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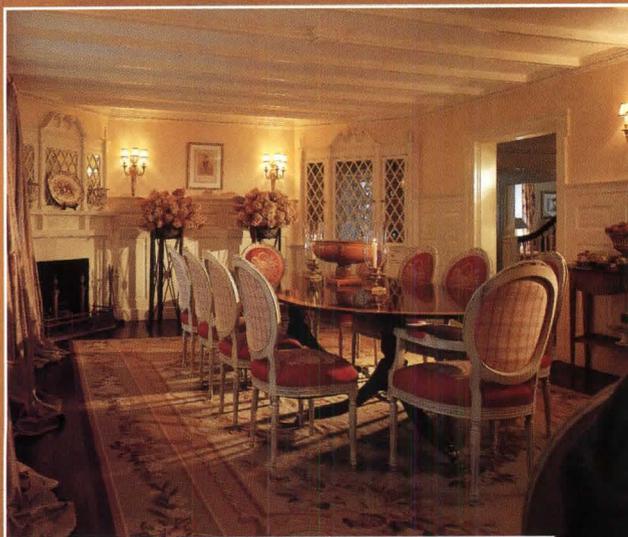
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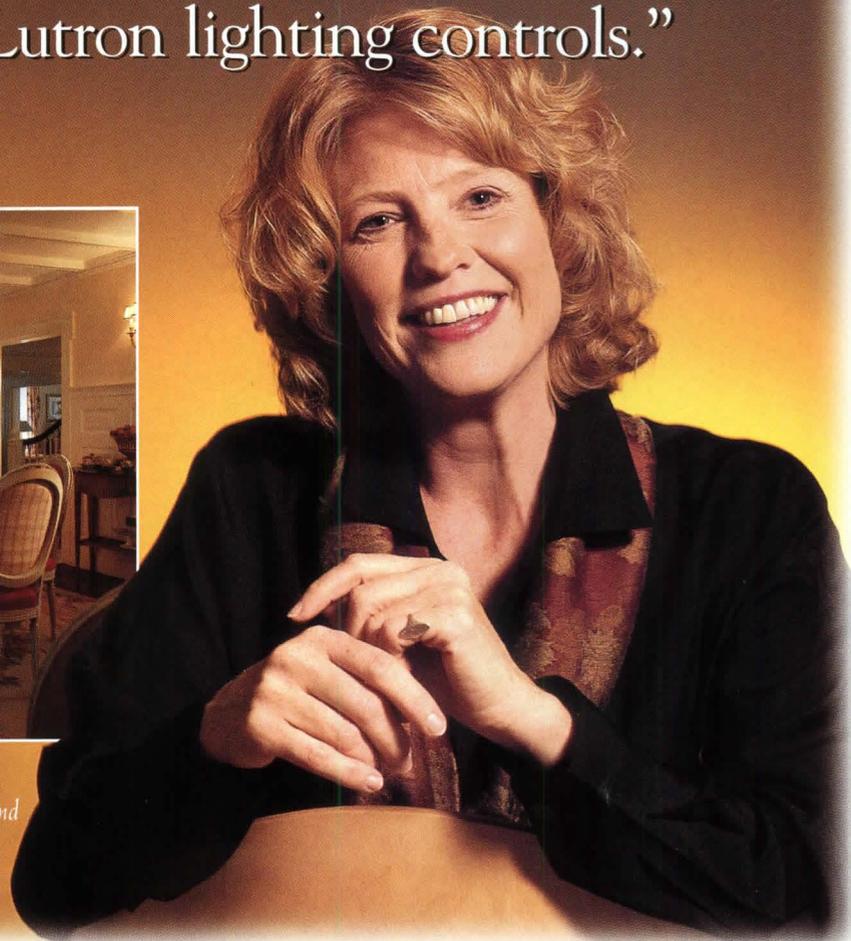
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CIRCLE 3 ON INQUIRY CARD

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Barbara Kristiansen, Lighting Designer
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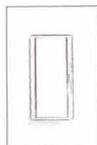
Lighting designer Barbara Kristiansen knows the ultimate judge of her work is how well it functions. “I design within architectural and interior spaces to accent, reveal and illuminate. To me, dimming is crucial.” Ms. Kristiansen also specifies Lutron lighting controls because of the quality of their technical support. “When you call with a question, you talk to an engineer; someone who can help you with even the toughest problems and give you *accurate* information. That’s important to me and the electrical contractor.”

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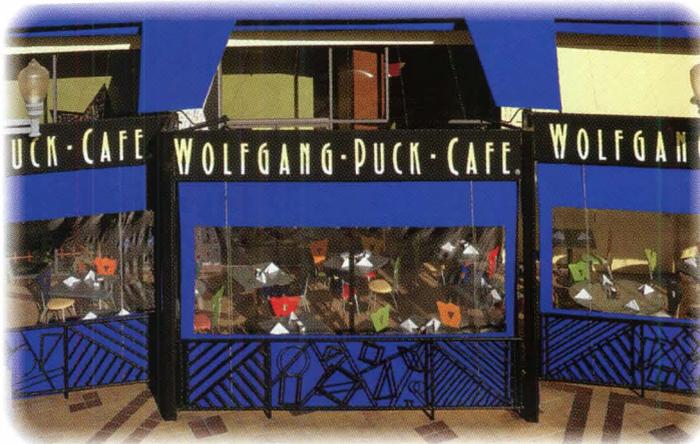
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EDITORIAL

Witnessing the Birth
of the Cyber Age

BY ROBERT A. IVY, FAIA

Has the moment come? Are the stars colliding and the phone lines sizzling and the electronic foundations shaking—all witnesses to the birth of the architectural cyber age? Few activities have been more anticipated or loudly trumpeted. After more than a decade of promotional hype from software and hardware vendors, after false starts and premature purchases by architects and engineers, the moment is arriving, not with a whimper, but a bang.

For architects, the revolution consists of a leap to the third dimension. Our former language was arcane and proprietary and we have loved it fiercely. But even in CAD, two-dimensional drawings demanded abstract, visual symbols best understood by trained experts like you and me. The latest technology shifts our communications to a more quickly and universally understood vocabulary. Wall sections, for example, which architects formerly represented by an aggregation of parallel lines, some straight, some squiggly, will shift in the new medium to almost-tangible objects with appreciable heft and bulk and texture—visual, digital representations of the real world.

At the same time, a building's parts and pieces are becoming integrated into whole systems. Walls, floors, and ceilings, formerly understood as discrete entities, become quantifiable electronic data, capable of being understood in numerous ways: cost analyses, quantities of materials, even specifications can be knitted together, analyzed and extracted on command into subsets of information. Design can flow into construction documents in a seamless evolution.

The entire digital enterprise is lubricated by the Internet, which encourages international teams to cluster at project-specific, electronic sites. Clients can access the homepages of architectural firms, touring their work in color, and sometimes in video, without walking outside. Students can tune into an international design competition on a live Webcast.

While scientists began the journey, a new generation of architects, their laptops popped ajar, are leading an exploration into new visual terri-

tory. Consider the facts. One firm produces its designs by the San Francisco Bay, zaps the data to Mexico for construction documents, then blasts them eastward toward construction projects in Japan. A Finnish architect, Risto Linturi, creates a virtual, three-dimensional model of Helsinki as an interactive directory to link the public with all city services.

The implications for the profession are immense. A positive effect of this new architectural language and channel of dissemination will be accessibility to a larger audience. How many clients today can read and understand the flat planes of an architectural elevation? Yet everyone should be able to quickly grasp a rendered perspective on the screen.

Architecture is attractive, not only to architects, but to artists, to contractors, and to businesspeople. If the new tools are so easily understood, design will be tested by nonprofessionals. While the initial reaction of architects may be fear of encroachment into sacred territory, new voices and new fingertips may spread the story of this engaging enterprise globally, ultimately heightening public consciousness of architecture's worth and elevating the status of those who devote their professional lives to it. Moreover, architects should discover an unimaginable wealth of opportunity for their creative skills.

It is as if we had been given an unanticipated gift. We still may need our pencils; we still may need to sacrifice our fingertips to the mat knife. But time and technology are delivering something new, something alien, something waiting to be picked up and handled. It's a birth, make no mistake about it, and if we don't embrace this child, someone else will.

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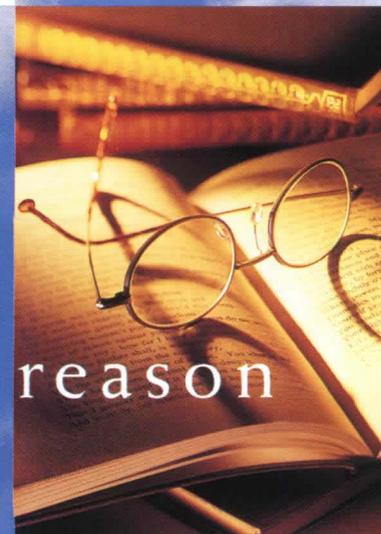


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LETTERS

New Orleans: Modern matters

I found your recent coverage of New Orleans ["Crescent City on the Edge," May 1997, pages 136–42] both puzzling and disappointing. The illustrations used to document the city's architectural heritage and its urban fabric ignores the repetitive nature of much of the housing stock. More disturbing was your exclusive reliance on the opinion of Errol Barron Jr., FAIA, and the related "new" work to represent contemporary architectural culture in New Orleans. Barron states: "It's extremely difficult to compete with the 19th-century architecture here because it is so good. You either ignore it and do something Modern or acknowledge it and do something that's not as good." The paucity of ideas and aspirations that this statement reveals may be typical of the New Orleans architectural establishment, but it does not reflect the efforts of at least some architects working in the city today.

—Mark Shapiro, Department Head School of Architecture, Kansas State University

A title earned

While Deryl McKissack should be congratulated for being named Small Business Person of the Year [June 1997, page 36], it is inappropriate to refer to her as an architect. You stated that she has a degree in civil engineering and training in architecture.

I often find that titles like architect and engineer are used loosely in architectural and engineering journals. Such titles should be given to those of us who have earned the title by vigorously pursuing our profession.

—Raymond Moses
Moses & Associates Electrical Consulting Engineers
Beverly Hills, Calif.

The Soul of Education

I read your article "Saving the Soul of Architectural Education" [May

1997, pages 124–30] and was shocked by "Challenge 2: Putting an End to Apartheid."

Students should be accepted into college programs based solely on their academic capabilities, regardless of race, gender, ethnic group, or sexual orientation. Accepting less qualified individuals for the sole purpose of meeting quotas, in my view, is ridiculous. Are schools rejecting outstanding applicants because the quotas have been met?

By no means am I prejudiced, but I am a firm believer in rewards being handed out for accomplishments. Unless the American architectural establishment rids itself of these preconceptions about so-called minorities, we cannot progress toward equality. How can we all be equal if we continue to label others as minorities? It shows great disrespect to foreigners (or those born of non-U.S. parents). Do citizens of other nations refer to outsiders as minorities?

—Patrizia Cimino
New York City

By using "soul" in the title of his story on architectural education, Mitgang suggests that his article discusses the essence of the profession and its education. But the soul of architecture is found in issues that are deeper than computers or teachers.

Soul is generated from the deeper idea of placemaking. It is about training young architects to formulate visions of place for our evolving communities; the health of communities is linked directly to the spaces we create and inhabit. Mitgang's concluding statement that "the spirit of competent service to communities must define the soul of architecture" is the key to saving the soul of a struggling profession.

In order to learn placemaking, students must be taught to understand the concept of community. I say "bravo!" to the notion of service-learning studios.

—Kristine Wade
Westminster, Md.

The issues raised in Lee Mitgang's article are among the most disturbing signs of what is wrong and outdated in society today. We should not be looking only at the design studio and the faculty, but should admit to ourselves that racism, sexism, and elitism still exist in our society and, therefore, in our architecture schools. In the classroom, students are rarely taught to relate to the "real world."

During my first two years as an architecture student in a five-year program, I have had the opportunity to meet students who refuse to acknowledge that there are people living in poverty, that homelessness still exists, or that the history and culture of other nations are relevant to them. The courses taught at my university focus on Western history and philosophy.

There is a rigidity and a monotony in architectural education, with every student leaving the program identical in thought and process. I believe it is the responsibility of everyone, including students, teachers, parents, and professionals, to improve the educational environment as we move toward the 21st century.

—Helen Mui
New York City

Respecting what is in place

The new amphitheater and outdoor cinema at the North Carolina Museum of Art [June 1997, pages 120–29] represent the very worst of what is happening in design today. Offensive enough in themselves, they do not relate in any meaningful way to the museum, nor apparently did the [design] team want them to.

Edward Durell Stone's 1960s NCMA building, which the writer describes as an "almost undifferentiated stone mass," is in fact a brick and concrete structure of surprising subtlety on the exterior and contains a wonderful variety of spaces, many with dramatic natural light, on the interior. It remains in good condition after 30-plus years. When architects are chosen to produce master plans and/or additions to

existing structures, especially those representing community commitment, they should be asked if they intend to produce work that respects what is already in place.

—J. West, AIA
West and Conyers, Sarasota, Fla.

AIA and TV advertising

"AIA Delegates 'Shoot Down' Dues Hike and TV Advertising Campaign" [June 1997, page 33] misrepresented the viewpoints of the American Institute of Architects, California Council [AIACC].

The AIACC supports the concept of the national AIA's proposed TV advertising campaign, but not at this time. Roberta Jorgensen, AIA, AIACC's president, spoke directly to the proposed assessment of \$50 to fund the campaign at the AIA national convention. Our principal argument against the assessment was, and is, based on timing. Right now, our membership is faced with one of the most far-reaching, detrimental state ballot initiatives to date. The "Competition Killer Initiative" is our number-one priority, and we are directing all our energy and our limited financial resources to fight it.

—Paul Welch Jr., Hon. AIA
Executive Vice President, AIACC
Sacramento, Calif.

Corrections

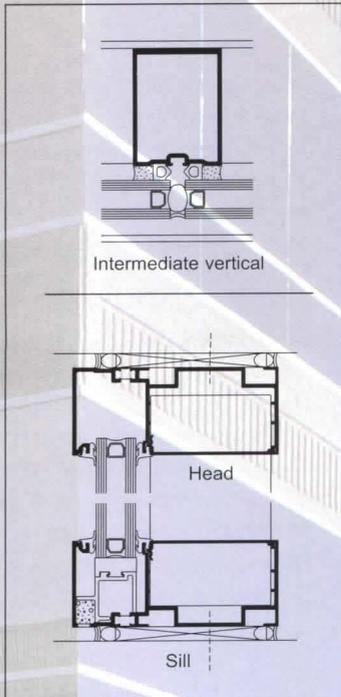
In the June 1997 issue, one of the winners of the computer delineation awards was incorrectly credited. "Save a Connie Air Museum" [pages 63, 65] was delineated by Aaron K. Zimmerman of WRS Architects, Kansas City, Mo.

A digital illustration of the Lujiazui/Itochu Building in Shanghai, China, by Nicholas Buccalo, AIA, of The Drawing Studio [June 1997, page 44] was misidentified as a photograph.

The architect of the Root House [May 1997, page 84] is William Morgan, FAIA, not Pasanella + Klein Stolzman + Berg, who are responsible for the interior design.

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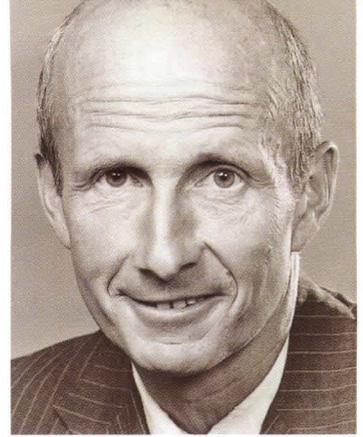
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CIRCLE 8 ON INQUIRY CARD

SPEAK OUT Post-occupancy evaluations: “They show us what works and what doesn’t.”

— BY HERBERT McLAUGHLIN



Herbert McLaughlin is director of design at Kaplan McLaughlin Diaz, a 200-person, San Francisco-based architecture and planning firm. Since its founding in 1963, the firm has conducted more than 30 research/POE projects in health, housing, courts, and correctional design.

Nearly everyone agrees that post-occupancy evaluations (POEs) are immensely valuable. They help architects to improve their designs and can be cited in job interviews to show prospective clients how responsive a firm is to the needs of a project’s users. They benefit the public by contributing to a pool of research on architecture and building types. Simply put, they show us what works and what doesn’t.

So why are they so seldom done?

Exactly 23 years ago, I wrote an article for this magazine, outlining my experiences with POEs. I explained how and why my firm did them. Since then, little has changed. The need for POEs is still great and the number of firms doing them or doing them on a regular basis is still quite small. I am the first to admit that my firm doesn’t do POEs nearly as often as we should.

Private-sector clients routinely do POEs, although they aren’t always identified as such or structured in a formal way. Every housing, commercial, and retail developer I know constantly assesses previous projects and looks at the marketplace to see what works—in other words, what sells.

On the other hand, clients for “compulsory” buildings (jails, public housing, and until recently, even hospitals) rarely feel the need to perform POEs. That’s a shame, because these are often exactly the projects that could most use the expertise and knowledge assembled in a POE.

Why don’t more architects do

POEs? One reason is that they’re perceived as being complicated and expensive. They need not be. The typical POE done by Kaplan McLaughlin Diaz requires between 150 and 300 hours of work and involves primarily our own staff. Most teams include at least one architect, a social scientist, and an experienced client or user from an institution other than the one being studied. While it is more “correct” to have a team of outsiders unaffiliated with any of the parties involved in the project, we like to include people from our staff because they benefit immensely from participating in POEs.

Recently we conducted a POE of a single-room-occupancy hotel that we designed in the Tenderloin district of San Francisco. The evaluation began six months after the first residents moved in and involved five components: written surveys of both the residents and the staff; two community meetings with residents; individual interviews and group meetings with the staff; a walking tour of the neighborhood with residents and staff; and a comparison with a neighboring “control” SRO.

Over the years, we’ve discovered that lessons learned from one project can help us even with different kinds of buildings. For example, studies we conducted of housing for the elderly have been applicable to the design of successful environments for the homeless, the mentally ill, and the incarcerated.

We fund most POEs from the firm’s research program, which has

an annual budget of a few thousand dollars. Occasionally we fund a POE from our sabbatical program, which offers KMD staff five weeks off every five years to work on independent projects somehow related to architecture. In many instances, clients foot the bill for post-occupancy studies.

Of course, POEs sometimes expose flaws in a firm’s design—an intolerable thought for architects with *Fountainhead*-inflated egos. But learning should be part of the design process. As for all those in the profession concerned about liability, let them rest assured. Our lawyers have told us that uncovering information that indicates a better functional solution might have been achieved is not actionable—at least not yet.

In 1974 I wrote in these pages, “The successful use of evaluation requires that we see design with new eyes.” This is still true today. By looking at our projects through the eyes of the people who live and work in them, or through the eyes of neighbors or social scientists, we can design better buildings. POEs are one way of doing this. ■

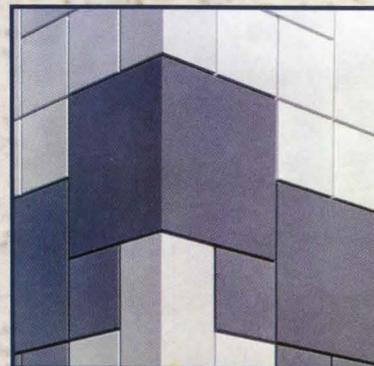
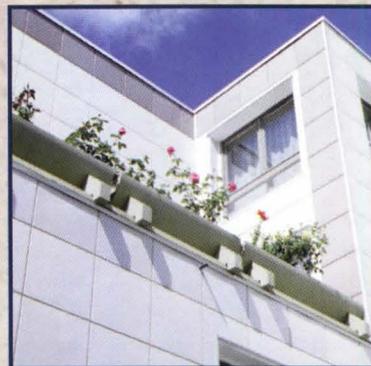
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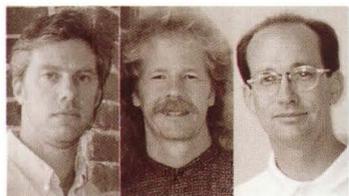
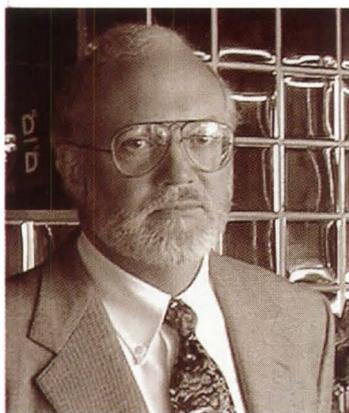
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CIRCLE 9 ON INQUIRY CARD

MENTORS Advice for entering the digital arena, and recommendations for working in affordable housing.

Randolph C. Marks, a longtime digital explorer, is the principal of *Architectura*, a firm specializing in historic preservation and residential design in Birmingham, Ala. His E-mail address is architectura@mindspring.com.



John Sheehan, Brad Burke, and Eric Naslund, AIA, are part of *Studio E*, a 10-person architectural firm in San Diego working primarily in affordable housing.

I have a ten-person firm in the Northeast and have been using CAD as a drafting tool. We are interested in organizing the company to take advantage of electronic media in other ways. What should we do to prepare to step into this arena?

—unsigned

Randolph C. Marks responds: The “arena” as I understand the question is the “communicative universe of digital media” that is continuously emerging for application by architects, their clients, contractors, and other providers of services for the building professions. The “larger step” is more akin to a willingness to undergo a baptismal immersion.

The first step requires a new commitment in order to enter this changing universe, which involves all members of the firm participating in the rethinking of a historically founded process. Everyone in the firm must be willing to share this information and act on it. Eventually, you may even wish to construct your own project-specific Intranet.

As primers or guides to the new arena I recommend two books written by MIT professors to expose the reader to the universe of ideas and possibilities encapsulated within the digital cloud. The first, *Being Digital* (Alfred A. Knopf, 1995), by Nicholas Negroponte, is an easy read and should be considered a springboard for further reading. The second primer, *City of Bits: Space, Place and the Infobahn* (MIT Press, 1995), is by William J. Mitchell, FAIA.

When you enter the new digital arena, look up! Learn the new light-

houses of the digital age. For this new journey you will need to acquire and learn unfamiliar but necessary charts and operate new navigational equipment. You must also exercise your will to explore. I suggest you find magazines and Web sites that represent the digital age on the Web.

On rare occasions in history the rapid constellation of ideas accompanied by the availability of technology has resulted in a swift revolution as opposed to slow evolutionary change. Rather than being threatened, we are challenged to find our own way.

Since the Federal government has all but pulled out of the business, how can architects make a living providing low-income housing? Is this a feasible area of architectural practice in 1997?

—unsigned

Eric Naslund, AIA, Brad Burke, and John Sheehan respond: While the days of extensive Federal intervention in the housing arena are certainly behind us, the good news is that quality affordable housing is still being built. The process is now a more local one and includes a wide variety of funding sources, including the Federal government by way of tax credits. Projects and budgets are smaller, resulting in a more gentle integrating of affordable units into existing communities. For small- to medium-size local firms, this means that affordable housing design is an intense and relational process with sometimes long waits between design and construction phases due

to the idiosyncrasies of funding. All too often projects never proceed past conceptual design.

Here in California, the groups building affordable housing fall into three categories: nonprofit housing developers, local municipalities or redevelopment agencies, and private developers satisfying inclusionary requirements. While many of these entities have extensive development experience, others may not. Architects should therefore be knowledgeable about the funding and development processes of affordable housing. These are quite different from the market-rate environment and have direct impact on design. For example, specific unit sizes and mix are required to secure certain types of funding.

As in most areas of practice, getting into affordable housing can be difficult because of the value placed on past experience. More than in any other housing market, long-term success must come from the quality of the ideas generated between architect and client. Affordable housing providers are generally motivated by a strong vision to make dignified housing that enriches people's lives, a vision that can provide tremendous design opportunities. ■

Questions: *If you have a question about your career, professional ethics, the law, or any other facet of architecture, design, and construction, send submissions by mail to Mentors, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; by fax to 212/512-4256; or by E-mail to rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*



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CIRCLE 10 ON INQUIRY CARD

PULSE RECORD readers were asked: Should the Gold Medal and other awards be broadened to include collaborators?

YES: 50%

NO: 50%

Yes: When it was set up in 1906 by Charles McKim, the Gold Medal was intended to recognize and create a record of outstanding contributions to architecture. It was focused on individuals, but McKim never ruled out group awards. In my view, the individual Gold Medals awarded to Louis Skidmore and Nat Owings were silly: clearly it was the firm and not the individuals who earned the medal.

There are many partnerships of talented people who do such superb work and make such important contributions in design, education, writing, and so on that they should be recognized. What will the record of the Gold Medal look like if it ignores talents like Robert Venturi and Denise Scott Brown?

—Richard Guy Wilson, Hon. AIA Chair, Department of Architectural History, University of Virginia

Yes: There is no question that the AIA Gold Medal should be presented to the entire team of collaborators. The historical view of the architect-hero romanticized by the media—the supreme master of all trades involved in the building process—is no longer accurate.

The “spirit of the individual” usually lies in a simple, unworkable sketch which is handed to the design team by the architect of record. Frequently the original massing and layout of the plan evolves into something entirely different from the initial concept.

To perpetuate the myth of the hero-architect is to contribute to the profession’s demise; it is also a factor in the low compensation paid to architects. As long as the design team receives little or no credit, those who turn the dream into real-

ity have a limited opportunity to capitalize on their efforts.

It is interesting to note that it is usually the hero-architects who demand from their employees the most work for the least pay, hiding behind labor laws in the process. The AIA, as the organization that supposedly represents the entire profession, should no longer be party to this injustice.

—Joseph Di Monda, AIA Attorney at Law/Architect Manhattan Beach, Calif.

Yes: In larger offices, say Richard Meier’s, the actual design is worked out by young architects with the principal as decision-maker. To anyone with experience working in an architectural office, this is a well-known practice.

—Tom Killian, Architect New York City

No: The AIA Gold Medal and other awards slated for individuals should not be broadened to include collaborators. Collaboration has no doubt spurred architectural mastery worthy of recognition, but the AIA’s awarding the results of such work should be reserved for the individual designer. This person is the one who bears the *soul* responsibility for design efforts and decisions for the project. The Gold Medal may become alloyed if it is allowed to relinquish its attention, not to mention its mission, to the individual.

—Miles Battle Washington, D.C.

No: Architects may have many collaborators, but the awards are for individual artistic achievement.

—Laszlo Papp, FAIA White Plains, N.Y.

This Month’s Question:

Is there a place for high design in affordable housing?

Architects are investing affordable housing with real design attention, often to the point that it is impossible to distinguish “affordable” from “upscale.” The July issue featured housing developments with towers, strong colors, and outdoor living spaces. Yet in Chicago, many tenants of the notorious Cabrini-Green housing complex, currently being redeveloped, fear gentrification of their community.

Is there a place for high design in affordable housing?

Yes No

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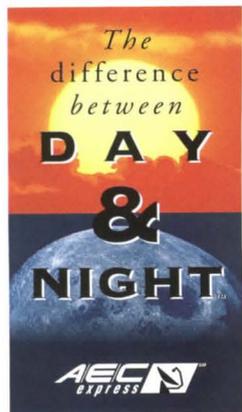
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CIRCLE 12 ON INQUIRY CARD

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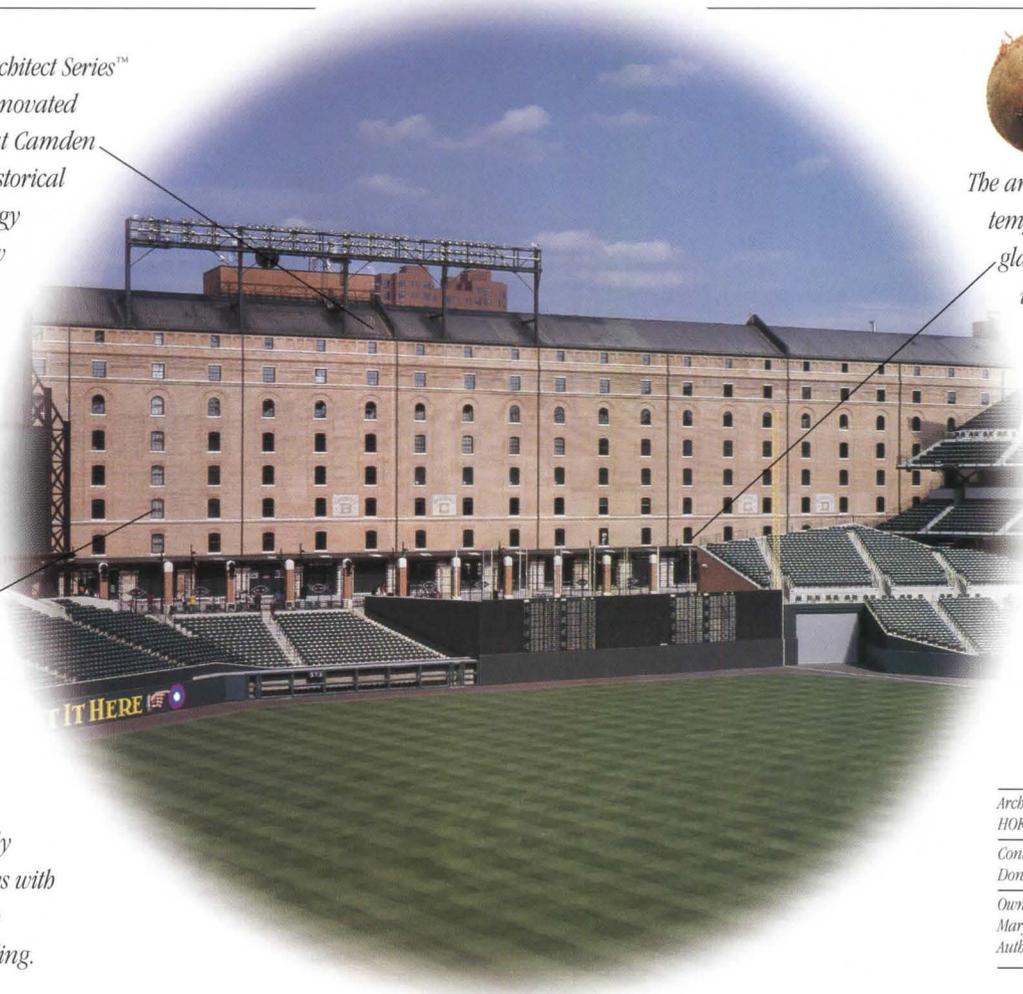
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BOOKS: Compared to art and architecture publishing, the landscape version is nearly invisible. It has no Rizzoli to celebrate its heroes.

BY DAVID DILLON

Contributing editor David Dillon is the architecture critic for the Dallas Morning News and a former Loeb Fellow at Harvard's Graduate School of Design. His books on Texas architect O'Neil Ford and the FDR Memorial in Washington will be published next spring. He is also the author of the new plan for Washington, D.C., "Extending the Legacy."

Paradise Transformed: The Private Garden for the Twenty-First Century, by Guy Cooper and Gordon Taylor. New York: Monacelli Press, 1996, 208 pages, \$60.

Taking Measures Across the American Landscape, by James Corner and Alex S. MacLean. New Haven: Yale University Press, 1996, 208 pages, \$45.

Invented Cities: The Creation of Landscape in Nineteenth-Century New York and Boston, by Mona Domosh. New Haven: Yale University Press, 1996, 185 pages, \$30.

The Cultivated Wilderness: Or, What is Landscape? by Paul Shepheard. Cambridge: MIT Press, 1997, 230 pages, \$13 (paperback).

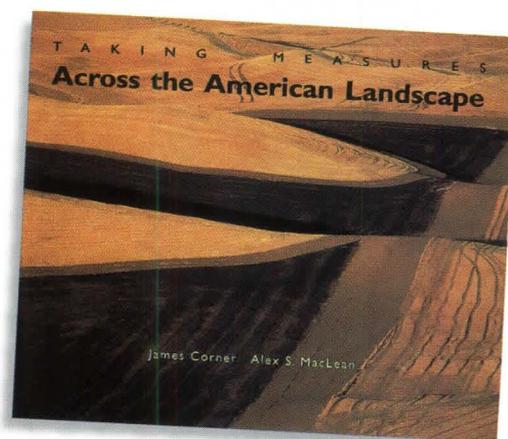
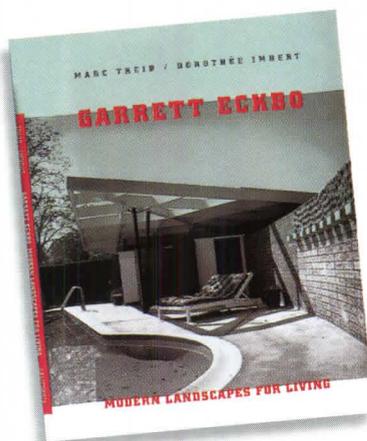
Garrett Eckbo: Modern Landscapes for Living, by Marc Treib and Dorothee Imbert. Berkeley: University of California Press, 1997, 193 pages, \$40.

Walk into your local megabookstore—a Borders, Barnes and Noble, or other literacy au lait emporium—and chances are you'll find a substantial section on architecture. Histories of architecture, biographies of prominent architects, theoretical tomes, monographs on major buildings and leading firms, along with slender volumes on aspiring young designers with only three projects to their credit but a sure grip on the self-promotion tiller.

And if it's a true megastore—and you're very persistent—you may also find a shelf of books on landscape architecture, probably down low so that you have to squat to read the titles. Most will deal with plants and gardening, and be filled with helpful tips on growing begonias and building a rot-proof planter. You'll find no comprehensive histories of the profession. Biographies of major landscape architects, other than Frederick Law Olmsted, will likewise be scarce, as will narratives of leading firms and thoughtful commentaries on current theory and practice.

Compared to art and architecture publishing, the landscape version is virtually invisible. The profession has no Rizzoli or Harry N. Abrams to celebrate its heroes and tout its successes. Much of the best writing on landscape architecture appears on the fringes, in books on planning, urban design, and natural history. Landscape architects themselves have only the shakiest grasp of their own history, and of the relationships between what they do and the broader culture.

A splendid opportunity for enterprising publishers, one would think, but so far few have stepped forward. One is Spacemaker Press in Washington, D.C., a fledgling venture of James Trulove and architect Peter Walker that will publish 10 books on American landscape architecture this year and a dozen or more next. These will range from corporate histories to studies of individual landscape architects and brief monographs on major landmarks. Clearly a step in the right direction, but no substitute for the broad commitment to history and

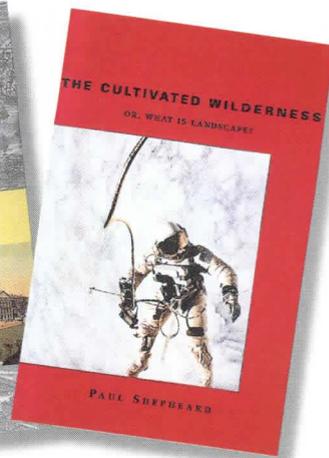
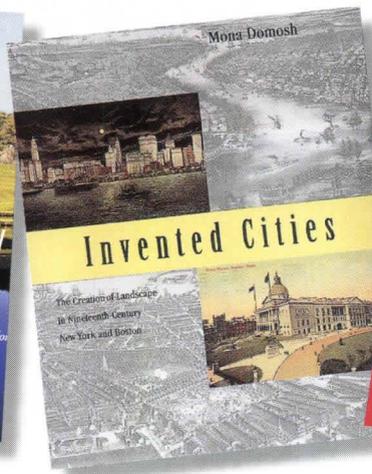
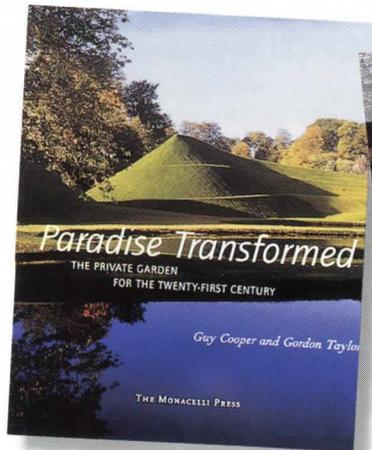


criticism that architects can take for granted.

All of which contributes to the patchwork character of landscape literature, of which the books reviewed here offer a representative if unscientific sample.

Taking flight

Every would-be metropolis with a runway and a few unemployed pilots is producing an aerial photography book. But none soars like *Taking Measures Across the American Landscape*. Not only are Alex MacLean's images provocative and memorable, they are accompanied by insightful commentary and map drawings by James Corner and Denis Cosgrove that reveal the American landscape to be a palimpsest of human interventions, good and bad, rather than a collection of dramatic spaces and picturesque views. We look down on rivers, farms, and tablelands, the indelible record of our actions on the earth. If J. B. Jackson's essays were trans-



ferred to film, this is what they would look like.

Paradise Transformed: The Private Garden for the Twenty-First Century is one of those glossy coffee-table books that are easy to read and difficult to take seriously. Authors Guy Cooper and Gordon Taylor selected 50 projects by 25 American and European designers to document the diversity of the private garden on the eve of the

millennium. The photography is handsome, the range of examples impressive—from Ian Hamilton Finlay's Neoclassical folly in Scotland to Martha Schwartz's bagel garden in Boston—but the writing is trite and the critical judgments commonplace. Instead of a framing essay, let's say, on the place and function of the private garden today, when the entire public realm is being privatized, the authors settle

for surface descriptions and easy generalizations. Their critical categories—exploration, innovation, tradition, abstraction—are particularly vague and unconvincing, with many projects falling easily into two or three. The book's lush superficiality, and hefty price, may confirm the public's suspicion that landscape architecture is just shrubbing up for rich folks, even though many of the gardens presented say otherwise.

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Mona Domosh's *Invented Cities* combines solid urban history with the repetitiveness of an undergraduate term paper. Her thesis is that the urban landscapes of Boston and New York reflect the values of their elites far more than the imperatives of economics, geography, and technology. Boston's elite was small, inbred, and more inclined to husband its wealth than risk it in speculative investments. This led to an orderly, low-scale city with significant public spaces—Boston Common, Public Garden, Olmsted's Emerald Necklace—and an enviable range of philanthropic and cultural institutions. New York's more commercially aggressive elite, fragmented by wave after wave of immigration, opted for risk and produced a landscape of skyscrapers and broad shopping streets with few civic spaces.

Domosh's thesis is not particularly original, but she marshals enough data and compelling drawings and photographs to create an

intriguing alternative argument for the origins of urban form. Still, even at 180 pages it would have been twice as good at half the length.

Paul Shephard's *Cultivated Wilderness: Or, What is Landscape?* is discursive, anecdotal, quirky, and altogether unclassifiable. In discussing the idea of wilderness—meaning both the landscape before man arrived and the wild places that remain despite our efforts to eradicate them—he visits glaciers, cathedrals, and parks, observes dogs and fish, and engages in discourses on the wonders of the Hubble Space Telescope.

Shephard is a keen observer and for the most part a felicitous writer who manages to uncover large truths in simple things, the largest being that our survival depends on recognizing and cherishing the bits of wildness in the world and in ourselves. At the same time, his writing is afflicted with a Jamesean sense of nuance that occasionally suggests that more is

going on in a page or a paragraph than really is. Rather than a sustained argument, *Cultivated Wilderness* presents a series of discrete observations that should be savored, as if they were part of an old-fashioned commonplace book.

Sticking to his principles

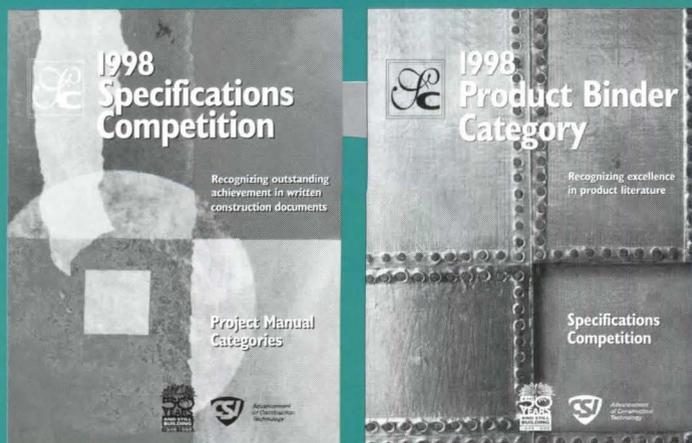
Garrett Eckbo's *Modern Landscapes for Living* was written to accompany a recent exhibition of his work at the University of California at Berkeley, and is therefore part catalog and part biography. In the first half, Marc Treib provides a concise introduction to Eckbo's career, covering not only his celebrated gardens for the rich and famous in L.A. but his defense housing and migrant worker camps for the Farm Security Administration. (Historian Dorothee Imbert discusses these social designs in the second half of the book.) Even in his theatrical, Beverly Hills phase, Eckbo never lost sight of the big picture. He was drawn to Modernism because it had a social agenda and

never abandoned his humanistic principles.

As an introduction to Eckbo's work, Treib's book is more solid than provocative. All the major projects are represented, including the Cole garden and pool in Beverly Hills, with its cantilevered diving pads, and the aluminum Forecast Garden for ALCOA. What's surprising is that a major book on Eckbo has taken so long to appear. A pioneer Modernist, the E in EDAW, the world's largest landscape architecture firm, is now 86 years old and very much in the shadows of professional awareness. The same is true of his Harvard classmate James Rose, about whom little has been written, and Dan Kiley, whose immense contributions to the profession have yet to receive the scholarly attention they deserve. The publication of Treib's book, though welcome, also reveals how much historical and critical ground landscape architecture has to make up. ■

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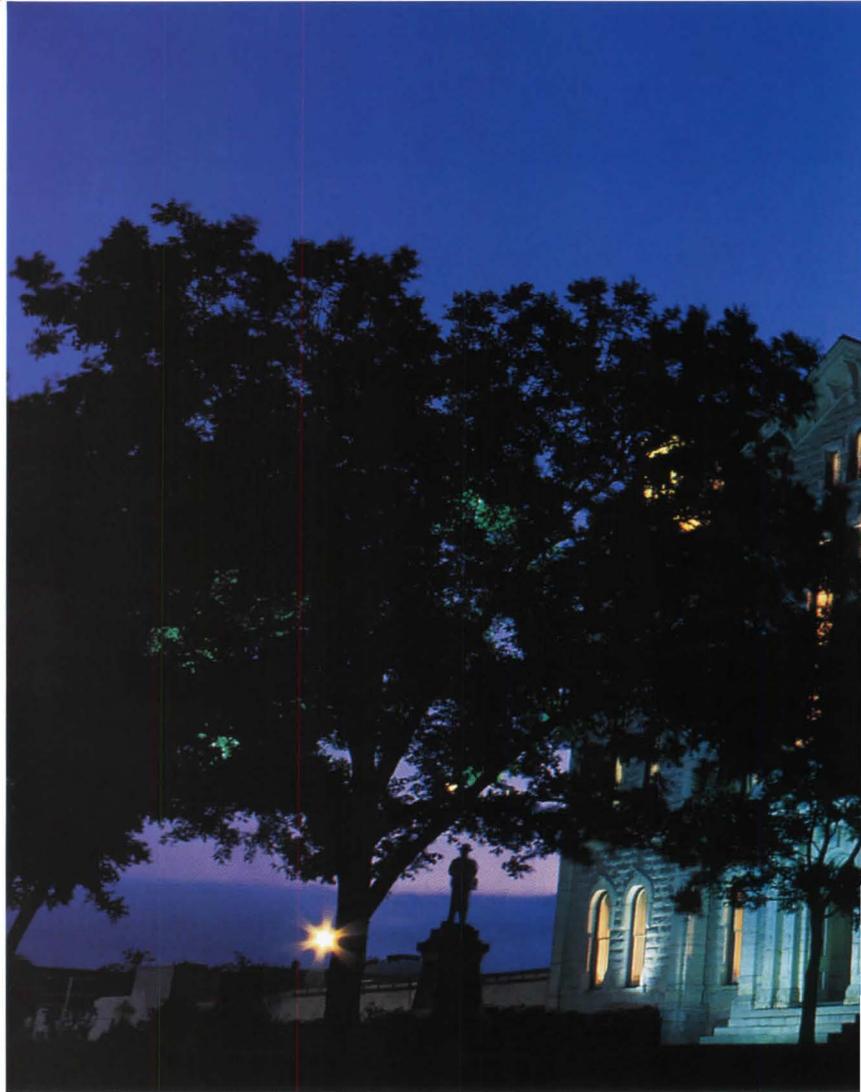
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CIRCLE 15 ON INQUIRY CARD

WHEN IT CAME TO RENOVATING THIS HISTORIC COURTHOUSE, EVEN THE



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

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

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

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

For the next several weeks, Marvin's architectural department busied itself recreating the past. Working from turn-of-the-century photographs



COMPETITION RULED IN OUR FAVOR.



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

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CIRCLE 17 ON INQUIRY CARD

RECORD NEWS

FUNDING OF WASHINGTON MONUMENT REPAIRS SETS TREND

Renovation of the Washington Monument is being funded by a private corporation, setting a precedent in public-private partnerships on federal projects that administration officials hope will become a trend. If the partnership is successful, it will mean that in the future architects will receive fewer commissions from the government and more from private corporations.

Minneapolis-based discount retailer Target Stores raised the \$5

million needed for the repair work by first announcing a partnership with the National Park Foundation and guaranteeing \$1 million for the project. The balance was solicited from Kodak, 3M, Procter & Gamble, Visa USA, Coca-Cola, and Discovery Communications.

"Target Stores' commitment is an outstanding example of public-private partnership that will help us better serve the visitors to all of America's national parks," said Bruce Babbitt, secretary of the interior. According to Babbitt's press office, as federal funds for these types of projects wane, the private sector will take up the slack.

Target has already commissioned architect Michael Graves to design the scaffolding. He intends to preserve the monument's stature and beauty even as the restoration by the National Park Service and the U.S. Department of the Interior proceeds.

Aging and weathering, combined with the mechanical challenges of heating and cooling the memorial while accommodating 2,500 visitors a day, have resulted in the need for major repair work. The project includes surveying the condition of and repairing the structure's stones, repointing exterior and interior joints, and replacing elevators and HVAC equipment.

The scaffolding needed to repair the stonework will be among the tallest in the history of federal projects, surpassing that required for the Statue of Liberty, another famous public-private (Chrysler Corp.) partnership. Graves says he would draw on historic designs for inspiration, including the scaffolding used to raise ancient Egyptian obelisks, as well as that depicted in the etchings of Italian artist Piranesi.

Says Graves: "That which covers it up has to be equal to what is covered." *Ellen Sands*



JOHNSON CHAPEL

Philip Johnson's \$6 million Chapel of St. Basil completes the Jeffersonian quadrangle at the University of St. Thomas, a private Catholic school for which Johnson devised the master plan.

