitories. To the right of the sculpture, metal-halide luminaires featuring cut-off fittings light a tertiary pathway without creating excessive glare.



widely. Lamp wattage along secondary pathways was reduced from 175 to 150 watts, while specifications for 15,000-hour lamps trimmed operating costs.

On tertiary walkways, the lighting designers specified cut-off luminaires supported by shorter bishop's-crook-style poles. "The major paths are clearly marked yet distinguishable from the secondary walkways," Stashik says. "The lines of illuminated globes allow you to distinguish major axes, while the secondary routes are well lit without creating confusion."

To imbue pedestrians with a strong sense of security at night, the designers enhanced orientation by illuminating architectural landmarks at the terminus of each path. "Floodlighting the major buildings became crucial," says Grenald, a former urban planner, "since pedestrians generally prefer not to walk toward areas of darkness."

With two-thirds of the master plan implemented, approximately 15 university buildings feature upgraded illumination. "The light tends to come from one direction to graze a facade and cast shadows that express the architectural detailing," Grenald says. Adds Stashik, "We aimed for a moon glow quality that outlines buildings on the horizon, not Times

Square-style floodlighting."

The buildings are primarily lit with metal-halide lamps and high-pressure sodium fixtures mounted on the rooftops of nearby buildings or on poles across the street. Entryways and the lower levels of buildings are lit by ground-mounted compact fluorescents, with historic lanterns restored and converted to lower-wattage compact fluorescents.

Landscape elements, such as shrubbery, trees, and outdoor sculptures, were treated as a connective layer of illumination between buildings and circulation corridors. "The practice had been to cut down obstructions like hedges or shrubs as security precautions," Sarge says. "Now that they are uplit, they are perceived as a nighttime enhancement instead of as a threatening shield for potential assailants." ■

#### Sources

**Primary and secondary walkway lighting:** *Street Lighting Equipment*  
**Tertiary walkway lighting:** *Architectural Area Lighting*  
**Pole- and building-mounted**

**floodlighting:** *Sterner*

**Ground-mounted fluorescents:** *Omegalux; Forum*

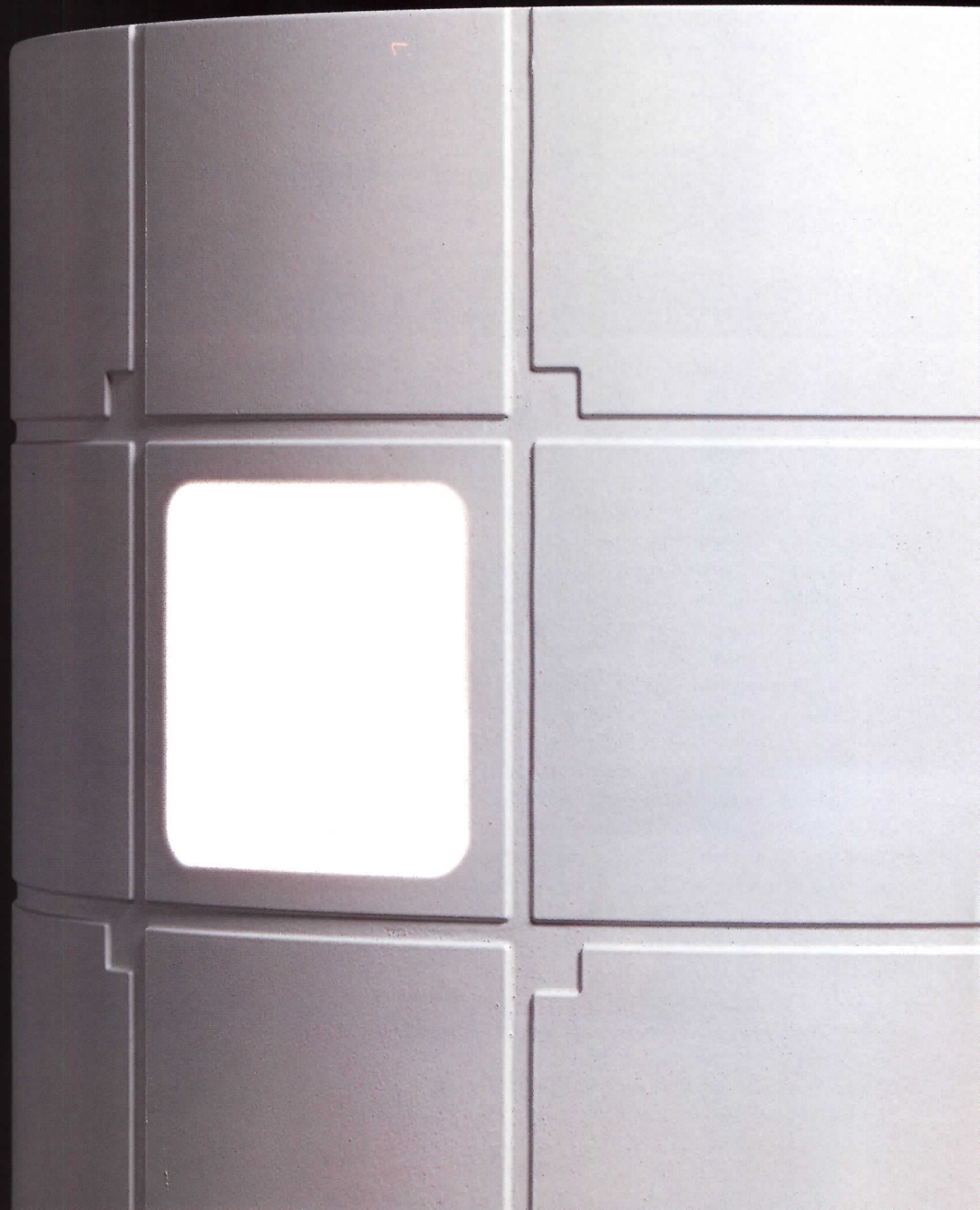
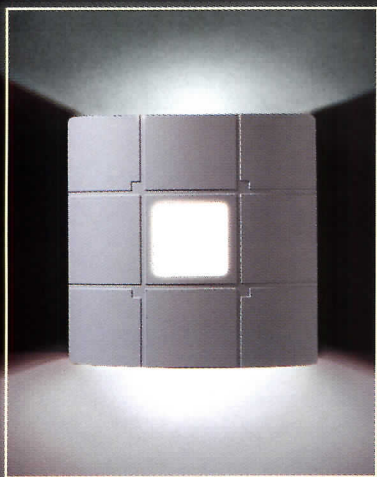
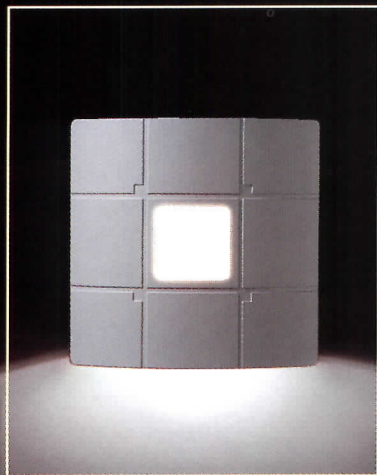
**Tree lighting:** *Sterner*

**Entry lighting:** *McPhilben*

**Lantern restoration:** *Klemm Reflector*

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CIRCLE 57 ON INQUIRY CARD

# A Design Team Whips Up An Egg-Shaped Showroom

by William Weathersby Jr.



sten-halogen lamps, hidden inside a nine-inch-deep cavity between the glass and a gypsum-board inner wall, backlight the graphics. “We explored using fluorescents to illuminate the panels like a lightbox, but it would have been difficult to replace them. We decided to restrict lamp positioning to the top and bottom of the wall to facilitate maintenance,” Leitch says.

The PAR16 lamps are spaced six inches on center between the top and bottom of the wall. “The lamps were chosen for their consistent color and small size and because they don’t require heat-sensitive transformers, like low-voltage systems do,” Kale says. “The PAR16s are also bright enough to be visible when the sun comes through the adjacent west windows.”

Where the Egg curves away from the entry, a series of interactive kiosks, video monitors, and graphic panels support product education and brand imaging. “Since many of the display monitors are self-illuminated, the space did not require much additional light,” Kale says. “The intent was to always

**W**hich came first, the egg or the rectangular copier? The egg, of course. So, it seems only natural that Xerox Corporation’s New York City product showroom took the timeless ovoid form as its central architectural element—it contrasts well with the right-angled geometries of the business machines on display. Besides, “The client requested a signature feature that would function like a corporate billboard attracting passersby,” says Highland Associates project architect Glenn Leitch, AIA. “The showroom’s ground-floor location,” he adds, “presented an extraordinary opportunity to enhance the company’s brand-building efforts through the design of its interior architecture.”

Dubbed “the Egg” by the project design team, the structure organizes circulation patterns through the 20,000-square-foot space while serving as an icon visible from Park Avenue at 47th Street.

Collaborating on this architecture-meets-marketing formula were lighting consultant Ann Kale Associates and graphic and interactive display designer IDEO. “The showroom required a dramatic entry area coupled with a series of more straightforward product demonstration suites,” says designer Ann Kale. “The Egg smoothes the transition between the two zones, and its eye-catching integral lighting helps extend the Xerox corporate presence beyond the envelope of the generic office building’s slab-to-deck glazing.”

The Egg is 16 feet high and 35 feet long, with an outer surface of curved-glass panels laminated with translucent graphics. PAR16 tung-

sten-halogen lamps, hidden inside a nine-inch-deep cavity between the glass and a gypsum-board inner wall, backlight the graphics. “We explored using fluorescents to illuminate the panels like a lightbox, but it would have been difficult to replace them. We decided to restrict lamp positioning to the top and bottom of the wall to facilitate maintenance,” Leitch says.

Deeper into the showroom, beyond the curve of the Egg, are six product-demonstration suites separated by gypsum-board partitions, which had to be built around the floorplate’s existing column grid. Typical two-by-two-foot recessed parabolic fluorescent troffers that simulate ordinary office lighting were used here. Wall-mounted supergraphics and product information are highlighted by MR16 track fixtures recessed into ceiling slots.

In addition to the showroom, the team designed regional offices for Xerox on three of the upper floors. The contiguous levels, each 35,000 square feet, converge at a circular central atrium. Two steel stair runs swoop dramatically in front of a 34-foot-high Xerox’s “X” logo, in red-lacquered relief, set into anigre—an African hardwood—vener panels. Track-mounted PAR38 tungsten halogen lamps, spaced nine inches on center, were installed around the perimeter of the space and vertically wash the veneer. Fluorescents illuminating adjacent offices have an average power density of less than 1.7 watts per square foot. ■

**Project:** Xerox Corporate Showroom, New York City

**Architect and engineer:** Highland Associates—Glenn Leitch, project architect

**Lighting designer:** Ann Kale Associates—Ann Kale, principal; Davis Mackiernan, senior associate

#### Sources

**Downlights, wallwashers, accent lights:** Edison Price Lighting, Zumtobel

**Additional fluorescents:** C.J. Lighting, Metalux, Neo Ray.

**Sconces:** Hampstead

**Uplights:** Norbert Belfer Lighting.

William Weathersby Jr.’s latest book, *The Pierre: The Life and Times of a Grand Hotel*, will be published this winter.





A large-scale glowing ovoid projects a strong streetside presence for the Xerox showroom (opposite). With only six inches of clearance between the staircases and the wall, illumination is provided by a continuous line of track-mounted PAR38 fixtures (left). Many business machines have self-illuminated screens and thus do not require high levels of light in the demonstration suites (below). The suites are lit with standard office two-by-two-foot recessed parabolic fluorescents. Displays and super-graphics are illuminated by MR16 track fixtures that are recessed into slots in the ceiling.





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# Adam Tihany Turns Stylist for A Pair of Fiber-Optic Fixtures

by Charles Linn, AIA

**A**dam Tihany has turned his talents to the design of a pair of new fiber-optic fixtures for Lucifer Lighting of Austin, Tex. Though best known for his interior design [see September 1999, page 140], Tihany has been involved in product design since his student days in Milan. "That's how I paid my way through school," he says, "most architects at the time were involved in furniture and products because there was no construction going on."

The new designs are called the Scape Light (right) and Light Chime (far right). The designs represent a leap in the evolution of fiber-optic technology: Tihany is the first designer with an international reputation to style fiber-optic lighting products for the architectural lighting market. Until now, that role has been relegated to industrial engineers and technicians.

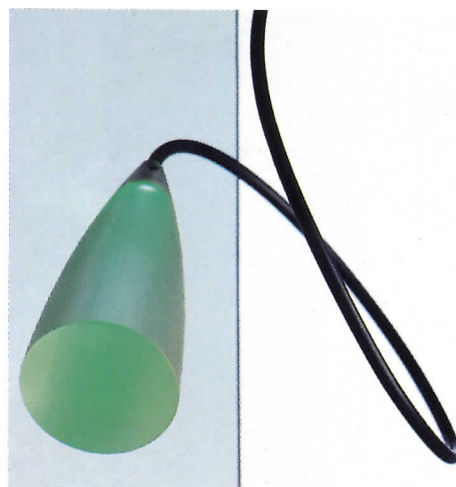
Like electric lighting, fiber-optic lighting uses a lamp as a light source. Instead of the lamp being the terminating point of the system, however, it is the midpoint. The light is conducted over a cable, which may be a bundle of hairlike strands or a single strand the diameter of a wooden dowel. The cable can be glass or plastic and is not electrified. It may be unsheathed, emitting light along its length so that it looks like a

## FIBER-OPTIC CABLE CAN BE RUN WHERE WIRING COULD BE A SERIOUS HAZARD.

neon tube, or sheathed, so that light shines only from its end. The advantages are obvious: fiber-optic cable can be run where wiring could present a serious hazard if damaged—such as underwater—and where replacing lamps would be difficult. The cable does not conduct heat from the lamp, so the light emitted is cool, and one lamp can illuminate many fixtures.

In the 1980s, two innovations made fiber-optic lighting practical for widespread use. The first was the introduction of a new generation of metal-halide lamps. They were compact, produced more lumens per watt, operated at cooler temperatures than comparable incandescent sources, and had excellent color-rendering properties. Metal-halide lamps were built into illuminator boxes that were extremely efficient at focusing light into the ends of the fiber-optic cables. The second innovation was the introduction of relatively inexpensive fiber-optic cable that was much better at conducting light than the cable that had been previously available. Distribution of light at the light-emitting end of the cable was also improved with the development of systems that spread the light out once it reaches the end of the cable.

Still, advances in product design have lagged with regard to the light-emitting end of fiber-optic systems. While dozens of



fixtures have been developed, most seem to mimic the design

of small downlights and other incandescent fixtures. This situation is typical in the evolution of product design—early light fixtures, for example, resembled the gaslights that predated them—so it will likely take time for designs to make use of the unique advantages of optical fibers.

Delivering on these advantages is the Light Chime (illustrated in the photo below), whose translucent cones are tough acrylic and in which 18 of the fixtures swing freely from the branches of a tree. Not only would it have been difficult to relamp the fixtures if each had had its own individual bulb, but also mounting the wiring and junction boxes needed for so many circuits would have required more effort than installing the

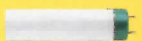
fiber-optic cables. The potential for weather damage is another drawback to tree-mounted electrical wiring; a storm can break live wires, leaving them where they could cause injury or damage.

Tihany is not finished innovating for Lucifer. In discussing plans for the Scape Beam, he says, "We are creating a number of accessories that will give this single shape many uses—on a wall or attached to a tree. I can't wait to design an entire environment around it." ■





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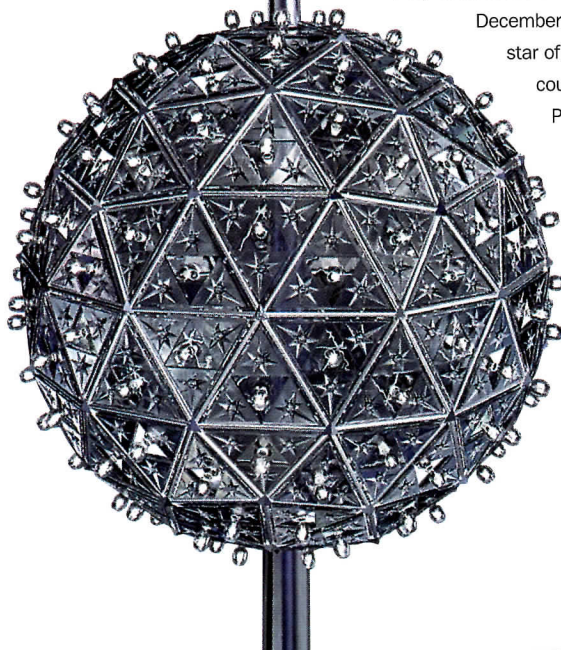
LIGHTING BRIEFS

▼ A brighter New Year

Forget about spending \$250 per person to try to be where the action is on December 31, 1999. The real star of the millennium countdown this year is Philips Lighting's Halogená 2000 light bulb—the official lightbulb of the Times Square New Year's Eve Ball for the next four

years. The Waterford crystal ball will house 180 of the multifaceted bulbs. First introduced in 1996, the Philips Halogená line bears a two-year guarantee and is intended to be used with a clear-glass fixture to take advantage of the faceted characteristics of the bulb. Halogená 2000 will be available for purchase this December. 800/555-0050. Philips Lighting, Somerset, N.J.

CIRCLE 200



▲ Jack light system

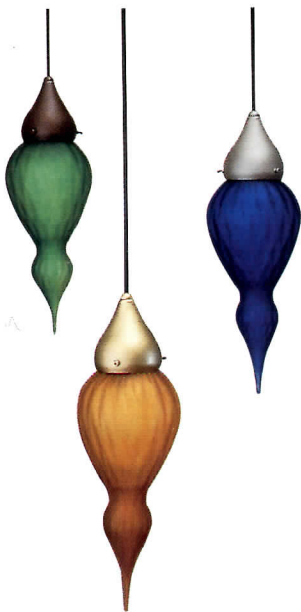
Milled from solid aluminum billets, Tracer, from Spy Lighting Corporation, features a jack light system shown here with concealed power supply. Standard finishes for Tracer include black, white, sand gray, and brush aluminum. The lamp is a 50-watt MR16 halogen. 716/691-7558. Spy Lighting Corp., Amherst, N.Y.

CIRCLE 204

► Lighting to grow on

A companion to Biproduct's line of stacking furniture is a pair of stacking table and floor lights. The floor light (shown) features a system of stackable rings available in natural and colored aluminum. Additional rings may be purchased or custom ordered. The stacking floor light is 5 by 5 by 48 inches and is made of waxed aluminum, powder-coated aluminum, and a stainless-steel mesh. The light requires a 50-watt PAR20 halogen bulb. All lighting fixtures are UL-listed and manufactured in the U.S. 212/255-3033. Biproduct, New York City.

CIRCLE 202



▲ American blown-glass lights

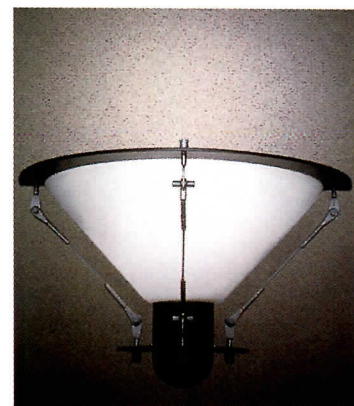
2thousand degrees has added the Majorica pendant and sconce to its line of blown-glass light fixtures. The fixtures are available in seven frosted-glass colors and satin nickel, satin brown, and satin gold finishes. The pieces feature a blown-glass shade with an optic pattern, satin-plated shade holder and canopy, and a 50-inch adjustable black cord. All 2thousand degree lighting is made in Northern California. 510/234-6886. 2thousand degrees, Richmond, Calif.