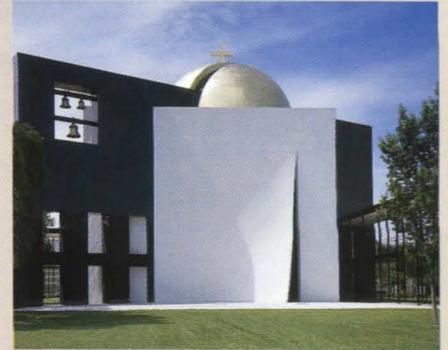
Chapel construction began in 1996

after an extended fund-raising period. In contrast to the brick boxes and steel arcades of the quadrangle, the 7,000-sq-ft chapel is pure geometric forms. A gold-leafed hemisphere sits atop a white cube, both of which are sliced at an acute angle by a black plane.

The front wall of the cube is pulled open like the flap of a tent, recalling ancient sanctuaries. Only daylight illuminates the 230-seat interior, entering from the sliced dome and through skylights over the shallow altar apse and above a niche for a statue of the Virgin and Child.

A cross-shaped window on the west wall is the most dramatic feature of the interior. As the sun moves outside, the image of the cross moves around the interior, representing Christ's journey to crucifixion.

Below the window are the Stations of the Cross cast in shallow reverse relief. Above the altar is a 14th-century statue of Christ donated by Dominique de Menil, the arts patron who first brought Johnson to Houston in 1948 to design her house. *Gerald Moorhead*



CHURCH IN THE LURCH AFTER U.S. SUPREME COURT RULING

Churches are subject to the same ordinances as other buildings when it comes to historic preservation, according to a U.S. Supreme Court ruling made earlier this summer.

The case, *City of Boerne v. Flores*, concerns St. Peter, a 74-year-old Catholic church in Boerne, Texas, near San Antonio. The parish was outgrowing St. Peter's 230-person capacity. So Archbishop Patrick Flores, who presides over the archdiocese, gave permission to expand the building.

But the city's historic landmark commission decreed that the church is part of a historic district and cannot be added onto.

Archbishop Flores sued, citing the 1993 Religious Freedom Restoration Act (RFRA). The law says that governments cannot "burden" religious organizations without compelling justification. U.S. District Court ruled against the archbishop, but an appeals court reversed the

district court. The archdiocese then appealed to the Supreme Court.

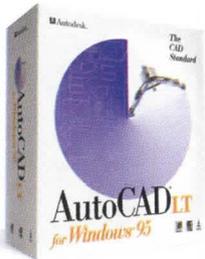
Writing of the high court's 6 to 3 ruling, associate justice Anthony Kennedy said, "Broad as the power of Congress is . . . RFRA contradicts vital principles necessary to maintain separation of powers and the federal balance."

Though the ruling centers on general constitutional issues, it gives historic preservation a significant boost. "With respect to historic designation and other land-use controls, religious properties stand on the same footing as other properties," said Edward Norton, a vice president at the National Trust for Historic Preservation.

The fate of the renovation remains up in the air. "We're back in court," said Thomas Drought, the archdiocese's attorney. This time, the church is citing the First and Fifth Amendments as grounds for its case. *Tom Ichniowski*

“OUT HERE NATURE MOVES AT A SLOW PACE, BUT NOT US. CONVERTING AN ENTIRE BUILDING TOOK UNDER A MONTH.”

--Michael Rivetts, engineering technician,
Cape Cod National Seashore



To get a job done fast, sometimes you just can't wait for the experts back at the home office.

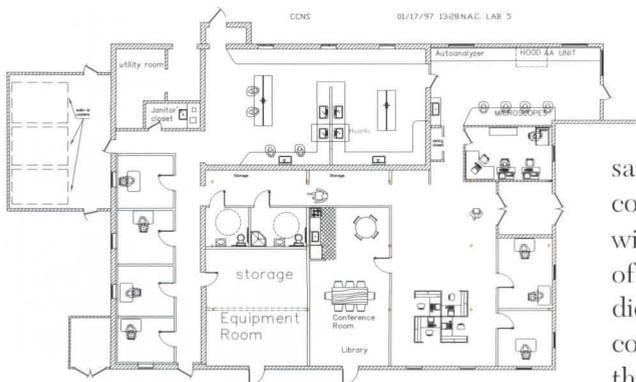
Sometimes you need to take matters into your own hands. That's what the Maintenance Division of Cape Cod National Seashore did when they decided to use AutoCAD LT® for Windows 95® to quickly turn a nearby, 50-year old Air Force building into a modern biology research facility. “Rather than waiting for the National Park Service Boston Architecture and



We hoped that by installing the application we'd be able to complete more projects internally, which is precisely what happened.” On this job, Rivetts simply obtained a hard copy of the original building floor plan, which he re-drew in AutoCAD LT. He and his colleagues then rearranged interior walls to indicate

laboratory boundaries and office sites. With the help of Autodesk's Symbols Library, things like work tables, sinks, and bathrooms were quickly added. National Park Service biologists will soon be using the new 5,800 square foot facility to examine natural resources, dune migration, and water quality. And many other abandoned buildings are also being redesigned for modern park and government use.

AutoCAD LT is available for \$489 at most software retailers. For information call 1-800-228-3601, ext. A146 or visit www.autodesk.com.



queue ourselves,” says Michael Rivetts, an engineering technician with the Maintenance Division. Prior to installing AutoCAD LT on a Pentium®-based PC, the Maintenance Division toyed with another low-cost CAD system. Big disappointment. With its limited feature set, inefficient toolbar setup, and plotting and printing problems, no one found it satisfactory. Worse, they couldn't exchange design files with other parks service offices because this product didn't offer DWG file format compatibility with AutoCAD®, the park service's design tool standard. Said Rivetts,

Engineering office to get to our projects, we decided to implement AutoCAD LT. That way we could tackle some of the design projects we had in the

“AutoCAD LT was extremely attractive to us because of its cost-effectiveness and the fact that it's so easy to use and fully compatible with AutoCAD.



ARCHITECT-DESIGNED PIANOS COME IN SURPRISING SHAPES AND SIZES

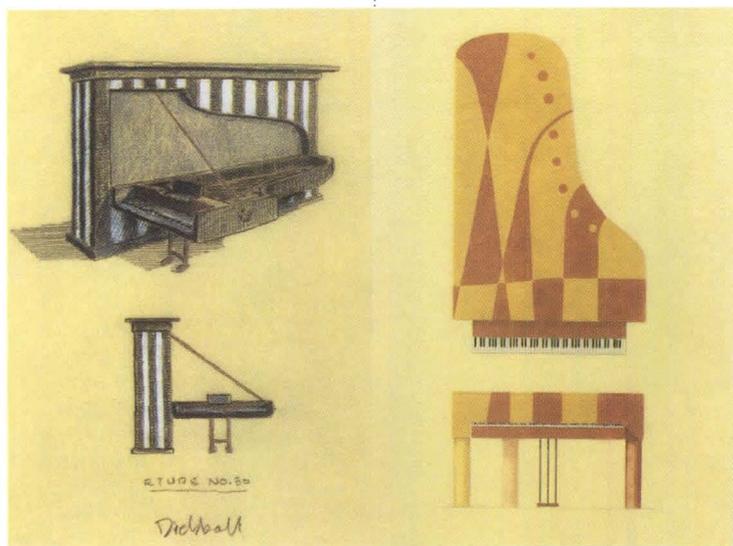
Architect John Diebboll, a senior associate of Michael Graves, has designed an African city, the 18th hole of a miniature golf course, and the usual repertoire of schools, museums, banks, shopping centers, condos, and libraries. But never before has he designed pianos.

Now, 25 colored pencil drawings of different pianos, including one shaped like a quonset hut, one clad with a veneer of tarnished copper, and one that resembles an open Murphy bed (below, left),

are on display at Klavierhaus, an antique-piano restoration company in New York City.

Diebboll is collaborating with the company to build a piano based on one of his drawings, and some individuals are commissioning their own.

"We're crossing the fine line between what is a musical instrument and what is a work of art," Diebboll said. "To me these are musical instruments that are meant to be played." *Jessie Mangaliman*



Piano drawings by John Diebboll.

THE REICHMANN FAMILY, DEVELOPERS, IS AT IT AGAIN

"Destination: Technodome" is the name of two indoor, year-round entertainment meccas recently proposed by the Toronto-based Reichmann family. Albert Reichmann is the former president of the failed real estate developer Olympia & York, developers of the World Financial Center in New York.

Albert and his nephew, Abraham Reichmann, formed a new company, Heathmount Arts and Entertainment Corp., which will develop the two technodomes. Both complexes, one in Toronto and one in Queens, N.Y., will include a 500-ft-tall "mountain" for year-round skiing, a simulated rain forest,

whitewater rafting "rivers," and a re-creation of New Orleans' Bourbon Street. Together, the projects will cost \$1.5 billion.

The 2.1 million-sq-ft Canadian complex will be on a 70-acre site at the former Downsview Canadian Forces military air base. Construction begins next spring and will be completed by 2000.

The Queens Technodrome, in the Arverne urban renewal area, 30 blocks of vacant land on the Atlantic, will also include an Olympic-sized pool and diving tower, seating, a hotel, and a convention center. No start or completion dates have been set. *Albert Warson*

ARCHITECTURAL PRESS ROUNDUP

CRUMBLING JUSTICE

The New York Times, June 29, 1997 There's poetic irony in a crumbling courthouse. The Westchester, N.Y., County Courthouse has a long series of problems, including witness boxes that are too small, security pens with movable partition walls, rickety elevators that break down, and an exterior made from a type of stucco that, county officials say, is absorbing water. Last winter a piece of the facade fell 20 stories, nearly squashing a father and son walking past the building on their way to story hour at the library. The blame, of course, has been laid first on the architect, Welton Becket & Associates, who, according to county attorneys, did not pay attention to details.

AN ARCHITECT BY ANY OTHER NAME . . .

The Wall Street Journal, July 2, 1997 The name I. M. Pei is to architecture what Armani, Calvin Klein, and Gucci are to fashion. So it's no surprise that Pei's sons, Chien Chung Pei and Li Chung Pei, have ridden their father's coattails to some degree to garner clients for their own New York firm, Pei Partnership Architects. That's not to say the two younger Peis are not talented architects. "They are quite good," admits James Freed, Pei-the-elder's partner at New York-based Pei Cobb Freed. Still, many of the sons' clients want Dad involved. They want to say, "I. M. Pei designed my building."

ALL THE BEST CITIES HAVE ONE

Texas Monthly, May 1997 Contemporary art museums are the "must-have civic amenity" of the '90s. Building one of these colossal art palaces with "hundreds of thousands of square feet of shopping mall ambience" signals that a city has arrived. Amidst all this ostentation, the Contemporary Arts Museum in Houston, recently redesigned, is a small and plucky player. The museum's goal is to be user-friendly, not impressive. It features intimate spaces, plenty of seating, and, best of all, a self-service Starbucks.

THOSE BIG, BAD AMERICANS

The Miami Herald, June 11, 1997 Oscar Niemeyer, the Rio de Janeiro-based architect known for designing Brasilia, the capital of Brazil, turns 90 in December. But the fiery communist is still hard at work, this time creating a 36-ft-tall concrete and metal monument that protests U.S. policy toward Cuba, which the architect calls "horrible" and "unjust." Niemeyer's "present to the Cuban people" is a concrete circle broken by the Cuban flag, symbolizing the island's resistance to America's economic blockade. The \$150,000 piece will be erected in Havana.

IT'S NOT EASY BEING GREEN

New York Press, June 18, 1997 The new building at 4 Times Square in New York (RECORD, June 1997, pages 73-75) will incorporate all the latest energy efficiencies, including photovoltaic panels, "smart" elevators that learn the habits of their users, a wastewater system that will help run the cooling system, and automatic lighting that powers up when natural light dims. There's only one problem with this exemplary building: several nice old buildings on the site must be razed to make way for it. "Wouldn't the destruction of the existing structures . . . commit a total expenditure of energy that the efficient operation of even the greenest skyscraper would never make up for? How do you justify such wastefulness?"

DESIGNING SPACE TO BURY PEOPLE POSES UNUSUAL PROBLEMS

Room for the dead is running out in West Hartford, Conn. According to a local study, the remaining 1,000 below-ground burial spaces will be used within 10 years. That means trouble for this 21-square-mile town of 60,000 people.

"Without a lot of open space for a new cemetery, the question becomes, 'How do we use our existing space?'" said James Capodice, director of the city services agency.

Architects C. Peter Chow, of West Hartford, and Nancy Barba, of Portland, Me., were commissioned by the city to come up with an answer. Their solution: a high-occupancy graveyard consisting of eight buildings, a garden, and a lawn area, all to be built at the existing Fairview Cemetery. The new space will accommodate 1,800 crypts and a columbarium for 900 urns.

Adjacent to a city park popular with local joggers, Fairview was built in the 1920s. The proposed \$6.9 million expansion will be located on a two-acre site presently used as a maintenance yard. Dotted with maple, oak, and ash trees, the site will include a garden with pergolas,

timber trellises, and ornamental grasses and berry bushes.

"We want a place where individuals can come to visit and have different experiences, including being quiet and being reflective," Chow said.

"The garden will allow the opportunity for contemplation as well as celebration," added Barba, who designed an award-winning series of mausoleums at the Maine Veterans Cemetery in Augusta. For example, the architects want to restore an old chapel on the cemetery hill and envision it as a site for celebrations, such as weddings.

For now, the plan is just that; it's last on the list of the city's priorities. That's partly because a state law forbids the pre-sale of unbuilt crypts so the city cannot raise the development funds.

But money woes are only part of the problem. "There are economic and diminishing land issues that are driving this, but we are also talking about society's attitude toward death and dying," Barba said. "Mortality is not a favorite subject." *Jessie Mangaliman*

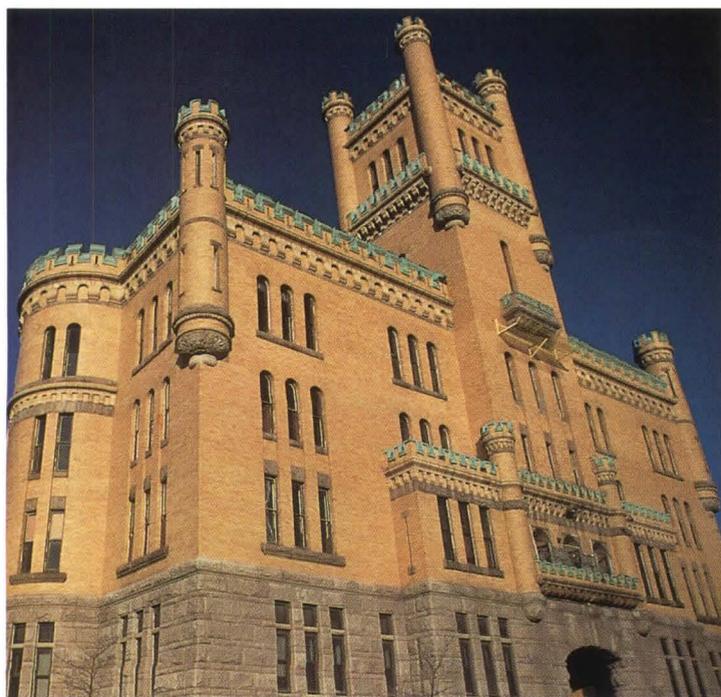
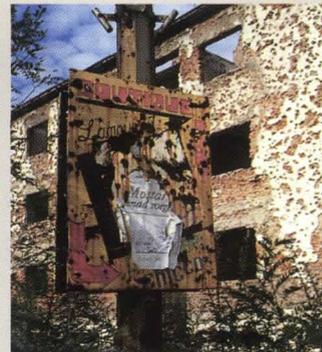
STUDENTS REBUILD BOSNIA

College students from the U.S., Turkey, Italy, Greece, and the Czech Republic are joining Bosnian students this summer to research and rebuild Mostar, the ancient capital of Bosnia.

Conceived by Dr. Amir Pasic of the Research Center for Islamic History, Art and Culture in Istanbul, and administered by Temple University professor Brooke Harrington and Drexel University associate professor Judy Bing, the program, called Mostar 2004, is in its third year. Its goal is to draw attention to the need to reconstruct Mostar.

But it's a diplomatic effort as well, Bing said. "Reconstructing the city is really part of helping to reknit a damaged culture."

It's also an opportunity for the 23 students, including some from Columbia and Yale, to do actual site work, to get their hands dirty. "That's not easy," Harrington said. "There are difficulties in coordinating a party of 23 students from a half-dozen different countries." *Bill Marsano*



WHO WILL SAVE THE NATION'S MOST ENDANGERED HISTORIC SITES?

Every year, the National Trust for Historic Preservation issues its list of the 11 most endangered historic American sites. In the past, these lists have motivated individuals, government agencies, and corporations to work toward saving everything from buildings to battlefields.

This year's list includes Ellis Island's hospital wards and the Congressional Cemetery in Washington, D.C., both crumbling and overgrown. Montana's Flathead Indian Reservation is in the path of a proposed superhighway, and there are plans to perch high-voltage power lines on Hawaii's scenic Wa'ahila Ridge.

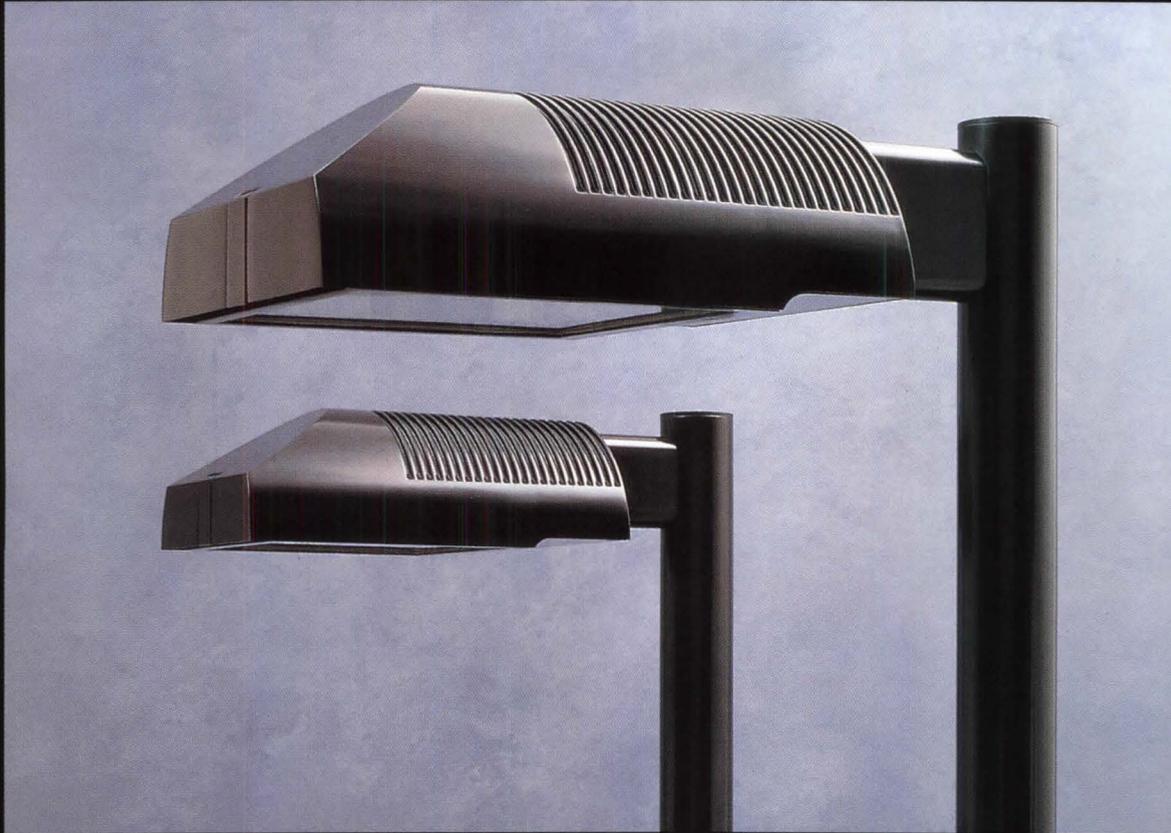
Also on the list is the 1876 Cathedral of St. Vibiana in Los Angeles,

the 1931 Stillwater Bridge in Stillwater, Minn., and the 1927 Bridge of Lions in St. Augustine, Fla. All of these have appointments with the wrecking ball, while new, modern replacements are in the works.

Funding is needed to restore the vacant 1907 Cranston Street Armory in Providence, R.I. New Mexico's Montezuma Castle (left), built by the Santa Fe railroad in the 1880s as a resort, is unusable.

In the Gulf States, all historic buildings infested with Formosan Termites made the list. Finally, the Civil War's Vicksburg Campaign Trail, which winds through Louisiana and Mississippi, faces the consequences of "progress." *Elizabeth A. Krol*

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CIRCLE 19 ON INQUIRY CARD

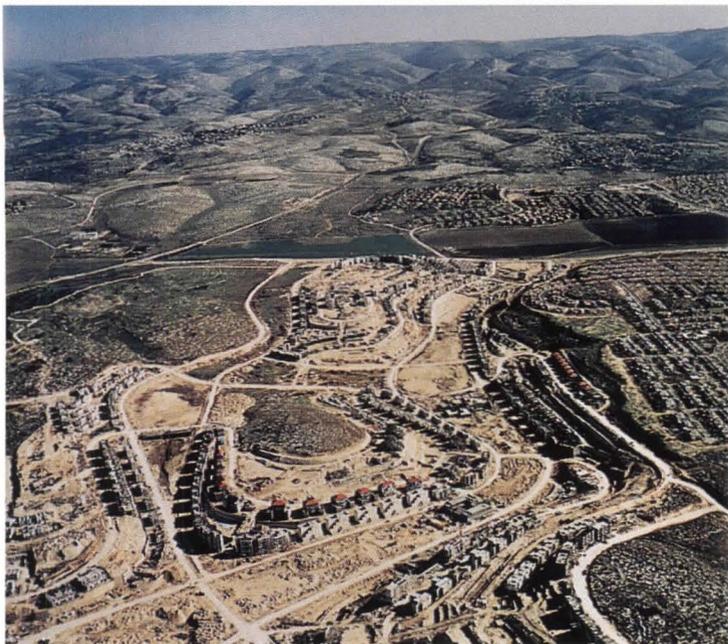
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MODI'IN, ISRAEL'S NEWEST CITY, TAKES SHAPE DESPITE CRITICISM

In the hills of Judea and Samaria, between Tel Aviv and Jerusalem, Israel is building Modi'in, a new city for 200,000 inhabitants and the largest building project ever in this young, construction-happy nation.

The master plan, commissioned in 1988, is by the Israeli-Canadian architect and planner Moshe Safdie. "There has been talk of building a new city in central Israel for 30 years," he said. "It was the flood of Russian immigrants in the late '80s that got it started."

Modi'in—named for the home of the Maccabees, who fought for freedom for the Jews in the second century B.C.—is located in one of the last rural areas in central Israel. Critics fear that the construction of the city will transform central Israel into an undifferentiated megalopolis. Others believe that the money invested in Modi'in would have been better spent on existing towns struggling to accommodate immigrants.

One of the differences between Modi'in and previous new towns is that the government is financing the infrastructure of Modi'in with the proceeds from land sales. "This combination of central planning and market-driven construction is new in Israel," Safdie said.

The urban plan was made in unusual detail. It's divided into sections, each of which is worked out in three-dimensional computer models at a scale of 1:500.

There's a height limit of four stories—below the treetops—in the town. On the hilltops, however, towers as high as 16 stories are allowed. These will serve as orientation points; on clear days, the inhabitants will be able to look across the scrubby brown hills to the Mediterranean.

Safdie took care to preserve the area's topography. The valley floors are "green tongues," accommodating parks and schools. Traffic moves up and down the hillsides along boulevards flanked with housing. Walkways across the valleys connect the neighborhoods. Each valley has specific landscaping—jacarandas, pines, or palms, for example—providing inhabitants with a way to identify their part of town.

The business center is located where the valleys come together. Besides housing, Modi'in will provide 60,000 jobs in service and light industry. "It will not be just a dormitory town for Jerusalem and Tel Aviv," Safdie said. "Modi'in will be a city in its own right." *Tracy Metz*

TORONTO GAINS NEW PARK AND CONVENTION CENTER IN SINGLE SPACE

The newly opened addition to the Metro Toronto Convention Centre lies hidden beneath a 17-acre park near the shore of Lake Ontario. The \$C185 million, 1.1 million-sq-ft underground expansion is one of the first projects to be completed in a proposed \$C2.5 billion chain of developments that will make up this city's revitalized waterfront.

Those still to come include a 20,000-seat Raptors basketball stadium, 4,000 residential units, a school, a 100,000-sq-ft aquarium, railway museums, and office and retail space in a former distillery.

Dan McAlister, who managed the project for Bregman + Hamann Architects, based in Toronto, says the urban park above the convention center addition functions as a transitional element, linking the city's core with the waterfront. The park is separated from the downtown, which includes the CN Tower, the SkyDome, and Toronto's main transportation hub, Union Station, by a 210-ft-wide rail corridor.

Covered bridges and a tunnel cross the corridor and connect the two areas. Carefully positioned pedestrian paths make the park pleasant to traverse, and make the lakefront more accessible.

Only a ventilation shaft, a few unobtrusive skylights, and a modest 11,000-sq-ft entrance, which addresses the lake, reveal the convention center's presence. Burying the expansion was necessary because the city's approval was conditional on incorporating a park.

Bregman + Hamann studied other underground facilities carefully during the design phase. A single underground facility of this scale is unprecedented in Toronto, but there are others elsewhere, such as the Moscone Center in San Francisco.

"We introduced natural light... and designed the proportions of the spaces, the lighting, materials, and colors so that the facility has a bright, spacious feeling," McAlister said. The center includes exhibit, ballroom, theater, and multipurpose space, as well as 1,700 on-site parking spaces. *Albert Warson*



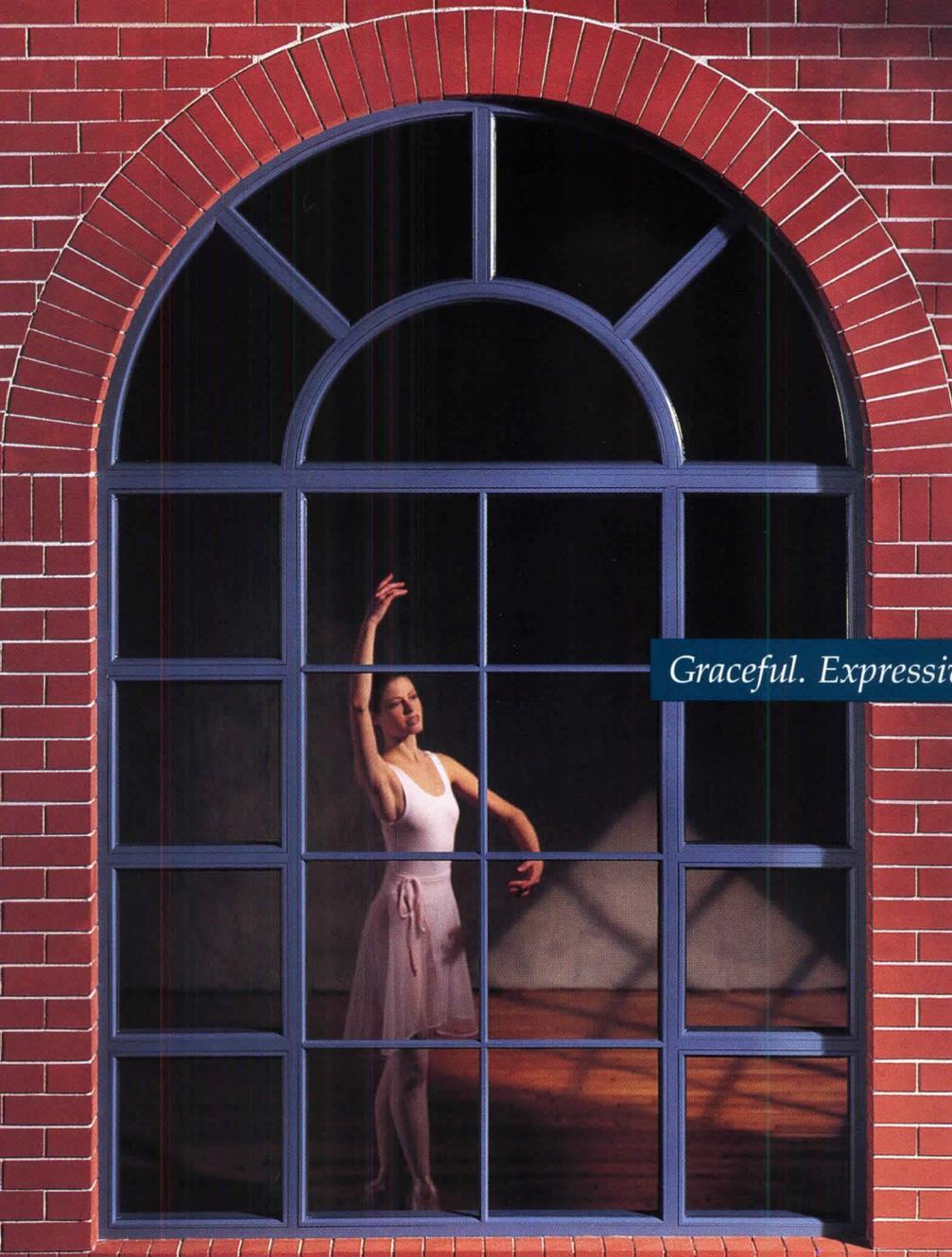
NEWLY OPENED MEMPHIS ARCHITECTURAL CENTER INSPIRES LOCAL DESIGNERS Memphis, Tenn., is no architectural mecca, but Coleman Coker, a partner at Mockbee/Coker Architects, known for its award-winning residential design, is out to prove that there is more to this conservative southern city than Elvis and Graceland.

An architectural school is the catalyst a city needs to churn out great buildings, Coker said. That's why he founded and serves as director of the year-old Memphis Center for Architecture, a studio located in a converted Memphis warehouse.

This summer, five architecture students are doing internships there. More will arrive next spring for credit courses, lectures, and critiques.

Coker collaborated with the University of Tennessee to create the center. Memphis University doesn't have an architecture school, nor does Coker's alma mater, Memphis College of Art. The closest, at Mississippi State University, is four hours from Memphis.

"An architectural school has an impact on the professional community because it brings conversations about design and theory, and opportunity for critiques," Coker said. "It opens people to new ideas and broadens their perspective." *Jessie Mangaliman*



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ARCHITECTURAL CRISIS IN FRANCE: “SOMETHING HAS TO GIVE”

About half of all French architects—at least 14,000 practitioners—are believed to be without full-time work in their chosen profession. The French *Ordre des Architectes* openly describes a profession in deep, sustained crisis. “A tragedy,” laments one Paris architect. “Something has to give,” proclaims another.

The problems are varied. Resistance to change, innovation, and reform, as well as burdensome regulations mandated by the French government, make architectural firms slow and inefficient. At the same time, the government work so many architects relied on is flagging, as is private-sector demand.

A few gifted and determined French design stars tackle tantaliz-

ing commissions at home and abroad, but winning and executing them is expensive. Well aware that work for architects is scarce, clients demand reduced fees and uncompensated front-end efforts.

In a country where the workforce is accustomed to generous salaries and leave policies, running a trim operation is almost impossible. “We still have to warn clients about July and August, when work just stops,” says Philippe Turolla, an architect in Paris. Key personnel routinely take off for four weeks in the summer. “Competitors from other countries don’t face this.”

Capricious, highly politicized decisions on lucrative commissions can change professional fortunes

overnight. Take, for example, the awarding of a huge Paris stadium design to one team while the competition winner was ignored. The commission is being legally contested.

Many architects languish in desperation. Some are resentful of incursions by foreign design firms. Meanwhile, the state struggles with chronic deficits, corruption scandals, social discontent, and a changing cast of political figures.

The answer, some say, is to boost the export of French architectural design. Others argue that a healthy domestic policy is needed.

Un- and under-employed architects do what they can. They design furniture, graphics, interiors, even clothing and food. Or they sell building products. In short, they work around architecture, but not in it.

Thomas Vonier

PENNSYLVANIA’S FLEXIBLE HOUSE

It’s not your ordinary house, though it looks and will probably cost the same as one. It’s Susquehanna House, a prototype for a flexible house—one with movable electrical outlets and walls.



The Susquehanna House used commercial construction technologies.

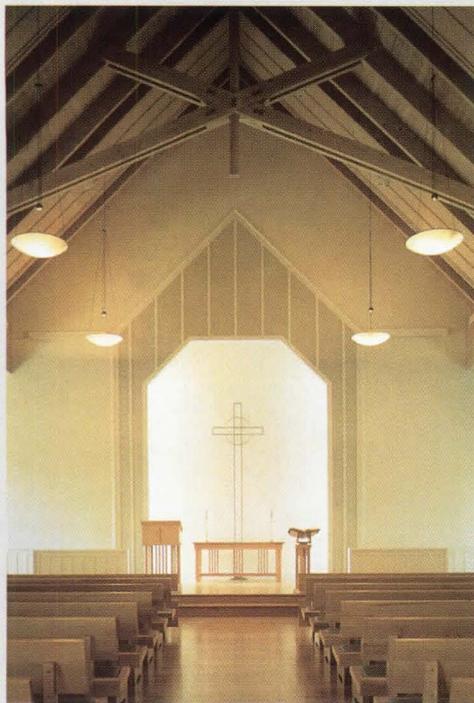
“We wanted to take what was learned in commercial construction and apply it to the home,” says designer Steve Lee, associate professor of architecture at Carnegie Mellon University.

Engineered wood trusses span the width of the two-story, 2,000-sq-ft house and carry the load so that interior walls can be moved around. The exterior walls are made of 3 1/2-in-thick polyurethane structural panels that have, Lee says, twice the heat-flow resistance of conventional, 2-by-4 walls.

Snap-together tracks, used instead of base moldings, allow for transient electrical, telephone, and computer outlets.

Using premanufactured products and building materials means the house could, ideally, be constructed in less than two months.

The project was sponsored by Armstrong World Industries in Lancaster, Pa., to serve as an experiment and an educational tool. *Elizabeth A. Krol*



WILLIAM TURNBULL, JR., DIES AT THE AGE OF 62

If there is a northern California style in architecture, William Turnbull, Jr., created it. His buildings, many of them simple wooden structures, evoke the ragged mountains, the massive trees, and the tawny, sun-bleached shores that characterize this edge of America.

Turnbull is best known for Sea Ranch, the condominium project in Sonoma County, Calif., on which he collaborated with Charles Moore and several other well-known architects. The project was so successful upon its completion in 1965 that Turnbull achieved an instant following—something every architect dreams of.

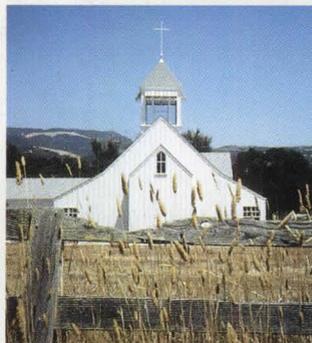
He went on to play a part in such award-winning structures as Kresge College at the University of California at Santa Cruz, the Warren Zimmerman house in Virginia, and the Foothill Student Housing at the University of California at Berkeley.

A New York City native and graduate of Princeton University, Turnbull “had architecture in his blood,” as a critic once said. His father was an architect, as was his great-grandfather, George B. Post, who designed the New York Stock Exchange.

His recent projects

include St. Andrew Presbyterian Church in Sonoma (above and right), and Teviot Springs, a house in Knight’s Valley, Calif. Both structures rise naturally out of the northern California landscape and embody a simple, understated elegance and grace.

At the time of his death in June 1997, Turnbull was working with partners Mary Griffin (his wife) and Eric Haesloop in the San Francisco offices of Turnbull Griffin Haesloop. The 15-member firm will continue its work. A memorial fund has been established at the department of architecture at Berkeley. The money will be used to help students research landscape-based architecture. *Dana Holbrook*



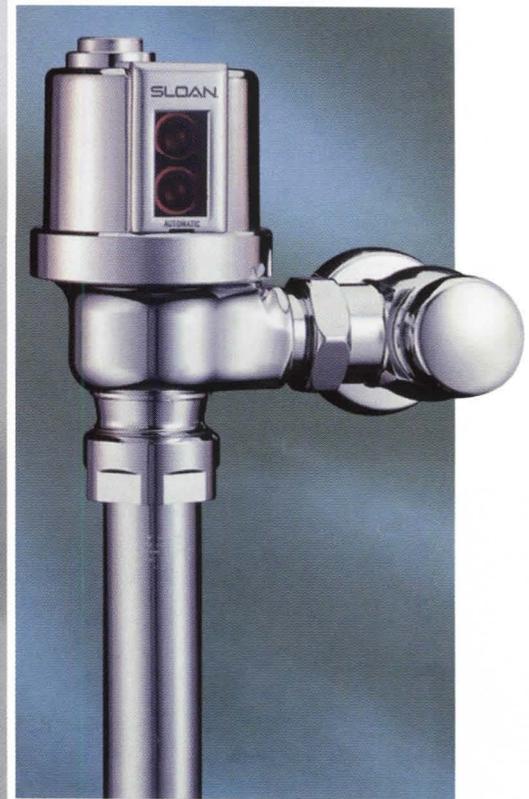
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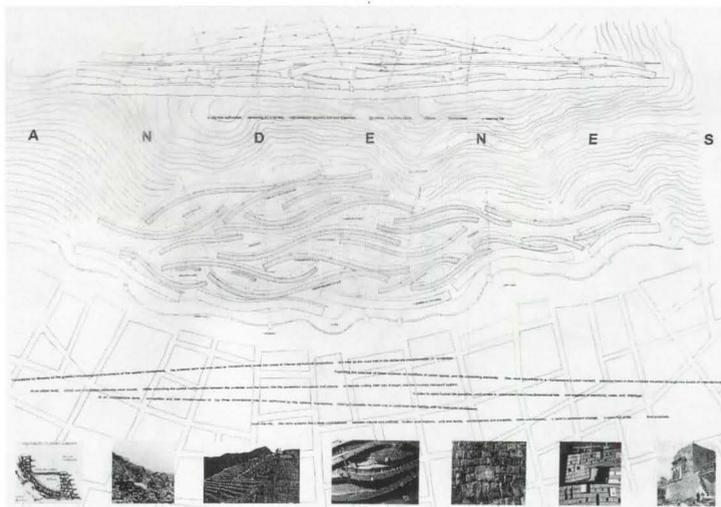
NEWS BRIEFS

Rotch Traveling Scholarship

awarded Andrew James Davis of Somerville, Mass., received the \$30,000 award for his design of Boston's Cottage Bridge. One of 60 entries, Davis's design, a landscaped pedestrian passage with accommodations for automobile, boat, and rail traffic, was called "the most intriguing and sophisticated solution" to the design problem. A graduate of the Rhode Island School of Design and Harvard University's Graduate School of Design, Davis is preceded as a Rotch Scholar by Henry Bacon, Ralph Walker, and Louis Skidmore.

Revamp of former National Rifle Association headquarters

Under the leadership of Brennan Beer Gorman/Architects and Brennan Beer Gorman Monk/Interiors, the Washington, D.C., building will become a 150-room



Marriott Courtyard. The \$10 million project will be completed in March 1998. An exterior facelift will help the building blend with neighborhood architecture.

Two students win Otis Elevator competition

Out of more than 2,000 entries from 52 countries, two students tied for grand prize in the 1996-97 Association of Colle-

giate Schools of Architecture/Otis Elevator International Student Design Competition. The entrants were asked to design a midrise urban housing development. Finalists and their faculty sponsors received cash prizes totaling \$30,000.

Herbert L. Beckwith dies

Known for introducing modern architecture on the MIT campus,

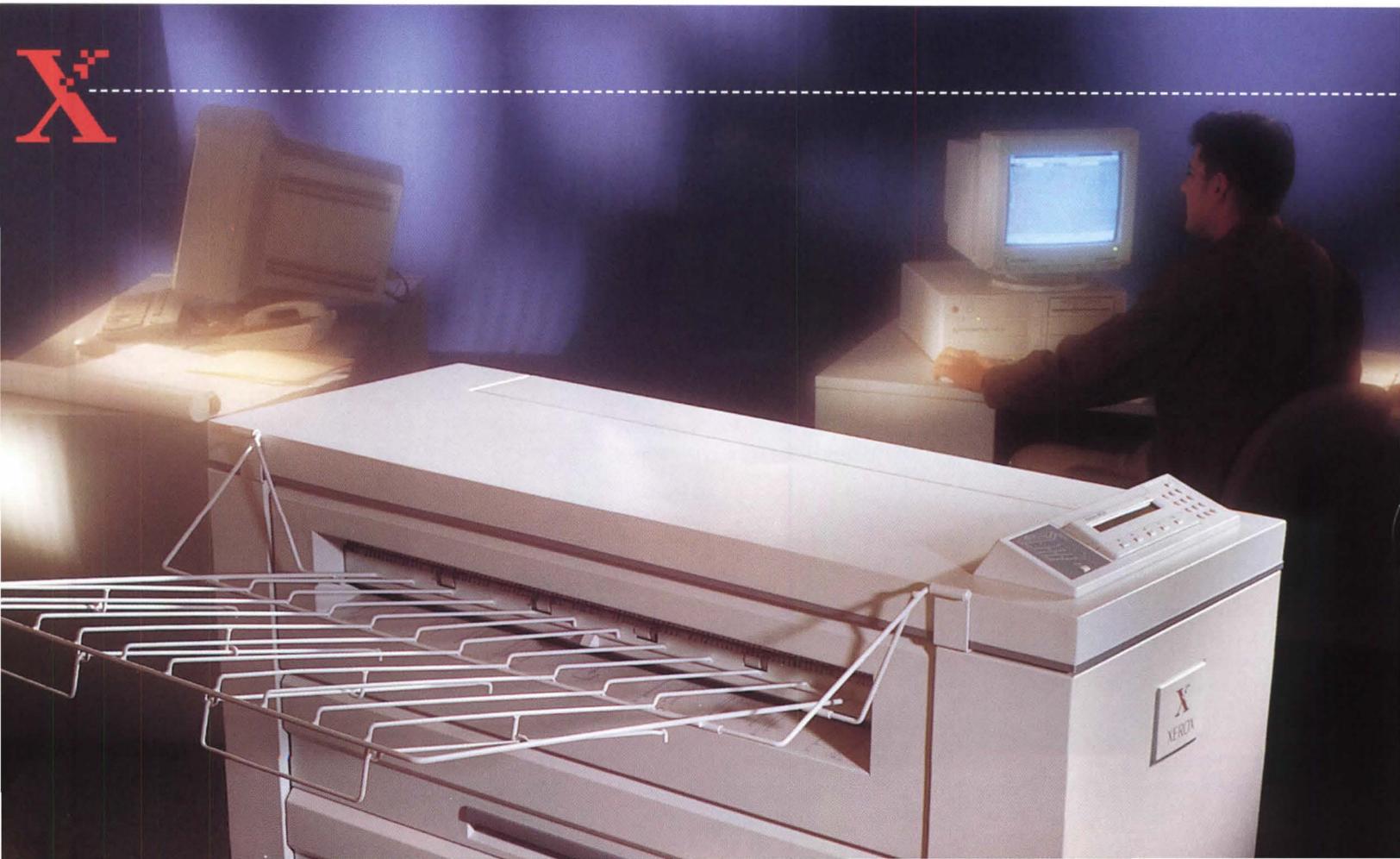
Urban housing plans from the ACSA/Otis Elevator competition.

Herbert L. Beckwith helped design 11 buildings there. He went on to become a professor at the school, where he taught until his death on June 3 at the age of 94. Beckwith's work also includes the U.S. Embassy in Taiwan.

New AIA vice president

Janet White joins the AIA as vice president of the education department, where she hopes to achieve the goals set by the board of directors concerning professional education and continuing education, as well as those in the Carnegie/Boyer study. White was formerly director of the Hammons School of Architecture at Drury College. She was actively involved in NCARB, NAAB, and ACSA.

Oklahoma City Memorial winner announced Barely two years after the bombing of the Alfred P.



Murrah Building, three young Berlin architects were named winners of the Oklahoma City Memorial competition. Hans-Ekkehard Butzer, Torrey Butzer, and Sven Berg of Locus Bold Design proposed a sloping lawn containing 168 stone and glass chairs, each inscribed with the name of a victim and illuminated at night. The lawn matches the footprint of the Murrah Building and faces a rectangular reflecting pool, landscaped terraces, and two formal "gates of time." The winning design, chosen from 624 submissions (RECORD, June 1997, page 31), will cost approximately \$8.8 million and will be completed by 2000.

1997 I.D.E.A.S. awards presented Honoring excellence in architecture that uses structural steel, the competition was co-sponsored by the American Institute of Steel Construction, Inc., and the AIA. National prizes were given to Chan Krieger & Associates, Cambridge, Mass., for their design of the Dis-

covery Museum entrance in Bridgeport, Conn., and to Leonard Parker Associates Architects, Inc., Minneapolis, Minn., for their expansion and modernization of a Lake Superior College facility in Duluth, Minn.

Increased construction activity bodes well for architects A survey of AIA member firms shows profits were up 13 percent last year and are expected to increase as much as 10 percent this year. More than two-thirds of the firms surveyed said they planned on adding staff this year. According to the AIA, growth in construction activity and a subsequent shortage of architects in many regions are accountable for the rising percentages. The South Atlantic states, South Central states, the Midwest, and California reported the tightest job markets.

Graphisoft competition winners chosen at live Webcast Using ArchiCAD and Apple Quick-

Timer VR, students from around the world created architectural models from works of literature and culture for a student competition cosponsored by the American Institute of Architecture Students and Graphisoft. The winning submissions were Webcast at the A/E/C Systems show in Philadelphia in June. Live Webcams, screen shots of the entries, and a live audio feed of the entire selection process constituted the online site. More than \$30,000 was awarded to the winners, including a first-prize work on Asgard from Norse mythology, and a second-place work on the Church of Reason from *Zen and the Art of Motorcycle Maintenance*.

Home improvers choose energy efficiency According to a Fannie Mae poll, 14 percent of those who are planning home improvements this year will be doing so to help conserve energy. Preceded only by kitchen improvements (15 percent), energy improvements—

including new windows and doors and upgrades of heating and cooling systems—remained more popular than building decks and renovating bathrooms.

Former AIA president takes public office Chester A. Widom, FAIA, of Widom Wein Cohen, will become sixth district representative to the newly formed Los Angeles Charter Reform Commission. Widom, along with 14 other elected representatives, will help restructure Los Angeles' city government.