CIRCLE 201



◀ Paperlike pendants

The ParkerPaper technique looks like crumpled and folded paper but is actually made of reinforced cement. Lights are available in sconce and pendant form. The Hastings light disc (shown) is designed to hang below recessed lighting to deflect light up and block downward glare. Cables can be adjusted to any length to a maximum of 24 inches. While facets on the surface give the work a sculptural interest, the material is lightweight, flame resistant, and easily cleaned. 510/845-6187. ParkerPaper, Emeryville, Calif. CIRCLE 203



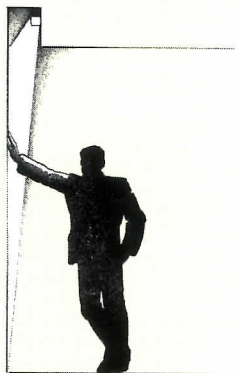
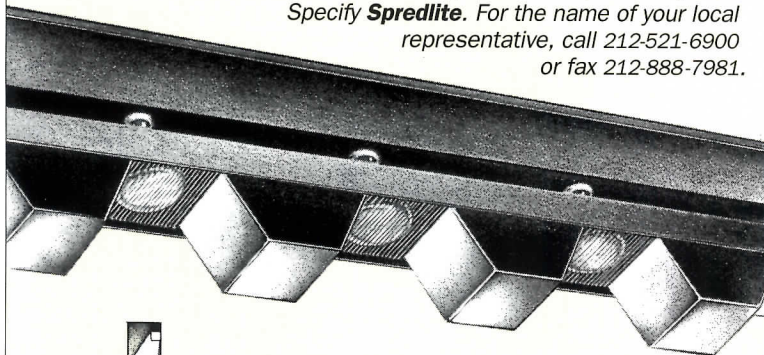
▲ Cone-shaped sconce

The d1140 Portsmouth wall sconce provides softly diffused ambient lighting and an industrial appearance, for a range of residential and contract interior lighting applications, including corporate interiors, public spaces, and hospitality venues. Fixtures feature a perforated half-cylinder metal ballast compartment with an inverted cone-shaped lens. 914/698-5959. d'ac Lighting Group Inc., Mamaroneck, N.Y.

CIRCLE 205

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CIRCLE 61 ON INQUIRY CARD

## LIGHTING BRIEFS

## ◀ Working floor lamp

The KIT P-1225 is part of the new collection of wall sconces, ceiling fixtures, pendant fixtures, and desk and floor lamps from Spanish manufacturer Estiluz. Made by joining a halogen floor lamp to a glass table attachment, the lamp provides direct and indirect light and features an electronic dimmer and a double-intensity low-voltage switch. Finishes include satin gold, gold plate, nickel and black. 201/641-1997. Estiluz Inc., Little Ferry, N.J.

CIRCLE 206

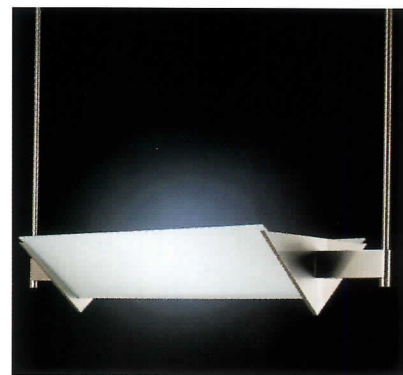


## ▶ Another viewpoint

The Viewpoint indirect/direct lighting system is available in an array of glass and metal finishes, such as wire glass, speckled glass, satin aluminum, and acrylic. Available in both pendants and sconces, Viewpoint is practical for commercial applications. 212/371-4800.

The American Glass Light Company, New York City.

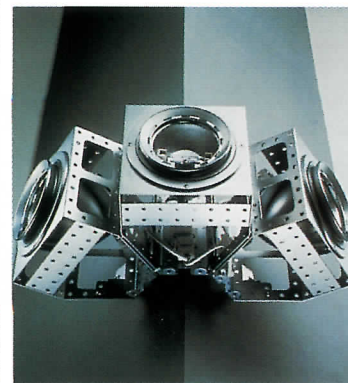
CIRCLE 207



## ▼ Orbital projector lights

The Mondial F-1 is an orbital projector light grouped in an architectural "space frame." Appropriate for high-end retail, hospitality, or museum projects, Mondial offers horizontally and vertically aimable, fully orbital projector lights, in a modular steel space frame that attaches to the architectural planes of the space being illuminated. Mondial projection lights may be specified in four- and eight-inch lens diameters. Projectors are available in an aluminum gray finish. 888/578-8111. Targetti USA, LLC, Santa Ana, Calif.

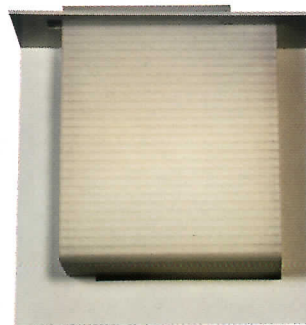
CIRCLE 209



## ▲ The Meier Lisa

The Lisa Wall Sconce, from Baldinger's Richard Meier collection, is designed to provide a soft diffused light. The white acrylic and frosted, ribbed acrylic diffuser options allow the fixture to produce a glowing effect while providing even illumination. The fully lined perforated metal lids on the top and bottom of the sconce make it appropriate for many spaces, including stairwell and corridor applications. The durable powder-coated metal-finish options include painted gloss white, painted copper, and painted silver. 718/204-5700. Baldinger Architectural Lighting, Astoria, N.Y.

CIRCLE 208



LIGHTING BRIEFS



▲ Mission-style mica

All Mica Lamp parts are made of solid copper, assembled with hand-driven copper rivets, and finished with natural patina. Mineral mica flakes, combined with organic shellac, give each mica shade a variation of mineral deposit patterns and color tones. All wood-based lamps are made of solid white oak. Shown here are the Bungalow table and floor lamps. 818/241-7227. Mica Lamp Co., Glendale, Calif. **CIRCLE 211**

▼ Light art

Tech Lighting's low-voltage Radius Wire system features slim conductors that can be easily hand bent on-site into whimsical loops or graceful curves for a sculptural effect. RadiusWire's flexibility allows it to add artistic illumination to a number of residential, commercial, or retail settings. Shown below is RadiusWire accessorized with round glass shields in cobalt, amber, and red. 773/883-6110. Tech Lighting, Chicago.

**CIRCLE 210**



Architectural

Compact Fluorescent

Metal Halide

Incandescent



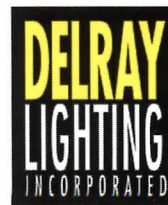
▲ Scenic system on tour

UV/FX was able to create a completely invisible 28-by-60-foot backdrop for the Dave Matthews Band, in which a hidden image is completely invisible until lit with UV backlight. Under normal lighting, the backdrop appears as a Mondrian-style abstract cityscape painting. Under UV lighting, the same backdrop becomes a highly detailed

painting of the Las Vegas strip in the 1960s. The system allows for UV-activated scenic images to be painted on lightweight scenic scrims that are resistant to crease lines and easy to set up. UV/FX effects scenery is currently on tour with The Offspring, Chicago, and Meatloaf. 310/392-6817. UV/FX, Santa Monica, Calif.

**CIRCLE 212**

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**CIRCLE 62 ON INQUIRY CARD**

LIGHTING BRIEFS



▲ **Along came a spider**

The contemporary, large-scale, multilight-source design shared by Starfish and Spider pendants makes them ideal for reception areas, conference rooms, dining, and banquet rooms. Spider (shown) features thin brass fixture arms angled slightly upward from the body that curve

down at the tips to join with the closed-end translucent cylindrical glass shades. Spider may also be specified with open-bottom shades, for direct downlighting. Starfish and Spider fixtures are UL- and CUL-listed. 914/698-7799. Nessen Lighting, Mamaroneck, N.Y.

CIRCLE 213



◀ **Another light on Broadway**

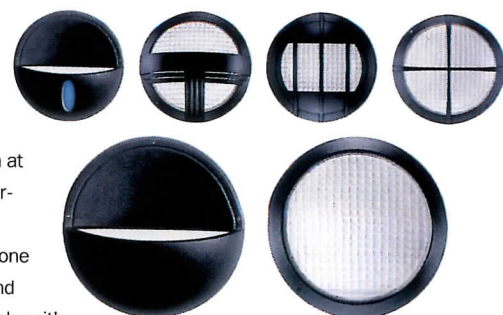
The Broadway wall sconce, designed by Doyle Crosby, is a more tailored version of Boyd's Duchess fixture, also designed by Crosby. Capped by a sloped fine linen shade, Broadway is offered in one-arm or two-arm versions. For contract installations, an ADA-compliant version is available using a half shade. Crosby has also designed the Mercury wall sconce. Mercury's architecturally inspired stem serves as the foundation for three design interpretations. 415/778-4300. Boyd Lighting Company, San Francisco.

CIRCLE 214

▼ **Tough, die-cast luminaries**

Fail-Safe introduces the Harmony series of decorative/complex-environment luminaires. Front and back housings are fashioned from extra-heavy aluminum, for efficient heat dissipation, and a five-stage paint finish, baked on at 400-degrees Fahrenheit, further protects each unit. A liquid injection-molded silicone gasket provides a water- and dust-tight seal between each unit's

housing and front-lens assembly. 847/806-3885. Cooper Lighting, Elk Grove Village, Ill. CIRCLE 215



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Paris 1925



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Duracell Headquarters, Connecticut 1995



Parisian, North Lake Mall, Georgia  
1995



Pier at Holland Tunnel, New York  
1996



Poulsen Lighting Headquarters,  
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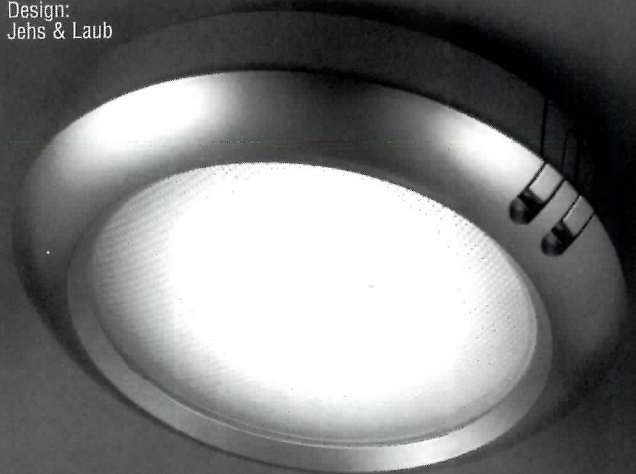
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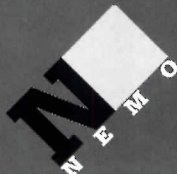


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Constellation 27 = 10 1/2" Ø ADA  
Constellation 37 = 14 1/2" Ø

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CIRCLE 65 ON INQUIRY CARD

## LIGHTING BRIEFS

### ► Steel and mica collaborate

The Lineage collection, created by interior and product designer Clodagh, is unique for Boyd because of its use of steel as the base metal, its large scale, and its new diffusing materials. Available as a pendant or sconce, even the largest wall fixture is ADA compliant. The designs are offered in gossamer steel, blackened steel, satin steel, or antique bronze finishes with white, pearl, or amber mica diffusers. 415/778-4300. Boyd Lighting Company, San Francisco. **CIRCLE 216**



### ▼ Creating the right image

Designed for display environments, the new BP75 Image Projector Series features a drop in cartridge with the ability to project, focus, and align (up to 90 degrees) any combination of two Gobos (patterns), which can be either glass or metal. 800/999-9574. Lighting Services, Inc., Stony Point, N.Y. **CIRCLE 217**



### ▲ Table lamp dimmer

The RadioRa dimmer provides one-touch tabletop operation of lamps. The user can brighten, dim, or turn on or off any lamp at the touch of a button. The control allows lamps to be incorporated into preset lighting scenes. 800/523-9466. Lutron Electronics Co. Inc., Coopersburg, Pa. **CIRCLE 218**



### ▲ Good bedside manner

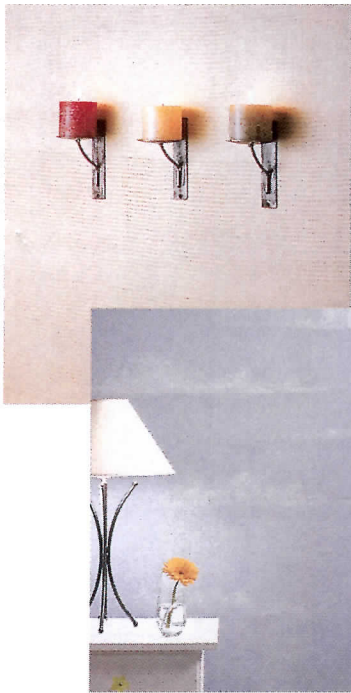
Derungs Lighting, a division of medical task lighting from Waldmann, introduces the Medicool E Bed Light and a complete line of medical task and inspection light-

ing. Medicool E is intended for both patient and staff use and is offered with an adjusting articulated or flexible goose-neck arm. 800/634-0007. Waldmann Lighting Co., Wheeling, Ill. **CIRCLE 219**

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# NEW PRODUCTS

## FAUX FINISHES HELP CUSTOMIZE COMMERCIAL OR RESIDENTIAL SPACES



Sherwin-Williams' illusions Paint Effects program offers faux-finish looks that can be customized to blend with any color and design plan, residential or commercial.

Using a color card, designers can present finishes and styles to clients, choosing from illusions categories such as sleek contemporary, touch of whimsy, European grandeur, and Americana. In addition to color cards, the program also includes all the essential base coats, glazes, tools, and supporting application information. 800/552-7579. The Sherwin-Williams Company, Cleveland.

CIRCLE 220

According to John Stauffer, director of the Paint Quality Institute, architects should try to spec high-quality paints, have surfaces primed to maximize adhesion of the finish coat, and insist on thorough surface preparation in renovation projects. Several trends in paints and finishes include the increase of water-based alternatives for all types of coatings, including primers, stains, varnishes, and new types of low-odor latex-based paints. Also, softer, more realistic looks are being created through faux finishes or decorative painting techniques that give a three-dimensional look. For a detailed look at paint formulas, check out this month's Technology article on page 131. *Rita F. Catinella, Products Editor*



## TWO SPRAY-APPLIED FINISHES CREATE ILLUSIONS WITH LIGHT AND COLOR

A spray-applied, water-based commercial wall finish, Luminations (above) from the Zolatone brand of Surface Protection Industries, is composed of highly reflective, natural colorants which, through a proprietary manufacturing process, are encapsulated and suspended in water to create a luminescent effect. Luminations allows the specifier to choose deeper colors because of its greater light-reflectance values.

Luminations is Class A Fire Rated; has a VOC of less than 60 grams per liter; shows no bacterial, mildew, or fungus growth; and resists stains such as catsup, butter, orange juice, motor oil, and acetic acid.

The finish can be applied to almost any substrate, including dry-wall or plaster; concrete, masonry or concrete block; wood surfaces; ceramic tile; fiberglass; glazed block; galvanized metals, aluminum; ferrous metals; and previously painted surfaces. The special coating material is applied using a two-step

pressure-differential spray technique, with variable control to ensure uniform distribution and 100 percent full coat (continuous coverage).

Another finishing option available from Surface Protection Industries is the Polomyx Gallery III Series Colors interior multicolor wall finish. Also a spray-applied, commercial wall finish, Polomyx Gallery III is available in a range of 84 new colors and a new pattern design. Gallery III offers an optically solid color effect for creating special designs in rooms, corridors, and hallways. Polomyx is intended for several types of projects, including office, education, health-care, hospitality, and retail environments.

Polomyx can be applied over a broad variety of substrates, meets all state and federal environmental codes, and features a textured appearance that helps hide minor wall defects. 888/ZOLATONE. 800/POLOMYX. Surface Protection Industries International, Los Angeles, Calif. **CIRCLE 222**

## COLOR PALETTE IS FULL OF HISTORICAL CHARACTER

Historic Colors of America, available from California Products, were selected from hundreds of samples taken from historic buildings and painted objects ranging from folk carvings to elegant corner cupboards.

The palette includes both early earth pigments, like Farmhouse Ochre and Codman Claret, and the more brilliant colors that became available in the 18th and 19th centuries. All of the colors presented are historically accurate.

Trained conservators from the Society for the Preservation of New England Antiquities' Conservation Center have worked with museums and private

homeowners from across the country to understand, preserve, and recreate the Historic Colors of America.

The conservators learned that interior colors of past eras were bold, and exterior colors were painted from a vivid palette in flamboyant combinations. 617/547-5300. California Products Corporation, Cambridge, Mass.

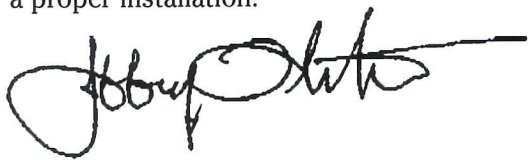
CIRCLE 221





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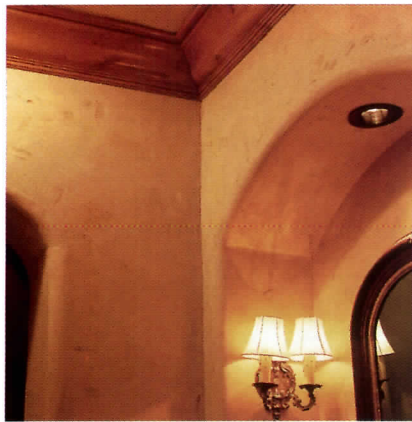
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CIRCLE 68 ON INQUIRY CARD



**▲ Interior finish alternative**

The USG decorative interior finish system offers a means of achieving the classic look of semismooth and textured inte-

rially colored finishes for residential and commercial interior drywall walls and ceilings. The system offers an alternative to other upscale decorative finishes including Venetian-style plaster and marmorino products, colored-textured plaster products, high-end wall coverings, and specialty paint finishing and marbling. The natural, mineral-based finish system lends a look of color and depth to interior surfaces in virtually any color.

Custom colors are achieved through the Colortrend system from Creanova Inc. 800/USG-4YOU. United States Gypsum Company, Chicago. **CIRCLE 223**



**▲ Coating for multiple surfaces**

Megaflon coating meets the weatherability and chemical resistance standards of PVDF finishes and features a range of color and gloss options. Megaflon adheres to a range of substrates, including steel, copper, aluminum, concrete, glass, and even plastic surfaces. It can be applied by spray, brush, screen, or coil coating. 800/876-8035. PPG Industries Inc., Springdale, Pa. **CIRCLE 225**

**▼ Glow paint aids escape route**

Permalight's three UL-Listed glow paint systems cover acrylic on walls, paper, and cardboard; epoxy on concrete; and polyurethane on metal and industrial surfaces, regardless of surface stress. Permalight was installed in the World Trade Center stairwells to mark escape routes following the 1993 bomb attack. 310/891-0924. American Permalight, Torrance, Calif. **CIRCLE 226**

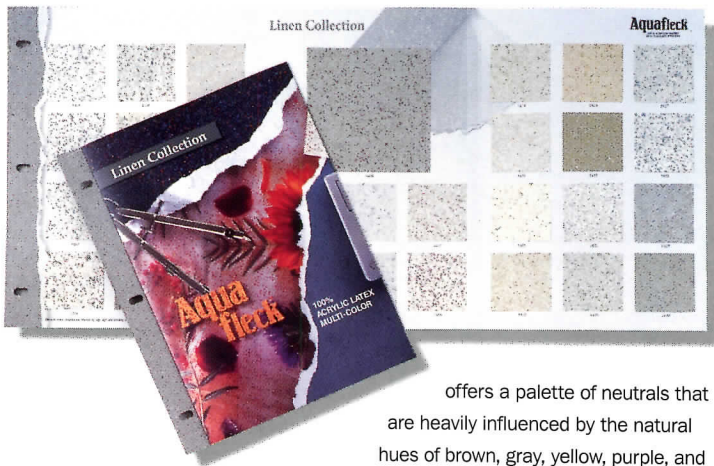


**▲ Customizable plaster**

Fresco Plaster Finish is available in a range of finishes from matte to high gloss. Initially utilized for protection, various penetrating sealers provide sheening characteristics. An entirely customized process, installation is a two-coat-system



consisting of a base coat for foundation and strength and a finish coat for variation and texture. Nicks and scratches are removed with a scouring pad or light-weight sandpaper. 847/639-1484. The Designer's Touch, Fox River Grove, Ill. **CIRCLE 224**