Zzzzz Mark Hirsch of Hirsch Associates in Bristol, Conn., is including a "nap room" in his plans for the new Yarde Metals distribution facility in Bristol, where 220 employees will work around the clock. It's not an easy mandate; issues of gender separation, acoustics, lighting, and privacy need to be resolved. "We don't have many models to look at," Hirsch says. "We're not even sure what to call the space." ■

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DATES EVENTS BOOKS

Calendar

August 3–October 13

Los Angeles County Museum of Art

“Charles Rennie Mackintosh” is a traveling exhibition of the Scottish architect’s extensive body of work. A room, fully restored and reconstructed, from Miss Cranston’s Ingram Street Tea Rooms of 1900 is part of the exhibition. Call 213/857-6000.

August 14–16

San Jose Convention Center San Jose, California

Alternative workplace issues concerning people, technology, and environments in the corporate and home office will be addressed at the alt.office conference and exposition. Furniture and office products will be on view. For more information, call 800/950-1314 or visit <http://www.alt.office.com>.

August 24–27

Toronto, Canada

The International Council of Societies of Industrial Design will focus its biennial conference on the “Humane Village,” with the hopes of offering a new perspective on how design can help shape a more compassionate society. Call the Design Exchange at 416/216-2124 or E-mail dx@pathcom.com.

August 24–January 11, 1998

Design Exchange Toronto, Canada

“Shifting Gears: Green Transportation for the 21st Century” investigates new materials, technologies, and design innovations that have the potential to alter transportation conventions. Call 416/216-2160.

Through August 29

The Skyscraper Museum New York City

“Downtown New York: The Architecture of Business/The Business of Architecture” is the inaugural exhibition at the Skyscraper Museum, 44 Wall Street. Call 212/968-1961.

Through September 12

Municipal Art Society New York City

The streetscape of New York City may take on a new character, once plans to award a franchise for new street furniture are completed later this

year. The “21st Century Streetscape” exhibition will include full-scale objects and photos of contemporary examples. Also on view are “Fifth Avenue Design Competition,” a presentation of ideas by ten firms (through September 5), and “Columbus Circle: Five Proposals for the Coliseum,” a display of proposed plans for the embattled site (through September 1). Call 212/935-3960.

September 8

PBS Stations Nationwide

“Planet Neighborhood,” a three-part television series, looks at the ways people are using down-to-earth concepts and innovative technologies in their quest to preserve the environment. Hosted by architect William McDonough and produced by WETA with the National Academy of Engineering, the series airs 8–11 p.m. ET on PBS (check local listings). Call Liz Hall, Devillier Communications, 202/833-8121.

Through September 14

Whitney Museum of American Art New York City

“Frank Lloyd Wright: Designs for an American Landscape, 1922–1932,” a traveling show, examines five unbuilt proposals, through original drawings, newly built models, and computer reconstructions. Call 212/570-3600.

Through September 15

Boston Public Library Boston

The history and architecture of Boston’s famous festival marketplace are documented in “Images of Faneuil Hall Marketplace, 1789 to 1976” and “Celebrating a City: The Benjamin and Jane Thompson Collection of Bostoniana.” Call 617/536-5400, x280.

September 15–22

London, England

The AIA’s London/UK Chapter is sponsoring a seven-day program of tours and lectures in the city. Contact Norvista at fax 800/526-4927.

September 17–19

National Institute of Standards and Technology Gaithersburg, Maryland

Participants in the Fourth International Symposium on Roofing Technology will address “Challenges of the 21st Century.” For information, call the National Roofing Contractors

Association at 847/299-9070 or 800/323-9545 or E-mail nrca@roofonline.org.

September 17–19

Fairmont Hotel New Orleans

The AIA Committee on Architecture for Justice and the American Jail Association are sponsoring “IDEAS/2001: Jail Innovations for the Third Millennium.” For more information, call David Roccasalva at the AIA at 202/626-7418.

September 18

Embassy Suites Omaha, Nebraska

Sponsored by the Joslyn Castle Institute for Sustainable Communities, AIA-Nebraska, and others, the Sustainable Urbanization and Responsive Transportation Colloquium will focus on two subjects: how emerging models of sustainability may provide alternatives to urban sprawl and development; and interdisciplinary work procedures. To register, call Elizabeth Stevens, Castle Institute, 402/595-1902.

September 26–28

Prague, Czech Republic

The Continental European Chapter of the AIA is sponsoring a low-cost, three-day program of talks and guided tours on architecture and urbanism in the Czech capital. Contact Martina Tomasovicova at fax 420/2/265-702.

September 27–28

Points Hilton Hotel Scottsdale, Arizona

“Does Design Make a Difference?” is the question posed to participants in the AIA Committee on Architecture for Education, held with the Council for Educational Facilities Planners International. Call David Roccasalva at the AIA at 202/626-7418.

Through September 28

Canadian Centre for Architecture Montreal, Canada

“The Architecture of Reassurance: Designing the Disney Theme Parks” is the first exhibition to explore the origins, intentions, and strategies behind Disney’s influential theme parks. For information, call 514/939-7026.

September 29–October 2

Marriott Waterside Norfolk, Virginia

The 82nd annual conference of Building Officials and Code Administrators International will include business (*continued on page 156*)

"Architecture isn't just methodology and science. It's a chance to invent another reality."

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LISTENING TO: Landscape Architects

WHAT DO THEY THINK OF ARCHITECTS?



By **Andrea O. Dean**

Illustrations by Lebbeus Woods for ARCHITECTURAL RECORD

Often collaborators and consultants, sometimes competitors and star-crossed partners, landscape architects and architects bring different perspectives to their relationships with each other. To help bridge the gap that often separates architects from other design and construction professionals, ARCHITECTURAL RECORD is beginning a series of occasional articles in which voices from related disciplines will be given a forum. Earlier this summer RECORD assembled a panel of landscape architects at AIA Headquarters in

Washington, D.C., to tell us what was on their minds. The participants were Dennis Carmichael (EDAW), Colin Franklin (Andropogon), Peter Walker (Peter Walker and Partners/Martha Schwartz), Michael Van Valkenburgh (Michael Van Valkenburgh Associates), William Roberts (Wallace Roberts & Todd), Patricia O'Donnell (Landscapes), Joseph Lalli (EDSA), and James van Sweden (Oehme, van Sweden & Associates). The moderator was RECORD editor in chief Robert A. Ivy. Next month, we listen to interior designers.

Most architects think they understand landscape architecture and its practitioners, but the picture conveyed by the panel we convened was of a profession only slightly more familiar than, let's say, entomology or constitutional law. How many architects would guess, to start with compellingly down-to-earth matters, that entry-level landscape architects tend to earn more than their counterparts in architecture? That landscape architects suffer less severely from economic fluctuations and cycles? That their responsibilities and opportunities are expanding just as those of architects seem to be narrowing?

And how many architects would acknowledge this: "Not only are we landscape architects not nervous about dealing with chaos, but sometimes it is what we like to play with best, because we are trained to understand large natural patterns and to recognize that chaos has an order or pattern to it that we can comprehend. Architects are a little nervous about chaos; they like order."

Or how about this one: "We're much more comfortable than architects [in] so-called controversial projects that require working with committees and various groups, filtering information and giving the client several possible intelligent decisions. Architects want to give clients the answer, and quickly."

These statements were made by Dennis Carmichael, ASLA, a vice president of the Alexandria, Virginia, office of EDAW. With 415 employees in 15 offices, it is an unusually large landscape architecture firm, but Carmichael's belief that he and his colleagues tend to take a more holistic, less linear approach than architects was a pervading theme of the roundtable. Listen, for example, to Colin Franklin, who was trained as an architect and then became a founding partner of the 20-person, ecologically oriented landscape firm of Andropogon in Philadelphia. "Architects working on complicated buildings want to narrow a problem down. We have difficulties with that. Landscape architects like best to ask questions, expand the boundaries, find out how the whole thing works. It's a Sherlock Holmes thing. We are much more comfortable than architects in open-ended collaborative situations. Architects traditionally haven't been trained that way."

"I didn't know you did all that."

Landscape architects think they know far more about how architects work than architects know about them. Peter Walker, FASLA, a partner in the 30-person Berkeley, California, firm of Peter Walker and Partners/Martha Schwartz, Inc. and the chair of the University of California at

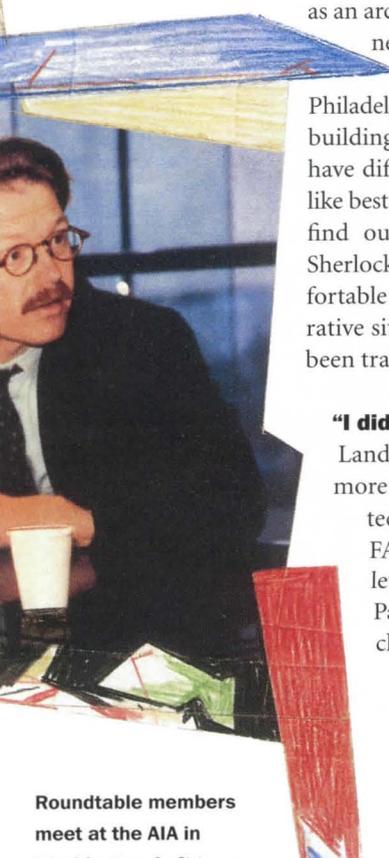
Contributing editor Andrea O. Dean is editor-at-large of Preservation magazine and a contributing editor of Landscape Architecture.

Lebbeus Woods is an architect in New York City who has exhibited his drawings in galleries and museums around the world. His latest book, Radical Reconstruction, was published earlier this year by Princeton Architectural Press.

Berkeley's landscape architecture department, told the panel what happens when he visits his architect clients every three or four years. "I give them a slide show to remind them of the breadth of services that we offer. Their response is always, 'I didn't know you did all that.'" What he tells his clients is that his firm will not only site a building, but evaluate the forces that may shape or affect its form, such as existing urban design configurations and wind and waterflow patterns. He tells them that he has planned and designed plazas, courtyards, recreation systems, and parks; built and rebuilt roads and trails; planned new communities and towns; restored wetlands; reclaimed toxic landfills and extraction areas. Most of the panelists could present a similar list.

If time permits, Walker will remind his client that in founding the profession of landscape architecture in America, Frederick Law Olmsted, Sr., lashed together the science of farming or husbandry (now called ecology), civil engineering (now referred to as infrastructure), and sociology. The last, Walker stresses, was the generator of most of Olmsted's work, including his winning 1858 competition entry, submitted with Calvert Vaux, for New York City's Central Park. That commission transformed Olmsted into a man of purpose, obsessed with the democratic ideal of making nature accessible to all.

In the process of popularizing the idea of public parks in America and designing brilliant examples, Olmsted defined a profession that often deals with large sites posing complex environmental, social, and cultural problems, a profession that is predisposed to view even small sites as part of a larger context. A conceptual approach to design, while optional in architecture, is essential in landscape architecture.



Roundtable members meet at the AIA in Washington. Left to right: Lalli, van Sweden, O'Donnell, and Van Valkenburgh.

Peter Walker makes a point to fellow landscape architects.



Joseph L. Lalli, FASLA, the managing partner of EDSA, a Fort Lauderdale- and Orlando-based firm of 80 landscape architects and planners that has worked on hotels, new communities, and public-sector projects, explained, “We seem to have an ability to look at a bigger kind of thing. A lot of architects get so down to looking at a micro scale it doesn’t seem to fit into the whole, the bigger picture.”

Less fashion and style, say landscape architects

Another obvious difference in the way the two design professions approach their work, the panel members asserted, is that landscape architects are more attuned than architects to conceiving a project as an experience rather than as an orthogonal design. James van Sweden, FASLA, president of Oehme, van Sweden & Associates, a 21-person practice in Washington, D.C., stressed that fashion and style play a smaller role in landscape architecture and that while “most architectural work will never look better than on the day it is completed, that of the landscape designer’s will never look worse.” Van Sweden’s firm specializes in private

architecture is the breadth of its domain. And while the influence and jurisdiction of architects has narrowed in recent years, in line with tighter budgets and the increasing authority of construction managers, the scope of landscape architects’ work has expanded. (Architects, though, are trying to regain control over more of the building process. The AIA, for example, has launched an initiative called “Practice and Prosperity,” aimed at expanding architects’ scope of services from pre-design to postoccupancy.)

From designing Central Park, which started as an improvement project on Manhattan’s outskirts, landscape architects have broadened their sights to reclaim huge industrial areas and create plans for entire counties, new communities, campuses, ports, airports. “There’s a lot of

WHILE MOST ARCHITECTURE WILL NEVER LOOK BETTER THAN ON THE DAY IT IS COMPLETED, MOST LANDSCAPE DESIGN WILL NEVER LOOK WORSE.

gardens and urban parks and recently created the landscape design for the winning entry in the World War II memorial competition, the controversial final major addition to the capital city’s Mall.

Landscapes undergo substantial change; they are ephemeral, which has its remunerative advantages, noted Patricia O’Donnell, FASLA, a principal of Landscapes, a five-person practice that specializes in preserving historic landscapes and has offices in Westport, Connecticut, and Charlotte, Vermont. O’Donnell includes in her reports to clients recommended plans for future upkeep and renewal. Overall, landscape architects claim high rates of repeat clients. Lalli said that EDSA has up to 85 percent repeat clients, while Carmichael placed EDAA’s percentage at up to 50 percent. William H. Roberts, FASLA, a founding partner of the 110-person interdisciplinary firm of Wallace Roberts & Todd of Philadelphia, San Francisco, San Diego, and Coral Gables, Florida, reported a rate of up to 65 percent for his firm.

But by far the most striking characteristic of landscape archi-

work out there,” said Michael Van Valkenburgh, FASLA, the chair from 1990 to 1996 of the Harvard Graduate School of Design’s landscape architecture program and founder of Michael Van Valkenburgh Associates, a nine-person practice in Cambridge, Massachusetts. Van Valkenburgh regrets that the most talented young people tend to be attracted to architecture, largely because they know nearly nothing about landscape architecture.

In fact, three of the panelists began as architects—van Sweden, Franklin, and Roberts—and subsequently became attracted to landscape architecture by the opportunities it affords to tackle complex and significant problems. Franklin explained that his firm has worked on ports and airports in Third World countries where the wrong site plan “might have obliterated 10 small towns or flattened a mountain. As a landscape architect-planner who knows what will happen to the environment,” he said, you become central. “You may not get to do nice design work, but you’re having an important impact.”

Propelling the profession's expansion during the last 25 years have been community planning, an increase in regulations, and the environmental movement. Legislation that established the Environmental Protection Agency in 1969 "created a mandate for environmental investiga-

You would assume that a significant degree of disunity exists in a profession embracing ecologists who don't concern themselves with construction and designers who make a profession of it. So it appeared during the early part of the session; talk centered on "schisms" and "dichotomies." But Van Valkenburgh shifted the discussion's direction, saying, "You don't have to make a choice here. The programmatic imperative of being environmentally sensitive has become a kind of founding ground for landscape architecture, just as functionalism was a part of the Modernist movement."

The conversation increasingly described a profession of exaggerated divisions important mainly to academics. The panelists turned their attention to their shared interests and characteristics, their working relationships with architects, and present and future trends in their own profession.

Common to all landscape architects is an environmental ethic. Roberts spoke of a moral calling. "I think that in the field there is

tion, which was a terrific source of work. It legitimized us," said Carmichael. Panel members and their practices did not reflect basic changes that environmental legislation and regulations brought to the profession, O'Donnell pointed out. Today, landscape architects who work for public agencies constitute 20 percent of the profession. By contrast, only 3.8 percent of architects are in public service. Some landscape architects work for agencies that build, such as parks and public works departments, the National Park Service being the largest single U.S. employer of landscape architects. Franklin explained that the nature of design work for public agencies has also changed: the job of some landscape architects, for example, consists entirely of consensus-building for planning and design decisions.

Some don't design at all

Still another breed of landscape architect doesn't design at all, but works for government agencies on such policy issues as land-use planning, watershed maintenance, and forest management. Many of the schools, said Walker, give the Master of Landscape Architecture degree in environmental planning, a discipline concerned with regional plans, national preserves, and the like. Unlike city planning, environmental planning generates no buildings and, being protectionist, "often resists construction," said Walker. To which Robert Ivy responded rhetorically, "Isn't that a defining difference between landscape architects and architects?"

Walker, Carmichael, Lalli, van Sweden, editor in chief Ivy, and Andrea Dean discuss the issues, while an idealized landscape overtakes the conference room in Lebbeus Woods's drawing, above.



Landscape architects moved quickly from their role in history to fees, from education to the environment.

a commonality of taking the high road, having a moral integrity toward managing resources and saving the planet.” At this point Van Valkenburgh interjected, “The sappiness that comes along with that is a real problem in the profession. I think it makes a lot of confusion to get preachy, as we do, about what we do.”

Turning to the profession’s relationship with architects, the panelists described a love-hate affair. “The love part is when a collaboration is a true, honest-to-God respectful one. The hate part is when we’re not treated with consideration but brought in after the building design and the site plan are complete to shrub it up,” said Carmichael. The panel agreed that productive alliances improve the work of both professions, but none denied the existence of landmines for landscape professionals who work as subcontractors for architects. Franklin, who called his firm’s relationships with architects “very good but always fraught,” remembered instances of “being brought into a project as the landscape architect/environmentalist or the landscape architect/sustainable designer on a team to have our ideas totally subverted by a budget whose sole focus is the building.” It was stating the obvious, he said, to assert that most architects don’t regard landscaping as a high priority.

Different mindset than architects

Nor does it help that architects and landscape architects tend to approach projects with different mindsets, the landscape architect being more inclined to give at least as much weight to process as to product. (Architects, however, might argue this point.) There is also a matter of ethics: the way the panel saw it, the architect represents the client, while the landscape architect feels an obligation to also represent the interests of the environment, the community, and even the culture. “You often stand right where the warring factions come together on positions that are not easily resolved, and no amount of roundtabling is going to resolve them,” said Walker.

“MY RELATIONSHIP TO ARCHITECTURE IS LESS SATISFYING THAN MY RELATIONSHIP TO CERTAIN ARCHITECTS,” STATES WALKER.

He further recalled that the Modern movement brought with it a belief in interdisciplinary collaboration, and he noted that Roberts’ firm, founded by two landscape architects (Roberts and Ian McHarg) and two architects (David Wallace and Thomas Todd), is an unusually successful example of interdisciplinary teamwork. Wallace Roberts & Todd is, however, an exception, according to the panel participants, as are true collaborations between the professions. “My relationship to architecture is less satisfying than my relationship to certain architects,” Walker concluded.

Lalli observed that collaboration required more than mere par-

ticipation on a team: “It means you’re an active contributor to all parts of the design process.” O’Donnell later mentioned in a follow-up telephone interview that she routinely gives architects with whom she will work a list of conditions for collaboration. The list demands, among other things, that her firm be privy to all communication with the client and that she be allowed to review all documentation that is presented to the client in time to react and suggest changes. Often

forgotten, she said, is that architects and landscape architects have an important common interest: the “growing of good clients. We all know from our own experience that when our peers give us awards it’s because we had a good client.” And the more enlightened the clients become, the better the chances of also enlightening the public about design.

The surest way for a landscape architect to escape the problems of subcontracting is to work directly for a client, and every panelist mentioned it as the preferred arrangement. Although direct contracts remain the exception, they are becoming the norm for designers who have gained broad renown (Walker, Van Valkenburgh), have strong track records in large-scale commercial or institutional work (Lalli’s

EDSA, Carmichael’s EDAA, Roberts’ WRT, and Oehme, van Sweden), or have sought-after specialties (O’Donnell’s preservation emphasis, Franklin’s expertise in ecological design and planning).

There are, further, at least two types of projects for which clients are increasingly hiring landscape architects directly with the expectation that they will lead the team: projects that reclaim environmentally damaged sites, and controversial projects, such as wetlands restoration and community planning projects, that require building a consensus, a process requiring an open-ended approach, rather than a simple choice between two alternatives.



What about sprawl?

How ingrained such an approach is among landscape architects became apparent when Ivy asked the panelists to talk about issues that concerned them. What, for instance, was their stance on sprawl? The panelists agreed that, yes, sprawl and the automobile culture are deplorable, but suggested that the phenomenon must be understood in all its contradictions. The cause of sprawl is not always what you are led to believe, one speaker pointed out. In Los Angeles, for instance, sprawl followed the path not of roads but of railroad tracks that once covered the area. He also pointed out that freeways might not be all bad, since they join widely scattered people with common interests into a community of sorts. The approach was to ask questions; solutions or a stance might emerge later.

Of course, solutions didn't emerge in this meeting, but Lalli, whose firm has planned and designed new

thing Lite, dumbed-down." No one disagreed, but most panelists saw another side of the argument. Carmichael, for instance, pointed out that a worldwide reaction against homogenized, synthetic culture has set in. His firm and Lalli's are among several that have made a specialty of planning and designing large commercial and residential projects that attempt to retrieve the individuality of a region and culture.

Franklin finds that often his role in a project is "just to reveal a group's place to them." Similarly, along with our culture's tendency to oversimplify complex issues, there exists an opposite tendency, said *(text continues on page 160)*

residential communities in the United States and abroad, observed that the preferred model now tends to be a mix of the so-called New Urbanism—with its town centers and walkable distances—and the more open conventional suburb. Carmichael asserted that "developers have learned that good design equals return on investment. Rather than bulldozing a site into submission, they now try to celebrate its intrinsic qualities."

Another issue that is of great concern to both landscape architects and architects, said Van Valkenburgh, is that "the 99.999 percent of the world out there, which none of us does work for, consists of a Balkanized public of warring interest groups. The majority knows little and cares less about design and wants every-



Some panelists manage multidisciplinary firms. Left to right: Bill Roberts (Wallace Roberts & Todd), Colin Franklin (Andropogon), and Dennis Carmichael (EDAW).

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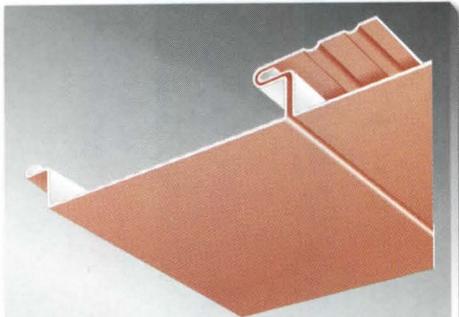
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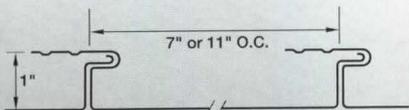
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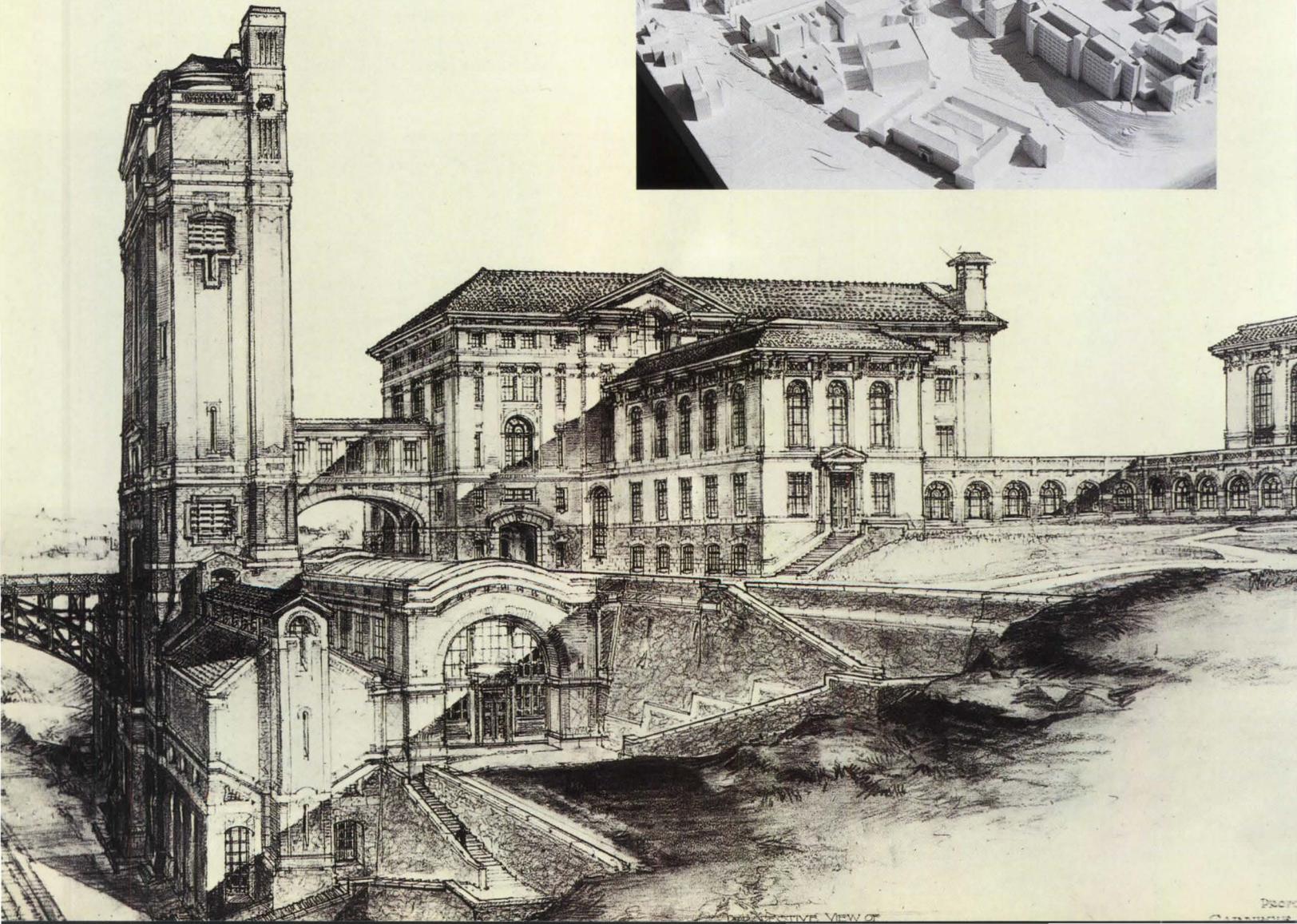
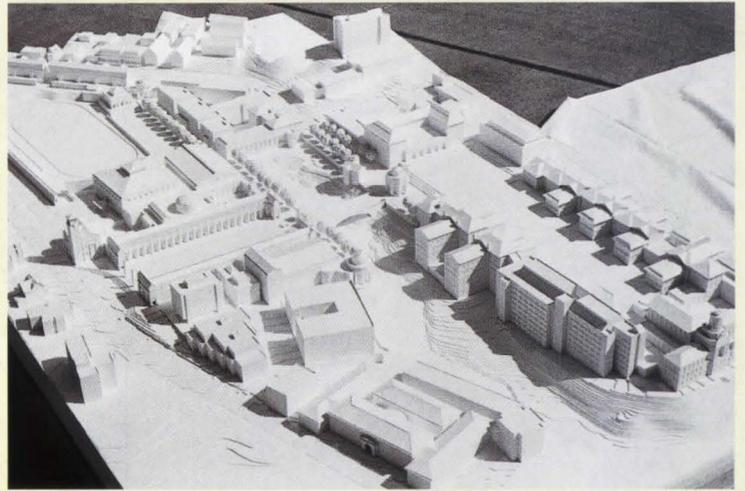
*The Capital City Airport
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 Color: Sandstone
 Profile: Flush Panel*

*Rubenzer Residence
 Prior Lake, MN
 Architect: Bruce Lehrer Architect
 Roofing Contractor: D.H. Nygren/
 Specialty Systems
 Color: Stone White.
 Profile: Flush Panel*



Henry Hornbostel's first master plan for Carnegie Mellon University (early sketch, below; as built, above)

precinct for learning. Its urban qualities were extended in Michael Dennis's competition-winning scheme (to left in model).



PROJECT DIARY: After 12 years, three buildings, and \$100 million, the **UNIVERSITY CENTER** respectfully extends a singular campus vision.

by Mildred F. Schmertz, FAIA



It is rare that a single architect is able to put his personal stamp on an entire college campus. At 93-year-old Carnegie Mellon University (CMU), in Pittsburgh, this has happened not once but twice. Henry Hornbostel created a Beaux Arts ensemble of unusual formal legibility and power. In ensuing decades, however, Hornbostel's vision, out of style, was ignored as the campus grew. Beginning in 1987, CMU again chose one architect, and charged him with reordering the campus while recognizing its original vision.

1904-1932 The New York City firm of Palmer and Hornbostel beats 44 competitors to master plan a campus for the proposed Carnegie Technical Schools (soon to become Carnegie Institute of Technology), underwritten by steel baron and philanthropist Andrew Carnegie. The 32-acre site, donated by the city, is in Pittsburgh's Oakland district, a fast-growing cultural enclave on the hills above the smoke-belching river-bottom steel mills. Carnegie (1835–1919) foresaw that technical education would be increasingly demanded by rapidly modernizing industrial society.

Hornbostel's plan was consistent with other eclectic campuses of the time. Carnegie, along with such educational philanthropists as Leland Stanford at Stanford University and John D. Rockefeller at the University of Chicago, envisioned cities of learning, shaped by contemplative quadrangles or offering inspirational vistas climaxed by important buildings. Although it owes a formal debt to Thomas Jefferson's University of Virginia and the academic work of McKim, Mead & White,

Mildred F. Schmertz, FAIA, a Pittsburgh native, writes about architecture for several publications. She was a longtime editor at RECORD and was editor-in-chief from 1985 until her retirement in 1990.

Hornbostel's plan is unique. Its abstracted forms and some of its characteristic materials—cream-colored brick, white terra-cotta trim, pale gray granite, and exposed concrete, punctuated by polychrome bands of terra cotta and black roof tiles—are akin to the structures of steel and rail-roading. These are industries, after all, where graduates are expected to find careers. Architectural historian Walter Kidney, in the new edition of *Pittsburgh's Landmark Architecture* (published in 1997 by the Pittsburgh History & Landmarks Foundation), describes the result as “an almost white campus with occasional touches of strong color, theatrically presented.” Hornbostel revises his master plan in 1906 and 1911, and designs nine buildings, enough to establish a consistent and fully realized campus identity, completing the last, a gymnasium, in 1932.

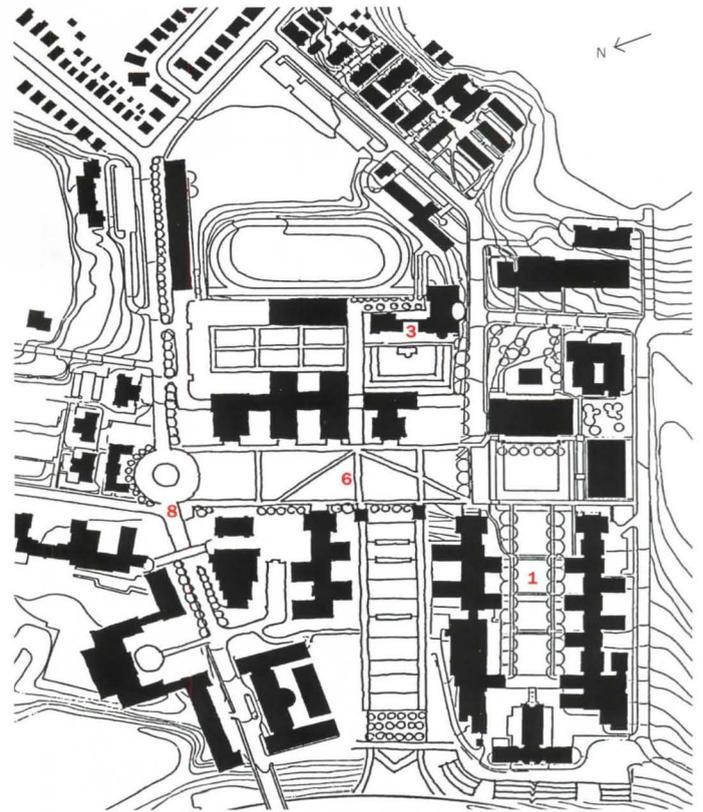
Project: University Center, Carnegie Mellon University, Pittsburgh
Architect: UDA/MDA Architects, a Joint Venture—Michael Dennis, principal-in-charge; Erik Thorkildsen, project architect; Daniel Boxx, AIA, Edgar Adams, Pamela Butz, Deborah Collins, Stephen Dadagian, Gerard Damiani, Lori Geissenhainer, Kimberly Genereux, Elizabeth Kamell, Glenn Knowles, David McCullough, Michael O'Keefe, Luca Ricco, David Tabenken, Beth Worell (MDA team); Donald K. Carter, FAIA, Raymond L. Gindroz, AIA, principals-in-charge; James P.

Goldman, AIA, principal; Paul Ostergaard, AIA, Karen Loysen, AIA, Alan Chu, Eric Clapper, Stephen Englert, John Figel, Margaret Flinner, AIA, Peter Kreuthmeier, Barry Long, AIA, Michael Zanolli, Donald Zeilman, AIA (UDA team)
Engineers: Dotter Engineering (structural); Peter F. Loftus Division, Eichleay Engineers (mechanical)
Consultants: GWSM (landscape); William R. Thornton (acoustics); Maguire Hilbish Associates (lighting)
Construction Manager: Turner Construction



Walter Kidney describes the style of Henry Hornbostel (above), especially at CMU (below), as “a personal kind of Beaux Arts, quite classical in some details, quite free in others.”

Henry Hornbostel, disciplined eclectic: Brooklyn born, and trained at the Ecole des Beaux Arts, Henry Hornbostel (1867–1961), Carnegie Mellon’s first master planner, had an active practice in New York City until World War I. He remains best known there for the Hell Gate, Queensboro, and Williamsburg bridges. His ability to marry Beaux Arts forms with the industrial underpinnings of 20th-century construction served him well in Pittsburgh, which became his principal base. In 1905 he accepted an appointment as a professor of architecture. His program included night school, with tuition pegged at \$5 a year for Pittsburgh residents and \$7 for nonresidents. This early atelier was to become the architectural department of the College of Fine Arts, with Hornbostel as chairman. Though he worked at CMU for 30 years (some of it shown, left), his proudest campus achievement was the College of Fine Arts, completed in 1916. It was originally named the School of Applied Design, but Hornbostel always intended that the arts taught in his cherished building were to be fine, not applied, and that each would occupy a space that best expressed its nature. Intricately fitted into a U-shaped Renaissance palazzo, with three five-story wings surrounding the low projecting pavilion of its grand foyer, are the five fine arts: sculpture in the basement; drama on the main floor; music above; architecture in vast drafting rooms on the fourth floor; painting at the top, under the skylights. The Depression and World War II ended both campus construction and other work. His 42-year career was over. When building resumed after the war, Hornbostel was in his 80s, a little late for a fresh start. He would no doubt have struggled even had he been younger. His was a great Beaux Arts style, which, by the 1950s, was in complete disrepute. —M.F.S.



CRSS MASTER PLAN, 1985

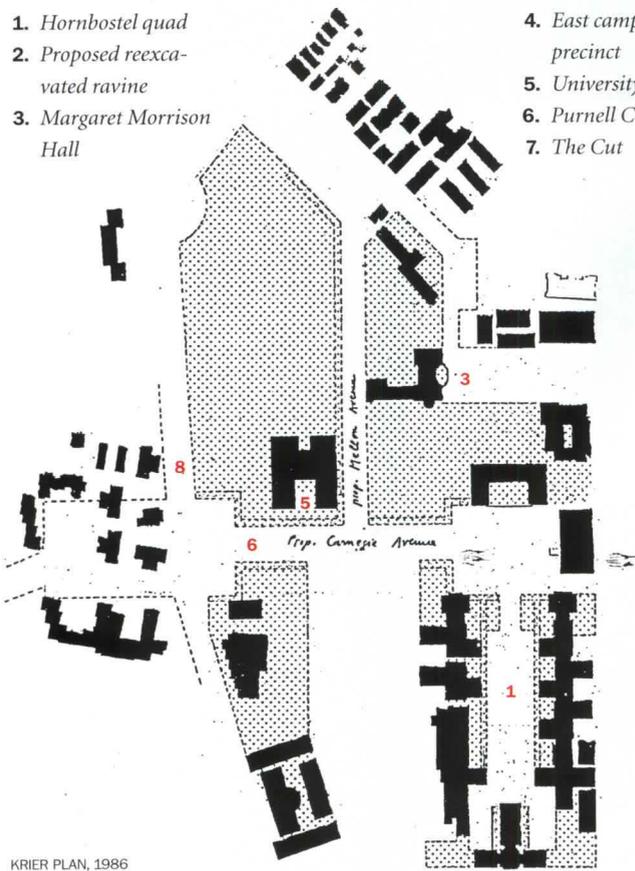
1932-1984 The acceptance of Modernist theory comes late to Pittsburgh, but by the 1950s most architects have become converts. The campus planners who follow Hornbostel—Githens and Keally in 1938 and Sasaki Dawson & DeMay in 1968—accommodate CMU’s rapidly expanding postwar student population with little regard to the pattern set by Hornbostel. Indeed, their initiatives lack a controlling architectural form, and chaotic development follows. Nearly all the work is done by leading Pittsburgh firms. Modernists all, their architecture expresses the school’s technical orientation through exposed structure and, for the most part, metal-and-glass cladding. Except for the the Hunt Library (1961), by Lawrie & Green, none of the buildings even acknowledge Hornbostel’s plan. In 1967 Carnegie Tech is renamed Carnegie Mellon University.

1984-1990 By this time the student commons, built in 1960, is deemed inadequate, requiring additions or complete replacement. The Department of Drama in the College of Fine Arts has long outgrown its space and requires a separate performing arts center. CMU once again decides that a new long-range master plan is needed. A master plan by CRS Sirrione, completed in 1985, proposes reinforcing the eastern edge of “the Cut” (which, ironically, is a filled ravine) with new construction. The Cut is a green swath perpendicular to Hornbostel’s lawn that links the original campus to Forbes Avenue, the key approach road (campus plans, above). In 1986 Leon Krier further clarifies the emerging campus diagram by proposing that a secondary east-west axis CRSS proposed be extended as

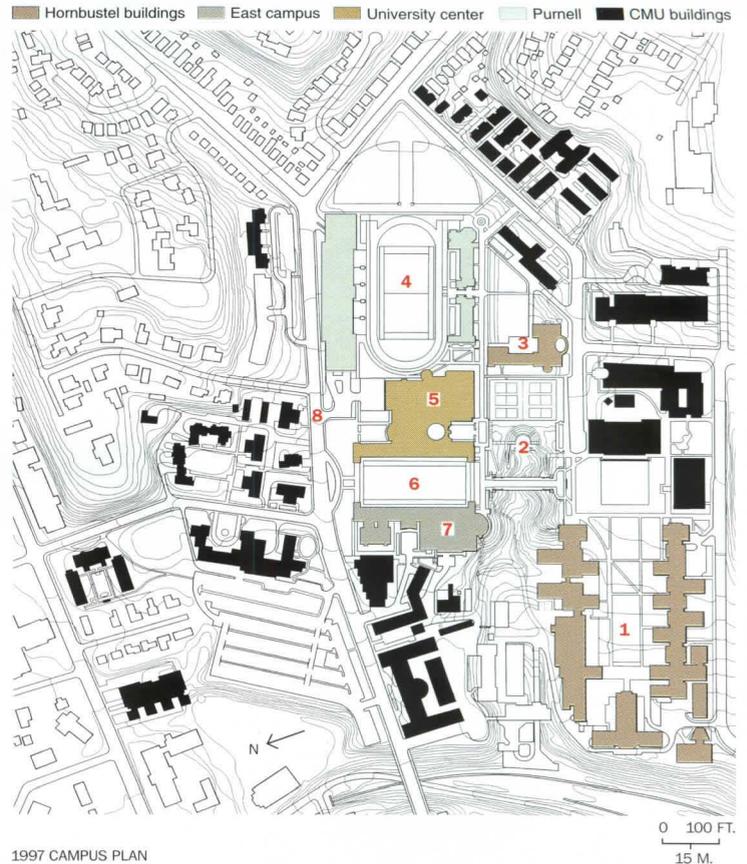
The master plan of CRSS was the first to propose unifying student athletics, dining, meeting, and performing arts in one campus complex. Leon Krier suggested the integrated urbanity realized by Dennis.

1. Hornbostel quad
2. Proposed reexcavated ravine
3. Margaret Morrison Hall

4. East campus precinct
5. University Center
6. Purnell Center
7. The Cut



KRIER PLAN, 1986



1997 CAMPUS PLAN

a pedestrian street to the eastern boundary of the central campus, which would be divided into four quadrants infilled to create a more coherently urban environment. These studies become the basis of the program for the University Center competition, held in early 1987.

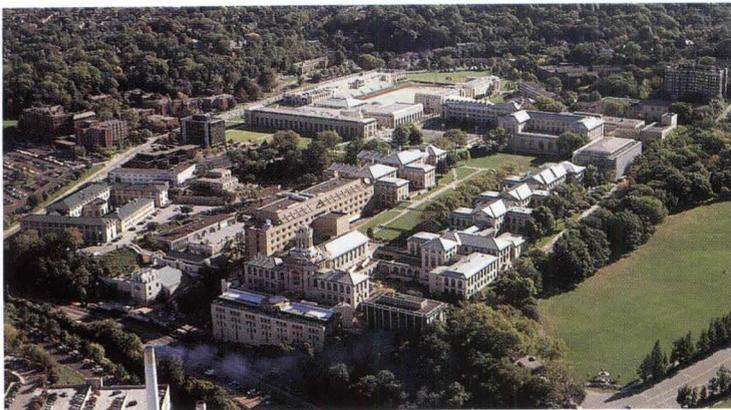
The jury's criteria show that critical judgment has come full circle: they seek a design "that will equal the quality of the original quadrangle designed by Henry Hornbostel." The great Beaux Arts architect, his style so recently devalued and abandoned, is back in the pantheon.

The jury chooses the scheme submitted by Michael Dennis, Jeffrey Clark & Associates with TAMS, lauding the way it "reaffirms the best of Carnegie Mellon while suggesting a means of shaping the future of this fine campus." (Other participants in the invited competition are Koetter Kim & Associates; Machado and Silvetti Associates; Skidmore, Owings & Merrill's New York City office; Damianos & Associates with Geddes Brecher Qualls Cunningham; and Jung/Brannen Associates.)

The winning plan subtly recalls Hornbostel's original in its use

of axial quadrangles formed by building walls. The Cut is reworked as a new quadrangle, with a student-union building to its east and a performing arts center to its west. It has a gateway onto Forbes Avenue, creating a genuine college entrance for the first time. The plan also shows the restoration of the upper part of a ravine that once ran parallel to Hornbostel's quad. Its picturesque landscape would demarcate the two master plans, yet a bridge reminiscent of one Hornbostel once proposed would tie them together.

Today, planners tend to be invited to build little or nothing of what they propose. Indeed, CMU might have seemed more "responsible" had it chosen a more experienced firm to execute Dennis and Clark's scheme. Dennis's firm was small, but an earlier, unbuilt student center proposal was well thought of, as was his book, *Court and Garden*, about Paris' elegant 19th-century housing. But Dennis credits Ted Nieremberg, a trustee, for convincing Carnegie Mellon that such a small firm would work harder to get the project right.



1991-1995 Dennis and Clark are awarded the design of the first phase of the complex, what is called the east campus precinct. They take the project through design development, then hand it off for completion to TAMS, a Boston firm. "Before this competition," says Dennis, "Carnegie Mellon had an intellectual reputation but had terrible facilities for student life. There is extreme competition for students, and the university made a commitment to reorganize the campus and build facilities that improved the atmosphere." New athletic fields form an active-play quadrangle surrounded by a new dormitory and bleachers built over a parking garage. Occupied in 1990, the east campus sets the tone for the new center by creating urban street walls along Forbes Avenue and the definition of the new east-west pedestrian way called for in CRSS's plan. (text continues)

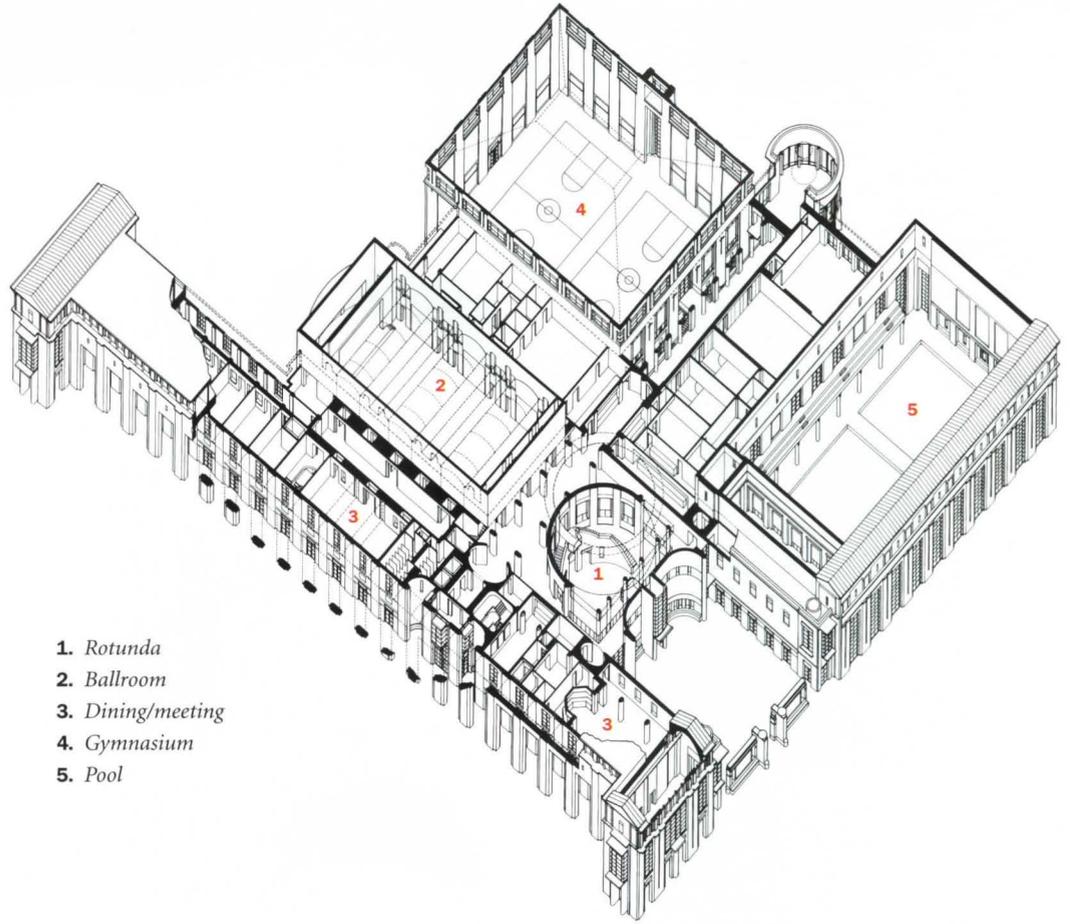
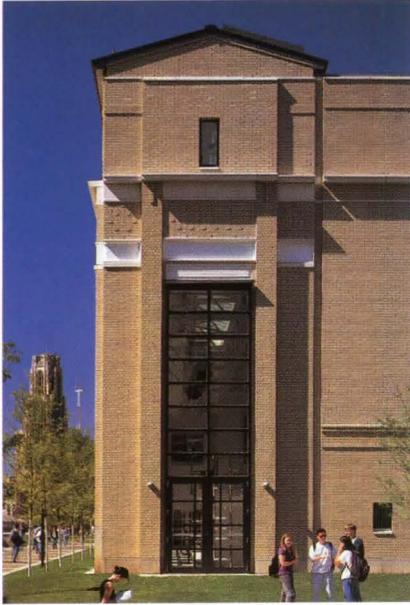


The University Center (foreground, above) extends the street wall along a pedestrian path first defined by the east campus precinct Dennis completed in 1990 (background, above). The center's south elevation faces tennis courts (right),

which Dennis hopes will become the top of a picturesque ravine. An entry court and rotunda (opposite) divide the end pavilion of the University Center's meeting and dining areas from the larger volume enclosing the pool.