**▲ Neutral multicolor system**

The Aquafleck 100 percent acrylic latex multicolor system has introduced the Linen Collection, a palette of 30 neutral multicolor patterns. The Linen Collection

offers a palette of neutrals that are heavily influenced by the natural hues of brown, gray, yellow, purple, and red. The patterns are subtle enough to add texture to an interior design project, yet complex enough to complement more vibrant accent colors. 800/225-1141. California Products Corporation, Cambridge, Mass. **CIRCLE 227**

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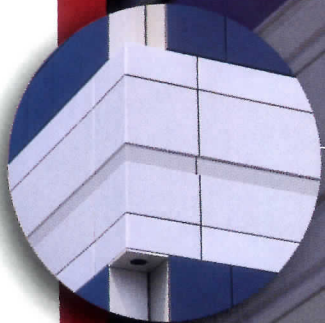
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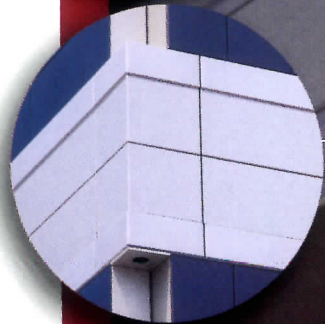


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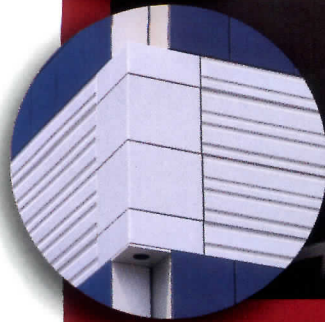
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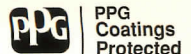
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## PRODUCT BRIEFS

### ► Nesting tables

The Move-it table series, licensed from Gebrüder Thonet Germany, is appropriate for seminars, training, or cafeteria use, whether solo or in conjunction with others. By lifting the table to a 15-degree angle, two back wheels touch the floor and the table may be moved to any position. Once the table is set down, the angled



glides lift the wheels off the floor, and the table cannot be rolled. The tabletop can be raised from the framework by releasing the latches located on both sides of the table. The

tables may then be slid onto one another to nest against the wall—like shopping carts for storage. 336/889-2009. Davis Furniture Industries Inc., High Point, N.C. **CIRCLE 228**

### ► Skin deep

Embossed Skins, a new imprinting tool, has been added to Scofield's Lithotex Pavecrafters architectural concrete imprinting system. Flexible Embossing Skins allow contractors to apply subtle texture, without joints or pattern marks. The tool is designed to make the imprinting process faster and easier for contractors by allowing them to add joint and grout lines as needed across the flatwork after the surface texture has been imprinted. Lithotex Pavecrafters are a system of mat-type imprinting tools that add detailed textures to the surface of freshly placed architectural concrete flatwork. The resi-



dential patio above has been textured with Lithotex to create the look of fractured slate. 800/800-9900. L.M. Scofield Company, Douglasville, Ga. **CIRCLE 229**



### ▲ Cranky lever

The Nanz No. 2116 is inspired by a crank on a 1930s Cincinnati "Royal 16" drill press. The lever may be specified for tilt-and-turn windows as well as interior doors. Shown here in satin nickel, the lever can also be manufactured in plated or patinated finishes. 212/367-7000. Nanz Custom Hardware, New York City.

**CIRCLE 231**

### ▼ Save a trip to the kitchen

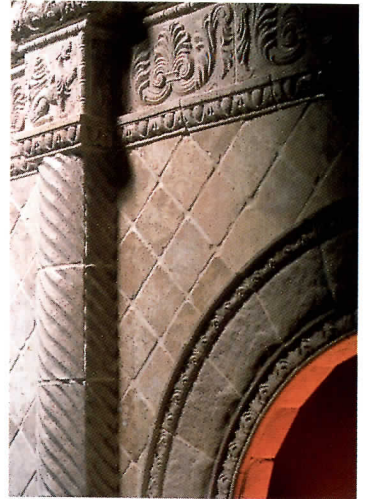
The Viking undercounter refrigerator is 24 inches wide and certified for indoor or outdoor use. The refrigerator contains three sections: a top wire shelf for storing open wine bottles or containers; a middle section that holds 112 12-oz. cans; and a wine rack on the bottom, which cradles 14 bottles horizontally. The indoor model comes with a clear-glass, fluted-glass, or solid door. 888/845-4641. Viking Range Corp., Greenwood, Miss. **CIRCLE 232**



### ▼ Ceramic accents

Inspired by the ancient architecture of Spain, the Sonoma Reserve tile line is meant to be installed with stone and consists of mouldings, decorative liners, and smaller decos. Glaze chemist and artist Greg Daggett used over 1,000 pieces of tile to get the correct glaze for the line. Sonoma Tilemakers specializes in carved-relief tile but produces assorted sizes of field tile and numerous liners and mouldings. 707/837-8177. Sonoma Tilemakers, Windsor, Calif.

**CIRCLE 233**



### ▼ Watch your steppe

Crafted from DuPont Legacy nylon, the geometric design of Steppe was inspired by the Grand Canyon. Harbinger patterned Steppe in a mirage of overlapping rectangles and squares that give the commercial carpet a multidimensional look. Steppe also features multilevel loops of textures and two-tone colorations. Steppe is available in 16 colorways, including a range of earth tones, grays, and deep jewel tones borrowed from the Grand Canyon's multicolored canvas. 800/554-6637. The Harbinger Company, Kennesaw, Ga.

**CIRCLE 234**



### ◀ Exterior grade wood panel

Parklex 1000 is a prefinished exterior grade wood panel. This system has been treated with thermo-hardened resins and has a Bakelite core. It is suitable for exterior applications with minimum maintenance required. Typical wood finishes include epong or boak in a natural or brown color. A commercial wood panel flooring with a resin finish is also available. 310/396-9991. Finland Color Plywood Corp., Venice, Calif. **CIRCLE 230**



**PRODUCT BRIEFS**

**▼ Back to the drawing board**

The Dordoni Worktop can serve as a desk, a drawing board, or even a conference table. Made of natural or blue-lacquered beechwood, the table is also available in other colors by special order. Dordoni's chromed-steel, angled legs give ample leg room, and the table's glides are adjustable to cope with

uneven floors. If the drawers are pushed to the back end of the desk, where they are also accessible, the user has convenient storage space for rolled-up blueprints and drawings. The Worktop holds up to eight drawers, which are sold separately. The table measures 29 inches high, 73 inches wide, and 36.5 inches across. 800/944-2233. Design Within Reach, San Francisco. **CIRCLE 235**



**▲ Now you see it, now you don't**

Climatex Lifecycle textiles are the result of an unprecedented agreement between Carnegie and DesignTex. The fabrics' environmentally friendly construction incorporates biodegradable fibers and reengineered chemical manufacturing technology. At the end of their life as upholstery, the fabrics can become compost. The four designs reflect the natural wool and ramie materials used in their construction. For example, Topsoil is a textured plain, while Heartland has the sense of planted fields. 800/727-6770. Carnegie, Rockville Centre, N.Y. **CIRCLE 236**

**▼ Steamy kitchen addition**

The Series 1100, part of In-Sink-Erator's full line of instant hot-water dispensers, features a lever that delivers 190-degree water right at the kitchen sink. The Series 1100 is available in two models; the GN model dispenses hot water only, while the HC model also dispenses water from another source such as cold tap water or filtered water. Both models are made of brass and are available in three finishes: chrome, stain nickel, and white. 800/558-5700. In-Sink-Erator Division, Racine, Wis. **CIRCLE 237**



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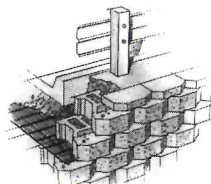


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**PRODUCT BRIEFS**

**▼ Roofing from the ground up**

Gunny Harboe, director of McClier's Preservation Group, Chicago, took on the task of restoring the exterior of the 20,000-square-foot Humboldt Park Stable. Harboe worked with Ludowici Roof Tile to replicate the original 1895 roof of the Chicago landmark. A chal-

lenge for the team was that the original 1895 roof was replaced with asphalt shingles in the 1970s. Luckily, pieces of flat, brown, glazed tile were found along the stable building, revealing the original roof style. Ludowici re-created the look of the 100-year-old tiles with historical accuracy. 610/341-7000. CertainTeed Corp., Valley Forge, Pa. **CIRCLE 238**



**▲► Going round in circles?**


The Children's Center is the final component in San Francisco's Yerba Buena Gardens project. The five buildings that comprise the center are organized around the circular forms of the enclosed antique carousel and the inverted conical space of the Children's Place lobby. The circular structures and the ice rink needed a curtain-wall system that could accommodate both the inverted slope and the asymmetrical glazing shapes created by



that slope. The Series 5800 curtain-wall system features prefabricated silicone gaskets with integral corners capable of plus or minus five degrees from nominal angularity, allowing for the structure's irregular glazing shapes. 800/221-4169. EFCO Corp., Monett, Mo. **CIRCLE 239**

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**PRODUCT BRIEFS**

**▼ Silver anniversary**

The Veneman Silver Collection, suited for residential and commercial use, features an unusual combination of natural teak nested within a cast aluminum frame. The collection includes an armchair; a backed bench; a barstool; dining tables in square, rectangular, and round shapes; two occasional tables; a teacart; and a chaise (shown). The teak,

used as slats on seats, backs, armrests, and for table tops, is harvested from managed plantations. Kiln-dried, European-grade teak is shipped in an unfinished natural state and will weather to a silvery gray in about a year's time. The teak can also be oiled, as shown, or sealed to maintain its original brown tone. The metal comes in 18 finishes including 2 new textured metallics in silver and bronze. Also, the same designs are offered with a fabric mesh sling seat and back and with glass tabletops replacing the teak. Arms are capped in wood. 714/894-0202. Veneman Collections, Westminster, Calif.

**CIRCLE 240**



**▲ Biological advantage**

Biofiber is a new addition to Phenix Biocomposites' line of environmentally friendly products. Free from formaldehyde and made from wheatstraw, Biofiber can be used for furniture, table surfaces, store fixtures, cabinets, and flooring. Biofiber engineered composite panels meet or exceed traditional wood industrial particleboard (PB) standards. Lightweight, the panels are claimed to be more moisture resistant than wood PB panel products and feature a strong surface for laminating and finishing. 800/324-8187. Phenix Biocomposites, Mankato, Minn.