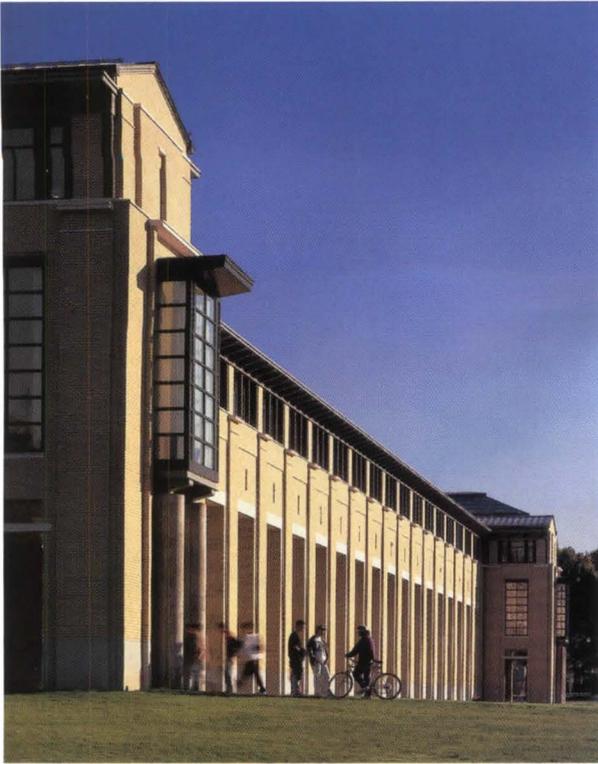


Though the materials resemble Hornbostel's and the architectural language evokes Classicism, the proportions are Dennis's.



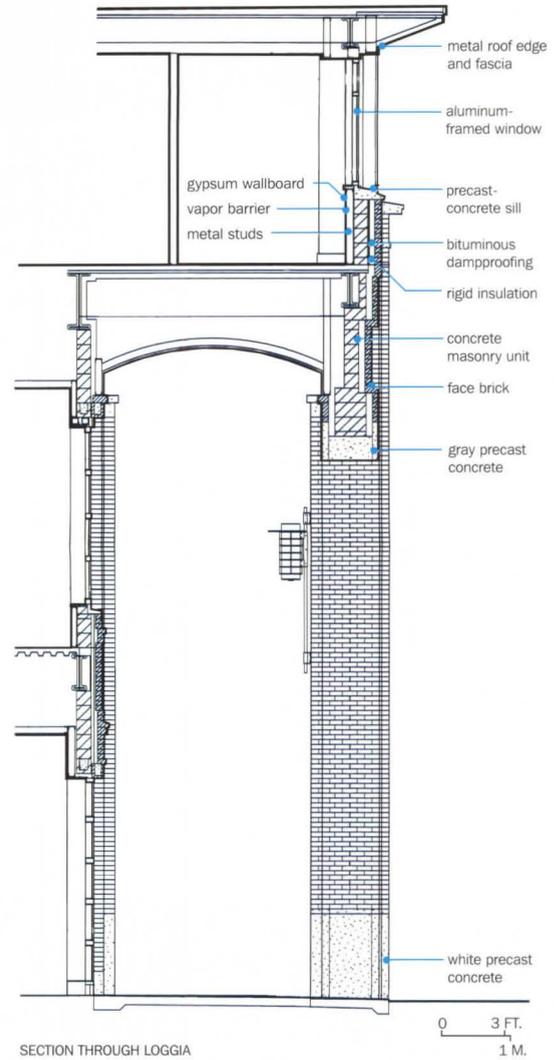
1. Rotunda
2. Ballroom
3. Dining/meeting
4. Gymnasium
5. Pool





The University Center's west-facing loggia will enclose the Cut with a quadrangle once the Purnell Center for the Arts is completed. The quad will also create a welcoming entrance for the university on

Forbes Avenue (to the left in photo bottom), which it has not had. Dennis located numerous dining and meeting rooms behind the loggia, assuring that it would be an active space.



Dennis counters the monumentality of the two-story-high loggia with a delicate, glazed bay window.



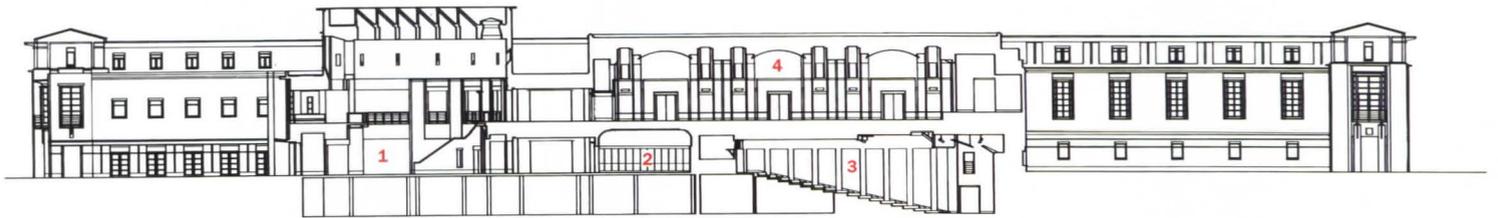
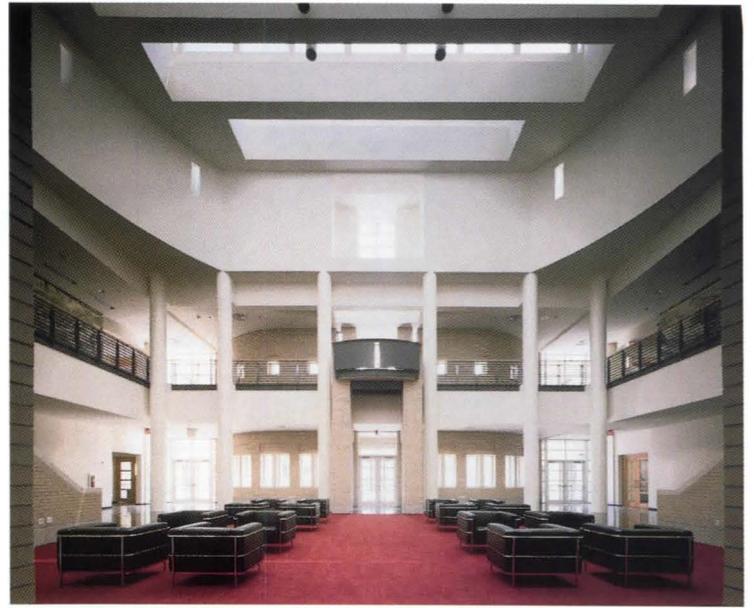


The rotunda hall (this page and opposite top) and surrounding spaces form the chief meeting places in the university.

Within the University Center, Dennis's team orchestrated a sequence of spaces (section below), from the rotunda commons to a multipurpose

space, an auditorium, and a ballroom. Meeting and dining rooms, most of which are located behind the loggia, reflect its tall proportions (bottom).

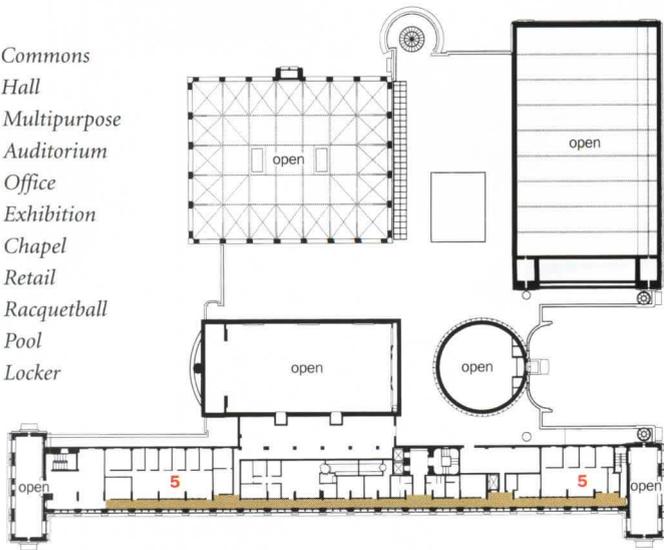
1. Rotunda
2. Multipurpose
3. Auditorium
4. Ballroom



NORTH-SOUTH SECTION THROUGH COMMONS

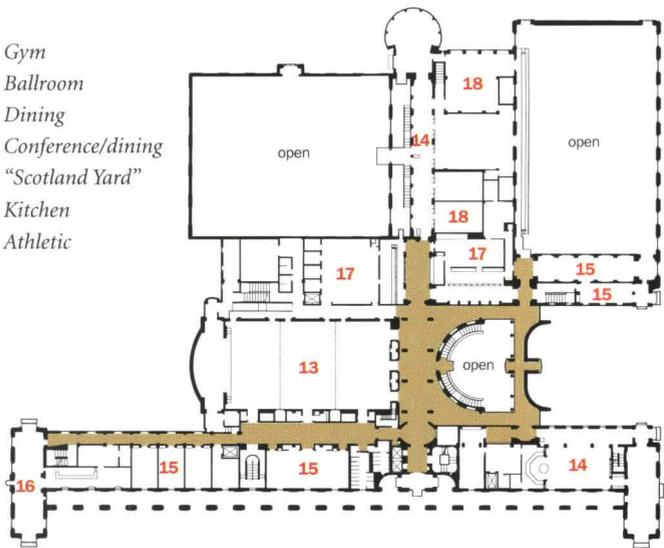


1. Commons
2. Hall
3. Multipurpose
4. Auditorium
5. Office
6. Exhibition
7. Chapel
8. Retail
9. Racquetball
10. Pool
11. Locker

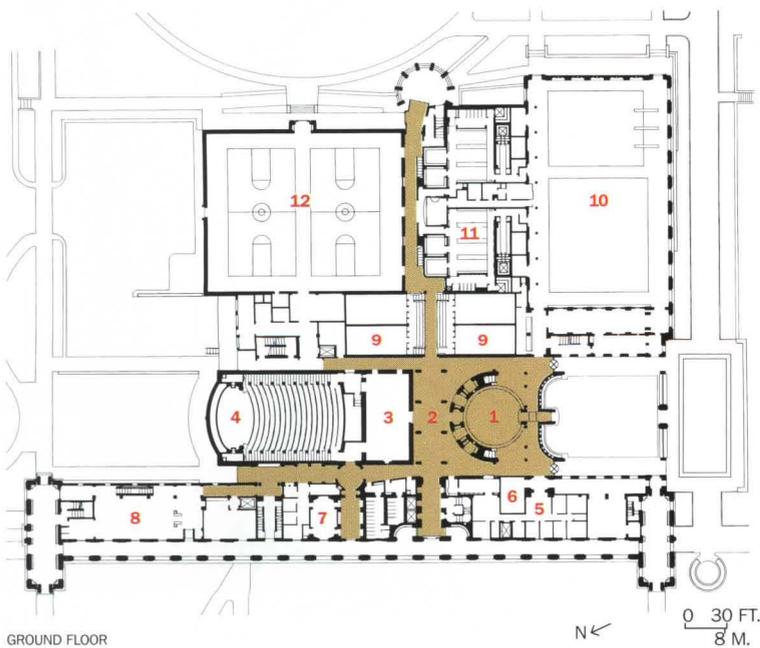


THIRD FLOOR

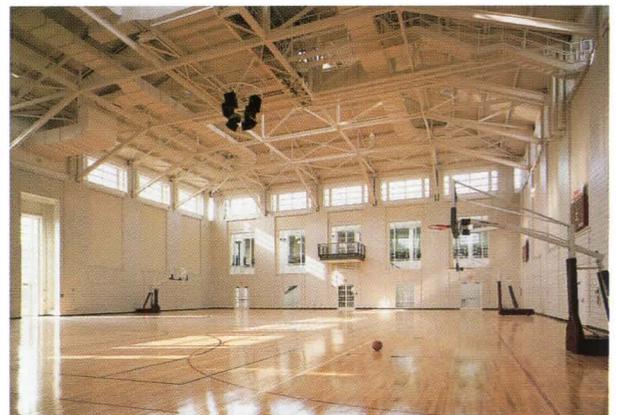
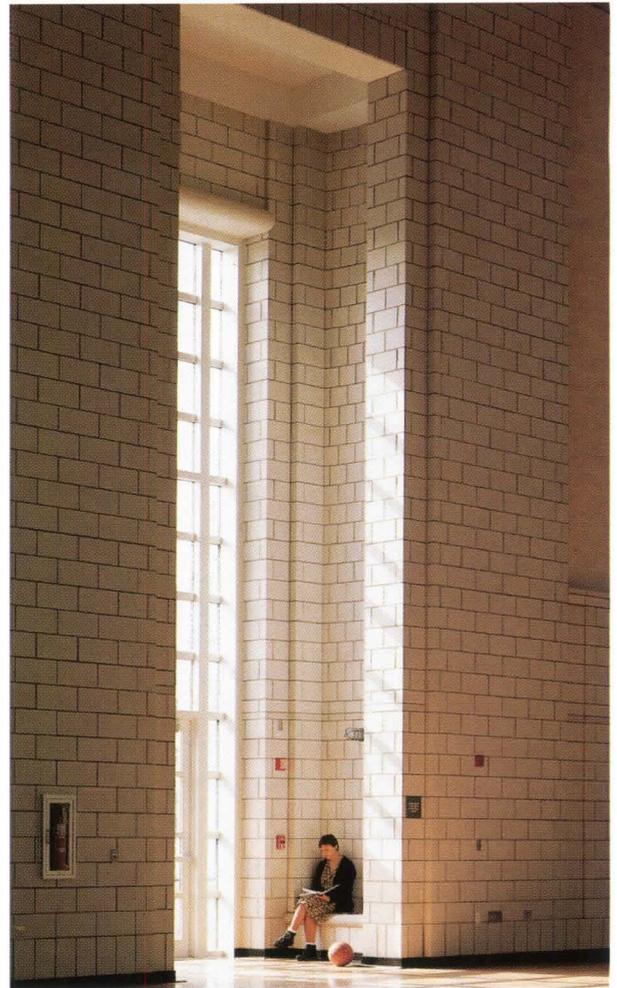
12. Gym
13. Ballroom
14. Dining
15. Conference/dining
16. "Scotland Yard"
17. Kitchen
18. Athletic



SECOND FLOOR



GROUND FLOOR



Dennis brings the idea of streets inside the buildings (plans and top photo opposite). In selectively revealing their structure, the gym (middle) and pool (bottom) evoke Hornbostel's approach.

The second phase is the \$47million, 200,000-sq-ft University Center itself. Part student union, part gym, it mixes a wide range of uses and scales. On the basis of the first project, Dennis's firm (now Michael Dennis & Associates) is asked to proceed with design of the center, though this time it is structured as a joint venture with Pittsburgh-based UDA Architects. Dennis credits Patrick Keating, now Carnegie Mellon's vice president of business and finance,

for his tenacity in keeping the master plan on track through the years. According to campus architect Paul Teller, "The plan might easily have been scuttled had not [current president Robert] Mehrabian, counseled by Keating, respected the work of [former president] Richard Cyert." The center is occupied in 1996.

Urbanistically, the building completes the east campus athletic quadrangle by placing the gymnasium on the main axis of the field. It establishes one side of a new quadrangle by defining the east edge of the Cut with an open public loggia. And it makes a wall to enclose another outdoor space that fronts on Hornbostel's Margaret Morrison Hall. Dennis brought the idea of streets inside, expressing the large program elements as discrete volumes wrapping a rotunda.

According to Teller, the center has totally changed the social culture of the campus, bringing a "badly needed sense of comfort and ease." Without duplicating Hornbostel's details, Dennis has imposed on the elevations basic classical proportions, both horizontal and vertical, drawn from the facades of Morrison Hall and the College of Fine Arts. Roof and cornice heights align, and the proportions of bays, pilasters, and window openings are similar.

1996-1999

CMU considers five firms, including Dennis's, for the Purnell Center for the Arts, the final piece of the master plan. To win the commission Dennis assembled a new team, adding Damianos + Anthony, of Pittsburgh, and John Sergio Fisher, a theatrical-design specialist with long ties to CMU. After such a successful association, "I was hysterical at having to interview once again," comments Dennis. But he wanted to complete the center. The joint venture, now called DDF Associates, won the project. Teller explains, Dennis "helped to crystallize what was in the back of the peoples' minds who had come to appreciate Hornbostel."

Though he has done about \$100 million of work on this campus, Dennis still hopes the university will complete the extension of the old ravine he first proposed in 1987. It would return "something of the geological and ecological system of the area," he says. "It's part of the persona of the place." Indeed, Dennis's intentions throughout have been to divine and interpret this persona. "You grow up as a student wanting to be au courant and on the edge," he explains. "You realize that when you have to build next to somebody like Hornbostel, you forget all that stuff." ■

Manufacturers' Sources

Brick: Stone Creek

Aluminum curtain wall: Wausau metals

Precast concrete: Cast Con

Terne-coated stainless steel:

Follansbee Steel

Hardware: Best (locksets); Stanley (hinges); LCN, Rixson (closers); Von Duprin (exit devices); Rockwood (pulls); Locknetics (security devices)

Acoustical ceilings: Armstrong, Wireworks

Ceramic tile: Daltile

Paints: Pittsburgh Paints

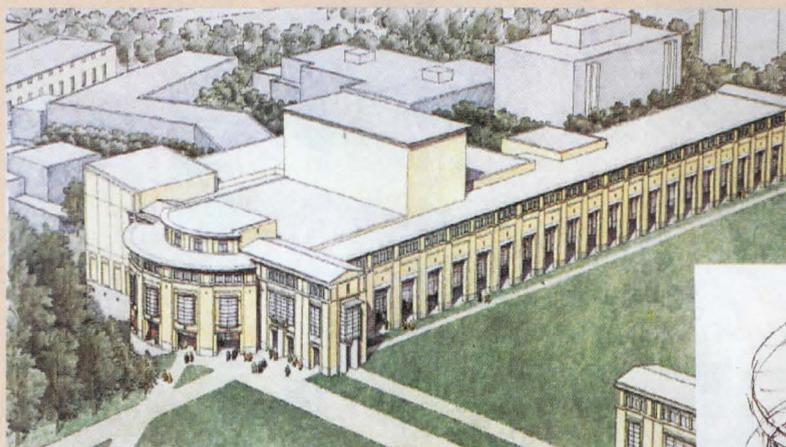
Furnishings: Knoll, Cartwright, Peter Pepper Products, Hussey, Community, Kimball, Ag1, Leland, K1, Loewenstein, Versteel

Lighting: Forum, Lightolier; Blackbird Systems (controls)

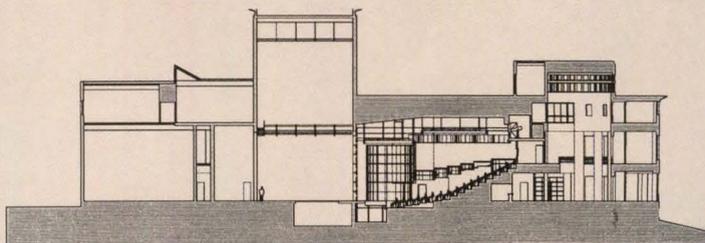
FUTURE

Last piece of the master plan

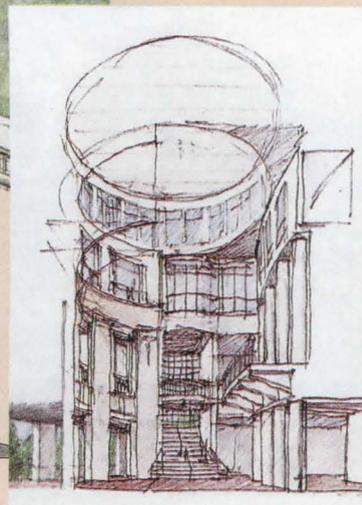
puzzle: The Purnell Center for the Arts will provide new facilities for the drama department and a large art gallery. The major elements in the \$24.6 million, 90,000-sq-ft project are a 450-seat theater, a 500-seat recital hall, a common public lobby, classrooms, practice rooms, faculty offices, and work spaces. Its form completes the quadrangle begun by the University Center, and includes a matching open loggia. Key faculty members lobbied for a unique-looking freestanding object that architecturally proclaimed its purpose. But Dennis's team won this third commission because CMU's officials, led by former president Robert Mehrabian, found the master plan's unifying strategy persuasive. —M.F.S.



The apsidal entrance pavilion may one day project into a picturesquely landscaped ravine—if Dennis can convince officials to re-excavate the Cut.



NORTH-SOUTH SECTION



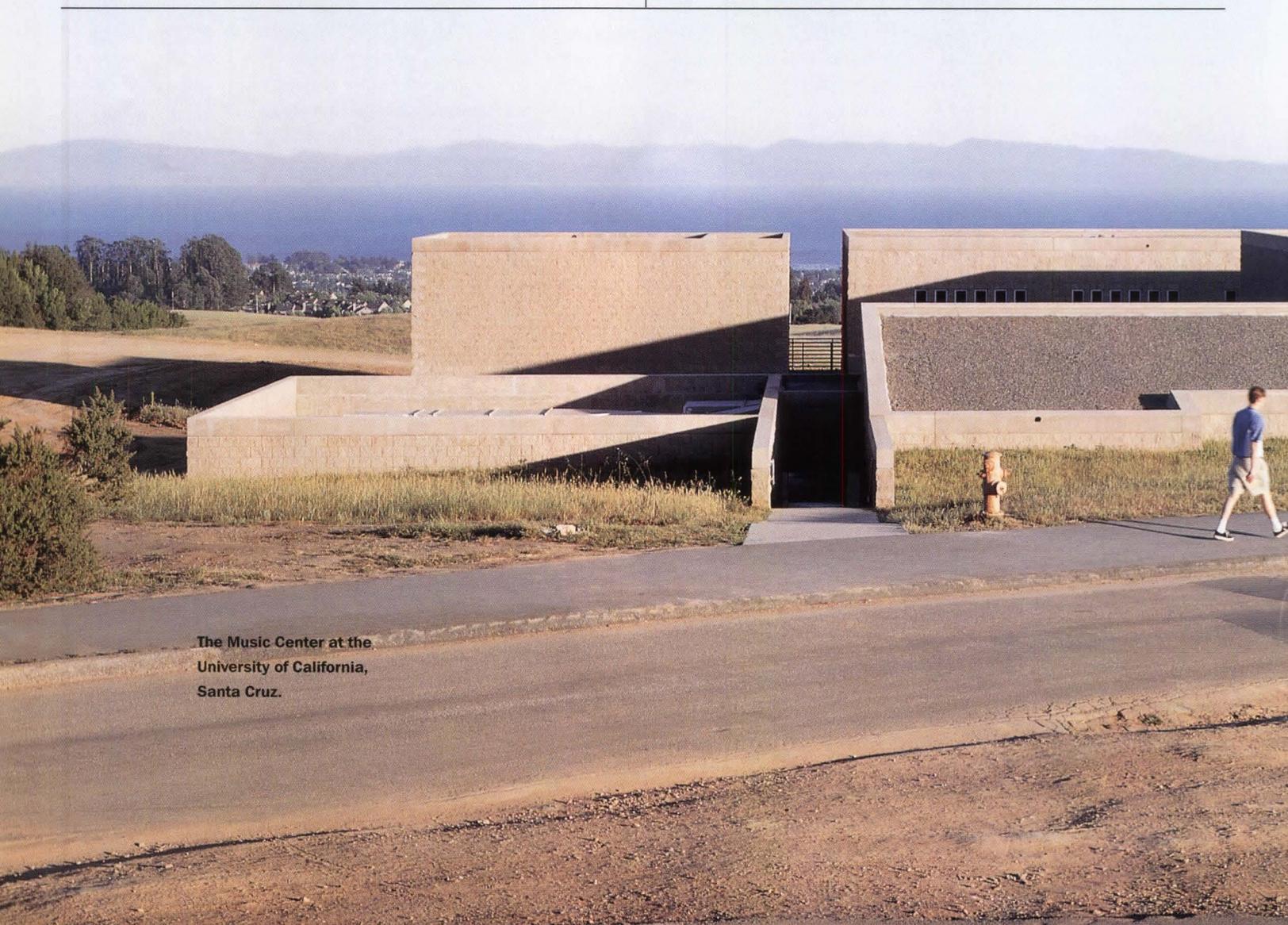
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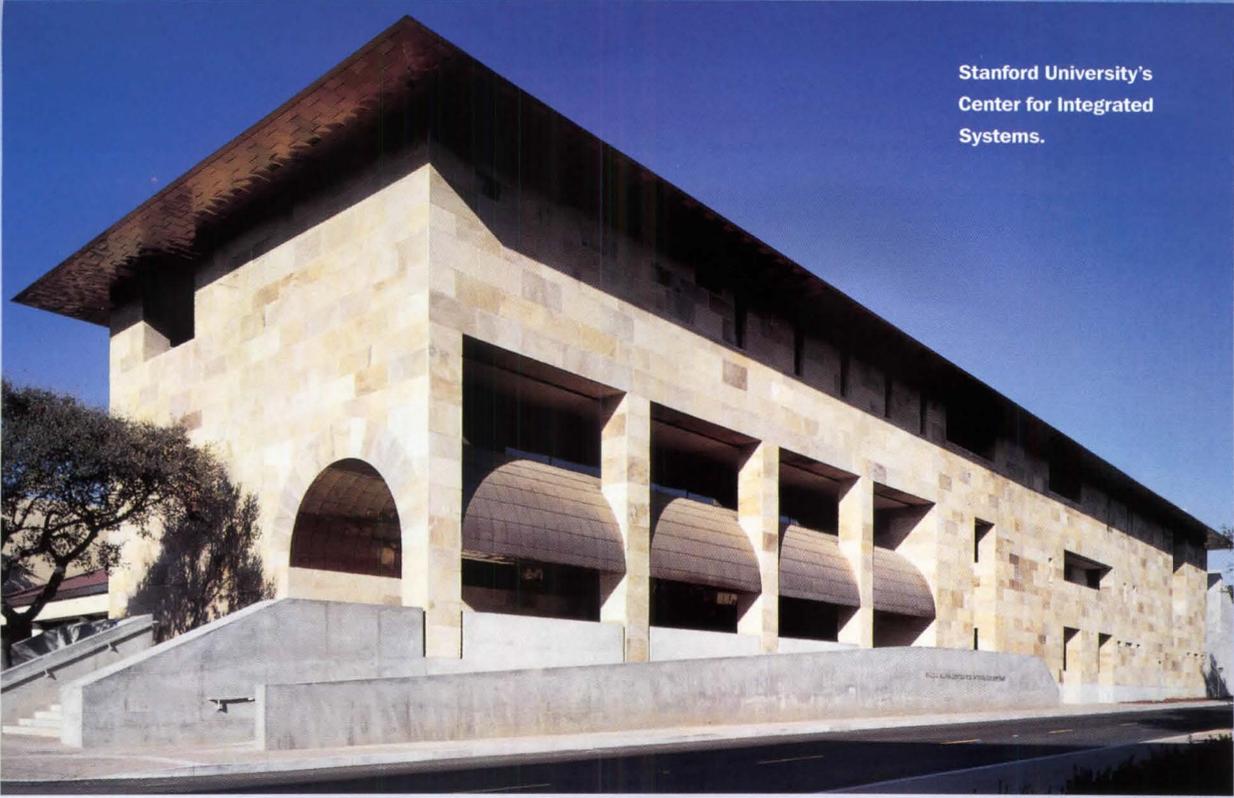
by Karen Stein

While commissions for new buildings at Stanford University and the University of California, Santa Cruz (UCSC) would seem to offer much in common, the campuses, and the results, are worlds apart. Stanford's original master plan by Frederick Law Olmsted depicted a Romanesque enclave—a

vision receiving fresh interpretation by Antoine Predock, among other architects currently completing projects there. UCSC, with its diverse styles of architecture, is best known for its spectacular landscape, and Predock was given a prime parcel at the edge of the "great meadow."



The Music Center at the
University of California,
Santa Cruz.



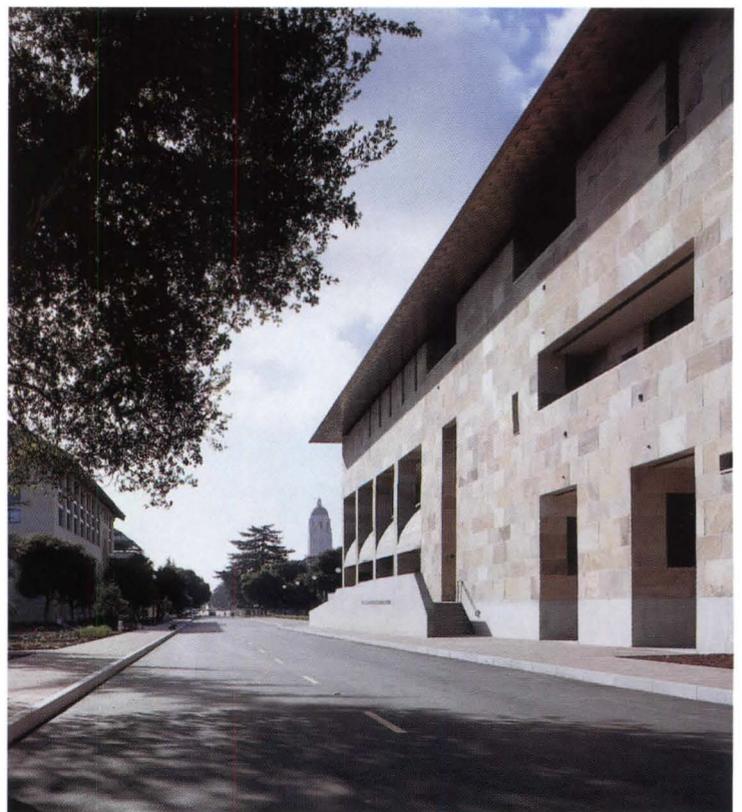
Stanford University's
Center for Integrated
Systems.

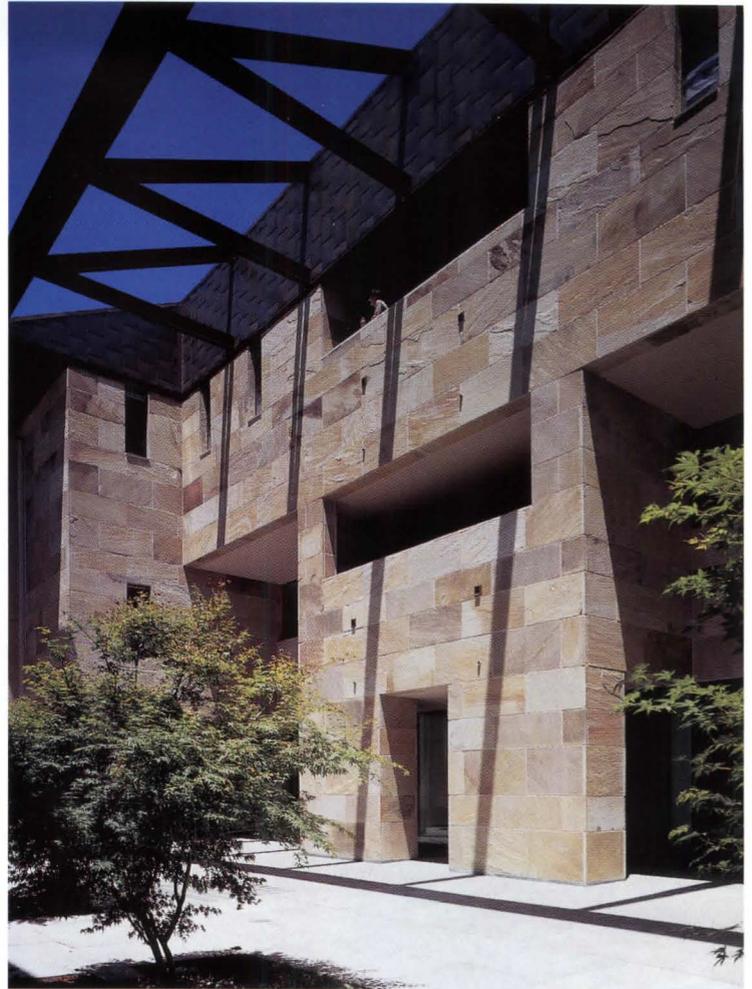
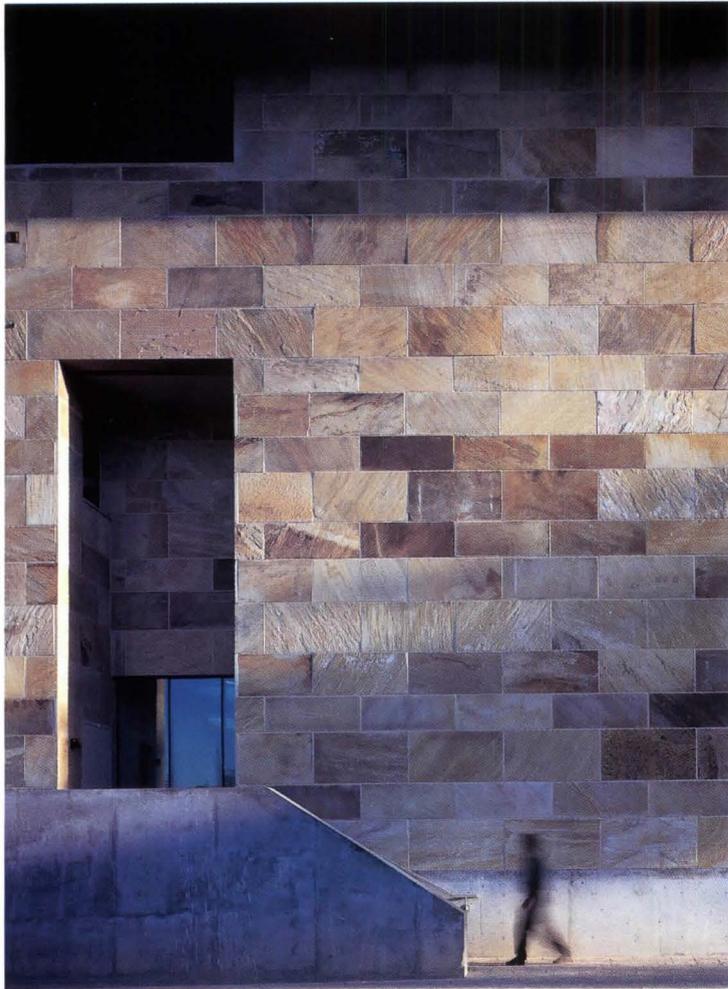




West of Stanford's historic heart, the Predock addition is part of a new new science and engineering quadrangle based on the principles of original campus planner

Frederick Law Olmsted. Members of the university's architect-selection committee found the competition entry's massing and materials in keeping with the main quad.





STANFORD

“Why me? Are you sure?” That’s what Antoine Predock remembers asking David Neuman, Stanford University’s campus architect, when he contacted Predock in 1993 about participating in an invited competition for an addition to the school’s Center for Integrated Systems (CIS). It’s not that the Albuquerque, New Mexico–based architect doubted his ability; after all, several of his academic projects had already opened around the Southwest to considerable acclaim. But Stanford’s reputation for traditional architecture seemed decidedly at odds with a practitioner who has been branded an architectural outlaw since the late 1980s for his far-flung references—from UFOs to geological excavations. Neuman assured Predock that Stanford was looking at alternative interpretations of its historic heart, with a master plan by Frederick Law Olmsted and Romanesque buildings by Shepley, Ruten & Coolidge.

Somewhat reassured, Predock participated in the competition, still feeling, he says, “stylistic pressure.” While working on the design, he imagined a massive stone block with windows and balconies recessed into

THE DESIGN CAUGHT EVERYONE, EVEN ITS ARCHITECT, BY SURPRISE.

the huge form as the expression of the internal pressures of the program. The design he presented to the architect-selection committee, which closely resembles what was ultimately built, caught everyone, including its

designer, pleasantly off guard. “I was surprised at the solution as it evolved,” admits Predock. “Site specificity starts at ground zero,” he says of his strategy of relating his projects to an intensive, if unorthodox, study of their place. “In this case, during the investigation there was a short circuit—a shunt—to the aura of Stanford.” Neuman agrees. Asked why this building doesn’t resemble other Predock buildings at campuses as varied as Arizona State University and the University of California, Santa Cruz (following pages), Neuman says: “Because it’s at Stanford.”

Knitting the now-sprawling campus together while at the same time guiding its rapid expansion is Neuman’s dual task, shared in part by Predock’s 53,000-sq-ft structure. Since coming to Stanford in 1989,

Project: Paul G. Allen Center for Integrated Systems Extension, Stanford University
Stanford, California

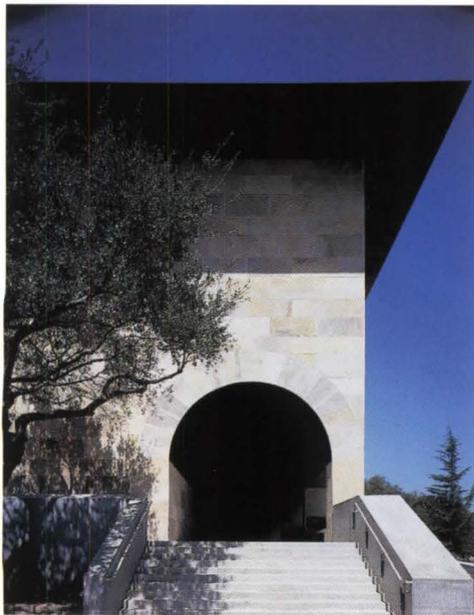
Architect: Antoine Predock Architect—Antoine Predock, FAIA, principal-in-charge; W. Anthony Evanko, AIA, Derek Payne, AIA, associates-in-charge; Mischa Farrell, AIA, project architect; Geoffrey Beebe, AIA, Mark Donahue, Paul Gonzales, Jennifer Lein, Robert McElhenny, Lawrence Mead, John

Morrow, George Newlands, Brett Oaks, Kira Sowanick, project team

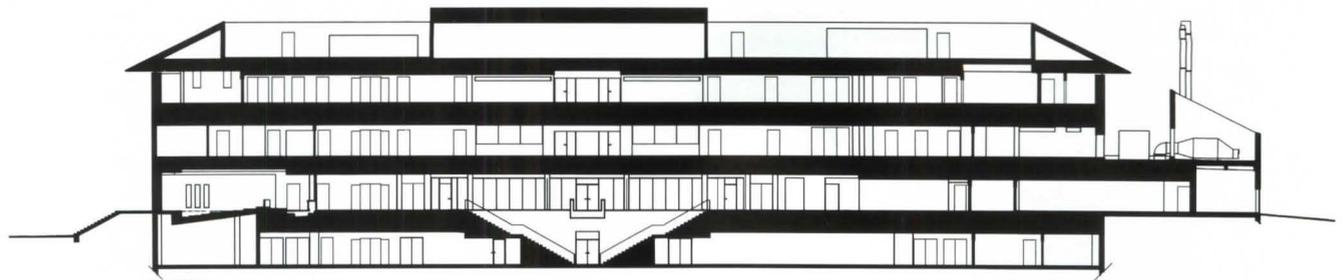
Engineers: Brian-Kangus Foulk Consulting Engineers (civil); Rinne & Peterson (structural); Gordon Prill, Inc. (mechanical); Complere Engineering (plumbing)

Consultants: Joni L. Janecki & Associates (landscape); WHL Architects (laboratory)

General Contractor: DPR Construction, Inc.

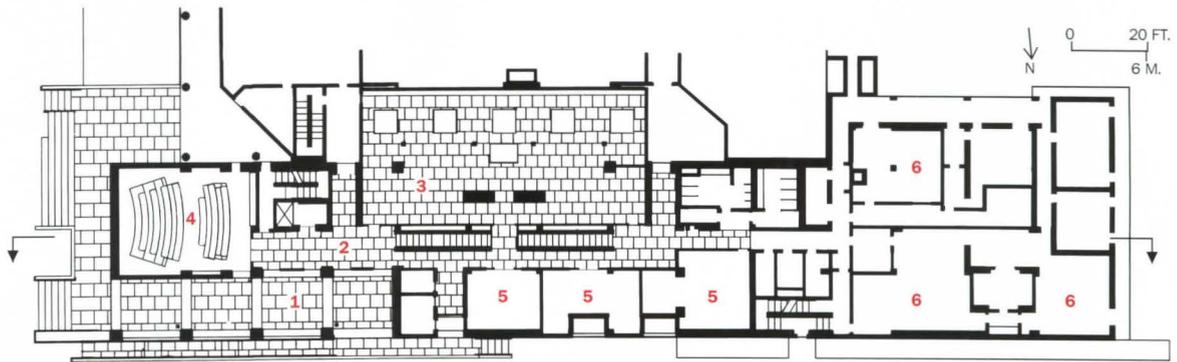


The arched entry (far left) with a copper lining that continues inside (opposite right) defines the edge of the narrow site, visually connecting the Predock structure to a new building by Robert A.M. Stern Architects (above). A courtyard between the addition and the existing structure admits daylight to the central stairwell (near left and opposite left).



SECTION

1. Covered entry
2. Lobby
3. Courtyard
4. Auditorium
5. Faculty
6. Laboratory



GROUND FLOOR PLAN



According to James Gibbons, dean of engineering, the building's floating roof and deeply recessed windows "give it a sense of both shelter and internal community."

Neuman has stressed the importance of the campus' landscape plan. "You have to have a commonly intelligible vision," he says of his effort to regulate patterns of growth. "You could have the best buildings, but if you lose order it's not a campus." Toward that end, the placement of Predock's building to the north of the existing CIS, designed in 1984 by Ehrlich-Rominger, was part of an overall effort to define the edge of a pedestrian axis along what will soon be Serra Mall, a science and engineering quadrangle with buildings by Pei Cobb Freed & Partners. The squat, arched frontispiece along the mall is Stanfordian, with its Indian sandstone echoing the honey tones of the original stonework. But within the barrel vault another architectural world emerges: a copper lining hung from the concrete form pokes through openings on the north side to show a hybrid image of old and new to the campus' loop road, a primary traffic artery beyond Serra Mall.

Helping to define the pedestrian mall is another Stanford newcomer, the Gates Computer Science Building by Robert A.M. Stern Architects [RECORD, July 1996, pages 66–71]. In an outward display of the academic link between the respective disciplines—Predock's building is for hardware research, Stern's is for software—the buildings not only share the arched forms, but also striking roof profiles and deep overhangs, with one notable difference. Predock used copper instead of the typical

red clay tiles. "I couldn't do it," he says of the roofing tile. At night, when the building's lights are on, a 9-in.-high rim of glass makes the roof appear to float above its masonry mass. "The vault looks somewhat conventional as you approach [from the east], but then you see that the roof looks like it's floating. I thought it was important to respond to the character of Stanford—but with a twist," says Predock. The dual effect of the CIS addition—fitting in and standing out—suits Neuman. Having weathered the 1989 Loma Prieta earthquake, which caused some \$160 million worth of damage mostly to Stanford's older structures and the construction of a business school facility on the previously untouched oval forecourt to the main campus, Neuman tries to maintain the past while inserting Modernist additions where appropriate (including an upcoming Norman Foster medical school building). He says, "Infill and recovery strategies are what interest me most."

Manufacturers' Sources

- Indian sandstone:** Columbia Stone
- Copper flat-seam roof panels:** County Sheet Metal
- Aluminum windows, entrances:** Arcadia Norcal

- Glazing:** PPG (Solex)
- Metal, wood doors:** Minton Door Co.
- Acoustical ceilings:** Spacetone
- Resilient flooring:** Armstrong
- Exterior lighting:** Devine Lighting
- Interior lighting:** Lightolier

An environmental impact report was prepared prior to design of the Music Center at the edge of UCSC's "great meadow."



The four-acre site lines the "great meadow" (top and right), overlooking the Pacific Ocean. Phase two is planned for completion

in 1998 on a site to the southeast of the recital hall (below). It will include additional music studios and offices.





UC SANTA CRUZ If Stanford's central sacrosanct space—is its historic heart as envisioned in the master plan by Frederick Law Olmsted, then the central space of the University of California, Santa Cruz (UCSC) is the "great meadow," with its rolling hills of tall grass that command views of Monterey Bay and the Pacific Ocean. Asked to design a new home for the music department, which had previously shared space with the theater arts department, Predock was presented with the only logical site within the expanding performing arts complex: a narrow, four-acre swath along the edge of the meadow, one of the few open spots on its perimeter. "It's where you would want to build your house," says Antoine Predock of the dreamlike setting.