**CIRCLE 241**

**▼ Decorative hardware**

The traditional ER series door knobs and roses are part of the Enoch Robinson & Company collection from E.R. Butler & Co. Knobs are available in a variety of diameters that range from 1 3/8 to 3 inches. The knobs are also available in a range from .5-inch to 1.5-inch diameters for cabinets and fine furniture. The turned knob and rose are made of solid brass, and standard, custom-plated, and patinated finishes are available. E.R. Butler provides consultation, specification, and finishing services to architects and their clients. 212/925-3565. E.R. Butler & Co., New York City. **CIRCLE 242**



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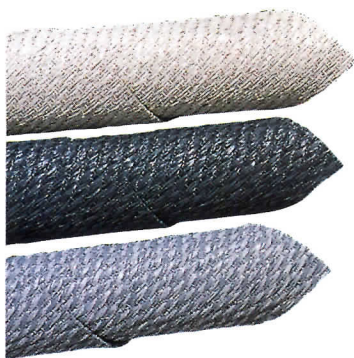


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PRODUCT BRIEFS

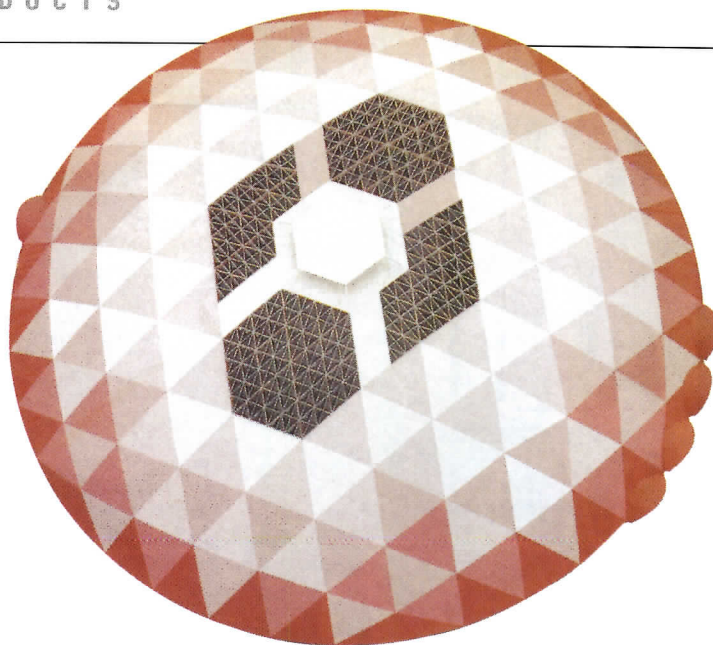


◀ **Waterproof vinyl flooring**

Designed and manufactured in Sweden, Bolon indoor/outdoor vinyl flooring is waterproof, making it an appropriate option for kitchens, swimming pool decks, health clubs, and shops and restaurants. The flooring is available in a range of colors, from primaries to neutrals, and in five designs, including thin- and thick-stripe patterns, tweeds, and solids. 206/935-5471. Alison T. Seyour Inc., Seattle. **CIRCLE 243**

▶ **Don't forget sunscreen**

The angled slat design of the RioShade awning provides a diffused light that allows visibility and natural ventilation. The slatted exterior shade can be used to offer protection for patios, plants, and backyard equipment. Constructed from heavy-gauge aluminum, RioShade has a stone-chip coating and comes with a 10-year warranty. 800/23ROOFS. Gerard Roofing Technologies, Brea, Calif. **CIRCLE 244**

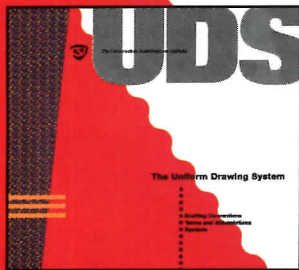


▲ **Mechanically fastened roof**

The Burke mechanically fastened system is ideal for new or reroof installations. On new roofs, Burkeline trained and approved applicators lay out and fasten the insulation board, roll on the Burkeline Hypalon single ply, fasten it with Burke-approved fasteners and plates, and weld the seams, making the installation com-

plete. Burkeline Hypalon weighs less than a third of a pound per square foot and is abrasion, tear, chemical, fire, and wind resistant. Above, the Ensphere Dome in Eagar, Ariz., uses a mechanically fastened system that displays the custom colors of Hypalon available. 408/297-3500. Burkeline Roofing Systems, San Jose, Calif. **CIRCLE 245**

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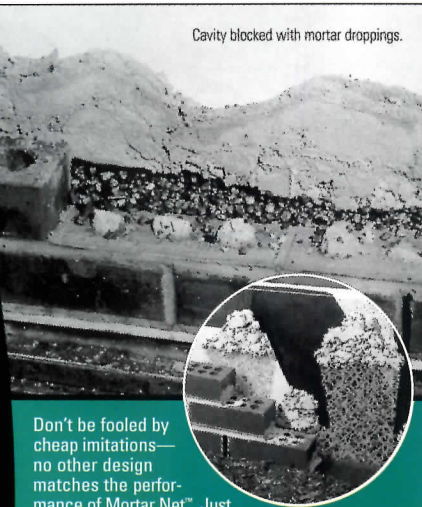
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## PRODUCT LITERATURE

### Educational CD-ROM

Acentech Incorporated has released *Architectural Acoustics*, a two CD-ROM set that covers the fundamentals of architectural acoustics. 617/499-8075. Acentech Incorporated, Cambridge, Mass. **CIRCLE 246**

### Linear lighting literature

Starfire Lighting Inc. offers a new brochure detailing its Xenflex line of high-performance, low-voltage linear strip lighting using xenon gas-filled lamps. 800/443-8823. Starfire Lighting, Jersey City, N.J. **CIRCLE 247**

### Drinking fountains and coolers

A new brochure showcases Haws indoor and outdoor drinking fountains and water coolers designed to meet both ADA requirements and all lead-free requirements of ANSI/NSF Standard 61. 510/528-2812. Haws Corporation, Berkeley. **CIRCLE 248**

### Window and door catalog

A new catalogue from Peachtree repre-

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sents the company's selection of premium entry doors, patio doors, and windows. 800/PEACH99. Peachtree Doors and Windows Inc., Norcross, Ga. **CIRCLE 249**

### CD-ROM carpet guide

Bigelow Commercial's new CD-ROM product guide has more than 150 pages of product images, complete specification data, fiber facts, and backing options. 800/544-6637. Bigelow Commercial, Kennesaw, Ga. **CIRCLE 250**



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**PRODUCT LITERATURE**

**Health-care art catalogue**

American Art Resources has released a CD-ROM catalogue of framed art exclusively for health-care environments. The catalogue is free of charge and highlights more than 1,200 images sorted for different types of patients. 800/282-0204. American Art Resources, Houston.

**CIRCLE 251**

**Friendly concrete**

The *Ecco Reference Library*, a new CD-ROM offered by the Environmental Council of Concrete Organizations, contains more than 1,200 abstracts of technical reports, articles, and other resources examining concrete and the environment. 800/944-ECCO. ECCO, Skokie, Ill. **CIRCLE 252**

**Mosaic solutions**

A 144-page catalogue from Sisis features a variety of ways mosaics can be used to enhance an environment. The catalogue is available free to architects and designers. 212/829-8341. Sisis USA Inc., New York City. **CIRCLE 253**

**Southern pine booklet**


A new, expanded version of the booklet *Pressure-Treated Southern Pine* has been published by the Southern Pine Council. This edition serves as a guide to the proper material selection, specification, and application of Southern Pine. 504/443-4464. Southern Pine Council, Kenner, La. **CIRCLE 254**

**Waterproofing binder**

TAMKO has released its waterproofing specifications and detail binder designed to keep distributors, contractors, and spec writers updated with TAMKO's waterproofing products. 800/641-4691. TAMKO Roofing Products Inc., Joplin, Mo. **CIRCLE 255**

**Precast concrete brochure**

The *Architectural Facade Systems* brochure from High Concrete Structures Inc. highlights the structural and functional advantages of specifying architectural precast concrete. 800/PRECAST. High Concrete Structures, Denver, Pa. **CIRCLE 256**



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**CIRCLE 80 ON INQUIRY CARD**

**FEES PART II** (continued from page 67) be in a far better position to negotiate fees. During the discussions that led to the publication of *In Search of Design Excellence*, Weld Coxe of The Coxe Group characterized negotiating skills as the "the single most important skill architects lack." He also notes that many award-winning firms are profitable because they have the ability to negotiate. Compensation is also a self-esteem issue. Architects who can say, "What I have to offer is worth something, pay me," are more likely to make money and make good architecture.

### 3 UPDATING CONVENTIONAL WISDOM

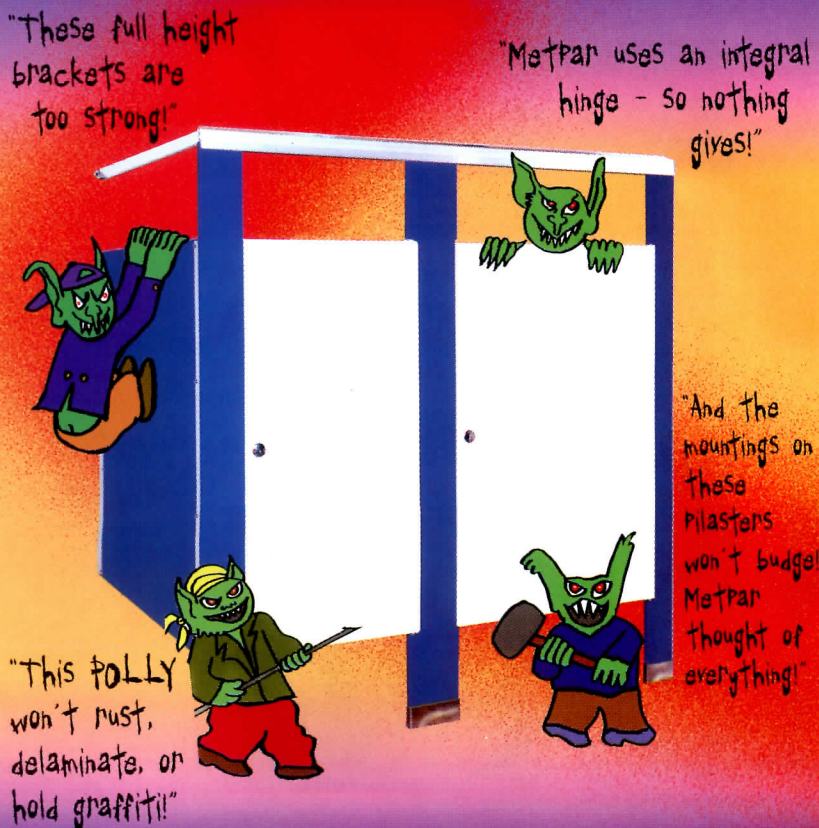
A principal of one highly profitable firm says, "The most valuable hours we spend are on proposals, contracts, and negotiations. If we don't take these activities seriously, we can't make money on our designs. There is nothing else that has this much economic benefit for our firm." Michael Strogoff, aia, a Mill Valley, Calif.-based negotiations consultant, lists the results of a successful negotiation as "a clearly defined scope of work, fees that budget for both quality and profit, well-defined responsibilities that match the client's objectives for the project, reasonable terms, allowances for expanded services, and a good relationship with the client."