For Predock the first thing that was clear was what his design

"I WANTED TO HUNKER IT DOWN . . . SO THE BUILDING WOULD PEER OUT."

should *not* do. "I did not want to insert an intrusive profile," he recalls of his first reaction to the project. "I wanted to hunker it down, excavate the site, so the building would peer out," he explains. The building, in fact, does hug the edge of the meadow; a colonnade fronting teaching studios

curves like an earth berm as if to gather up the parcel. While Predock was able to take advantage of a natural change in grade and step the building mass down into the descending crest of the hill, the centerpiece of the music center's program—a 400-seat recital hall—is by its nature massive and hard to cloak. Predock treated the form like a giant boulder, which he placed at the northwest end of the 49,000-sq-ft composition, constructed of cast-in-place concrete tinted to match the yellowish green grass. It will

Project: Music Center, University of California, Santa Cruz

Architect: Antoine Predock Architect—Antoine Predock, FAIA, principal-in-charge; Devendra Contractor, AIA, project architect; Geoffrey Adams, Jon Anderson, AIA, Sunil Bald, Jorge Burbano, Phyllis Cece, AIA, Mark Donahue, Cameron Erdmann, AIA, Mischa Farrell, AIA, Lorraine Guthrie, Katharine Howe, Karen King, AIA, Robert McElheney, George Newlands, Timothy Nichols, Brett Oaks, Christopher

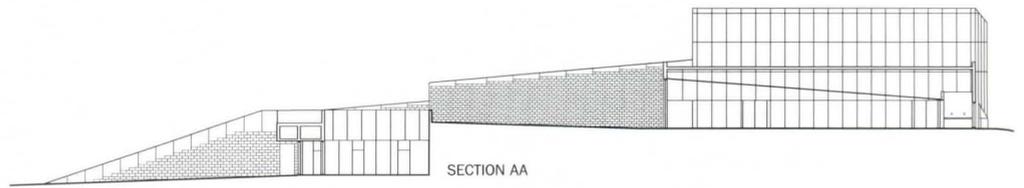
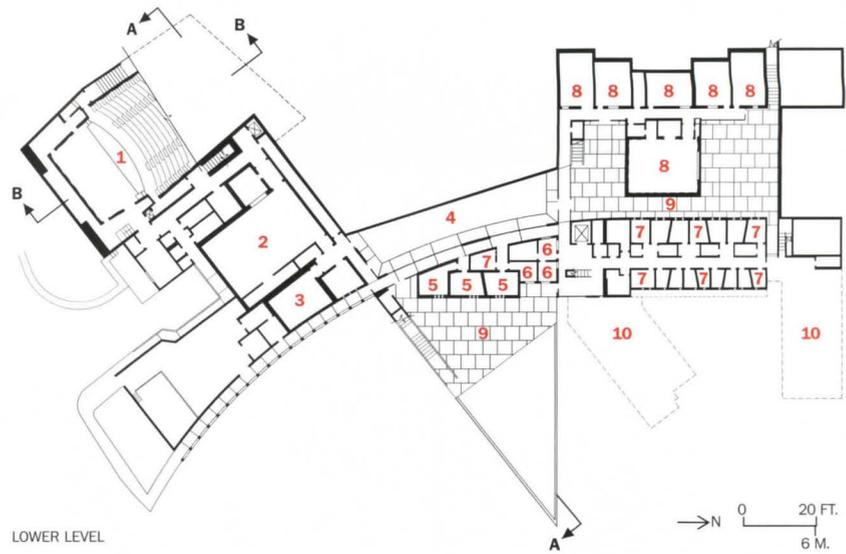
Romero, Alcides Santiesteban, Deborah Waldrip, Suzanne Weisman, Jeffrey Wren, project team

Engineers: Paragon Structural Design, Inc. (structural); JBA Consulting Engineers (mechanical, electrical, plumbing); Chavez-Grieves (civil)

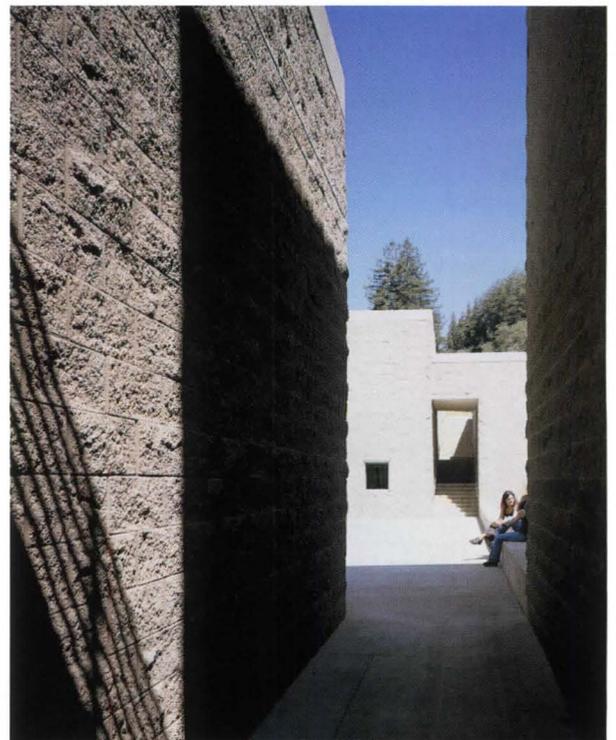
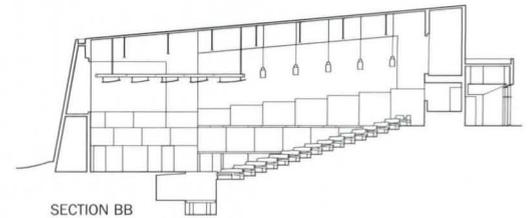
Consultants: Joni L. Janecki & Associates (landscape); McKay Conant Brook, Inc. (acoustical); Landry & Bogan (theater)

General Contractor: Lewis C. Nelson & Sons

1. Recital hall
2. Ensemble rehearsal
3. Percussion studio
4. Ravine
5. Teaching studio
6. Office
7. Practice room
8. Classroom/
laboratory
9. Courtyard
10. Future addition



Contoured wood walls around the stage and an adjustable canopy of panels allow the recital hall to be tuned to different music styles (right).





Exterior concrete block is split face (opposite bottom). Interior block is sandblasted (left in photo below).

be gradually surrounded by the redwood trees that line the meadow “so it’s not quite as naked,” says the architect.

In fact, the trees play a significant role at UCSC, providing context and design latitude. “We try not to have one style [of architecture],” explains David Tanza, AIA, UCSC’s project architect, of the range of buildings that have been constructed on the campus in recent years. “We have the luxury of the redwood trees. We can have varied buildings, because the redwoods tie them together.” The landscape is further integrated into the building by outdoor courtyards—exterior practice and meeting areas, some with patches of transplanted meadow—and narrow walkways that are intended to echo the ravines found on the campus.

While the preciousness of the meadow dictated the siting and overall form of the building, the program of the music center determined its parts and pieces. “It’s an instrument,” says Predock of the organization of the plan. With the recital hall connected to teaching/faculty offices by a shared plaza, the overall image is one of a sequestered facility to create, study, and play music. Reinforcing that image is the construction of

acoustically isolated practice rooms. Acoustician Ron McKay says each space is customized—from the “tunable” recital hall with an adjustable canopy of fiberglass-reinforced plaster panels and built-in “reverberation chambers” in the wall that can be covered by curtains, to practice rooms built as sheetrock inner boxes within concrete and stud-wall structural boxes to isolate sound vibration between adjacent spaces. One small detail was purposefully left out in some areas, reports Tanza: an extra layer of gaskets on the doors of the practice rooms in the student wing. He explains of the omission, “We thought it would be wrong if visitors walked down the hall of a music center and they couldn’t hear the sound of instruments.” ■

Manufacturers’ Sources

Cast-in-place concrete: Granite Rock

Concrete masonry units: Calstone

Structural steel: Bostrom-Bergen

Metal Products

Built-up roofing: Johns Manville

Aluminum windows: Kawneer, Milco

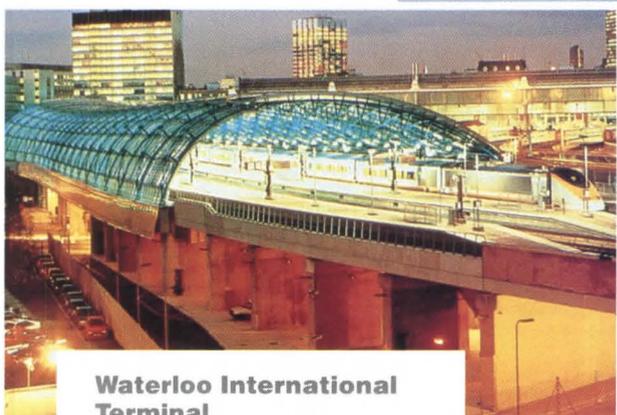
Aluminum entrances: Kawneer

Sound-control doors: Overly

Fixed seating: American Seating

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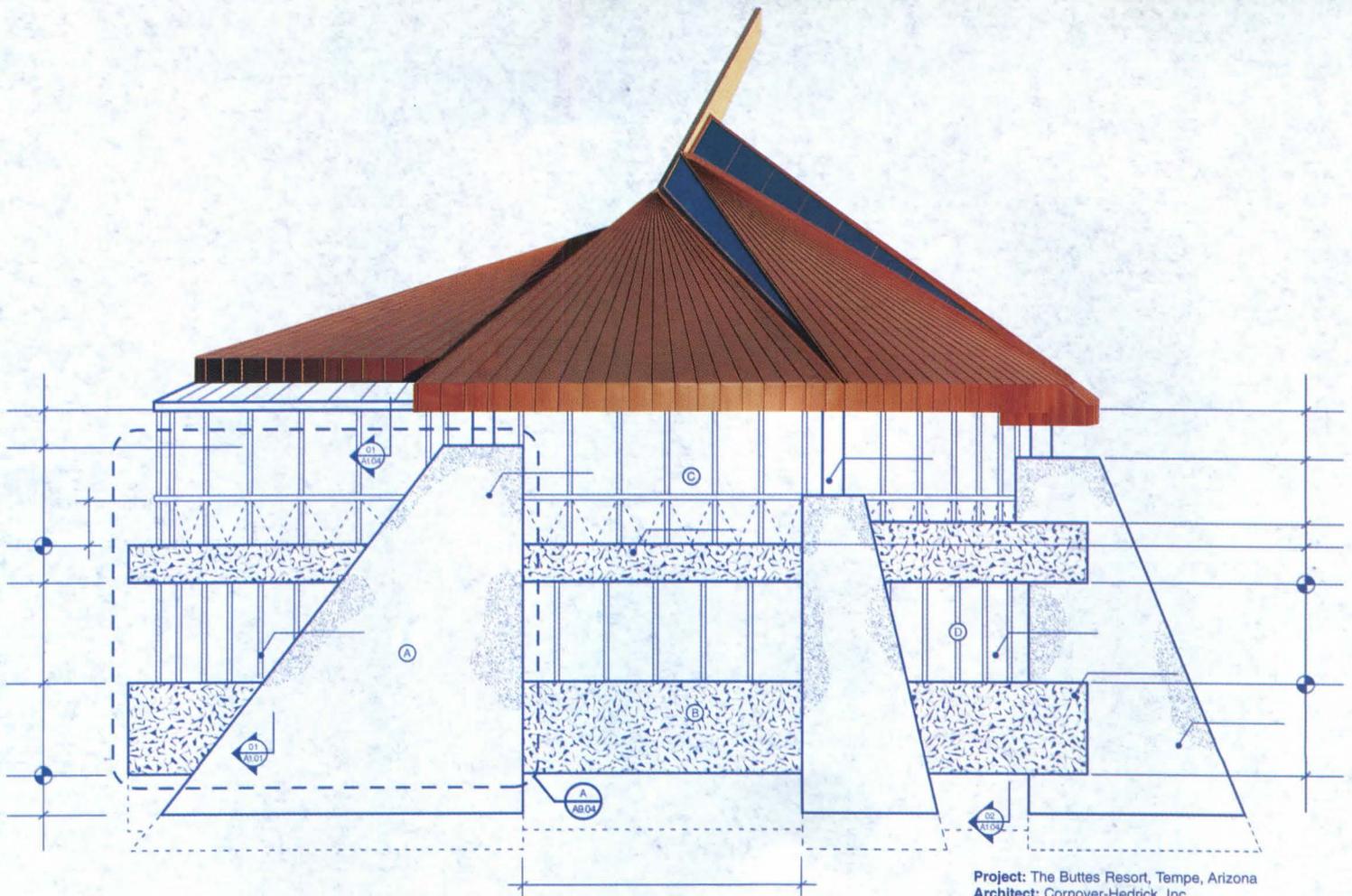


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by Tom Ichniowski



1

Jamaica, New York

The Hillier Groups gives an airport's prominently located power plant a pleasing face.



2

Seattle, Washington

Angela Danadjieva has turned a sewage treatment plant, which might have been an eyesore, into a shoreline retreat.



3

London, England

An elegant pedestrian link, Future Systems' floating pontoon structure is a harbinger of the city's bridge-building boom.



4

Charlotte, North Carolina

Gantt Huberman's airy, vaulted shed packed with services solves problems common to sprawling all-bus transit systems.

In the field of infrastructure, architecture is increasingly a peacemaking art. Projects shown in these pages might be called “environmental mitigation,” but in plain English they turn NIMBY nightmares into community-pleasers. The biggest infrastructure category is surface transportation. Tom Ichniowski considers the congressional battle over provisions of the new surface transportation bill that will affect not only commissions, but the architect's role in improving cities.—James S. Russell

On December 18, 1991, then-President George Bush and other officials gathered at a Texas construction site to celebrate the start of a new direction in federal transportation policy. The bill Bush signed that day, the Intermodal Surface Transportation Efficiency Act (ISTEA), not only sharply boosted the sums authorized for transportation projects (by far the federal government's largest capital-expenditure category), it expanded the definition of the sorts of projects that could be financed by federal transportation dollars. It also allowed state officials much more flexibility in using that money, particularly in shifting aid from highway funding categories to mass-transit uses.

Design firms have benefited from the law's transportation planning requirements and its Congestion Mitigation and Air Quality program (CMAQ), which funds projects aimed at reducing vehicle emissions by reducing traffic. Another key section for architects set up a new program called “transportation enhancement activities.” For the first time it allowed federal transportation funds (mostly derived from gas taxes and other user fees) to support activities that make up for the deleterious effects of highways: pedestrian and bike paths, preservation or rehabilitation of historic transportation buildings, and archaeological planning and research.

On October 1, the clock will run out on ISTEA. Capitol Hill has been buzzing for months with plans to rewrite the statute and several bills have been introduced. Most reflect competing regional interests, focusing mainly on new ways of dividing the funds among states and programs.

The design linkage: fitting transportation into communities

ISTEA was supposed to improve urban livability by forcing states to choose projects and transportation modes according to need rather than

Tom Ichniowski is the Washington, D.C., bureau chief of Engineering News-Record.

according to what kind of funding was available. (Highway funding formulas have usually been more generous than those for mass transit, for example.) Elizabeth Deakin, associate professor of city and regional planning at the University of California at Berkeley's College of Environmental Design, says, "Probably the most challenging thing about ISTEA was the fact that metropolitan planning organizations [MPOs] were given somewhat more authority than they'd had before over the decisions being made on highways and on other kinds of projects in their own regions. And that of course caused a certain amount of dismay among some [state] highway departments." The requirement for metrowide regional planning should have made transportation planning more rational, since needs usually transcend rather than coincide with city and suburban political boundaries.

For architects, the law's planning provisions "gave firms the option to be much more creative about the kinds of facilities that could be done," Deakin says. The planning bodies were instructed to consider at least 15 factors in their plans, including preserving existing roads, bridges, and transit lines; relieving congestion; considering a project's impact on land use; and taking note of the "social, economic, energy, and environmental effects of transportation decisions."

These planning initiatives have had varied levels of success. At first not all urban areas even had metrowide planning agencies; in others, highway-focused officials didn't take advantage of the planning flexibility allowed. A few, though, began to realize ISTEA's potential. Transit planners, for example, have long decried infrastructure planning and land-use patterns that encourage population dispersion, since sprawl increases congestion and makes transit inconvenient and uneconomical. Portland, Ore., sought funds from ISTEA's CMAQ category to reverse the traditional pattern by developing transit-oriented affordable housing projects. The idea was to encourage projects that include mixed uses and higher densities located near transit lines. Conversion of a former dairy plant into 85 apartments and 27,000 sq ft of retail space was one of the

first tests of the idea. The paperwork connected with actually using ISTEA funds proved too daunting, but Portland hopes to proceed with other similar projects, including the use of a revolving fund to acquire land for future transit-oriented development projects.

Portland also tapped CMAQ to help finance an experiment on whether improving pedestrian access to transit can lead to a rise in ridership. Bill Hoffman, manager of the city's Pedestrian Transportation Program, says, "We focused on those people, 'trace riders,' who use cars but live along major transit networks." Tom Lister, landscape architect on the project, says the biggest problem in the study areas was a forbiddingly wide and bleak four-lane street. The city is adding islands and curb extensions to improve access. "The program is probably going to help [ridership] a little bit, but there's no other data for us to refer to. We just don't know. It's totally experimental," says Lister.

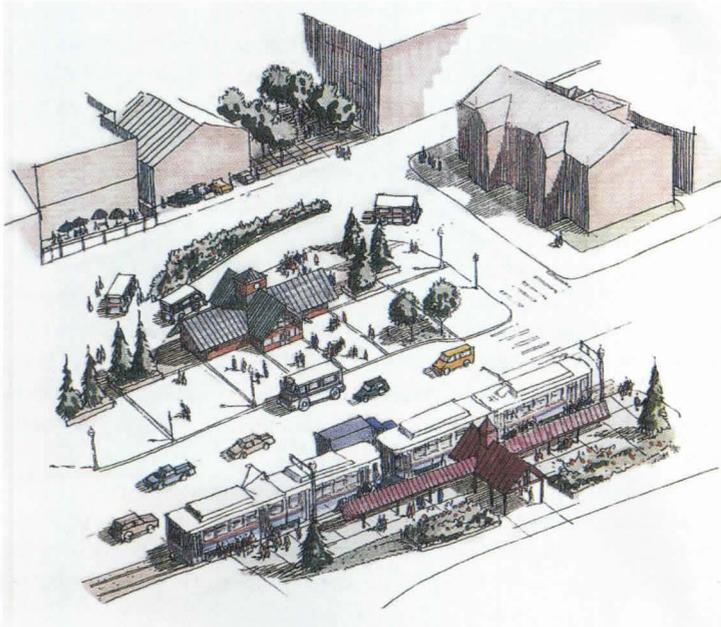
A few other cities have been creative in the use of transportation funds for coordinating planning with infrastructure investment. The impact on the nation's built landscape, however, has been limited, observers say. The reason: much of ISTEA's money has gone to projects already planned, not new ideas. Deakin notes that "it takes five to seven years to move things through the pipeline." Skidmore, Owings & Merrill partner Marilyn Jordan Taylor, AIA, a transportation expert, agrees, explaining that most of those projects were roads. An ISTEA successor, she argues, might make possible projects that would make a real difference to communities, such as New York City's long-dreamed-of plan for a rail link between Pennsylvania Station and Grand Central.

The law's planning provisions have benefited multidiscipline design firms such as Philadelphia-based Wallace, Roberts & Todd. WRT's biggest project, says Anish Kumar, an associate at the firm, has been an urban design feasibility study for three transportation hubs along a light-rail line in New Jersey's Hudson and Bergen Counties. Kumar notes that planning "feeds into our design process." The firm's studies led to its being hired to do urban design guidelines for the whole 20-mile route. The handbook is consistent with ISTEA's emphasis on community involvement, Kumar says. The new ISTEA is expected to continue to stress planning. But there may be modifications. Marcia Frenz, AIA's program director of federal affairs, favors retaining planning provisions. "They certainly can be streamlined," she says.

When is an "enhancement" a boondoggle?

Another key element of ISTEA are so-called enhancements. ISTEA set aside 10 percent of its Surface Transportation Program category and a portion of other funding categories for projects intended to mitigate problems associated with road-building. The pro-enhancements Rails-to-Trails Conservancy says that as of February, \$2.1 billion in federal ISTEA funds plus \$821 million in local matching aid have financed 7,321 projects. Bike and pedestrian facilities account for the largest portions, 43 percent of the projects. But there also have been 873 historic transportation facility projects and 462 other historic-preservation projects.

While amounting to less than two percent of the \$155 billion authorized by ISTEA, that isn't small change for firms that design and build the projects. Dallas-based Corgan Associates has worked on adaptive reuse of the Monroe Shops, where repairs were done on trolleys that ran on the area's long-gone interurban system. The building, which sits at one end of the Dallas Area Rapid Transit modern light-rail line, will be converted to multiple uses, including a transportation museum that will house an old trolley, says Lyle Burgin, a Corgan principal. Similarly, both congestion-relief and historic-preservation ends were served by the enhancement-assisted Big Four Depot project in Lafayette, Ind. (opposite top).



ISTEA funds supported the intermodal planning process that proposed a combina-

tion of light rail, bus, and bike trails as congestion relief for the Aspen, Colo., area

(above). The plan was developed by Otak, a company based in Lake Oswego, Ore.

With ISTEA assistance, a congestion-inducing rail line was moved out

of downtown Lafayette, Ind. As part of the work, HNTB moved this sta-

tion (below), restored it, and added a park and bikeway link.



Enhancement projects that stretch the definition of “transportation” have provided ammunition for ISTEA foes. A July 1996 U.S. General Accounting Office report mentioned a \$4.3 million plan to rehabilitate grandstands at the Iowa State Fair, funded in part with federal enhancement aid, and the purchase and renovation of the Oddfellows’ Building in Griffin, Ga. “We’re subject to sort of murder by anecdote,” says Roy Kienitz, deputy director of the pro-enhancements Surface Transportation Policy Project. While he concedes that “some wacky projects have been funded,” he adds that guidance issued in 1995 by the Federal Highway Administration has largely eliminated boondoggles.

Congress at loggerheads over Fed’s biggest building program

How will enhancements, planning, and the congestion-mitigation program fare in the new ISTEA bill? A broad coalition, including the AIA, the National Trust for Historic Preservation, the Rails-to-Trails Conservancy, and the Surface Transportation Policy Project, is lobbying to retain these elements of the surface-transportation bill, promoting their economic and environmental advantages. Supporters would also like to see total funding grow, which would increase the enhancement dollars.

PRIMARY FEDERAL TRANSPORTATION FUNDING PROPOSALS

PROPOSAL	\$ PROPOSED	ENHANCEMENT	COMMENTS
ISTEA INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT	\$157 BILLION/ 5 YEARS	47% INCREASE	EXTENSION OF EXISTING PROGRAM. AIA SUPPORTS
NEXTEA NATIONAL ECONOMIC CROSSROADS TRANSPORTATION EFFICIENCY ACT	\$175 BILLION/ 6 YEARS	30% INCREASE	CLINTON ADMINISTRATION BILL
HOTEA HIGHWAY ONLY TRANSPORTATION EFFICIENCY ACT	\$34 BILLION/ YEAR	\$9 BILLION COVERS PUBLIC TRANSIT AND OTHER EXPENDITURES	HIGHWAY USERS’ BILL
STEP 21 STREAMLINED TRANSPORTATION EFFICIENCY PROGRAM FOR THE 21st CENTURY	DEPENDS ON RECEIPTS	9% INCREASE	STATES TO RECEIVE NO LESS THAN 95% OF GAS TAX RECEIPTS THEY CONTRIBUTE. VARIATIONS PROPOSE ADJUSTMENTS THAT FAVOR CERTAIN STATES.
DEVOLUTION	NA	NA	MAKES STATES RESPONSIBLE FOR NEARLY ALL HIGHWAY FUNDING

The programs have the strong backing of the U.S. Dept. of Transportation (DOT), says Deputy Secretary Mortimer L. Downey. DOT’s reauthorization proposal, dubbed National Economic Crossroads Transportation Efficiency Act, or NEXTEA, hikes CMAQ funding by 30 percent and increases the Surface Transportation Program account by 46 percent, to \$175 billion over six years. “And planning is also supported” in the bill, says Downey. It retains the enhancements set-aside from that account, which means a hefty increase, mainly because the concept has gained friends in local communities. He recently spoke to the Tennessee Municipal League, “And people were grabbing me by the sleeve and saying, ‘Am I going to get my bikeway? Am I going to get my project?’” Such grassroots support, he says, will help get a “good bill through.”

Lined up against these provisions are the formidable forces of the highway lobby, including the American Highway Users Alliance (AHUA) as well as other groups that have formed the Transportation Construction Coalition. William D. Fay, president of the AHUA, says that even with the increase under ISTEA, current funds fall about \$20 billion short of the amount needed simply to maintain current conditions. He says, “When I’m looking at a seriously deteriorated road system, one that’s failing to meet the safety standards that we really want, it’s hard for us to say that we should be forcing money to be spent on train-depot restorations and other things that are nice, but may not be priorities right now.”

Early on, the coalition sought to eliminate enhancements in the new bill. Now it is arguing to knock out the set-aside, allowing enhancements to be eligible for federal transport aid, but not mandating that states fund them. This might seem a modest change, but Edward M. Norton, vice president of the National Trust for Historic Preservation, fears that if the set-aside is removed, the program “will be raided by the DOTs to the point where it amounts to nothing.”

It is unlikely that Congress will have new transportation funding in place when ISTEA expires. The struggle is protracted because most of the user-fee source of ISTEA funds is free of the balanced-budget constraints that affect so many other programs. At press time, no measure had been approved even by a House or Senate subcommittee. ■

1 Cogeneration Plant Jamaica, New York

CLOSED TO THE PUBLIC BUT CENTRALLY LOCATED AT JFK AIRPORT, THIS POWER PLANT DISPLAYS ITS MECHANICAL PARTS FROM AFAR.

by Virginia Kent Dorris

Project: Cogeneration Plant, John F. Kennedy International Airport
Jamaica, New York
Owners: Gas Energy, Inc. and
Community Energy Alternatives, Inc.
Architect: The Hillier Group—David
Finci, AIA, project design principal;
Dale Laurin, project architect; Matthew
C. Salerno, AIA, project manager
Engineers: Thornton-Tomasetti
(structural concept design); Energy
Services Inc. and Parson Brinckerhoff
(structural, mechanical, electrical,
plumbing, civil)
Consultants: DeBellis & Semmens
(landscape); David Mintz (lighting)
General Contractor: Crow-Jones

Project Statistics

Size: 45,000 sq ft

Cost: \$244 million

Output: 100 megawatts of electricity

“From the beginning, we understood this was an engineering-driven project,” says architect David Finci, AIA, of the new cogeneration facility at New York’s John F. Kennedy International Airport. By necessity, first priority went to meeting the technical demands of the massive turbines, boilers, and coolers that would produce the electricity, heating, and cooling used by the airport’s 30 million travelers and employees each year.

Finci’s task, as the architect for the Hillier Group, was to find forms and materials that would allow the enormous \$244 million power plant to stand comfortably just a stone’s throw away from Eero Saarinen’s soaring TWA Terminal. Although few visitors to the airport will ever enter the cogeneration plant, its location at the center of the airport’s complex of passenger terminals makes it a building that most everyone will see.

Adding to an SOM building

The project included renovating and expanding an existing heating and refrigeration plant, a 1957 glass-and-steel building designed by Skidmore, Owings & Merrill. It also called for the construction of a new 45,000-sq-ft cogeneration facility

Virginia Kent Dorris is a writer based in Brooklyn, New York, who covers architecture and engineering.

with two massive exterior heat-recovery boilers and two 120-ft-high exhaust stacks.

In a first for the Port Authority of New York and New Jersey, which owns and runs the airport, the design, construction, and operation of the plant were privatized in the hands of a consortium called Kennedy International Airport Cogeneration (KIAC).

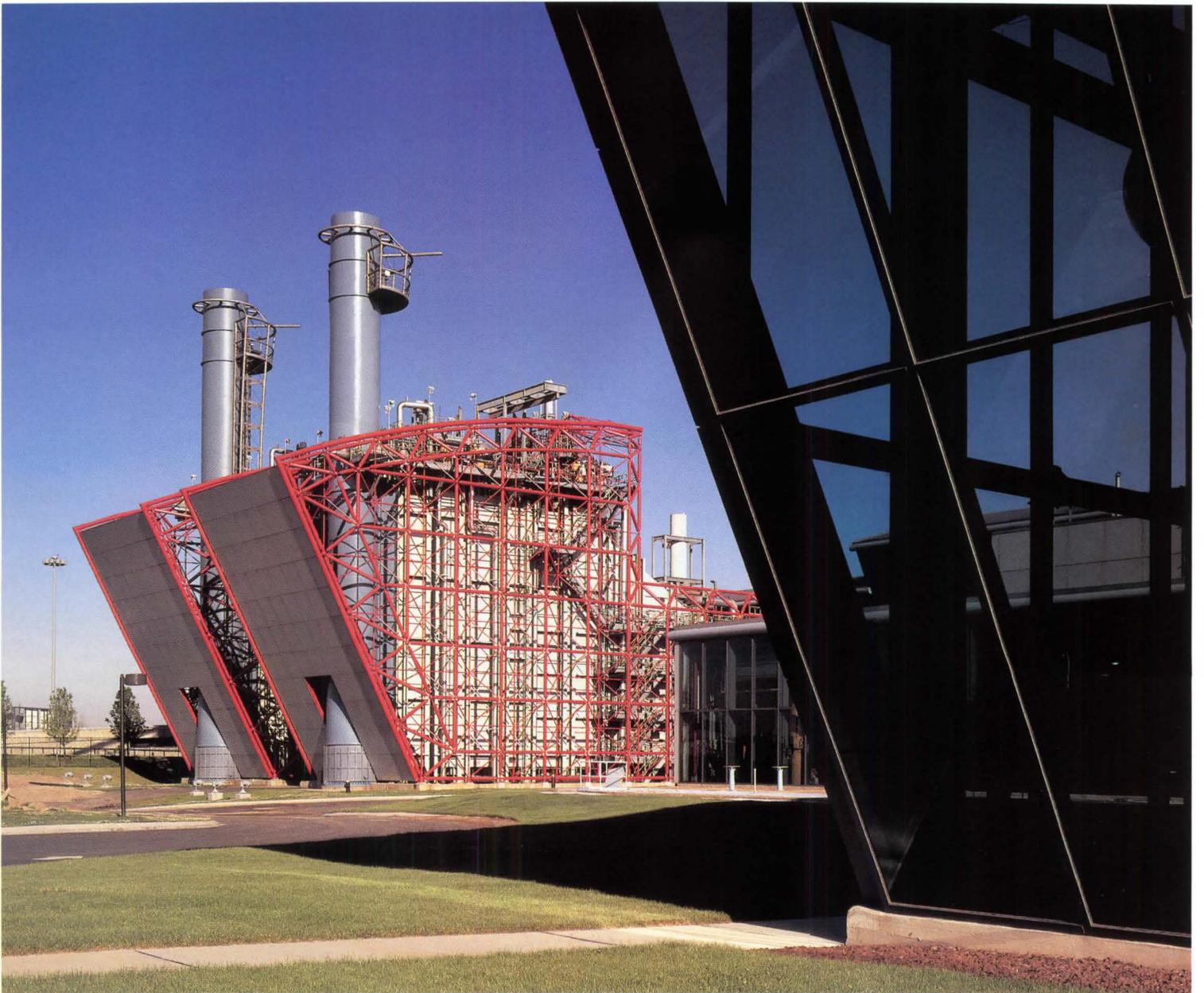
Despite the facility’s unglamorous function, the Port Authority wanted a building with an architect-

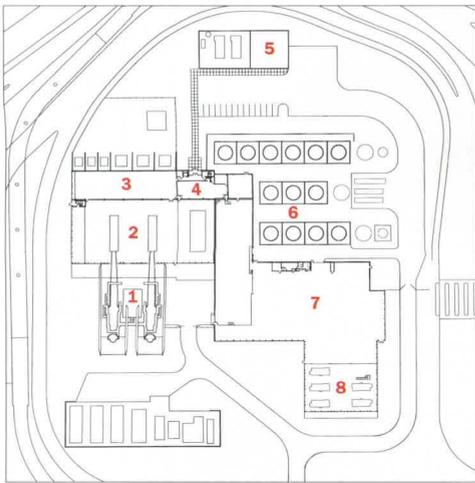
tural presence. “That the level of design was consistent with existing and future design at the airport was critical to us. This was a nonpublic building in a very public setting,” explains Robert Davidson, chief architect in the Port Authority’s engineering department.

To maintain architectural control, the Port Authority stipulated that the cogeneration plant’s design be approved by its architectural review board. As a result, KIAC hired the Eggers Group as architect. In



Prominently located on the loop road around JFK’s terminal complex (opposite top), the plant is seen by most visitors. Curved roofs (left) allude to wings and flight. Two giant boilers are encased in a space frame (opposite bottom).





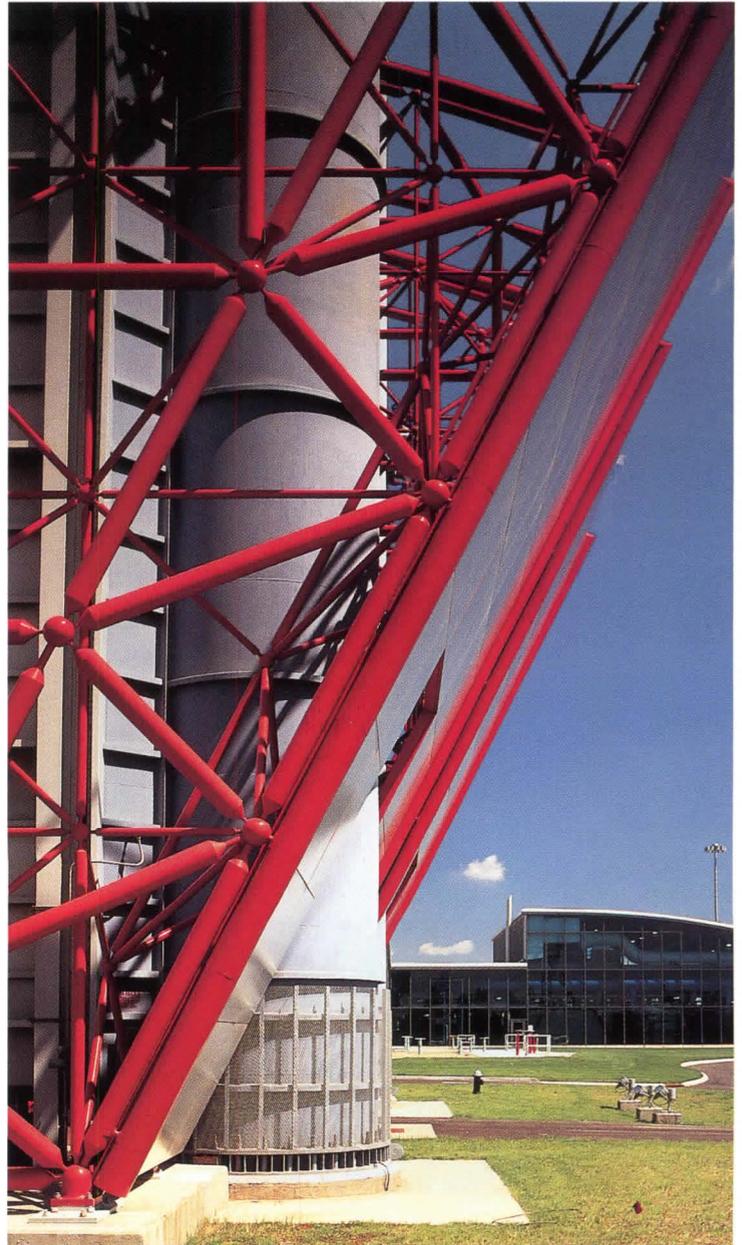
SITE PLAN/FLOOR PLAN

0 100 FT.
30 M.

1. Boilers
2. Turbines
3. Switchgears
4. Controls
5. Warehouse (unbuilt)
6. Cooling towers
7. Existing
8. Chillers

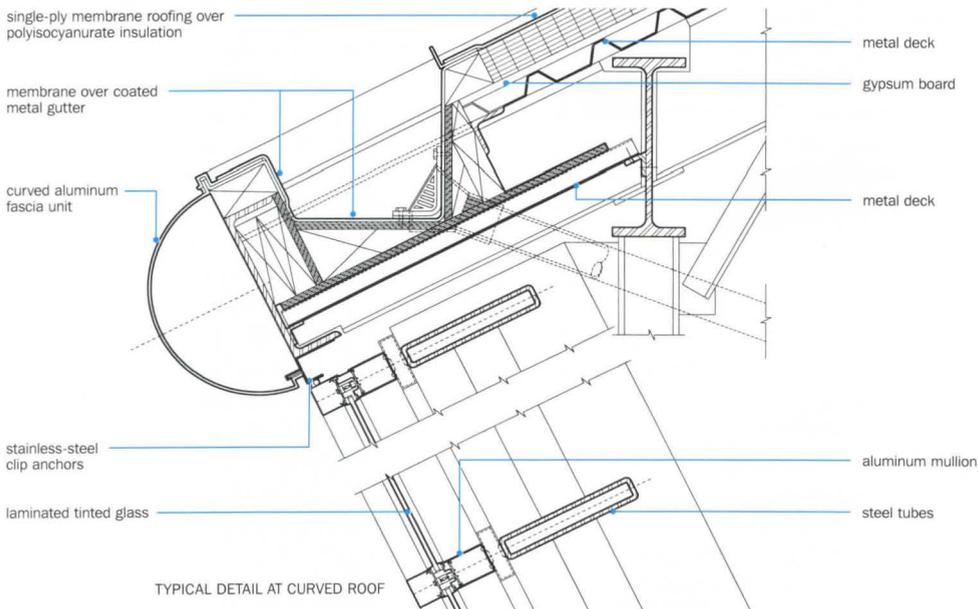
Canted at a 60-degree angle, the tinted-glass walls reduce heat gain as well as the visual impact of the buildings (below and bottom).

The metal space frame wrapping some of the buildings was assembled from commercially available components to keep costs low.





While accommodating the complex machinery was the top priority of the engineers and architects in laying out interior spaces, a color-coded system helps bring order to the techno-ensemble (left).



1994 the Eggers Group merged with The Hillier Group.

The private consortium had not originally envisioned hiring a design architect for the plant. Although David S. Milne, Jr., president and CEO of Gas Energy, Inc., one of KIAC's parent companies, initially thought a design architect would "cost us a lot of money," he estimates the "architecture" portion added "a couple of million dollars," only a fraction of a percent of the plant's total cost.

Early in the design process, Finci decided to celebrate rather than disguise the plant's industrial nature and consciously worked to show off its massive power-generat-

ing equipment. The resulting layers of glass, metal panels, and steel space-frame elements provide some direct and some reflected views of the massive, brightly painted equipment inside. "I didn't want to see the beautiful equipment enclosed. Why hide it?" says Finci.

The cogeneration plant produces 100 megawatts of electricity, enough to power a small city (or a 4,900-acre airport), with two huge gas-powered turbine generators that are—ironically—modified 747 aircraft engines. Power is distributed via four substations to the airport runways, roadways, terminals, and service facilities.

The hot and chilled water that

is distributed underground to the terminals is produced by the plant's central heating and refrigeration equipment, which operates almost exclusively on waste heat extracted from the 900-degree exhaust of the gas turbines. The project included rebuilding some 30,000 ft of hot-water-delivery piping. During construction, contractors had to plan carefully to ensure that deliveries of systems and equipment did not impact airport operations. Because some of the plant components were too large to be taken under airport road bridges, they were moved by barge to the airport and trucked during off-hours across runways and taxiways to the site.

Finci selected green-tinted window walls for much of the plant to reduce heat gain. The glass walls lean out on a 60 degree angle from bottom to top, increasing the reflectivity of the glass and reducing the structure's visual mass. The piping inside is painted in a coded system of colors: red for fire protection, green for condenser water from the cooling towers, yellow for natural gas, blue for chilled water, and orange for hot water.

A space frame gives scale

At the southern corner of the plant, where two 150-ft-long boilers and their soaring stacks are exposed, the architects gave a sense of scale to the giant machinery by surrounding it with a red space frame. The 5-ft-deep metal frame adds a layer of complexity to the structure and at the same time acknowledges the engineering nature of the cogeneration project itself. And by using off-the-shelf components, the architects kept costs down. ■

Manufacturers' Sources

- Space frame:** Starnet International
- Exterior paint:** Sherwin-Williams
- Elastomeric roofing:** Trocal Roofing
- Curtain wall:** Robertson
- Tinted tempered glazing:** Viracon
- Plastic-glazed skylights:** Naturalite
- Exit devices:** Van-Duprin
- Plastic-laminate surfaces:** Formica

2 West Point Sewage Treatment Plant Seattle, Washington

ANGELA DANADJIEVA HAS TURNED WHAT MIGHT HAVE BEEN AN EYESORE INTO A SHORELINE RETREAT.

by Douglas Gantenbein

Project: West Point Sewage Treatment Plant
Seattle, Washington

Owner: King County (formerly Metro)

Landscape Architect/Mitigation

Consultant: Danadjieva & Koenig Associates—Angela Danadjieva (project designer, principal in charge); Thomas Koenig, AIA (project architect); Tong Cheung, AIA (project director); Roland Aberg (project landscape architect); Robert Harding (landscape architect)

Prime Engineer: CH2M Hill

Associate Architect: Streeter, Dermanis & Associates

General Contractor: M. A. Mortenson

Project Statistics

Size: 50 acres (total site); 32 acres (treatment plant)

Plant capacity: 133 million gallons per day

Cost: \$578 million (total cost); \$86.7 million (mitigation)

The 535 forested acres of Discovery Park, a near wilderness, jut into salt-water Puget Sound just three miles north of downtown Seattle. Although tightly bordered by dense residential development, the park retained this ambience due to decades of ownership by the U.S. military: it was once Fort Lawton. Its separation from the surrounding city also had an unfortunate side effect, however. In 1962 West Point, at the waterside tip of the fort, became the site of a \$12.9 million primary sewage treatment plant. Twenty years later, scrambling to meet federal Clean Water Act requirements for secondary sewage treatment (requiring much more elaborate removal of solid material), Metro, the local sewage treatment agency, laid plans for expanding West Point.

By then, Fort Lawton had become Discovery Park, a much-prized city sanctuary. Opposition to Metro's project was fierce, and for a time it appeared the agency would move the plant to another site. But the massive cost of that alternative persuaded Metro to expand operations at West Point in a way that was acceptable to opponents. It promised to spend some 15 percent of the project's \$578 million budget on environmental mitigation.

Douglas Gantenbein is the Seattle correspondent for the Economist magazine and also writes about architecture.

An improbable park

Mitigation, in this context, usually refers to the engineering of disturbed sites to duplicate natural ones. In selecting Danadjieva & Koenig Associates, of Tiburon, Calif., to work with the plant's designers, the Seattle-based engineering firm of CH2M Hill, Metro found a firm that recognizes that re-creating nature may not be enough. The infrastructure landscape work of Angela Danadjieva, the firm's co-founder, was already known in Seattle. She had worked with Lawrence Halprin on the city's innovative 1976 Freeway Park, and her

firm worked on the Washington State Convention and Trade Center—both of which are planted, pedestrianized lids bridging Interstate 5 where it splits the downtown core.

The project required an immense collaborative effort since it had to turn into a benign presence a sprawling processing complex that daily handles more than 130 million gallons of residential sewage.

Installing a planted earthen berm to screen the plant seemed the obvious solution, but it would have been too steep and would



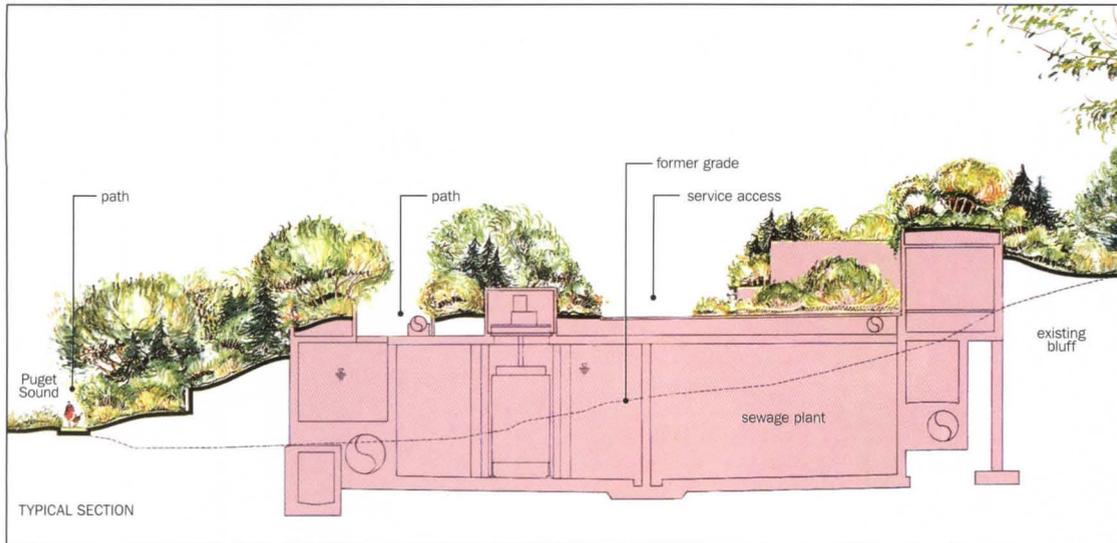
Danadjieva & Koenig constructed a wetland as part of the mitigation of the West Point Sewage Treatment Plant's environmental impact (left). A substantial coterie of waterfowl already have found comfortable nesting spots.



The undulating walls echo bluffs along the north and south sides of Discovery Park that have a naturally scalloped appearance from erosion. The entrance bridge, left, carries a walking path.



The narrow strip of artificial landscape bridges ecosystems from bluff to beach.



have encouraged erosion. Instead, Danadjieva wrapped the treatment plant with a two-mile-long concrete perimeter wall that rises on average 30 ft. Danadjieva's team added a series of sinuous, stepped retaining walls outside the wall, filled in with soil and densely planted. To the east, where the facility hugs a steep bluff, the wall, as high as 60 ft, holds back the unstable slopes. But water drained from behind the wall feeds a new wetland constructed along the project's northern shore (opposite and page 86).

Regard for the human-made

With its waving walls and trails drawn through, the project is much

more than mere "mitigation"; it is a 20-acre extension to Discovery Park. At present, the retaining walls are a dominant, visible presence, despite the softening effect of their curves and a concrete-pouring technique that in places leaves exposed gravel to mimic stream-laid sediment. But rapidly filling in the "hardscape" are more than 60,000 trees and shrubs comprising some 80 native species, including Western red cedar, shore pine, big leaf maple, wild rose, red huckleberry, evergreen violet, and cattail. As the plantings mature, they will cascade over the concrete retaining wall, all but hiding Danadjieva's work.



Danadjieva makes no claim to re-creating nature, however. The mitigation scheme acknowledges the fact that the sewage plant—not to mention earlier human interventions—has irrevocably altered the landscape. This tension between the natural and the human-made is most clearly visible in a bridge that spans the access road into the treatment plant and is the most purely "architectural" part of Danadjieva's work (page 87). A pedestrian path that extends along most of the plant's perimeter brings the pedestrian up as if along a soft curve of natural terrain to a small knoll, the bridge's apex. There they are treated not just to eye-popping vistas of Puget Sound, Mount Rainier, and the Olympic Mountains, but to a vista across the huge man-made treatment facility.

Hiding 32 acres of effluent

Making room for this landscape was no mean feat, since a facility that normally would require 80 acres was shoehorned onto 32. New construction was pushed as far west as possible to free up space along the beaches. A pumping station that from an engineering standpoint would have been best sited near the tip of West Point was moved closer to the bluff, where its three-story height is less noticeable. The massive piping and other treatment works are layered three-deep in

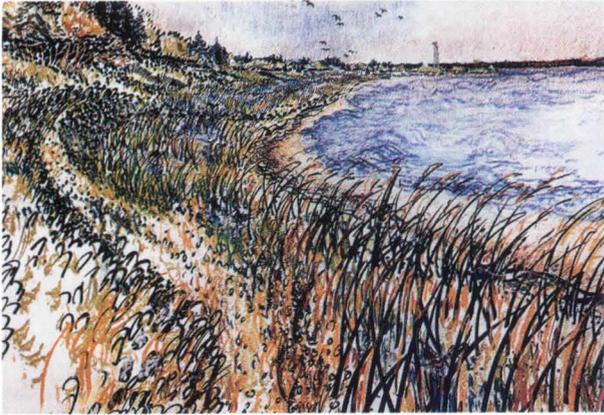
places to save space. And to reduce odors, the huge clarifying and solids-digester tanks are roofed and fitted with scrubbers. Danadjieva and the Seattle architectural firm of Streeter/Dermanis & Associates worked to ensure that a new, partially visible administration building blended in. (One early plan—to put a lid over much of the plant—had to be scrapped due to its cost.)

Construction posed its own problems due to restrictions on traffic access. A concrete plant was set up on the site to churn out the needed 285,000 cubic yards, and a barge dock, now dismantled, was built to bring in raw materials as well as to haul off construction debris.

To test the success of Danadjieva's work, it's best to simply walk along the shoreline. In places visitors may hear the clank of machinery and get an occasional whiff of the plant's raw material (at the time of writing, sewage authorities and CH2M Hill were still fine-tuning operations). But overall the transformation is startling. From the pedestrian path and beach, the walker may become entirely caught up in the riot of wildflower colors, in the sound of waves lapping against the pebbled beach, and in the sharp tang of salt water and decaying eelgrass. It is even possible to forget what is happening a stone's throw away. ■

Danadjieva used sketches (left) and models to meld land-forms and soils with

the particularities of the site's climate, wind exposure, and solar orientation.



3 Floating Bridge London, England

QUICK, CHEAP, AND SPARE, THIS PONTOON STRUCTURE IN THE DOCKLANDS BY FUTURE SYSTEMS IS PART OF A BOOM IN LONDON BRIDGE BUILDING.

by David Dillon

Project: *Floating Bridge, West India Quay*
London, England

Client: *London Docklands Development Corporation*

Architect: *Future Systems—Jan Kaplicky, Amanda Levete, partners-in-charge; Angus Pond, project architect*

Engineers: *Anthony Hunt Associates (structural); Rendel Palmer & Tritton (mechanical)*

Consultants: *Lighting Design Partnership (lighting); Bucknall Austin (cost estimator)*

Main Contractor: *Littlehampton Welding*

Project Statistics

Length: *280 ft*

Cost: *\$3 million*

Structural system: *steel and aluminum on four pairs of polystyrene-filled pontoons*

London's Docklands stretch for miles along the South Thames, encompassing office towers, apartment blocks, and 19th-century warehouses.

In this vast agglomeration, a new footbridge links Canary Wharf, the commercial hub of the Docklands, to the smaller 19th-century West India Quay. Designed by Jan Kaplicky of Future Systems, the bridge is a slender 280-ft arc of painted steel and extruded aluminum resting on four pairs of pontoons filled with polystyrene. The pontoons respond to the movement of the water, giving the bridge a pleasant springiness and the appearance of a graceful water spider. The center section can be raised hydraulically to allow barges and restaurant boats to pass through, though water traffic here is not heavy.

The bridge provides access to shops, restaurants, and gardens, while reinforcing the impression of the Docklands as a waterfront development instead of a landlocked office park. At night, the bridge's legs, deck, and handrails are illuminated by colored lights so it becomes a piercing lime-green line set against the bulky verticality of the surrounding office towers.

David Dillon, a contributing editor of RECORD, is the architecture critic of the Dallas Morning News.

Old idea, new constraints

A pontoon bridge, a piece of military technology that goes back at least to the Romans, offered an ingenious solution to a set of unusual problems. Since the quays at either end are nonstructural, the bridge had to be more or less self-supporting. And since the lawyers and stockbrokers in the Canary Wharf towers didn't want a work barge parked outside their windows for months, it also had to be erected quickly. Kaplicky designed his floating bridge to be fabricated in two sections at a nearby boatyard and then towed into place. Construction took 10 days, at a total cost of approximately \$3 million.

"It was a bit risky," Kaplicky recalled. "The client [London Docklands Development Corp.] had never seen a pontoon bridge before and thought it might be too crude. But they loved the simplicity of it, the way it shows how it is made."

The floating bridge is one of half a dozen new footbridges in the Docklands, part of a citywide boom that includes proposals for rail bridges, automobile bridges, habitable bridges, and a narrow, laserlike footbridge connecting St. Paul's Cathedral to the new Tate Gallery of Modern Art designed by Norman Foster. After decades of sprawl and fragmentation, London is suddenly pulling itself together.

Kaplicky attributes the renaissance

to an exhibition several years ago of the work of Santiago Calatrava, which changed the public's perception of what a bridge could be. "He raised the standard for everyone," says Kaplicky. In addition, London itself has changed. The real estate bust of the late 1980s, coupled with the demise of Postmodernism and the retreat of the hectoring Prince Charles, has refocused attention on making the city work. Infrastructure has become the hot design category, and bridges its most conspicuous component. (Ironically, none of the bridge commissions has gone to Calatrava.)

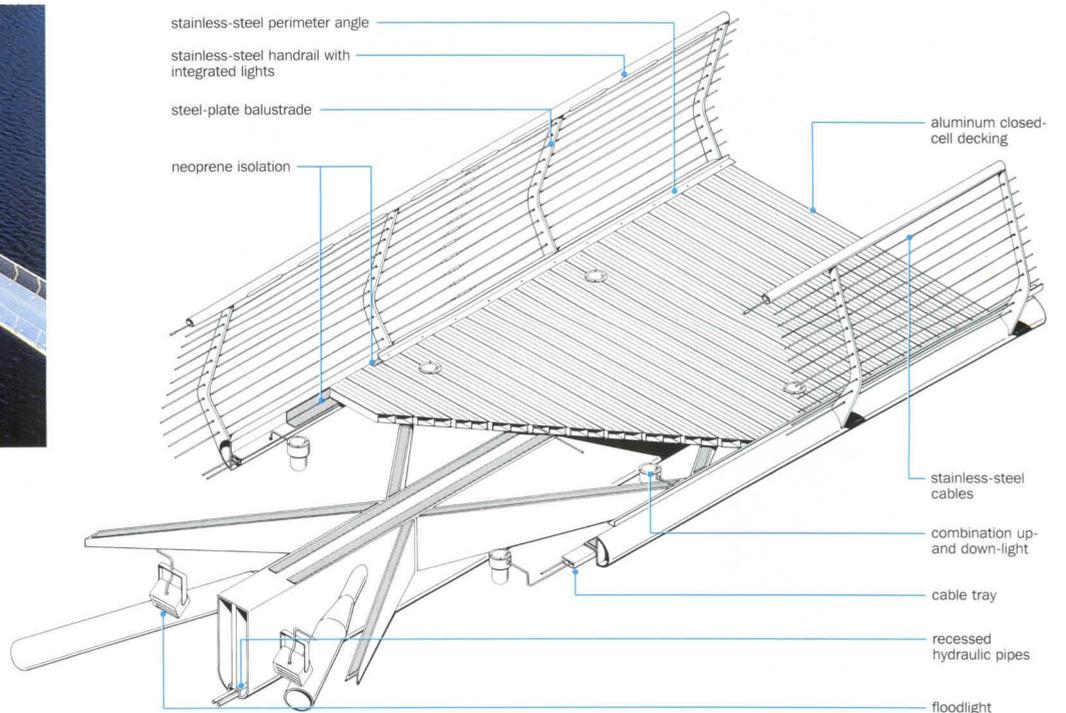
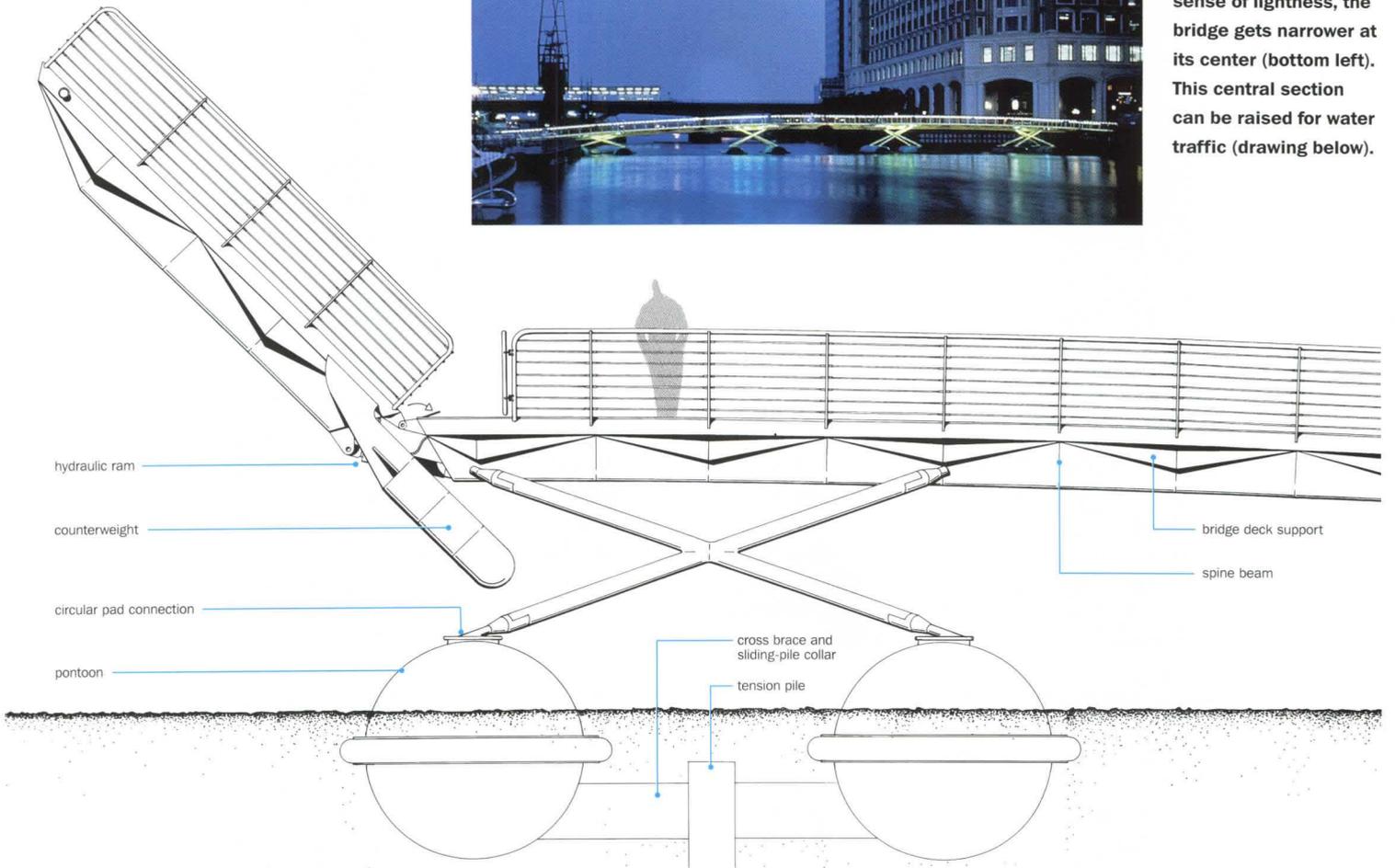
Testing new ideas

For architects, designing even a footbridge can be a chance to experiment. Thus, Kaplicky is having his steel press box for Lords Cricket Grounds fabricated at a Thames shipyard and transported to the site, just as he did with the Canary Wharf–West India Quay bridge. In a city nearly smothered by two decades of revivalist appliqué, bridges have become a vehicle for reasserting the value of construction and craft.

"In London, you can no longer go to an engineer and say, 'Build me a bridge,'" says Kaplicky. "The role of architecture in an engineering project has been recognized. It is not just a decorative element." ■



Fluorescent lighting in the stainless-steel handrails illuminates the bridge at night (left). To heighten the sense of lightness, the bridge gets narrower at its center (bottom left). This central section can be raised for water traffic (drawing below).



4

Transportation Center Charlotte, North Carolina

AN AIRY, VAULTED SHED PACKED WITH SERVICES SOLVES PROBLEMS TYPICAL OF SPRAWLING ALL-BUS TRANSIT SYSTEMS.

by **Kenneth Friedlein**

Project: Charlotte Transportation Center

Charlotte, North Carolina

Owner: The City of Charlotte/
NationsBank, a joint venture

Architect: Gantt Huberman Architects—Harvey B. Gantt, FAIA, partner-in-charge; Larry Walters, AIA, project architect

Engineers: King/Guinn Associates (structural); McCracken & Lopez (plumbing, fire protection, mechanical, electrical)

Consultants: Gantt Huberman (interiors); Land Design, Inc. (landscape); Parsons Brinckerhoff Quade & Douglas (traffic and civil engineering); James Brawley (ADA/sound systems); Jones Worley Design (graphics)

Project Statistics

Construction cost: \$9.3 million

Size: 95,000 sq ft

Passengers: 4.5 million in the first year

Construction: Fast-tracked: a 9-in. concrete slab was poured on a 15-ft grid of pilings because of uncertainties about soil conditions. Construction took 12 months; the center opened December 1995.

While urban rail stations were often grand and airport terminals can be elegant, bus stations have rarely been accorded the architectural treatment these ubiquitous facilities deserve. Charlotte, North Carolina, has attempted to rectify this situation by erecting an airy, barrel-vaulted pavilion that already serves as a terminus and transfer point for more than 4.5 million annual transit passengers.

It was not clear initially what a bus station in a city of 580,000 ought to be. Several planning studies since the late 1960s had anticipated Charlotte's need for a central facility to consolidate transfers. In the 1980s the city opted for a different model, remaking the downtown's main north-south avenue with wide walks lined with lamps and trees and punctuated with bus shelters that would disperse riders along a 10-block, people-oriented transit mall.

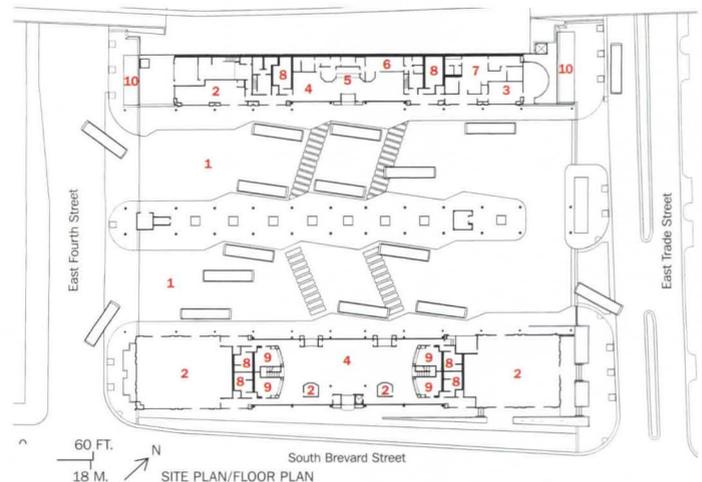
Unfortunately, because the hub-and-spoke bus system relies so extensively on transfers, waiting riders didn't spread out along the streets. Instead, up to 10,000 daily passengers packed the sidewalks around The Square, downtown's crossroads, because it was the

point at which most routes met. However, The Square is also the showpiece center of the city's rising banking district, and, aside from a few inadequate shelters, there were no facilities for riders. Voices in the corporate community expressed concern about a perception that the white-collar office district was being overrun by the blue-collar and service workers that make up the bulk of bus ridership.

The bank makes an offer

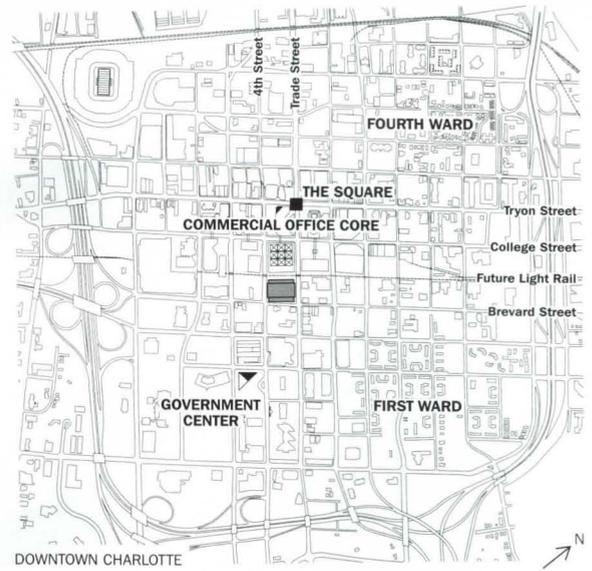
NationsBank, a key local player, has a history of initiating and investing in inner-city developments in Charlotte. Indeed, its Corporate

Center, the 60-story tower and performing arts complex designed by Cesar Pelli, faces The Square. Chairman Hugh McColl brought together city and transit officials and Harvey Gantt, FAIA, a former mayor and U.S. senate candidate and partner at Gantt Huberman Architects. McColl made an offer: if the city would provide the land, the bank would finance a central bus facility. Gantt was sensitive to the impression that would be created by merely relocating bus riders to a less visible location. On the other hand, moving the people and the buses to a close-in site could relieve congestion and realize a



- | | | |
|------------------------|------------------------|-----------------|
| 1. Bus loading shed | 5. Transit information | 9. Food vendor |
| 2. Retail | 6. Police | 10. Bus shelter |
| 3. Utility-bill paying | 7. Branch bank | |
| 4. Lobby | 8. Toilet | |

Kenneth Friedlein, a longtime journalist, is an architectural intern at Dixon Weinstein Architects in Chapel Hill, N.C.





The bus facility's shed is welcoming even at night. Food vendors, a clinic, and other services were designed into the center (below left), catering to a ridership limited in both time and means.



long-term planning goal for street-focused development that bridges the gap between Charlotte's skyscraper business district and the complex of lowrise city and county offices that sprawl over several blocks to the south (map, page 93). Gantt remembers that the bank's initial inclination—to array bus shelters on the city's 2.6-acre site—seemed too modest. He sensed that “the intersection of transit needs and city growth” presented an opportunity.

“There was no interest in hauling people away from The Square simply to relieve the bank,” Gantt says. The transportation center “ought to be something more than a place to catch a bus and a place to go to the bathroom. It ought to

contribute to the life of the city.” As the firm looked into the problem, he realized “there weren't a lot of examples. Face it—buses aren't the pizzazzy form of mass transit.”

A big pavilion

Initially he gave the sketch problem to the entire office, he explains. “What came back were a lot of big spaces. It was obvious we had an opportunity to do a grand space, a terminal like the train stations in Rome and Florence, like Victoria Station in London. . . . We wanted motion, movement, a different form [from other downtown buildings].” The scheme Gantt ultimately presented cost about \$10 million and featured a landmark structure and an attention-grabbing mix of uses

that would cater to waiting bus passengers and to visitors who might be enticed from nearby offices.

As developed by project architect Larry Walters, AIA, the project covers most of a former city parking lot with a 200-ft, truss-supported curved roof spanning the 20-bay bus transfer pavilion. Two smaller-span vaults flank the main shed, enclosing climate-controlled retail and service spaces.

Gantt Huberman made the most of the exposed steel-angle trusses by filtering daylight from skylights through them, uplighting them at night, and adding touches of neon. The architect hung banners to add color and a rider-oriented scale within the big space and used backlit glass block in the side pavilions to enliven the exterior. “We knew this could really spur development on this side of town,” Walters says. “We tried to make it as exciting as possible.”

Walters credits Charlotte Transit System officials with keeping his firm focused on the needs of bus riders, and the center features transit information in forms accessible to riders who are either vision or hearing impaired. Riders with a variety of disabilities are also served by a staffed transit information and ticket center. The recent addition of a walk-in, preventive-care clinic run by the city's major medical center rounds out ancillary operations in

the now fully leased facility. To help riders feel secure, benches have short arms that define seats and thwart sleeping. Many walls are fully glazed to ease surveillance.

Gantt says he measures the transportation center's success by the satisfaction expressed by clients, both the bank and the bus riders. By making an opportunity out of what was perceived as a problem, “all those issues about moving people off The Square are largely forgotten.” The Federal Transit Administration called the facility a model for all-bus systems.

“It helps to have clients like Hugh McColl who have got real feelings and concern for this downtown area,” Gantt observes. It also helps to know what's going on. “We have a storefront office here—people walk in off the street. And we have an ethic that says people get involved in the community. What ought to make a better designer is understanding the socioeconomic and political factors that shape what a city becomes.” ■

Manufacturers' Sources

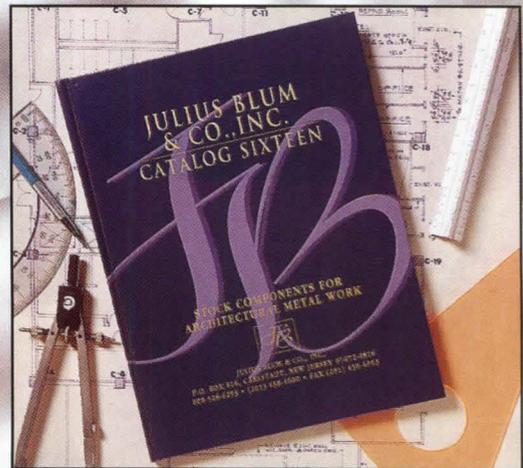
Storefront system: Kawneer
EPDM roofing: Johns-Manville
Metal doors and frames: Ceco
Acrylic CMU coating: Sto Decocoat X
Toilet partitions: Metpar Corp.
Glass block: Pittsburgh Corning
Tile: Granitifiandre, Florida Tile, Dal-Tile

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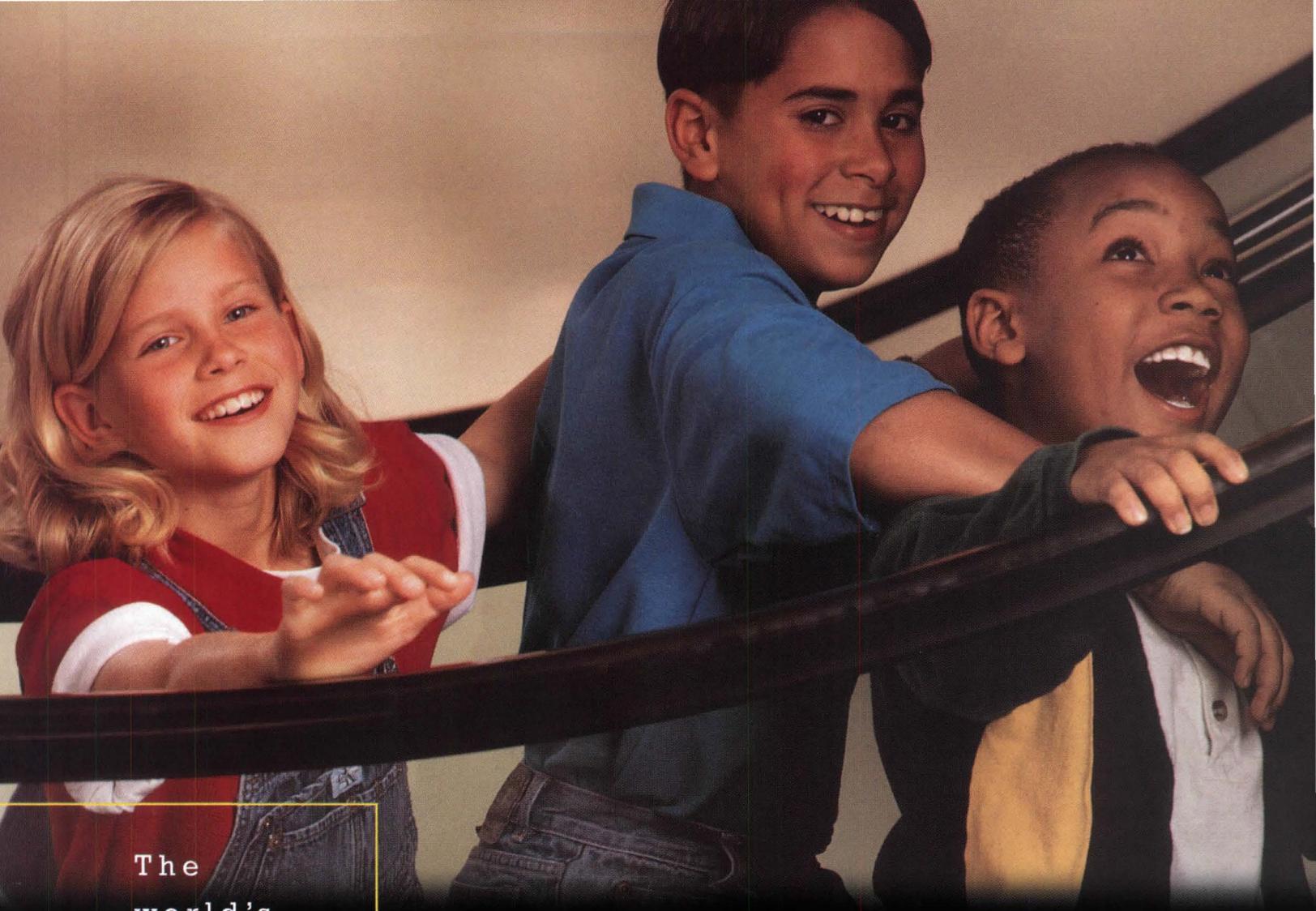
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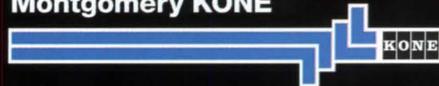


The
world's
first
kidproof
escalator?

No, unfortunately.

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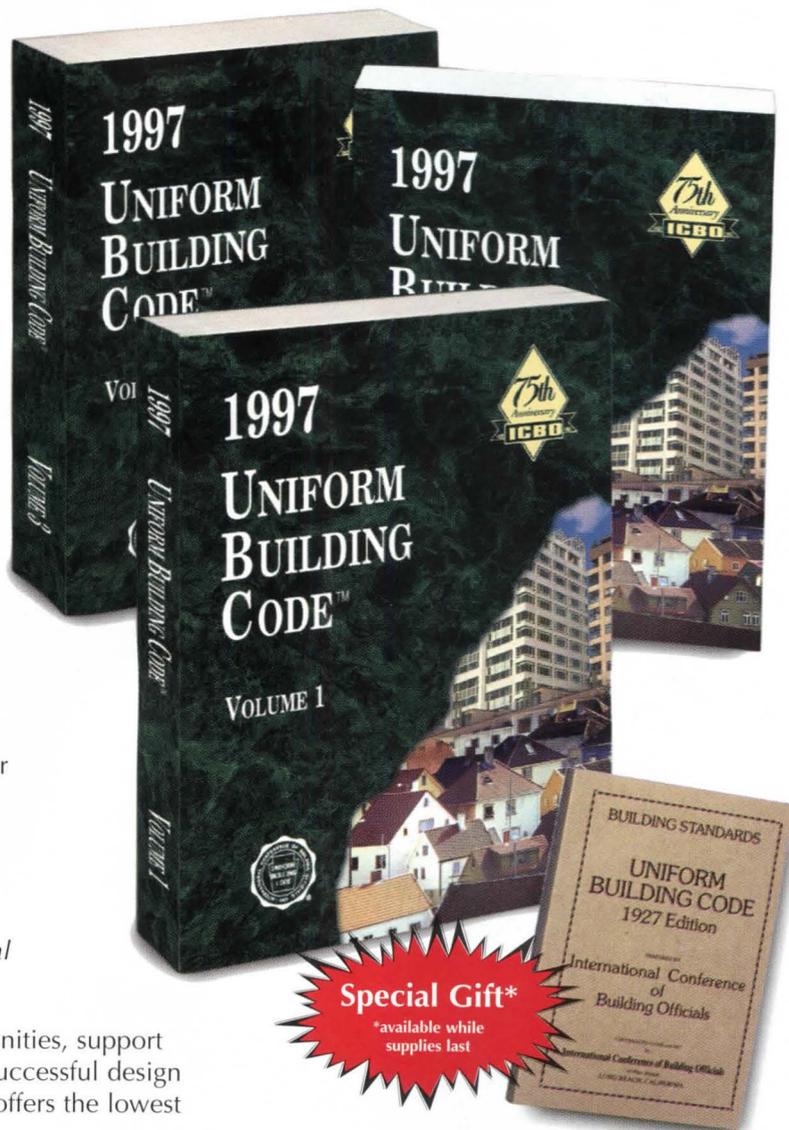
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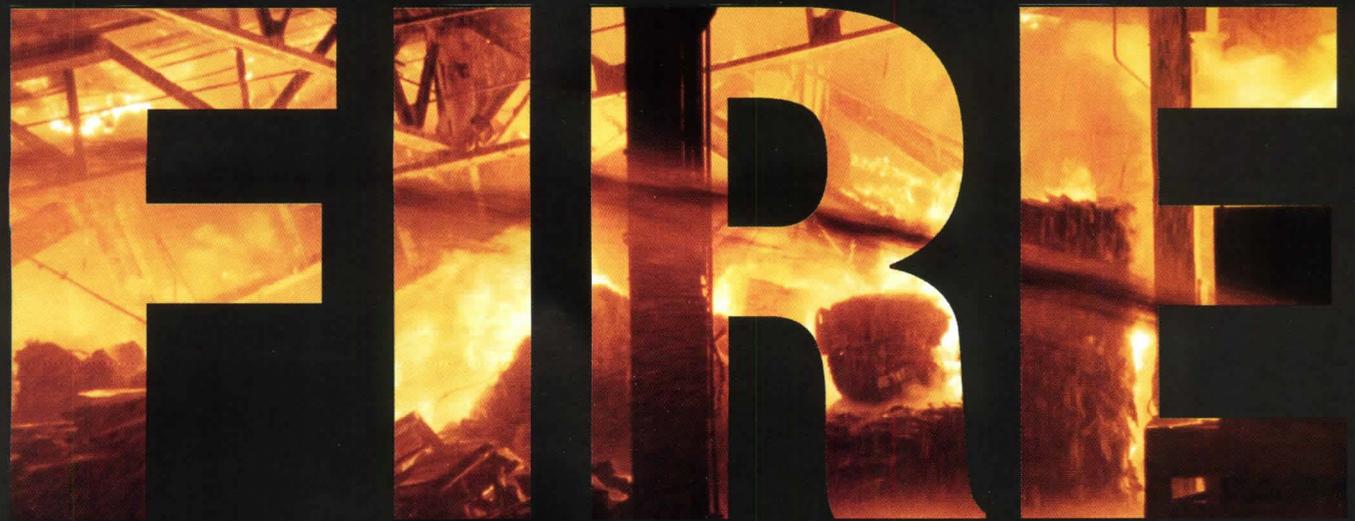


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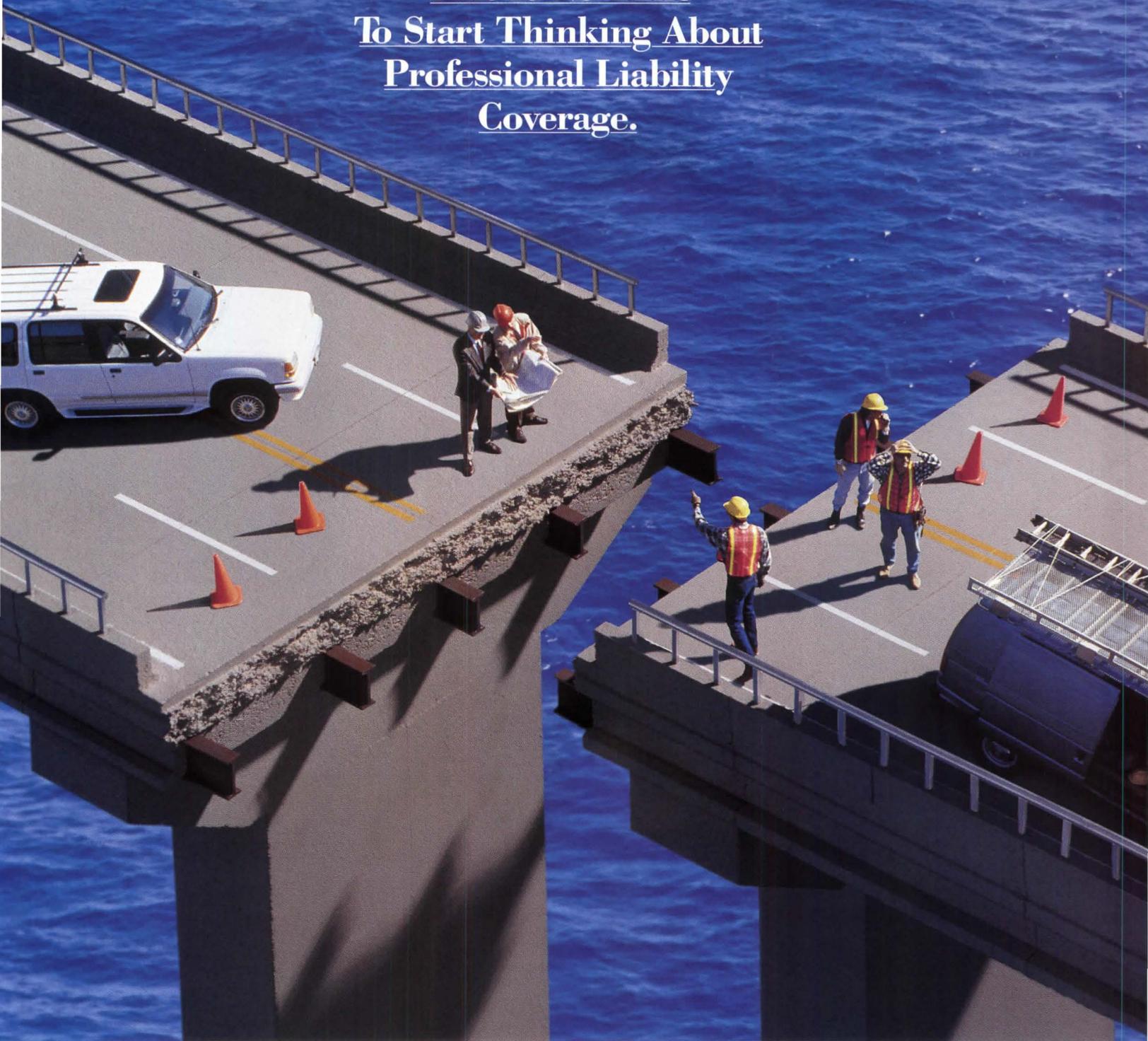
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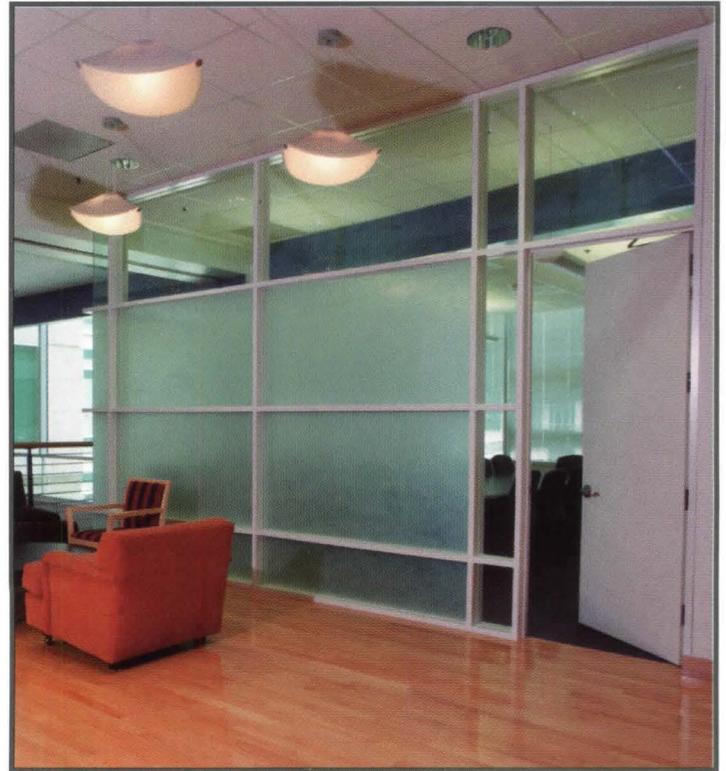
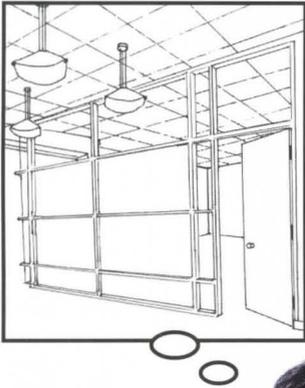


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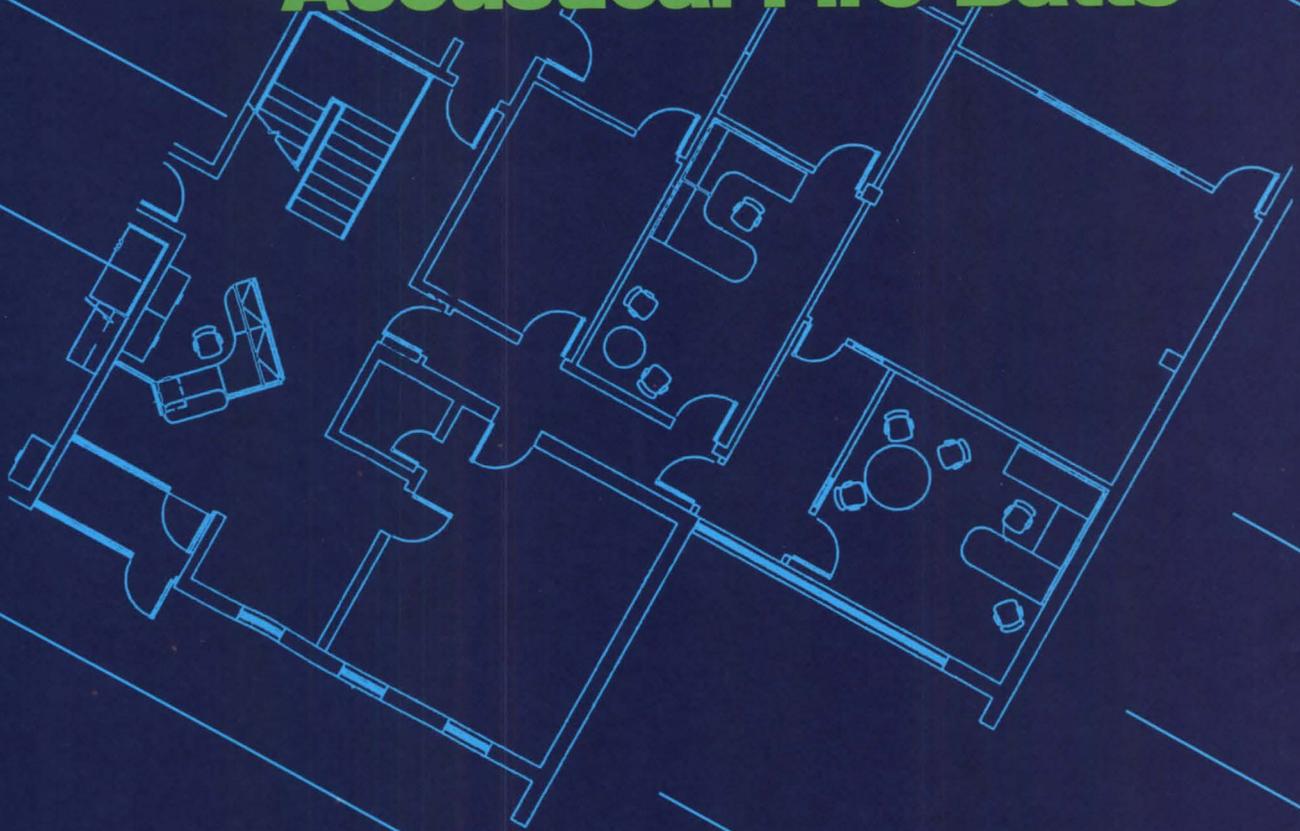
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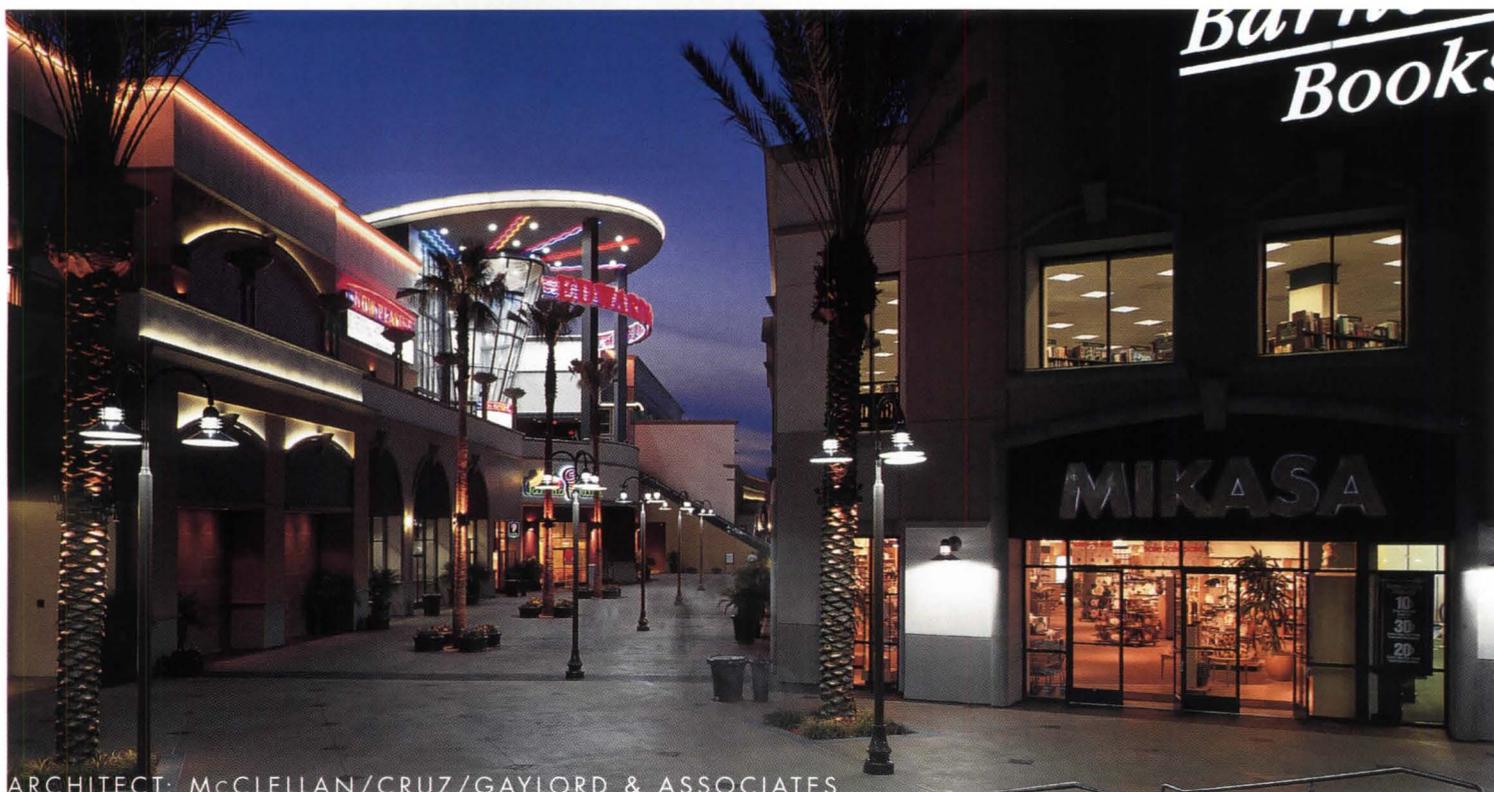
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LIGHTING...



1909–1997

ABE FEDER whose accomplishments in architectural and theatrical lighting spanned over sixty years, passed away at the age of 87 on April 24. I remember the first time I ever spoke to him—it was about 10 years ago, and I was the editor of a fledgling lighting magazine. One afternoon he called me out of the blue and grilled me about the magazine and what I knew about lighting. Not very much, I had to admit. Had I ever heard of him? No. Over the next 30 minutes he rattled off a list of accom-

plishments so amazing I thought he had to be making them up: technical director for the Federal Theater Project, including Orson Welles's famed production of *Dr. Faustus*, the lighting designer for the original productions of *My Fair Lady*, *Camelot*, and *On a Clear Day You Can See Forever*. Later I learned he had designed some 300 other Broadway shows.

At the end of World War II his theater work was suddenly supplemented by dozens of architectural lighting jobs every year, as the value of adding a lighting designer to the design team was suddenly realized by architects. Even though relatively few buildings were built during the Depression and the war, advances were still made in lighting. Now there were fluorescent lamps, PAR and reflector lamps, recessed downlights, and other innovations that demanded the skills of an expert. During the four and a half decades he did architectural lighting, his client list read like a who's who of architects. Edward Durell Stone, Harrison and Abramowitz, and Eero Saarinen, to name just a few, all consulted with Abe.