In addition to the strategies mentioned above, which may seem incompatible with more traditional ways of viewing the profession, there are more straightforward methods that can help improve the bottom line. During the last recession, when it was still very difficult to get work and to negotiate reasonable fees, many architects tightened operating policies to stay in business. They instituted rather straightforward, simple business procedures, which allowed them to remain solvent.

These conventional-wisdom strategies include screening clients before going after new work; walking away from clients who have unrealistic expectations; taking the time to establish a realistic scope of work and schedule; charging the client if the scope increases; stopping work if the client falls behind in payments; and making sure that the client understands the terms of the contract. These are sound business practices that should be embraced by all firms—large or small, traditional or progressive. Lowell V. Getz's book, *An Architect's Guide to Financial Management* (1997, AIA Press), is a good source for additional information on these basic rules of doing business.

**CONCLUSION:** *In a perfect world, architects would be able to do what they do best—design the built environment—and, given the importance of this task and the knowledge and talent necessary to perform it well, be paid handsomely for it. But since the beginnings of the profession, architects have struggled with pay scales disproportionate to their skill. The actions of the Justice Department in the late 1960s, which led to a widespread misunderstanding of architecture on the part of the American public, as well as changes in the profession that have made it increasingly complex, have only exacerbated this situation. Architects have been forced to evolve and to change the way they do business just to survive. Some have taken radical positions, while others have amended their business practices in more conventional ways. Many architects pine for the days of the "master builder," when architects were the building professionals, but all indications are that the market pressures and regulatory environment that have affected the profession during the past few decades will continue. The future of architecture depends on a constant reappraisal of the profession and the new opportunities that arise, including a fresh, realistic approach toward making money. ■*

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**HOUSING** (continued from page 83) The new developments that appear to be doing well, such as Baltimore's Lexington Terrace and Atlanta's Centennial Park, combine bricks and sticks with a range of social services—such as day care and job training. They rebuild people as well as housing.

Yet despite encouraging stories, like those about Milwaukee's Hillside Terrace, where the number of households with tenants holding jobs shot from 15 percent to 61 percent during a renovation completed last year, no evidence demonstrates conclusively that public-housing families, whose median income is \$9,257 per year, are moving into the mainstream—and off welfare. "Are we getting people to be self-sufficient?" asks Jerry Salama, a research fellow at the Center for Real Estate and Urban Policy at New York University Law School. "It's too early to tell."

Displacing the poor from the projects to new ghettos also presents a huge problem. That's because 100,000 housing units have failed a viability test that calls for the demolition of complexes if it is more expen-

## SUCCESSFUL PROJECTS REBUILD PEOPLE AS WELL AS HOUSES.

sive to maintain them than to simply relocate residents with Section 8 vouchers. "We believe that Section 8, that having people live not in public housing, but in private-market housing with a subsidy, is the preferable way to go," says HUD's Bacon.

But that's not what was happening, according to a 1998 *Chicago Tribune* analysis of the first wave of people—more than 1,500 since early 1996—to leave Chicago's projects. It showed that project residents had simply moved from one poor, segregated community to another. Almost 50 percent of families had moved into census tracts where more



New low-rise and old high-rise buildings at Henry Horner sit along the El line.

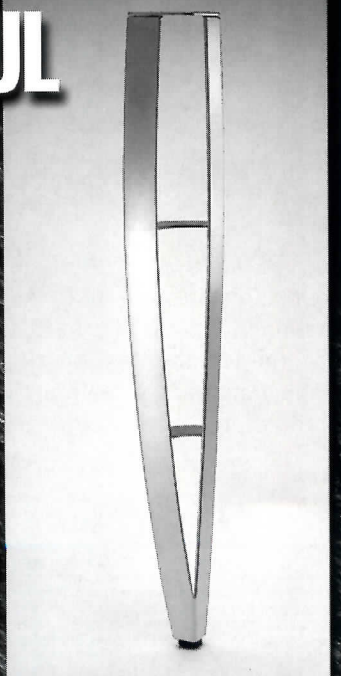
than half of their neighbors live below the poverty line. More than three-quarters resettled in census tracts that are more than 90 percent black.

Reviewing three HOPE VI projects—Cabrini-Green in Chicago, Centennial Place in Atlanta, and Spring View in San Antonio—in the journal *Housing Policy Debate*, Salama concludes that the \$625 million program, though worthwhile, lacks the financial wherewithal to carry out its goals, in part because it is not leveraging enough private funds. At the same time, he observes in an interview, housing authorities "are finally hunkering down and saying, 'Let's make this work.' If you could get

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around the bad blood of housing authority relationships and get things going,” Salama adds, “you could actually do some good projects.”

Perhaps. But in Chicago—which contains nearly one-fifth of the public housing that HUD has targeted for demolition (19,000 of 100,000 units)—the challenge is formidable. Nowhere is it better illustrated than at the 1,533-unit Henry Horner Homes, which was the subject of Alex Kotlowitz’s 1991 book, *There Are No Children Here: The Story of Two Boys Growing Up in the Other America*. The warped expectations formed by this “other America” were encapsulated in the words of the two young brothers, Lafayette and Pharoah Rivers. Speaking of the future, they would say: “If I grow up” rather than “When I grow up.”

### A long way to go before it is normal

While the \$120 million Horner redevelopment was not funded by HOPE VI, instead receiving a variety of federal funds from other sources, it tries to accomplish the same goals, using New Urbanist design principles like reinstating streets, alleys, and sidewalks as a means to integrate public housing with its surroundings and attract working families. The plan—drafted by San Francisco architect Peter Calthorpe and modified by the Chicago architecture firms of Johnson & Lee and Solomon Cordwell Buenz & Associates—has done that, but it has a long way to go before the former superblock, renamed “The Villages of West Haven,” could be considered a normal neighborhood.

The main reason: poor screening of tenants by the housing authority has undermined the goal of creating a stable community. Not only are some apartments harboring drug dealers, but some residents lack the skills to care properly for their homes. One tenant, for example, reportedly tried cleaning her carpeting with a mop, ruining it in the process.

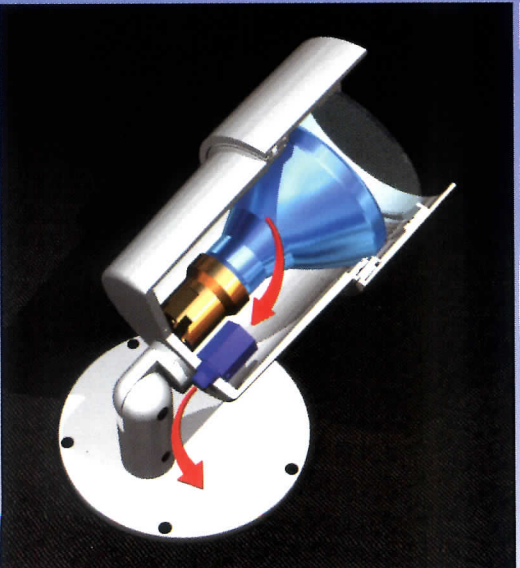
Such telling details place buildings in a new light. They don’t seem strong and permanent. They appear fragile, vulnerable, subject to human foibles. Architects who have designed lots of public housing know all too well that design can’t rebuild lives by itself. It needs help—over the long haul, not just on move-in day.

Says architect Lee: “If the family’s not together, if Dad doesn’t have a job, if Mom doesn’t go to work, then architecture isn’t going to solve all the problems.” He adds, “You can put people in the Taj Mahal and if you have all the problems, it’s going to be the Taj Mahal in disrepair.”

Still, the trouble remains restricted to a small portion of the first phase of the new Horner development, which includes 380 new homes. “They call this the country,” says resident leader Sue Sago, 45, who lives on tidy Randolph Street, one block north of troubled Maypole. Pointing to Maypole, she says, “They call that the city.”

Like the nation’s efforts to transform public housing, the new residences at Henry Horner remain a work in progress. Housing has a life over time, just as people do. Its ability to transform lives depends on who occupies it—and how well prepared they are to climb the ladder out of poverty. Due to HUD’s new emphasis on humanistic design, architecture has opened the door to creating successful mixed-income communities.