One of his best-known projects was the lighting of the RCA Building (right, now known as the GE Building) in 1986. He also lit the Prometheus Fountain at its base, the sculpture of Atlas nearby, and murals inside. The lighting of the GE Building is even—defining the setback planes sharply—and bold, just as Wallace Harrison's architectural forms are. Today, I work across the street from the GE Building, and in the winter, when darkness comes before I go home, I never fail to look the place over, and think of the wonderful things Abe Feder brought to life through illumination. His work, like that of other lighting design pioneers, changed the face of architecture forever. I will miss him.—Charles Linn, AIA

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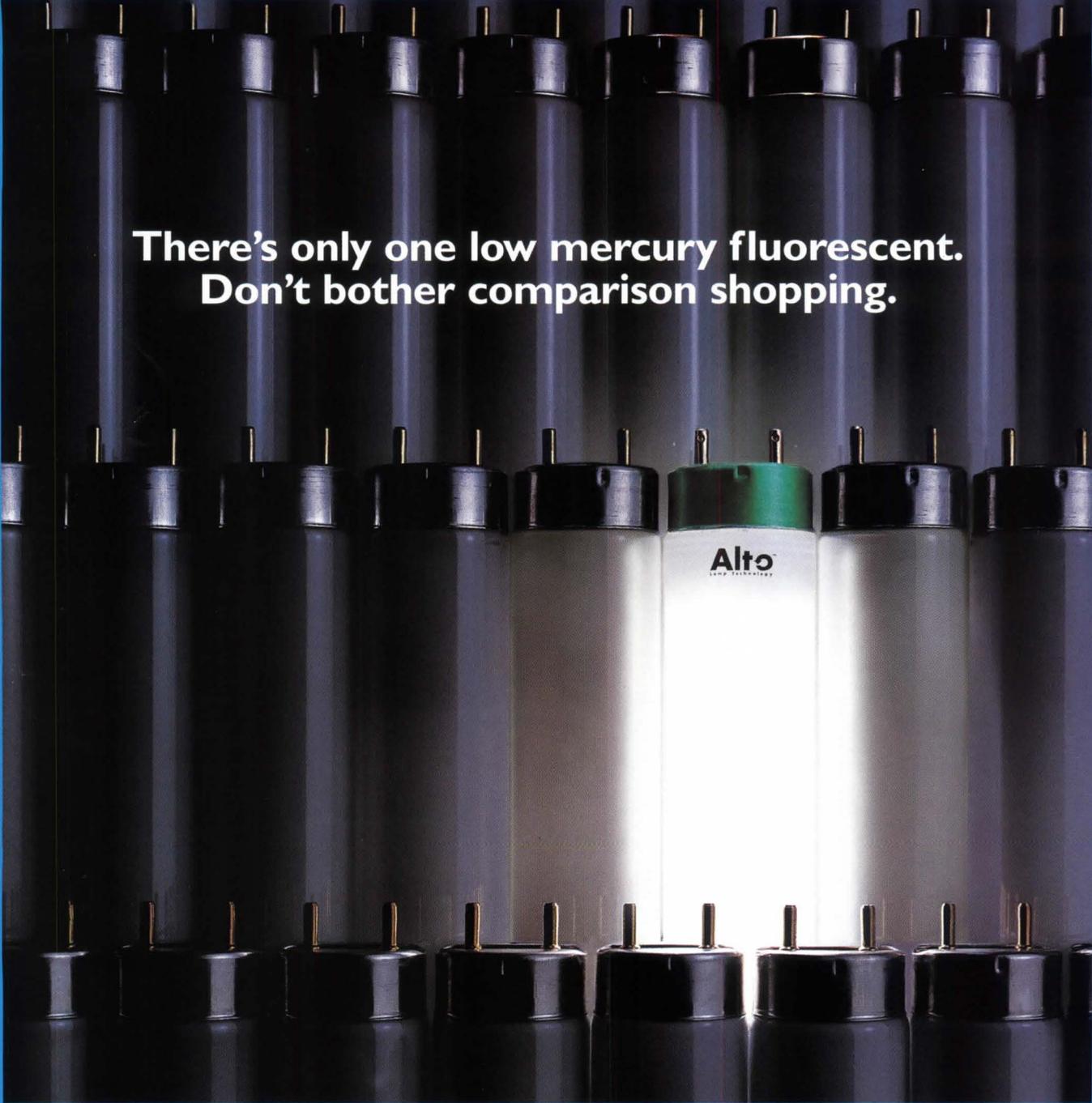
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CREATIVE USES

LIGHTING A COSMETICS SHOP AS IF IT WERE A JOURNEY OF SELF-DISCOVERY

The Trucco Atelier in Glendale, Calif., is a cosmetics workshop. It is an interactive, “touch-feel-know,” 1990s kind of store, where cosmetics are within reach and the purchase of makeup is treated as a journey of self-discovery. The first in a series to be opened by the California-based company Sebastian International, the Trucco Atelier was designed by the Woodland Hills–based architectural firm of Artecnic, headed by Enrico Bressan and his wife, artist Tamineh Javanbakht.

The 550-sq-ft store is designed with plexiglass, glass, resin, and fiberglass in shades of blue and aquamarine, accented by natural birch display units.

The storefront is made up of three layers of parallel vertical glass panes set just inches away from each other. This creates the illusion of depth and adds a three-dimensional quality to the displayed products. In the storefront window, cable-mounted V-shaped light fixtures with MR16 lamps are mounted between the layers of glass to spot displays.

The window, coupled with an epoxy-plastic-covered floor and 11-ft-high glass-paneled walls, creates a high-gloss glass box. Suspended fiberglass panels float along the ceiling, adding dimension and translucency to the space. Four rows of track lighting with MR16-lamped pendants attached are concealed in the fiberglass ceiling panels. These pendants have been supplemented by a 100W quartz flood aimed at the ceiling. In the display areas, MR16 halogens mounted from 16-in. stems allow the flexibility necessary for changing displays.

“The store is like a chameleon,” says Javanbakht. “It has to be able to change its skin to fit the different moods of the display.” The brief for the lighting was that it had to be adjustable, but also had to be warm and bright enough from all angles to facilitate the application of cosmetics.

“It was like creating a stage set where the customers are the actors,” adds Lili Merck, of Artecnic, who also designed the lighting for the project.



HIGH-VOLTAGE HUES GIVE POWER STATION GLOW OF RESPECTABILITY

Dewar Place, a power systems substation of ScottishPower, has played a key role in the city of Edinburgh for more than a hundred years. A major energy source for the city, the station supplies power to 33,000 customers. A recent redevelopment of the area around the old railway station, replacing the station and its sidings with some of Edinburgh's finest modern buildings, had made Dewar Place something of an eyesore in contrast with the now vital Exchange Plaza.

The substation could not be moved or changed, but a community-led initiative to enhance its appearance determined that lighting could be used to transform the space. For the Edinburgh-based lighting design firm Jonathan Speirs and Associates, the challenge was to create a sculpture out of the functional forms of the power plant. The resulting lighting plan has transformed a visual embarrassment into a vital, dynamic structure, which has become a city landmark.

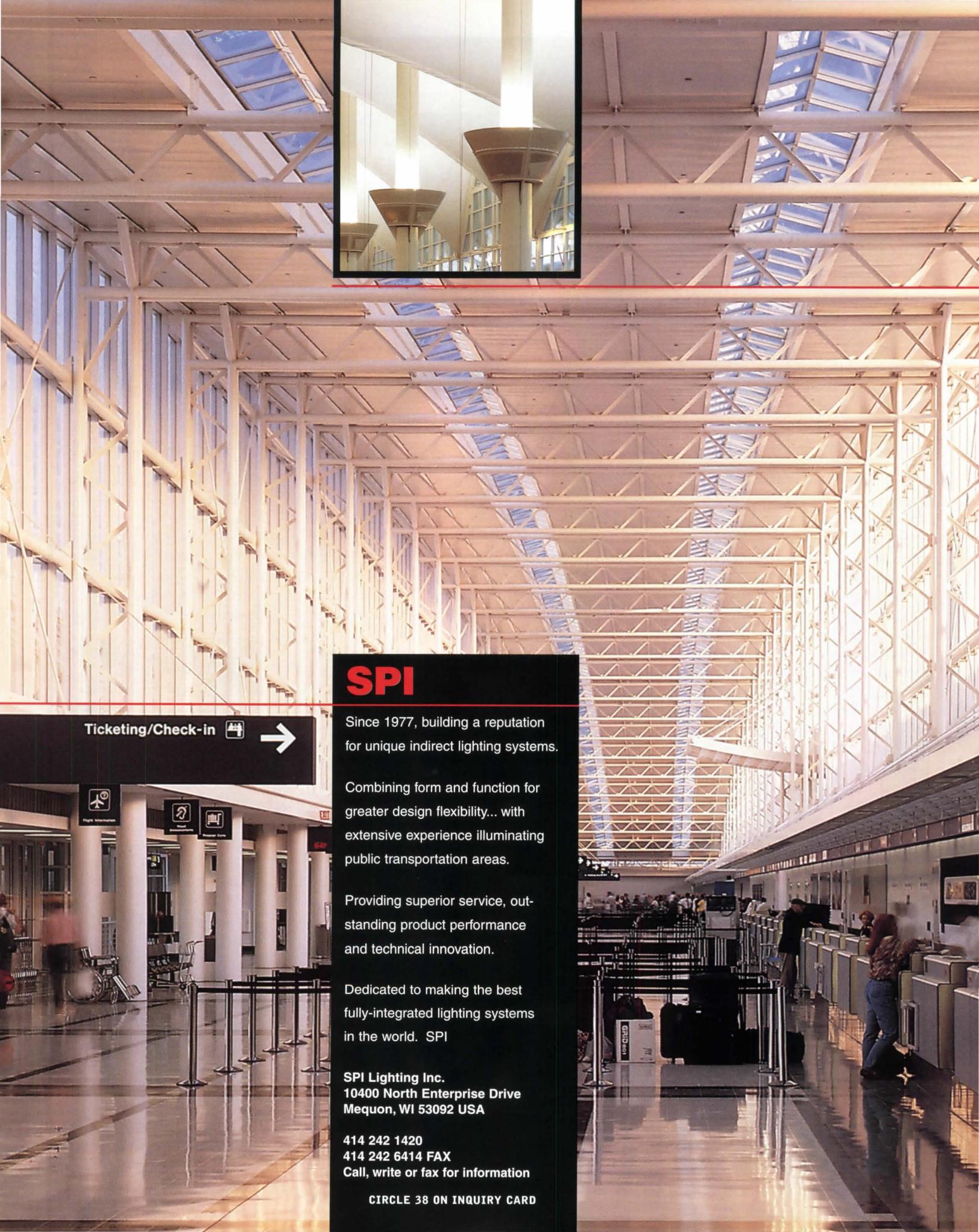
Five Irideon AR500 luminaires fitted with dichroic filters drench the unusual forms in red, blue, green, and yellow, creating a color composition that uses the corporate colors of ScottishPower. Metal-halide fixtures within the components of some of the machines—such as cooling fins and porcelain insula-

tors—emphasize the three-dimensional quality of the space. Fluorescent batons around the exterior edges of the site define the border of the structure. Speirs and Associates have deliberately limited the types of lamps and luminaires in order to allow easy maintenance.



Creating a light sculpture in the heart of the city brings its own set of requirements. While the structure had to be lit so that it could be viewed from every angle, up close and at a distance, luminaires have also been carefully aimed and shielded to avoid spilling light onto the surrounding buildings, and to avoid creating glare on the four-lane highway nearby.

The lighting scheme, part of ScottishPower's £400,000 investment in technical and visual enhancement, has, according to the lighting designer, pleased the local government, community groups, and neighbors alike, and has led the way for more community-based solutions.



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LIGHTED LOBBY-LANTERNS GREET LOWELL TOWERS OFFICEGOERS



ADD Inc., of Cambridge, Mass., was commissioned to transform Lowell Towers, a rather uninviting, single-tenant property consisting of three square, brown office buildings in Lowell, Mass., into a user-friendly multitenant office environment. As redesigned, a pair of complex, curved-glass curtain wall entrance lobbies is connected by a bright, broad gallery whose edges are enlivened by retail shops and tenant amenities.

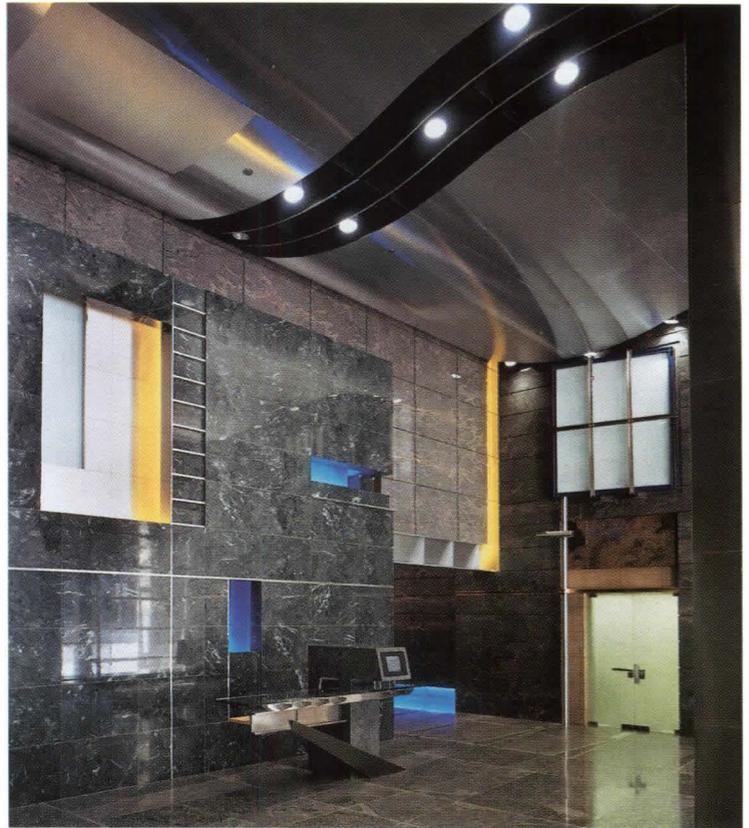
The lobbies—light-filled spaces anchoring both ends of the new corridor—were created by replacing the opaque building exterior with glass curtain walls. The 30-ft-high glass structures now give scale and a dynamic street presence to the 1 million-sq-ft office complex.

Curved in plan as well in elevation, and punctuated by a series of geometric forms, the main glass entry structure is lit primarily from within, so it glows like a lantern. “It has a very high visibility at night, and has become something of a landmark,” says project executive Wayne Koch, a partner at ADD Inc.



“We created a simple lighting plan, designed primarily to animate the building as an object,” says D. Scheppe, of D. Scheppe Lighting Design. 250W, 3000K metal-halide fixtures on a ceiling-mounted metal armature work as wall washers. Also mounted in the 30-ft-high ceiling are 250W metal-halide downlights and 15-mm 3000k neon, recessed into a slot where the curtain wall meets the interior existing stone wall. This light grazes the wall, throwing it into relief and adding drama to the space. Throughout the low-height spaces, energy-saving compact-fluorescent downlights provide ambient lighting and allow the building complex’s management to take advantage of rebates from local utility companies.

The interior lighting spills out through the glass panes onto the plaza surrounding the buildings. Although this creates a pleasant effect and a sense of security, such a large amount of light might be seen as wasteful. In order to compensate, the interior spaces have been sparsely lit at night. Outside, bollards with 250W metal-halide lamps delineate the path from the entrance of the plaza to the lobby. The glass curtain wall is capped by a row of fins that act as sunshades during the day. Recessed metal-halide uplights are aimed at each mullion to emphasize the exterior wall’s curved planes.



LAYERED LIGHT IN LOBBY RENOVATION HINTS AT HIGH-TECH SYSTEMS BEYOND

88 and 100 University Avenue in Toronto appear to be one building but are actually a pair. Both have had their own lobbies and elevator banks since they were constructed in 1956. Located downtown at the junction of the financial and theater districts, the landmark buildings were two of the first curtain wall structures in the city.

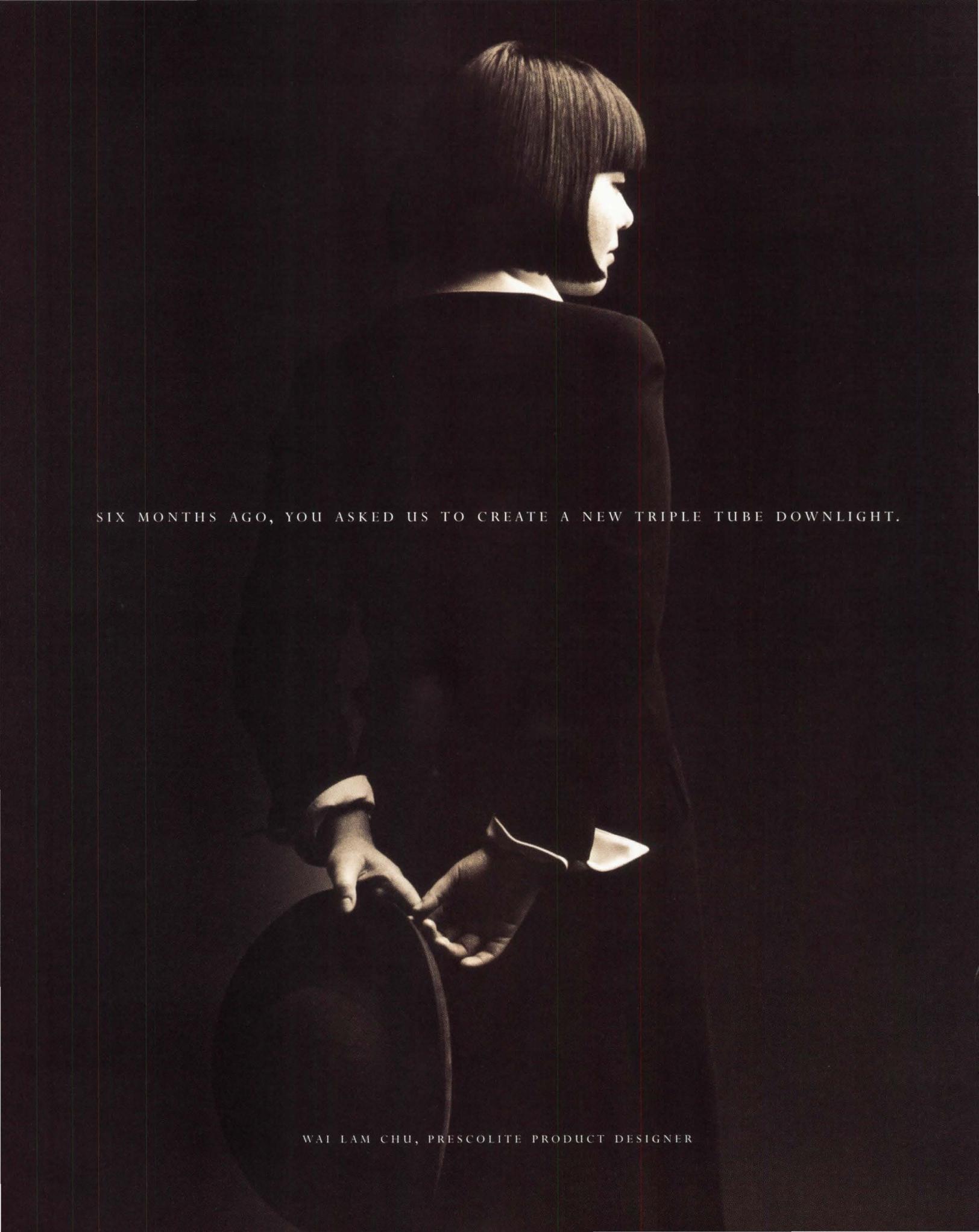
As the result of a limited competition, the Toronto-based Webb Zerafa Menkes Housden Partnership was awarded the commission to create a new image for the building. They combined the two lobbies into one grand, double-height space using glossy surfaces such as granite, glass, and metal, supplemented with cold light—fluorescent, cold-cathode and metal-halide—to create a dramatic entry designed to provide a foretaste of the new state-of-the-art systems within the buildings.

A cantilevered entrance

canopy defines the main entrance and introduces a geometry that is reflected in the lobby floor pattern and the positioning of the lighting. The lobby, according to project manager and lighting designer Voytec Gorzinsky, has been conceived as an extension of the exterior. On the exterior, aluminum “stitches” hold together different layers of granite. In the interior lobby, layers of sheet rock and metal are superimposed with layers of lights of different intensities and color rendition.

In the main lobby, custom, adjustable pendant-mounted fixtures with 50W metal-halide lamps are located in a light trough in the aluminum ceiling, while the elevator banks are highlighted by fluorescent strips with 32W 3500k T8 lamps mounted above a sandblasted glass ceiling. Cold-cathode fixtures—1-in. in diameter—in blue, gold, and coral highlight open corner niches.

—Nayana Currimbhoy



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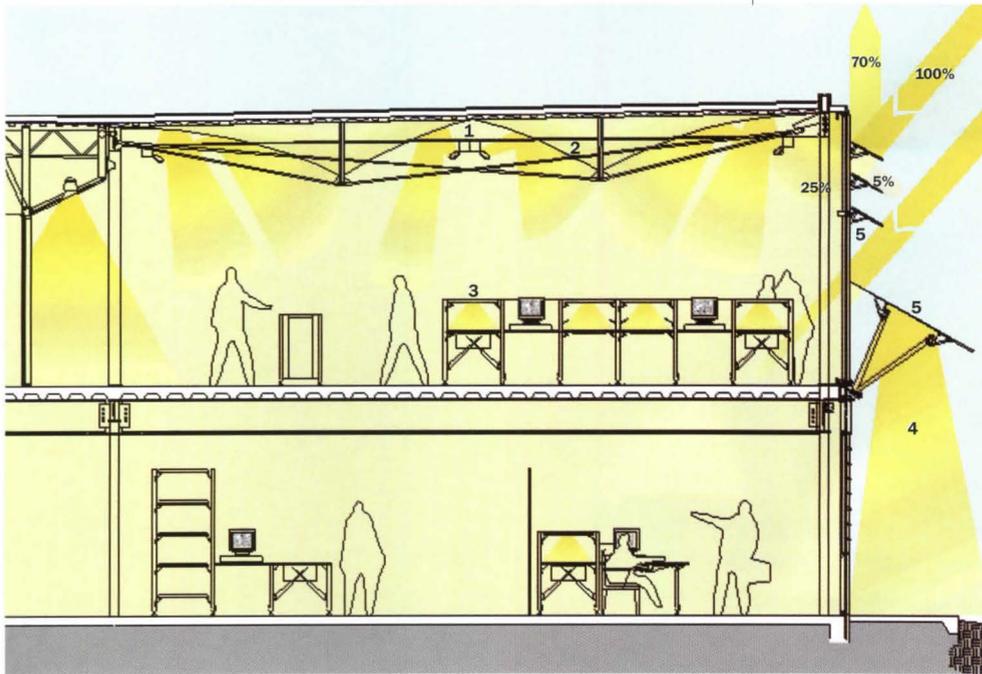
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Innovative Architecture for Image, Efficiency, and Users' Comfort

by Charles Linn, AIA



to give the building a highly visible position on a nearby highway and to create a view corridor to the mountains for building users. This footprint has left a good deal of the site available for landscaping. The north, east, and south elevations are glazed with low-emissivity glass, and the east and south elevations have fritted-glass sunshades fastened to them. The west elevation is solid masonry, to block summer sun and views of a neighboring building. The building's enclosed offices, mechanical equipment, and other services are located on this side of the building, leaving the view accessible to the open-office area, where most of the association's employees work.

At the second story of the two-story structure, where APEGBC's offices are located, the upper sunshades work like light shelves. They are installed at an angle that allows most of the direct-sun component to be reflected away from the building by the fritting during the hottest months of the year, when the sun is

highest above the horizon. Approximately 70 percent of the light is reflected upward, 5 percent is reflected by the low-emissivity glazing, and the remaining 25 percent is admitted into the building for indirect

Architecture has always played a role in defining the aspirations and politics of organizations. And now that some of them want to be seen as earth-friendly, the result can be architecture that uses energy wisely and considers life-cycle issues and a building's use of natural resources. Perhaps the best results are achieved when "green" architecture also attempts to consider the needs of those who work in these buildings.

The Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) wanted a new headquarters building that would show off its commitment to principles of sound energy management, display advanced engineering through its architecture, and provide a comfortable work environment for its employees.

Busby and Associates Architects (formerly known as Busby Bridger and Associates) responded to these needs with a building that is high-tech in appearance but also uses daylighting, an indirect lighting system, and a number of other progressive energy-saving components—such as heat pumps and a ground-source heat sink—to demonstrate APEGBC's commitment to energy conservation. The building's energy consumption is less than 90 percent of that allowed by ASHRAE's Standard 90.1.

The building's form, orientation, and fenestration were computer-modeled to predict energy efficiency and to optimize the building's envelope design. The building's long axis is on a north-south orientation,

1. Indirect lighting
2. Semitranslucent/reflective-fabric sails
3. Task light at desks
4. Indirect walkway lighting
5. Fritted-glass sunshade

Project: Association of Professional Engineers and Geoscientists of British Columbia Headquarters
Burnaby, British Columbia

Architect: Busby and Associates Architects—J. Breshears, P. Bridger, Peter Busby, M. McColl, D. Thiruchitampalam, A. M. Tam, A. Vaughan;
Designlines—S. Schou, G. Tovel

Lighting Designer and Electrical

Engineer: Reid Crowther and Partners—Robert Marcuzzi, lighting designer

Consultants: Read Jones Christofferson (structural); Keen Engineering (mechanical); Reeve MacDugall (landscape); Protection Engineering (life-safety codes)

Contractor: Degelder Construction Company

The fabric lighting system is integrated with the building's suspended roof assembly.





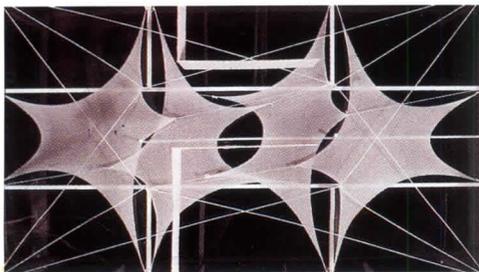
In the summer, the sunshades, made of fritted glass (a glass that has patterns of ceramic fused to its surface), reflect much of the direct-sun component away from the interior of the building. In the winter, when the sun is closer to the horizon, more light is admitted.

lighting. A larger sunshade, which protects the first-floor leased space, also doubles as a reflector for 70W metal-halide fixtures. These are aimed upward to the underside of the sunshade to provide indirect walkway lighting at night.

The lighting in the offices is provided by 70W metal-halide tracklights, in addition to the daylight that is bounced off the light shelves. The light reflects off a shallow, fabric tensile structure that is fastened to a suspended roof assembly—which itself eliminated the need for

and manufactured by Designlines, Busby and Associates' product design division.

Other portions of the APEGBC building are also lighted with energy-efficient fixtures. Corridors are illuminated with 18W compact-fluorescent downlights, and enclosed offices are lighted by two 32W T8 lamps in 2-by-4-ft ceiling troffers with 2-in.-deep louvers. Busby and Associates also designed the interiors and provided task lighting for workstations where needed. ■



The shape of the fabric reflector/shade was fine-tuned using a model (left). A detail of the finished shade (right) shows the soft, indirect light produced by the system.

a conventional bar joist structural system. A combination of spot and flood fixtures was used, depending on how far away from the fabric the fixtures were located. The fabric is translucent, so that some of the light bounces directly off it, while some of the light penetrates the fabric to the ceiling, where it can bounce downward again. The resulting light is soft, avoiding the computer-screen reflections that are a source of discomfort for users. Workstations have also been oriented away from direct light that comes through the curtain wall to keep daylight from reflecting in the computer screens. The unique castings and extrusions used for the fabric structures, sunshades, and roof suspension system were designed



Manufacturers' Sources
Exterior metal-halide indirect fixtures: Infranor

Metal-halide track: Lightolier
Fluorescent downlights and troffers: Thomas Industries

A Procession of Museum Spaces Inspired by the Light of a Dutch Painter

by Charles Linn, AIA



Rogier van der Heide, an Amsterdam-based lighting designer, has something in common with many American lighting designers: he learned his craft in the theater. He studied lighting design, photography, and directing at the Institut Supérieur des Beaux-Arts in Brussels and the Theatre School in Amsterdam. Van der Heide lit operas, musicals, and plays throughout Europe before establishing his firm, *Hollands Licht*, in the early 1990s. The firm concentrates mostly on architectural lighting design, although it has also lit some theatrical productions. Van der Heide writes, “My design philosophy uses the emotional and shaping qualities of light to make architecture live. I learned to work from this point of view in the theater.”

This theatrical lighting approach produces fine moments in his lighting of an exhibition, “The Pride of Haarlem,” at the Frans Hals Museum in the city of Haarlem, the Netherlands. The museum is the

home of the world’s largest collection of paintings by Hals, one of the Dutch Old Masters (it has been said that Hals was to Haarlem what Rembrandt was to Amsterdam). The museum is located in a 17th-century building formerly used as a convalescent hospital known as the Old Men’s Home.

The lighting worked out by Van der Heide for the exhibition is undeniably influenced by Hals’s own re-creation of the gentle, ethereal quality of daylight in his paintings. But rather than applying oil to canvas, Van der Heide has used light itself and gauzy, translucent fabric as his mediums. Information is transmitted onto the fabric in the forms of shadow, color, and text. The fabric’s translucency both illuminates and obscures what lies ahead for the viewer, creating sequences of mystery followed by revelation.

The entrance to the exhibition (opposite middle left) is marked by the words “Des trots” (“the pride”), which epitomize the 750-year history of Haarlem celebrated by the exhibition. The phrase is painted in red on a blue wall, and veiled behind a curved curtain. The curtain is itself grazed by white light, and forms a semicircular room that presents Jacob van Ruisdael’s 1670 painting *View from the Dunes with Haarlem in the Distance*. A bright wash of light reflecting from an adjacent gallery signals that a transition is due. To keep one white-painted gallery after another from becoming monotonous, and to establish a sense of mystery and sequence between the spaces, Van der Heide has dressed walls and draperies in some rooms entirely in blue- or red-colored light (left and opposite lower left), alternating these with galleries that are lit entirely by white light.

Throughout the exhibition, a floor cove fixture developed by *Hollands Licht* is used to project uplight on the walls and paintings. The effect is not unlike footlights once used in the theater. A row of track fixtures with silver-bowl lamps built inside a trough is aimed toward an adjustable mirror—the light simply bounces from the mirror onto the paintings and wall surfaces. Even in this gallery with many paintings, Van der Heide has avoided the conventional use of accent lighting and lit all of the paintings evenly. Wherever possible, lighting is integrated with the exhibition design to create interesting and mysterious textures. For example, a front-lit antique chandelier casts a shadow at a sharp angle on a piece of folded drapery hung behind it (opposite bottom right). ■

Project: *Frans Hals Museum
Haarlem, the Netherlands*

Architect: *Gebr de Jong*

Lighting Designer: *Hollands Licht—
Rogier Van der Heide, principal; Henk
van der Geest*

Electrical Engineer: *Hollands Licht*

Manufacturers’ Sources

Halogen track: *Erco*

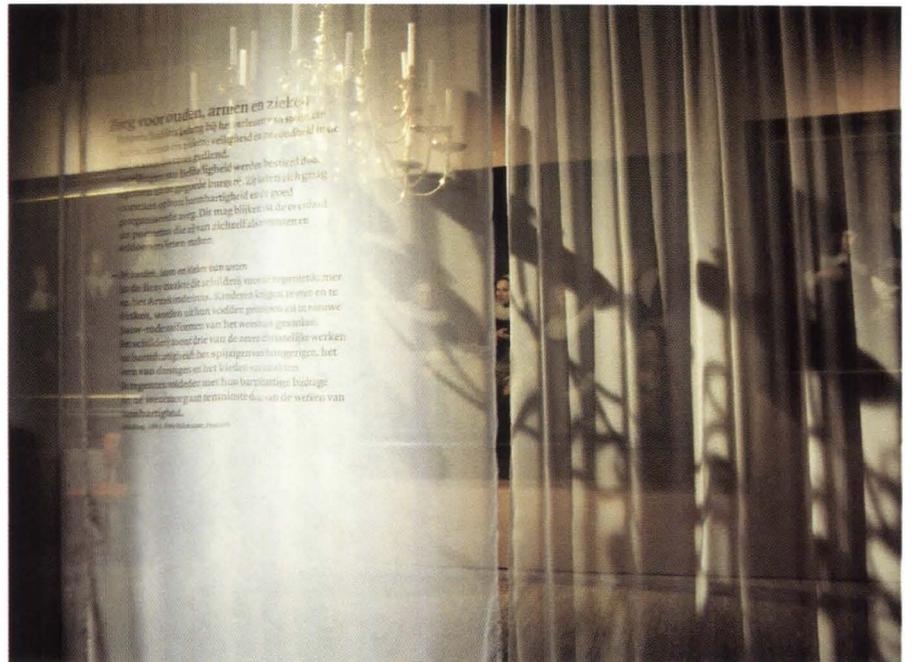
Ellipsoidal track: *Microspot*

Dichroic filters: *Erco*

Floor cove fixture: *designed by
Hollands Licht*

Floor cove track: *Erco*

Rogier van der Heide's lighting design for the Frans Hals Museum engages visitors by re-creating the lighting of the Dutch Old Master painters.





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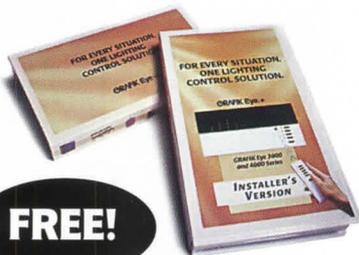


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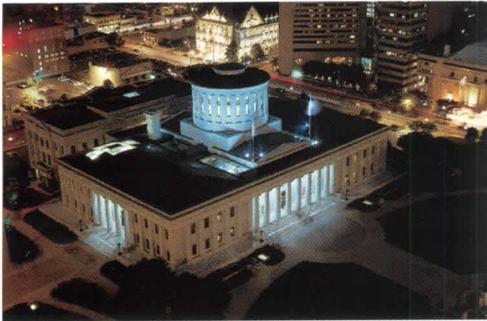
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CIRCLE 41 ON INQUIRY CARD

The Ohio Statehouse Experiences an Enlightened Revival

by Charles Linn, AIA



An aerial view shows where skylights have been reopened at the Ohio Statehouse. A lightwell that was once open to the exterior (below) has a new skylight, and an elevator for vertical access.

The Ohio Statehouse is one of the nation's finest examples of Greek Revival architecture. It was built over a period of 22 years and completed before the Civil War. In 1988, when Schooley Caldwell Associates began studying how the building might be restored, time, neglect, and insensitive remodeling had taken their toll. When it was completed, the capitol building had 53 rooms. In the 135 years or so following its completion, generous rooms were divided and subdivided again until a total of 317 cubicles occupied the same space.

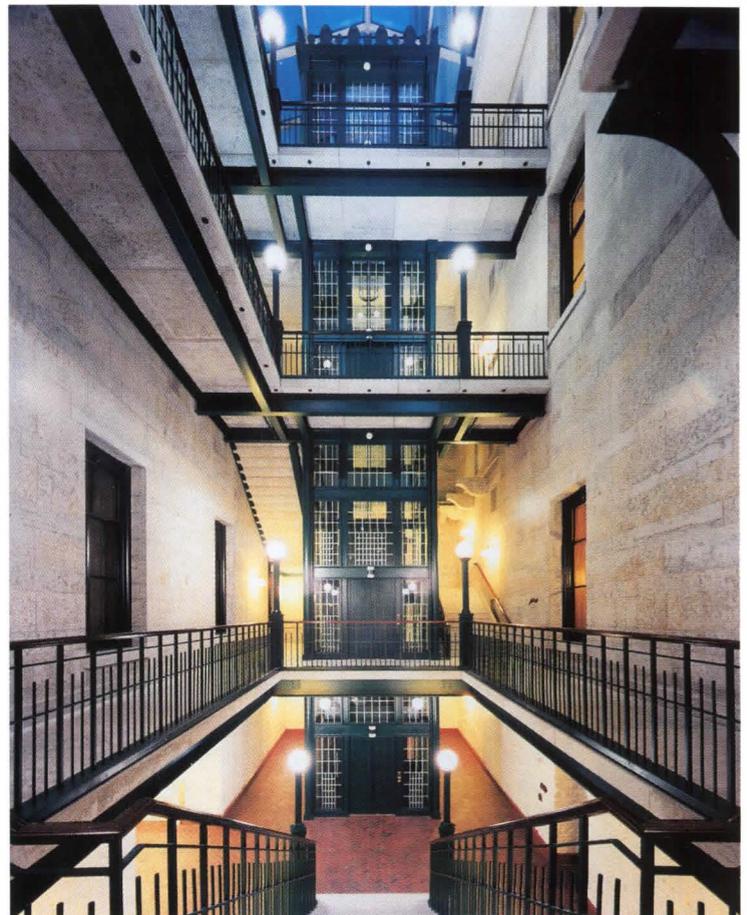
Summarizing one major problem brought on by these haphazard additions, project engineer Terry Sullivan, AIA, says, "When this building was built, daylighting wasn't just something that you did. If you didn't do it, you were in the dark. Every one of the 53 original rooms had access to daylight, so on a decent day, you didn't really need much light. But in the process of adding floors and walls to the building, skylights and windows were blocked and covered over, and original electrified gaslight fixtures were dismantled and lost. The lighting was destroyed along with the fabric of the building."

Principal-in-charge Robert Loversidge, AIA, reflecting on the results the new lighting had to achieve, says, "We had to try to understand what this building was about when it was built. Lighting was a particular challenge because nobody wants to live in 19th-century lighting levels. And yet we were trying to create the ambience this building had when it was built."

To begin, the architects pored over early drawings of the build-

ing, comparing them with what they found on site visits, trying to determine which parts of the building were original and which had been added. After extensive research and the completion of contract documents, gutting and reconstruction began. Electrical and HVAC systems were installed, rooms refinished, and windows and skylights reopened.

As a part of restoring the rooms, period fixtures would have to be re-created. "I think the real essence of what we were faced with was getting good quality light at a sufficient quantity out of a type of fixture that never really gave that kind of lighting," says Sullivan. While the fixtures that were built for the project have the appearance of the original gaslights, which may have been adequate as gas fixtures, they are probably not optimal for electric lamps. "It isn't all that difficult to go into a museum and put up a reproduction fixture. But this is one of the few statehouses that has been restored to this degree that still functions as the seat of government. The lighting has to work."



Project: Ohio Statehouse
Columbus, Ohio

Owner: State of Ohio

Architect: Schooley Caldwell Associates—Robert Loversidge, AIA, principal-in-charge; Terence Sullivan, AIA, principal engineer

Associate Architect: Moody/Nolan

Project Historian: Dr. William Seale

Lighting Designers: Gary Steffy
Lighting Design—Gary Steffy, principal; Gary Woodall, project manager; Keith Fineberg, designer

Electrical Engineer: Schooley Caldwell Associates

Project Manager: Sherman Smoot Co.

Historic Preservation Consultants: Benjamin D. Rickey & Co.



Re-creating the past

The architects, the lighting designers—Gary Steffy and Gary Woodall, of Gary Steffy Lighting Design—and historian William Seale, formerly the White House historian, searched for gas luminaires that could serve as precedents. Their primary source of inspiration was luminaires produced by the Cornelius and Baker Company in the 1850s and 1860s, including a fixture that once hung in the Michigan Governor’s Office. “This was reproduced for the governor’s office here, which is basically at a museum-quality level of finish.”

In the committee rooms, lighting had to satisfy requirements for both committee functions and closed-circuit-television taping of committee proceedings, about 30 footcandles. Lighting designers Steffy and Woodall did calculations to determine the quality and quantity of light that would be produced by various lamp configurations and chose 20W self-ballasted screw-in compact fluorescents for the chandelier and sconce globes. Bowl-type pendants used in other committee rooms were each lamped with six 300W asymmetric quartz uplights. The designs for both the chandeliers and the bowl pendants were based on historical precedent as the originals had long been lost.

The chandeliers in the House and Senate chambers were first designed as a larger version of the globe-type committee room chandeliers, but just before these were to be fabricated, a pen-and-ink drawing of Abraham Lincoln addressing a crowd in one of the chambers was discovered. The drawing captured the chandeliers in great detail, and a new chandelier was designed from the drawing. Clear, 106W traffic-signal lamps were chosen for the chandeliers because of their dimming capability and ability to reproduce a gaslight appearance.

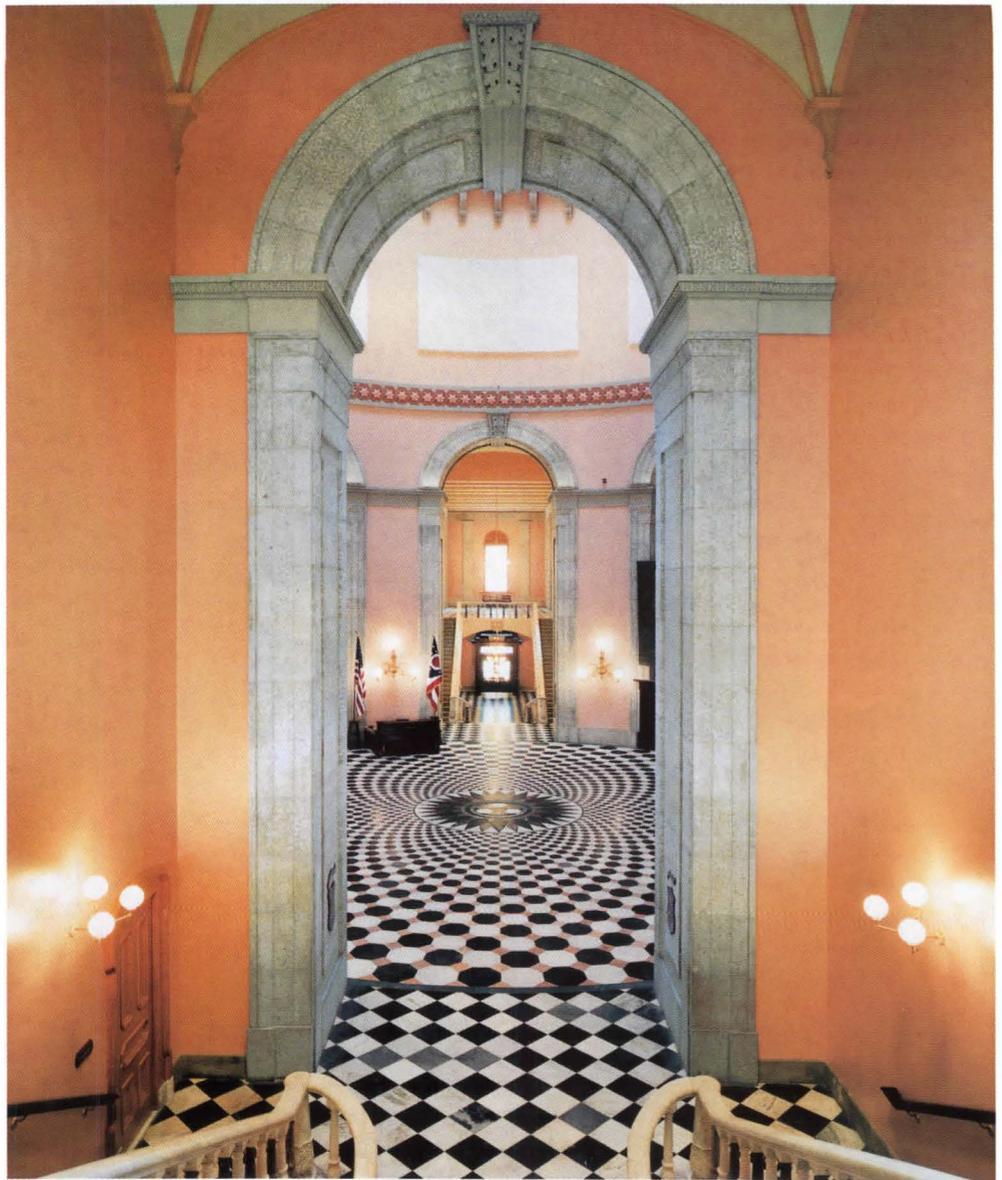
The skylights in the chambers were reopened. To make the light coming through the laylights more consistent, four-ft-high, white-painted gypsum-board walls were built around the laylight perimeter. 40W dimmer-controlled compact-fluorescent strips were installed at the tops of the walls and angled downward. When the exterior light drops below a certain point, a photocell activates the fluorescents at a low level to compensate. If the daylight level continues to drop, the fluorescents’ light output will increase proportionally. “We were able to get 10 to 15 footcandles out of this detail,” says Woodall.

A space that was originally an exterior lightwell (photo, opening page) was enclosed with a skylight and adapted for vertical circulation by



The Senate Chamber (opposite left) is lit by chandeliers and skylights. These are supplemented by fluorescent lamps above the stained glass panels. Committee rooms (opposite right) are lit by re-created sconces and either globe- or bowl-type pendants. The stained-glass oculus at the top of the rotunda (above) was re-created and permits

daylight to flood the dome. It is also backlit by compact fluorescents at night. Sconces six feet off the floor and MR16 lamps built into the springpoint of each stone arch (right) add two additional layers of incandescent light to balance the daylight. Chambers, committee rooms, and public spaces are on a preset dimming system.



the addition of an elevator and stairs. Balconies allow access into the interior of the building. Metal-halide torchères with round globes were added at the corners of the balcony rails, and compact fluorescent sconces were added to the walls next to the elevators. "Because this was originally an exterior space," says Woodall, "we used something from both the interior and exterior fixture vocabularies to make a transition."

Exterior lighting and project maintainability

At the building porticoes, bell-shaped glass pendants with 3000K metal-halide lamps are suspended inside each ceiling coffer to light the building steps and entries. These project light both up and down, "to fill in the porticoes as much as possible," says Woodall. On the plinths in front of the building, torchères patterned after some found at the Dayton, Ohio, courthouse were installed. These actually burn natural gas. The drum on the roof of the building was ringed with 100W metal-halide floodlights to bring it to life at night, and compact fluorescent lamps were added inside to backlight existing windows set into the exterior walls of the drum.