But it is the people who live there who have to cross the threshold, and many more have to do so before HOPE VI makes a significant impact on the problem of poverty. To be sure, HUD and the New Urbanists deserve credit for engaging one of the most vexing social problems of our times. Yet what they have accomplished is little more than a beginning. Now, the task is to maintain quality while expanding the quantity of new housing. Much more needs to be done if we are to write the final chapter in the sad tale of “the Other America.” ■



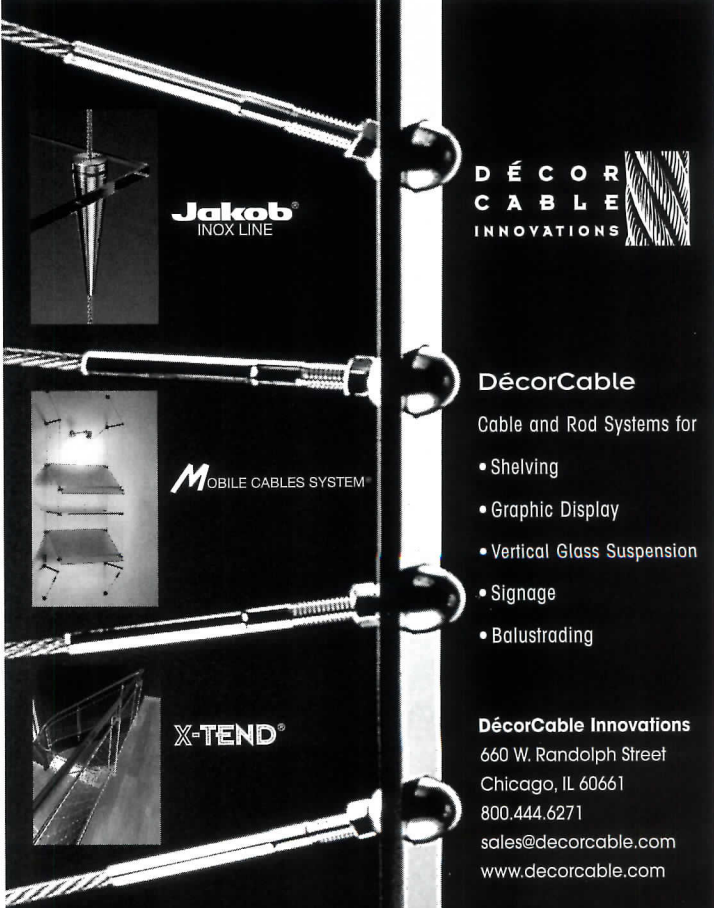
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Questions appear on page 138. To receive CES credits, fill in the education reporting form below or on our Web site ([www.architecturalrecord.com](http://www.architecturalrecord.com)).

1. Paints are made of finely ground solids, including binders, pigments and additives, that are suspended in a liquid carrier. Paints get their color from pigments. Metallic pigments or organic pigment synthesized from petrochemicals are used to add color. Most use powdered titanium dioxide for the primary pigment because of its superior hiding power. Fillers increase the solids content of the formula. Examples of these are calcium carbonate, silicas, and silicates, all of which help eliminate chalkiness and improve scrub resistance. Binders, including urethanes, alkyds, and acrylics, form a film that knits the particles of pigment together. The carrier evaporates as the paint dries, leaving the solids behind as a thin surface film that clings to the underlying surface.
2. Both alkyd and latex paints were developed in the 1940s. Alkyd paints are made with synthetic resin binders (called alkyds) that are dissolved in a petroleum-based solvent. Latex paints use vinyl binders and a water carrier. Originally latex paints were less durable and did not adhere well. Subsequent improvements, specifically the introduction of acrylic and urethane binders,

have improved quality. Alkyd paint forms an impermeable film through constant surface oxidation. This process, which goes on for the life of the paint, causes alkyd films to lose their color and become brittle. Acrylic particles draw together as the water evaporates, forming a stable yet flexible film that expands and contracts with the underlying surface. As a result, acrylic paints hold their color longer than alkyds and are less susceptible to cracking.

3. The ingredients of a paint are suspended or dissolved in a base that is either oil or water. Oil-based paints use petroleum-derived hydrocarbon or natural-oil solvents such as linseed. New clean-air laws mandate that the amount of volatile organic compounds in paint be lowered. That means reducing the amount of solvents that the paint contains. To meet the new rules, manufacturers have been switching nearly all their products from oil- to water-based formulations. Manufacturers have focused on developing water-based coatings that are harder, more colorful, and more UV-resistant than their solvent-based predecessors.
4. Low-odor paints are formulated with little or no solvents. Even latex paints have always included a small amount of solvent to soften the binder's particles and facilitate film formation at low temperatures. Low-odor paints use softer binders that don't require solvents for film formation and, therefore, emit no odors. The softer binders can create problems with tackiness and film formation. Combatting these problems has meant putting expensive additives into the formulas which increase the costs of these paints.



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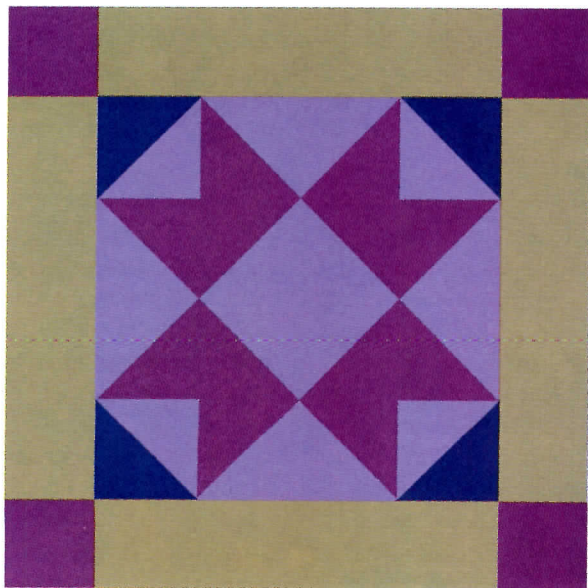


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# THE FUTURE Architects should be aware of the benefits and solutions FRP composites offer.

BY DOUGLAS S. BARNO



Imagine a new family of engineering materials that are stronger than steel, lighter than aluminum, easily formed into complex and dramatic shapes, maintenance-free for decades, and reduce labor and installation costs. Sound too good to be true? Fiber-reinforced polymer (FRP) composites have been making steady gains in new building and civil engineering applications since the 1970s. FRP composites are a class of materials in which a polymeric matrix (usually a high-performance thermosetting resin) is reinforced with high-strength fibers (glass, carbon, aramid, etc.), similar to the way steel rebar reinforces concrete. Yet, few architects seem to be aware of the available FRP composite products and their many benefits.

## Mighty material, minimal cost

In addition to the advantages of strength, weight, and design flexibility, FRP composites provide high dielectric strength and corrosion resistance, as well as low product or tooling costs. Some of the latest FRP composite applications include the development of composite rebars and tendons for reinforcing and prestressing/posttensioning concrete. FRP composites are also used on exteriors to repair and strengthen concrete columns, beams, and decks as well as to repair and upgrade above-ground and below-grade masonry walls.

In 1997, Construction Techno-

logy Inc. completed a renovation of a 190-foot-long-by-17-foot-high FRP composite rebar-reinforced seawall for the former Kennedy family estate on the Atlantic Ocean in Palm Beach (center). The overall job cost was competitive with steel, but the service life of the structure is



expected to be decades versus the five- to seven-year maintenance cycle of a traditional steel-reinforced concrete seawall.

FRP composites used for reinforcing concrete eliminate problems associated with rust stains, as well as spalling from corrosion or inadequate cover. In coastal areas where exposure to marine salts can be harsh, using FRP composite rebar in architectural elements—such as balusters, column facades, cast stone, cladding, window lintels, and brackets—significantly increases the service life of structural components. Problems of steel corrosion have focused new interest on the benefits of FRP composite rebar in architectural concrete elements. The material is being used to restore and repair balconies on apartments and condominiums in coastal areas in applications where typically thin concrete elements are exposed to chlorides on two surfaces.

Other architectural applications along the coastline include the minarets and fascia at the Trump Taj Mahal in Atlantic City (top right). Fabricated of a special fire-retardant thermosetting resin and glass fiber reinforcements, these exterior parts range in size from a

50-by-29-foot dome structure to a 1.5-inch diameter miniature rosette. These architectural details were designed to withstand decades of exposure to sunlight, salt spray, air pollution, and hurricane winds.

Surprisingly, much of the Victorian architectural fascia and details in service since the early 1970s on Main Street at Walt Disney World outside Orlando use FRP composites.

## Not just for the salt air

FRP composites are also being combined with traditional building materials, such as glulam beams, I-Joists, and wooden building panels, to create new forms of engineered wood products with higher strength, lighter weight, and better resistance to natural hazards such as wind and earthquakes. Recently, APA, the Engineered Wood Association, the Advanced Engineered Wood Center at the University of Maine, the U.S. Forest Service Forest Products Laboratory, and the Market Development Alliance of the FRP Composites Industry have signed an agreement that creates a four-way research and development consortium to develop, demonstrate, and

commercialize new FRP composite engineered wood products for the building industry.

Looking worldwide, in Japan, architects and engineers routinely use FRP composite reinforcements, panels, and external strengthening to meet seismic building requirements. At the “Eyecatcher,” a five-story building in Basel, Switzerland, FRP composites are used in an integrated system of structural framing profiles and facade panels. The design provides state-of-the-art energy-saving technologies (solar cells, solar heating, heat recirculation, etc.) that improve acoustical performance, require little maintenance, and have a striking look. Since its opening in February 1999, the Eyecatcher has received more than 20,000 visitors.

## U.S. leads the way

While Europe, Japan, and Canada are all active in developing niche applications for FRP composites, the U.S. has emerged with a commanding lead in R&D and the widespread commercialization of FRP products. Already, researchers are focusing on a new generation of structural framing systems that use FRP composites to snap together, reducing time and labor costs while improving structural performance. Also promising for natural-disaster-resistant building methods are FRP composites developed for ballistic armor in military applications, because as the U.S. has witnessed too often, a hurricane or an earthquake can render as devastating structural damage and financial loss as any man-made war. ■

*Douglas Barno has more than 35 years' experience in the composites industry in the U.S., Europe, Middle East, and Africa.*



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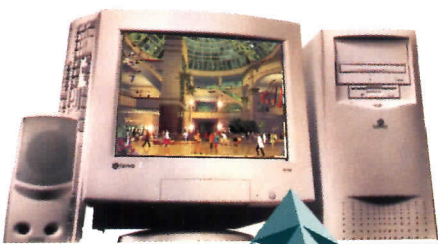
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Harriman's architects and engineers have been using ARRIS since the 1980's, and have a strong appreciation of the software's unique capabilities. ARRIS' efficient file structure enables easy collaboration between team members. Michael Polley, CAD manager, explains, "Each layer is a separate file on the disk, so a team can work together more productively. While the architect works on a floor plan, the electrical engineers can load just the files containing the walls, column grids, and partitions."

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Harriman Associates and the J.J. Nissen Bakery project were spotlighted in the October 1999 issue of CADALYST magazine.



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