One issue that emerged during design was maintainability. Just as the original design of the statehouse was compromised by insensitive

additions and remodeling, so could the integrity of the lighting design be ruined because of a lack of proper maintenance. Terry Sullivan says that his firm learned the importance of using a restricted palette of lamp types when doing embassy work overseas. "If there are too many lamps, the project won't be well maintained. Basically you could wrap up this job with about six different lamps," he says. In addition, the architects are preparing a computer program that has a maintenance schedule that lists what type of lamp goes into every fixture in the building. "The user can click on a room on the floor plan, and the program will tell them what fixtures are in the room, what lamps they take, and how many." ■

Manufacturers' Sources

Custom interior fixtures:

Excalibur Bronze Sculpture Foundry—
William R. Gold

Custom exterior fixtures: Historical
Arts & Casting

Fixture restoration: Brandon
Thompson Restorations

Dimming controls: Lutron

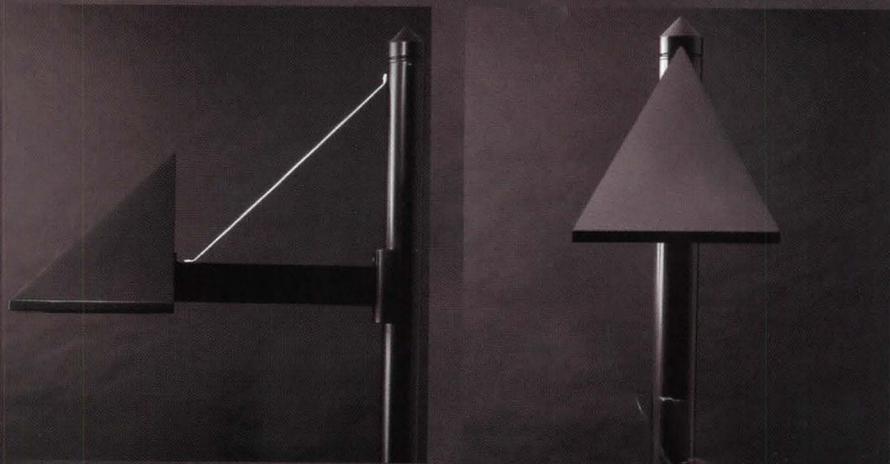
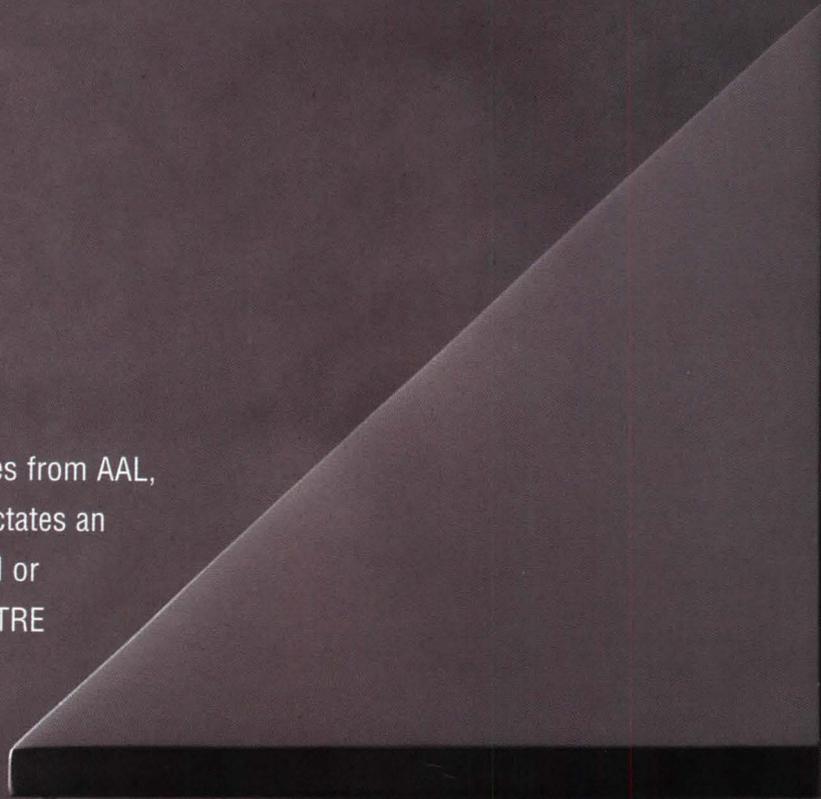
Exterior metal-halide pendants:
Holophane

Compact fluorescent, incandescent,
and metal-halide lamps: General
Electric

Special fixtures: Jefferson Art Lighting
Light fixture contractor: Messer & Sons

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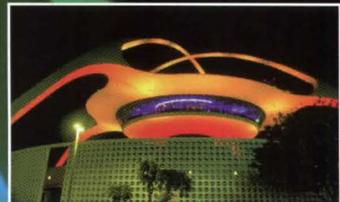


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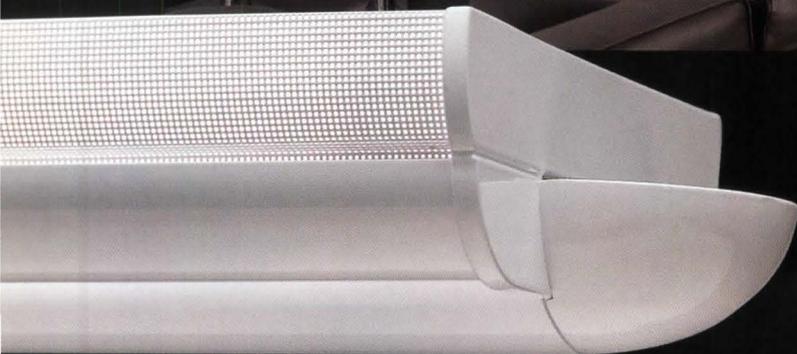
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CIRCLE 46 ON INQUIRY CARD

Case Study: SONY CD Factory Presents a High-Tech Lighting Challenge

by Linda Sanford and Naomi Miller

A high-technology manufacturing environment offers the architect and lighting designer challenges that reflect the differing nature of the work done in the various spaces. And to meet those challenges successfully, designers must fully understand the exacting nature of the industrial tasks performed. The Lighting Research Center at Rensselaer Polytechnic Institute, Troy, N.Y., investigated the effectiveness of one particular lighting scheme by surveying the workers themselves as to their perception of the lighting. The findings of the Center's DELTA (Demonstrations and Evaluation of Lighting Technologies and Applications) team are presented here in a case study conducted at the SONY Disk Manufacturing plant in Springfield, Ore. The DELTA team evaluated how well the luminaires, light sources, and controls performed in meeting the illumination programs of five distinct manufacturing tasks. Designers can apply these concepts and the lessons learned to other industrial and assembly-plant applications with similar task-specific lighting requirements.

Opened in 1995 as a state-of-the-art manufacturing facility for digital optical disks, the SONY plant operates 24 hours a day. The 324,800-sq-ft facility sits on a 120-acre forested, parklike site, and with 350 employees, it currently produces as many as 6.5 million disks a month. Inside this building, a compact disk (CD) goes through the full production process. It begins with mastering customer input, then mastering a "mother" disk, then producing individual masters for replicating the disks in quantity. Finally, CDs are printed with artwork and packaged for shipping.

Linda Sanford acted as the project coordinator for Rensselaer Polytechnic Institute's survey of the SONY Disk Manufacturing plant. Naomi Miller, FIES, IALD, director of the DELTA program, participated in the lighting design of the SONY plant.



Continuing Education This month's installment of the ARCHITECTURAL RECORD/AIA Continuing Education Series looks at a lighting study in a manufacturing plant that offers useful lessons for other technical projects. Use the following learning objectives to focus your study. After reading the article, complete the questions (page 172) and check your answers (page 174). AIA members may fill out the self-report form in this issue (page 174) and send it in for two AIA Learning Units. —Mark Scher, AIA Director Professional Education Products and Service

Learning Objectives

1. Identify two specific client lighting needs for the SONY Disk Manufacturing plant.
2. List five lighting objectives that are useful for almost every industrial and commercial project.
3. Assess the major lighting problems found at the SONY plant and briefly explain the solutions recommended for each that are applicable to other industrial projects.



SONY's lighting program

The lighting in the SONY Disk manufacturing spaces was designed to accommodate the many visual tasks involved in CD production, and to meet clean-room standards for some of the manufacturing processes. In nonmanufacturing spaces, the lighting provides good task visibility with a minimum of glare while accentuating the architectural design and providing visual interest. The design team, Boucher Mouchka Larson, Architects and PAE Consulting Engineers, carefully coordinated architectural details with lighting and controls equipment.

There were five lighting objectives for the industrial areas: create work spaces with good task visibility and visual comfort for employees; minimize energy consumption by specifying energy-efficient lamps, ballasts, luminaires, and controls; achieve bright, visually stimulating spaces to help keep shift workers alert in early-morning hours; keep the initial cost of the lighting installation within budget; and install energy-efficient lighting products in order to qualify for utility-sponsored energy rebates. (The full study details energy-saving strategies.)

Lighting fixtures and lamp sources

The principal light sources used in the SONY facility are T8 4-ft rapid-start lamps with a color-rendering index (CRI) of 75, and a correlated color temperature (CCT) of 3500 K. The warehouse uses 400W clear

Project: SONY Disk Manufacturing
Springfield, Oregon

Architect: Boucher Mouchka Larson,
Architects

Lighting Design: PAE Consulting
Engineers; Naomi Miller, IALD

Electrical Contractor: L. H. Morris
Electric, Inc.

Site Sponsor: Bonneville Power
Administration; Craig Ciranny, team

contact; Monica Shovlin, Sony contact
Evaluation: Rensselaer Polytechnic
Institute Lighting Research Center
DELTA team—Naomi Miller, program
director; Russell Leslie, Mark S. Rea,
reviewers; Linda Sanford, project coordi-
nator; evaluation team: Peter Boyce
(leader), Russell Leslie, Kathryn Con-
way, Craig Ciranny; Judith Block, publi-
cation manager; Claudia Hunter, editor



Printing and replication areas (above) needed lighting that met clean-room standards and gave uniform illumination over floor areas. The staging area (right) is a long, narrow room, also with strict clean-room requirements. Here, technicians perform extremely varied, difficult, and critical visual tasks.

metal-halide lamps in glass-reflector, high-bay luminaires. Some luminaires also have 250W halogen lamps for instantaneous light in emergencies. The adjustable dock lights use 150W PAR38/CFL lamps.

All four-ft fluorescent lamps are operated on low total-harmonic-distortion electronic ballasts for energy efficiency and minimal interference with sophisticated electronic machinery. Metal-halide lamps are operated with high power factor magnetic ballasts. Sealed clean-room troffers and louvered direct/indirect pendant luminaires using T8 fluorescent lamps and high-performance electronic ballasts are used in the staging and replication, packaging, and shipping and receiving areas. All lighting circuits are controlled through a building-wide energy management system (EMS), with controls that permit switching off lighting circuits in unused areas. The lighting power density in the industrial side of the facility is 1.04 W per sq ft.

Illumination of printing and replication areas

The printing and replication areas required luminaires that conform to clean-room standards, and the lighting design had to provide uniform lighting over floor area to accommodate frequent changes in equipment and its layout. In this 13,600-sq-ft clean-room space, machines called solo-liners replicate CDs to exacting standards. Master disks called stampers imprint digital data onto blank CDs. The completed disks are then moved to a second bank of machines which silk-screen artwork onto them. Technicians set up, adjust, and maintain the replication machinery, and identify defective CDs. Printing operators enter codes to select ink colors for the artwork, maintain the autoroll machines, and briefly inspect the artwork of every finished CD for clarity and correct colors. A sample of CDs is inspected more thoroughly to catch molding defects.

The lighting-design team specified recessed 2-by-4-ft clean-room luminaires with three F32T8 lamps and electronic ballasts to provide ambient light. These luminaires are sealed to Class 10,000 standards to prevent adding dust to the air or disrupting air flow over surfaces in the room. Horizontal illuminance in the room depends on the amount of equipment in it: in a relatively empty part of the room

at night, floor illuminance is 95 to 135 footcandles (fc) (1020 to 1450 lux [lx]), but where the solo-liners are concentrated, the machinery itself blocks light and lowers illuminance on the floor to 45 to 73 fc (490 to 790 lx).

Specifics of clean-room luminaires

Manufacturing techniques for delicate electronic media such as CDs require unusually clean environments called clean rooms. These are spaces in which the concentration of airborne particles, temperature, and humidity are controlled to specific requirements. Workers wear special clothing that helps prevent dust, dirt, and skin particles from entering the clean room. Clean rooms are graded into cleanliness classes according to how many particles of a specific diameter are allowed in a cubic foot of air. For example, a Class 10,000 clean room cannot have more than 10,000 particles of 5 microns or larger per cubic foot.

Luminaires for clean rooms are specially designed to permit a smooth flow of air from air-filtering systems over their surfaces. Luminaires should have enclosed, gasketed, sealed designs to minimize dust, mold, and microscopic particles entering the room. They should also be designed to keep contaminants from the plenum from entering through holes for mounting hardware and electrical feeds. Where magnetic ballasts are used, the magnetic flux can attract dust particles. One way to prevent this problem is to mount magnetic ballasts remotely, outside the clean room. Electronic ballasts do not attract dust particles.

Lighting the staging area

Technicians bring defective disks from the replication area into the staging area to inspect and categorize the type of error that caused the defect. The technicians then identify the production problem so they can make adjustments to the machinery. Visual tasks in this area are extremely varied, difficult, and critical. They range from spotting tiny aberrations in the CD's surface, to viewing VDT screens and equipment monitors, to observing the production floor through the large glass wall. The staging area is a long, narrow room with strict clean-room

requirements. The electric lighting is recessed 2-by-4-ft luminaires with prismatic lenses and three F32T8 fluorescent lamps. To aid in visual inspection, three 50W halogen gooseneck task lights have been installed by management.

Early-morning sunlight enters the staging area through high clerestory windows in the adjacent corridor for one to two hours a day most of the year. Unfortunately, the computer screens in this area face the windows. Direct sunlight bothers some technicians when it falls across their work space or creates a bright, reflected image on their computer screens. Technicians who work the midnight-to-noon shift report experiencing much more difficulty with glare than those who work the noon-to-midnight shift. With daylight, vertical illuminances on screens are as high as 210 fc (2300 lx). Even when there is no direct sunlight, the reflec-

tasks. The DELTA team observed that the task of detecting a variety of extremely small, low-contrast details requires a variety of lighting conditions. A specialized viewing booth would help make these flaws more visible. Technicians must also see inside the machinery to make adjustments and repairs. The interiors of the machines are not lighted well enough either by lighting built inside the machine's glass enclosure or by ambient light, so some technicians report that they use flashlights for task lighting.

Packaging area program

The designers provided evenly distributed illuminance on the workplane in the packaging area with minimal glare for a variety of packaging tasks, including inserting CDs and paper liner notes into clear-plastic cases,

TASK VISIBILITY IS NOT ALWAYS IMPROVED WITH MORE LIGHT — AND WINDOWS CAN MAKE IT HARDER TO SEE.

tion of the clerestory windows obscures workers' view of computer screens and the view into the replication area. At night, however, electric lighting adds no more than 46 fc (490 lx) vertical illuminance to screens, making them much more readable.

Screen visibility varies according to the specularity (shininess) of the screen, the maximum luminance (brightness) of the screen, and the comparative luminance of the characters against their background (contrast). Highly specular screens reflect far more of the distracting window brightness than screens with antireflection coatings. The window reflection is also less noticeable on higher-luminance screens. Despite the reflections, technicians like being able to see the sky and tell what time of day it is, even though they don't have a view of the ground.

When daylight is not available, horizontal illuminances on both sides of the room at the 3-ft-6-in. countertop are 82 to 95 fc (880 to 1030 lx), sufficient for paper tasks anywhere in the staging area. At midmorning on a typical partly cloudy day, daylight contributes up to an additional 800 lx to these surfaces.

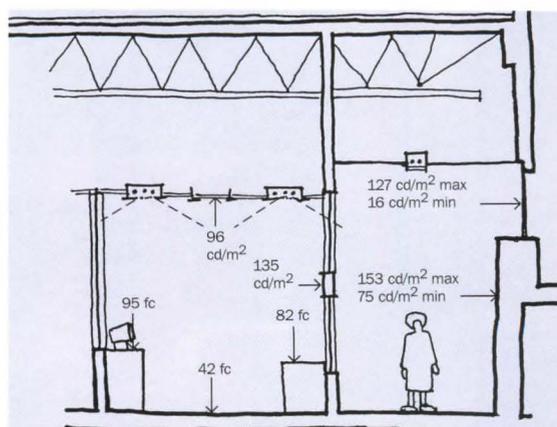
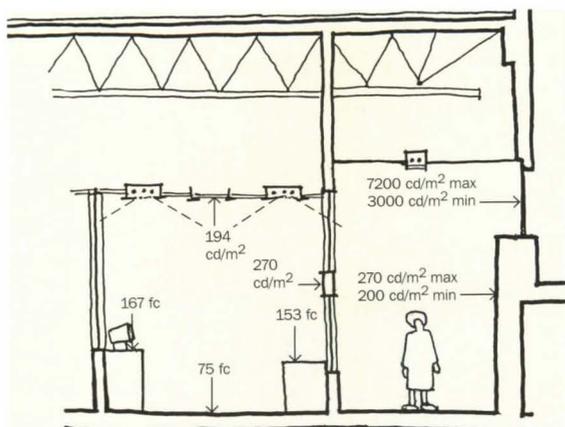
When technicians make their first check for imperfections, they hold a CD slightly above eye level, using the reflection from overhead luminaires to reveal defects on the shiny surface. They look for tiny bumps, dimples, fibers, and particles of dirt on the disks to determine if the replication machines are creating problems that must be corrected. Several technicians also use the halogen task light to produce a high-intensity reflection for a closer check. Technicians report that neither the overhead lighting nor the task lighting is well suited to their inspection

wrapping individual cases in cellophane, boxing the cases, and preparing them for shipping. Much of the work is highly automated, but 18 employees per shift visually inspect, correct, and stock the machinery. The room is lighted entirely with three-lamp T8 recessed 2-by-4-ft lensed troffers on 8-by-8-ft centers. High-frequency electronic ballasts eliminate flicker so that moving machinery does not appear to stop or change speed. The room has no windows. Although the lighting layout is similar to that in the adjacent replication and printing area, the machinery is lower in height and spaced farther apart. As a result, the machinery blocks less of the light and the illuminance on horizontal task surfaces remains fairly high (108 to 115 fc [1160 to 1240 lx]).

Warehouse lighting program

In the warehouse space, the fixtures had to provide uniform vertical illuminances on shelving in warehouse aisles to aid in reading labels on shelved materials. The space has 35-ft-high ceilings, and provides storage for manufacturing materials as well as finished products. Because the facility is new, only 25 percent of the 58,000-sq-ft warehouse space is currently being used, but SONY plans rapid expansion. Two to four employees on each shift track inventory storage and retrieval. Their desks are located in the warehouse, and they perform both paperwork and computer-screen visual tasks. Forklift operators moving materials on pallets need to read labels quickly on both pallets and the vertical shelving members.

Glass-reflector luminaires with 400W clear metal-halide lamps



Early-morning sunlight enters the staging area via high clerestory windows, placing glare on computer screens a few hours of every day. At night, lighting adds less than 46 fc of vertical illuminance to screens, making them much more readable.

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CIRCLE 44 ON INQUIRY CARD



In the warehouse, left, forklift operators moving materials on pallets need to be able to read shelf labels quickly. In the shipping area, above, light from the luminaires reflects off white-painted ceiling, trusses, and walls to produce very uniform illuminances.

are pendant-mounted near the bottom chord of the ceiling trusses. The luminaires are spaced on 20-by-20-ft centers. To avoid most of the glare and visual-comfort issues associated with high-bay industrial lighting, the design team specified a white-painted ceiling and luminaires that direct 18 percent of their light upward. This combination lowers the contrast of the bright light source against the ceiling, reducing the sensation of glare. The bounced light from the ceiling helps make light levels more uniform and also softens shadows cast by objects below. Though ranging from 17 to 82 cd/m² (candella per square meter), luminances on the ceiling appear fairly uniform.

Four high-bay storage shelves are currently in use, creating one full-height aisle. The lighting has been coordinated with the shelf layout so that luminaires are located directly above the 6-ft aisle. Vertical illuminances are relatively uniform (less than 8 to 1 maximum to minimum) over the height of the shelves, making it easy for forklift operators to see the package labels on the lower shelves. Illuminances on the floor of the aisle are 15 to 21 fc (160 to 230 lx). In areas of the warehouse without tall shelving, floor illuminances are higher and more uniform, from 32 to 37 fc (340 to 398 lx).

Lighting for shipping and receiving

In the shipping and receiving areas, lighting was designed to provide evenly distributed illuminance for easy viewing of labeled materials loaded onto and unloaded off of trucks. Here, workers retrieve an order of finished CDs from the warehouse, assemble it into boxes or pallets, and load it onto trucks through one of 12 loading bays. Raw materials for manufacturing are also received here. Visual tasks include reading package labels, filling out paperwork for dispatching, using computers to track orders, and loading materials onto and off of trucks.

The ceiling height is 20 ft. Economical T8 fluorescent direct/indirect pendants are suspended 16 ft above the floor in rows 10 ft on-center. Light from the luminaires reflects off the white-painted ceiling, trusses, and walls to produce very uniform illuminances. Floor illuminances range from 31 fc (330 lx) near the loading doors to 43 fc (460 lx)

in the center of the space. The luminaires emit 65 percent of their light upward, making the space appear large and bright. Ceiling luminances of 54 to 96 cd/m² help reduce the contrast between the luminaires and the surrounding ceiling. The luminaires have opaque metal sides and down-light louvers with a 45 degree cutoff angle, dramatically reducing the sensation of glare.

Swivel-head dock lights with incandescent PAR lamps are wall-mounted at each loading bay to aim light into truck cavities. The extendable arm of the task lights does a good job of projecting light for the workers walking into trucks with a load. However, workers complain of “extreme glare” once they turn around because they are now facing a high-candlepower light source that is very close to their line of sight. As a result, workers in the shipping and receiving area report that the lighting for loading and unloading trucks is inadequate and uncomfortable (see “Lessons learned,” page 128).

Project evaluation

The DELTA team surveyed employees in several of the facility’s manufacturing areas to find out about their impressions and experiences with the lighting. DELTA wanted to know about task visibility, visual comfort, problems employees noticed with the lighting or windows, and overall satisfaction with the lighting.

Employees from several shifts completed surveys in each of the areas DELTA evaluated. In addition to rating their agreement with a series of statements about the lighting (see chart, page 128), they checked lighting problems they perceived from a list. In areas with significant daylight contributions, such as the staging area, they were asked to rate the lighting for both day and night.

Generally, all the employees in the manufacturing areas approved of the lighting design. Workers in both midnight-to-noon (day) and noon-to-midnight (night) shifts in all areas liked the lighting and found it comfortable. However, technicians who perform exacting visual tasks found the lighting less than satisfactory.

Replication and printing. More than half of the technicians in

LIGHTING SURVEY

RESPONSES FROM A.M. AND P.M. WORKERS ARE COMBINED

PERCENTAGE OF PEOPLE WHO AGREE	REPLICATION & PRINTING	STAGING	PACKAGING	WAREHOUSE	SHIPPING & RECEIVING
I LIKE THE LIGHTING OF THIS AREA	71	77	66	70	67
THE LIGHTING IS COMFORTABLE	78	73	61	60	67
THE LIGHTING HELPS ME SEE CLEARLY	44	63	81	60	67
HAVING DAYLIGHT IS IMPORTANT	—	65	—	—	—

PERCENTAGE OF PEOPLE INDICATING THE FOLLOWING LIGHTING PROBLEMS	REPLICATION & PRINTING	STAGING	PACKAGING	WAREHOUSE	SHIPPING & RECEIVING
TOO LITTLE LIGHT	17	0	7	20	16
TOO MUCH LIGHT	10	12	15	0	0
GLARE FROM THE ELECTRIC LIGHTING	15	6	30	30	16
GLARE FROM THE SUNLIGHT	17	25	3	10	0
SHADOWS	19	19	5	20	16
PATCHY LIGHTING	24	6	5	10	0
FLICKER	0	0	8	0	0
POOR LIGHT COLOR	5	0	12	0	0
REFLECTED PATTERNS OF LIGHT	5	12	3	10	16
OTHER	5	0	8	0	0

day and night shifts in this area reported that they could not see everything they needed to see quickly and clearly. Among day workers in the replication area, 30 percent reported a problem with glare from sunlight and patchy lighting, and 20 percent complained of strong shadows. The printing-area technicians said that the overall lighting was not designed for their specific visual tasks, such as identifying problems inside the printing machinery, visual inspection of the completed printed disks, and color matching to ensure that printed colors match artwork colors.

Staging. More than a third of the technicians in the staging area also reported that the lighting did not enable them to see everything they needed to see clearly and quickly. They said they wanted better lighting to help them with their inspection tasks. The day workers were less satisfied than the night workers. They said the reason was that the early-morning daylight from clerestory windows created reflected glare on computer screens and glass walls. Day workers also complained about direct glare from the morning sun (57 percent) and the strong shadows cast by the sun (29 percent). But because the clerestory windows face east, direct sunlight is a serious problem for only a few hours in the morning.

Packaging. In the packaging area, visual tasks are less demanding than in the staging, replication, or printing areas. Employees in this area were generally satisfied with the lighting, found it comfortable, and reported that they could see quickly and clearly. The packaging area has no windows, so employees did not complain about daylight, but some did report glare from reflections of the overhead lighting in shiny packaging materials. Others complained of annoying glare from light refracted through the edges of their safety glasses, or from electric lighting. Too much light was a problem for 15 percent of these employees.

Warehouse. In the warehouse area, workers were quite satisfied with the lighting levels, finding them sufficient for driving and using a forklift. The metal-halide lamps specified in this area drew no complaints about flicker or color, although workers reported glare when they needed to see the top of the warehouse shelves while standing on the aisle floor. From this viewing angle, it is hard not to see the bare metal-halide lamp.

Shipping and receiving. Some illumination problems were

reported to the survey team in the shipping and receiving areas, particularly at the loading docks. When employees drive forklifts out of dark truck interiors, they report glare or even "blinding" from the incandescent PAR-lamp task lights that are mounted at the edge of the loading dock. Employees working at loading or unloading trucks find that their own strong shadows interfere with their ability to see objects and labels at the far end of the truck.

Lessons learned

Task visibility is not always improved with more light. In the case of inspecting CDs for irregularities, high ambient-light levels did not improve visibility. It is often more economical in terms of equipment and energy to design a special viewing booth which can enhance the visibility of surface or substrate flaws through side lighting, a selective light spectrum, specular reflections, diffuse lighting, or other visual inspection techniques. This viewing booth should be specifically designed for the application and the characteristics of the flaws that technicians must detect.

Choosing the right computer screen can solve VDT lighting problems. The surface characteristics of a computer screen affect its visibility. A screen with high luminance (brightness) and a good antireflection coating can reduce reflected glare to such an extent that almost any electric lighting system will work well. It is only when poor-quality screens are used that design of the lighted environment is critical.

Windows can reduce visibility. Reflections of bright windows can seriously interfere with visibility through interior panels of glass or with visual tasks performed on computer screens. Although employees enjoy the ability to see outdoors, glare-control devices such as blinds or shades should be installed to block the offending light at the time of day or year when direct sun penetrates the space.

Uplight on ceilings improves warehouse lighting. The uplight on white-painted ceilings serves several important functions. It makes the luminaires appear less glaring because it reduces the contrast between the luminaire and its background. It provides soft, bounced light at the task level, which helps wash out distracting shadows. It provides greater vertical illuminance on storage shelves. Finally, it provides a psychological lift because the space appears brighter and more cheerful.

Dock lights often provide poor seeing conditions. Traditional dock lights do a poor job of lighting truck cavities because they use a narrow-beam PAR lamp to direct light deep inside the truck. Workers, forklifts, and materials cast strong shadows that get in the way of the light beam, causing uncomfortable seeing conditions for workers as they come out of the truck. An improved dock light design would use a lower-brightness lamp and a larger reflector system to provide more diffuse light into the truck. ■

Manufacturers' Sources

Pendant direct/indirect luminaires and recessed three-lamp fixtures (shipping and packaging areas):

Lithonia

Clean-room fluorescent luminaires in replication area and adjustable dock lights: Guth

Ballasts: Holophane and Advance

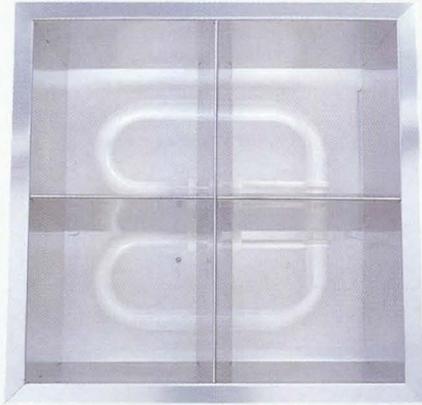
Gasketed luminaire (warehouse):

Holophane

Energy-management system:

Lithonia

For information about DELTA publications and to obtain a copy of the complete SONY Disk Manufacturing survey report, call 518/276-8716, fax 518/276-2999, or E-mail lrc@rpi.edu.



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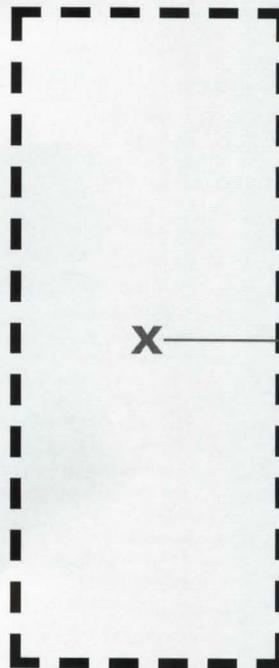


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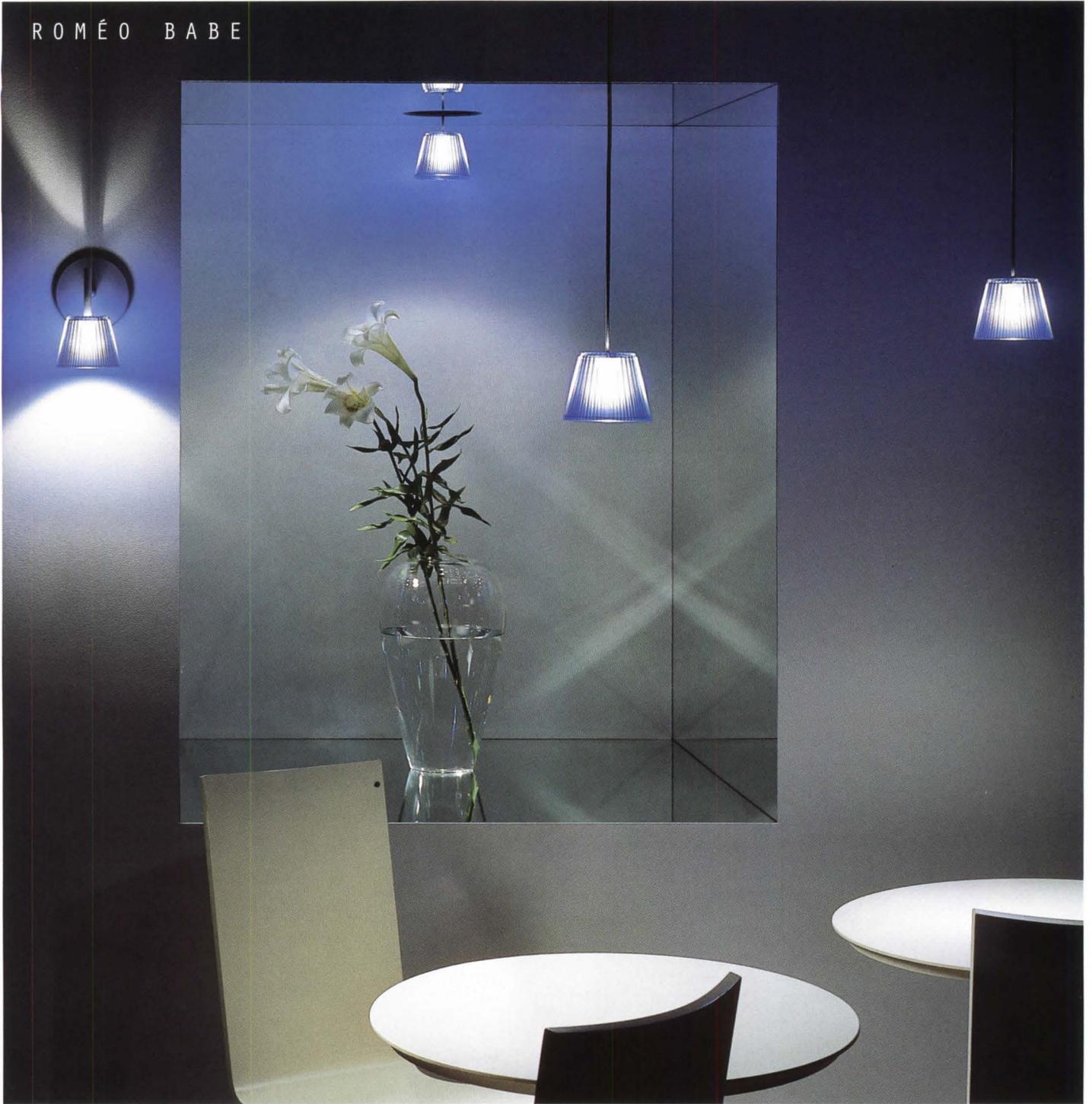
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CIRCLE 47 ON INQUIRY CARD

Residential Lighting Control Strategies for Every Budget

by Lindsay Audin

Too often, homes are lit the same way they are decorated: in an ad hoc fashion, with furnishings added as needed. Next time your clients are ready for a change, consider all the options in advance, including choices for how they'll control the lighting. Whether for aesthetics, safety, or security, a variety of options is available for both homeowners and architects.

There are two basic control methods for home lighting: on/off switching and dimming. Strobing, color changes, and flashing neon are generally considered inappropriate for residential use. Within those parameters are three general options: grouping fixtures by circuits; time control; and motion sensing. Mixing and matching these choices provides many ways of influencing the mood and appearance of a room.

Today's control options can add a new dimension to residential architecture. Combining controls with built-in lighting is an especially good way to create a variety of useful and dramatic effects. For example, miniature low-voltage lamps, hidden on the edges of a staircase (see photo), are switched on by a concealed motion sensor, adding flair to the otherwise mundane task of stair climbing.

The sophistication of lighting controls is most often influenced by budget. Fortunately, the lighting industry offers a variety of equipment choices, many of which are relatively inexpensive (i.e., less than \$20 per control point). An examination of the choices is essential before planning an installation. Not all systems are compatible—either with each other, or with compact fluorescent lamps—and a little research up front goes a long way toward avoiding disappointment later.

The least costly ways to control home lighting include plug-in devices that use power line carrier (PLC) technology, the best known of which is the X-10 system, manufactured by X-10 USA of Closter, N.J. Control signals (from a central panel) pass through home power wiring to plug-in relays for fixtures. Switch replacements that incorporate timers or sensors (to cycle lighting based on clock settings, elapsed time, or sensed motion) are another low-cost way to control fixtures. Several battery-powered wireless systems use short-range radio signals instead of wires to control plug-in relays.

At the other end of the investment spectrum are units using low-voltage wiring and built-in relays that are usually installed during major renovations or new construction. Higher-end dwellings may be served by units that look like miniature control panels. Often seen in conference spaces, better restaurants, and auditoriums, such panels have enough memory to recall many preprogrammed "scenes," or user-defined groups of fixtures and light levels, which may be initiated by the touch of a button. Using a variety of signal communication technologies, these

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devices centralize all control functions, including manual and/or programmed fixture choice, automated dimming, time sequencing, and motorized blinds.

In my own home, I use the plug-in X-10 system to automatically turn lights and heating/cooling units on and off; individual switch timers for built-in fixtures (e.g., porch, basement, and closet lighting); a wireless switch to control a single fixture among several fixtures in my living room; and occupancy sensors for lighting in irregularly occupied spaces, including stairwells and the outdoor parking area.

Some switch replacement units incorporate incandescent dimmers—which are not compatible with most compact fluorescents. Fortunately, special equipment is available for controlling and dimming fluorescent lighting. A recent upgrade of my living room included dimmable fluorescent cove lighting, equipped with electronic ballasts controlled by inexpensive infrared dimming technology and activated by a hand-held remote.

The growing movement toward home automation has spawned a communications and control protocol known as the Consumer Electronic Bus (CEBus). When installed, the CEBus allows remote control of electrical systems, including lighting, by telephone and/or power-line signals from inside or outside the home.

Designed with the future in mind, the CEBus can also be used to control electrical devices, such as appliances and HVAC units, in conjunction with peak demands on the utility grid. Under a real-time pricing tariff, such control could even help cut electric bills. Vendors of centralized lighting control systems are adopting the CEBus standard, and many builders of new homes are now offering this system as an option to home buyers.

A good way to get an overview of both the technologies and the available products for controlling home lighting is to visit the HomeTeam Web site at <http://www.hometeam.com/lighting/man.htm>. Listing both the options and their price ranges, *this site provides* links to many manufacturers' sites and/or their direct contact information. X-10 has its own Web site at <http://X10.com>. Those seeking more background on the CEBus standard can go to <http://www.cebus.org>. ■



Low-voltage light strips on the stair risers are activated by a concealed motion sensor. The cat is an optional component.

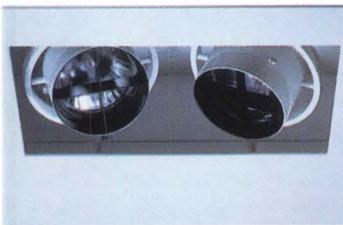
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LIGHTING



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The Perpetual Light Pump uses one 1,000W lamp to illuminate multiple-fiber optic endpoints and is said to be able to replace up to 68 conventional 100-watt light bulbs. The light pump is available in over 75 configurations and can be fitted with a number of fixtures. 919/319-7575. Remote Lighting International, Inc., Morrisville, N.C. **CIRCLE 272**



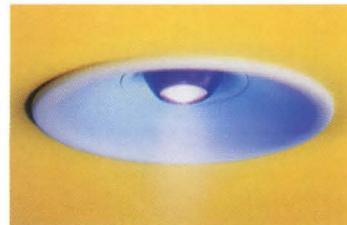
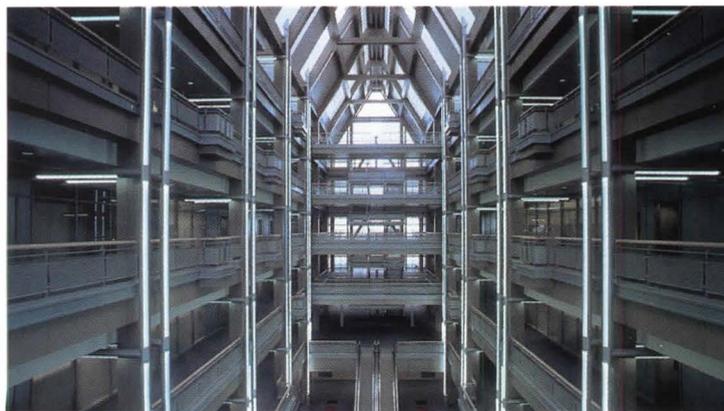
▲ Showing off merchandise

Meeting retail store designers' specifications, the Recessed Multi-Slot features a white enclosure and two or three adjustable heads. Not only can the fixture be relamped below the ceiling, which allows for easy maintenance, but the heads will also accept numerous other sources, including metal-halide PAR, Halogen PAR30, or MR16 lamps. 800/932-0633. Zumtobel Staff Lighting, Inc., Highland, N.Y. **CIRCLE 273**



▲ Combo sign

A combination exit sign and emergency lighting unit, the PEX Combo has a smooth-edged thermoplastic construction and removable directional arrows. The unit is prewired. 510/562-3500. Prescolite Moldcast, San Leandro, Calif. **CIRCLE 274**



▼ Solving problems

The Boréns line of original design luminaires uses two-component lighting to solve common office lighting problems. Ceiling, suspended pendant, and wall sconces are available. 914/937-4433. Luxo Corporation, Port Chester, N.Y. **CIRCLE 275**



▲ Unidentified flying objects?

Recessed low-voltage UFO metal downlights, available in 4-in. or 6-in. diameters, are usable with MR11s and MR16s, and can be accessorized with clear, frosted, and colored-glass lenses, as well as colored-glass conical insets. The lighting unit can be permanently installed in insulated and noninsulated ceilings and relamped from below. 210/227-7329. Lucifer Lighting Company, San Antonio, Tex. **CIRCLE 276**



plate with stainless steel swivels, and are available in standard and custom finishes, including brass, bronze, and powdercoated. 425/823-4560.

Charles Loomis, Inc., Kirland, Wash. **CIRCLE 277**

► Fashion and function

The Angled Sconce series of Lightframes features individually movable locking frames as well as an adjustable, hinged wall bracket. Available in various sizes, configurations, and finishes, they incorporate the latest in lamping technology, from MR16, ALR, and AR70 to AR111, PAR30, PAR 36, and PAR38 lamps. The lightframes are constructed of aluminum

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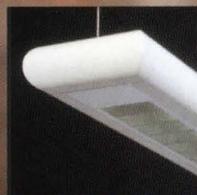
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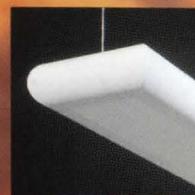
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75% up 25% down
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Peak candela @ 112.5°
Meets RP-1

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Concave filter



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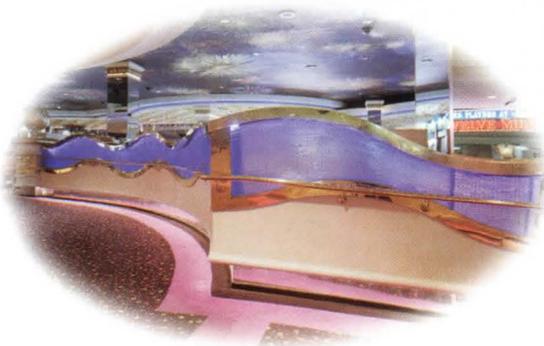
Cove lighting, Harrah's
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U.S. Naval Ship
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Cove Lighting, aircraft interior



Etched glass wall, Harrah's
Hotel & Casino, Las Vegas

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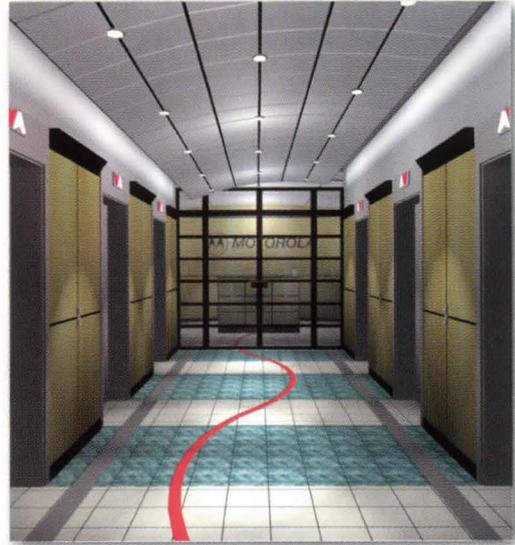


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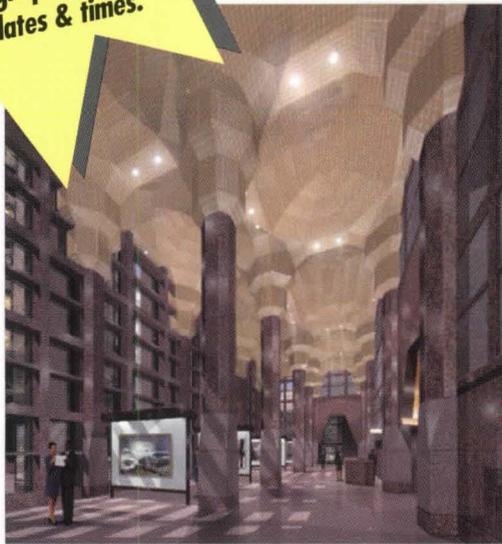
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CIRCLE 52 ON INQUIRY CARD

GRAPHISOFT®



A/E/C Systems "Nets" Surprises

NETWORKING AND THE INTERNET MADE NEWS AT A/E/C SYSTEMS THIS YEAR.

BUT BEHIND THE SCENES, THE DOMINANCE OF MAJOR PLAYERS WAS CHALLENGED.

by Steven S. Ross

As if you didn't know, it's official: the Internet will change the way you do business. At this year's show, many vendors offered ways to automatically publish project drawings and other files on-line, to speed up design cycles, and to more easily keep track of changes. Some also found ways to allow design-team professionals and others to interact with the drawings as well, collaborating by redlining or editing them. All three keynote panelists—the CEOs of Autodesk and Intergraph, and Keith Bentley, the technical whiz behind MicroStation—pushed their Internet visions. In terms of user functionality, their visions were the same, differing only in some technical details.

There's little question about the drawing formats, either: most will be based on AutoCAD DWG files, and some on Bentley MicroStation DGN. But events at the show suggest Bentley and Autodesk have some former friends to fight, as well as each other (see box, page 142). And smaller CAD vendors showed some nifty new software of their own, especially for solids modeling, animation, and 3D visualization.

Nemetschek, Autodesk, Bentley, Graphisoft, and others selling high-end CAD all signaled that small, continual upgrades would be the norm in the years to come. They all hope to push users toward "subscriptions" for product-maintenance plans—raising the cost of CAD.

The march toward the Internet started a year ago, when Bentley and Autodesk announced "publishing" solutions at A/E/C '96. By last fall both had come up with software that could take even thousands of drawings and index them for retrieval on the World Wide Web. You first view the files as images that can't be modified. The systems can be set up so that, once you find what you want, you can call for the much larger and harder-to-transmit original file. You can also, within some limits, use the

FASTER NETWORKS WILL SEND FILES BOUNCING FROM OFFICE TO OFFICE.

Web to scan vendor catalogs and bring details into your own drawings.

Bentley is offering a "digital signature" authorization system for tracking changes in drawing files. You don't have to place your files on an open network, either—you can use an internal network. If the internal network uses common Internet software, it's called an "Intranet." Otherwise, it's a LAN (local-area network) or WAN (wide-area network). Bentley actually started including a Web browser, from Spyglass, inside MicroStation last fall. (But at the Bentley booth this year, staff tended to demo with Netscape Navigator as the browser instead.)

Internet collaboration

Many vendors, including small ones that have been offering LAN-based "internal" file-tracking systems for years, announced Internet/Intranet solutions that do more than "publishing." Some can integrate CAD,



billing, and project-planning data into one on-line database. And as networks get faster, whole projects' worth of files will soon be bouncing from office to office. Among the latest offerings:

Design rendered in Nemetschek Allplan; note structural details.

Archibus/FM, the facilities-management people, showed a new I*Net Toolkit that allows employees or authorized consultants to create work requests from any Web browser, or query the facility-management database to check the status of a project. Version 10 of the Archibus/FM package was released at the show.

Bentley's ModelServer, which has been available since last year, can pull project files in AutoCAD DWG or MicroStation DGN format into a Web server system and publish those formats, or images of the files in JPEG, PNG, CGM, SVE, or VRML formats, across the Web. At A/E/C Systems, company officials said they were investigating the licensing of Autodesk's 2D DWF format as well. DWF is a compressed format that can be used for markups and can be linked easily to other files. Autodesk has a product with similar functionality. Cadscape's Port, based on the Oracle database, helps automate importing of AutoCAD and MicroStation files (and any extra files they refer to) into the PC DOCS document management system. One nice feature: it maintains original file names. You can use this sort of software on a network to find and fetch documents, as the "back end" of a system that also allows viewing.

Cimmetry's AutoVue Professional Version 15 viewing and markup software was shown for the first time at the show. Cimmetry has a Netscape Navigator plug-in that allows remote users to view and print files and to mark them up. (In Netscape parlance, a plug-in is an add-on helper application that enhances Navigator's ability to handle specific types of files.) The markup information is kept in separate files, apart

from the original CAD files. But they are indexed back to the originals. Cimmetry can read 150 file formats.

Cyco's AutoManager View 2.0, announced at the show, allows viewing, redlining, and printing of more than 200 file formats including AutoCAD R14 and Autodesk's DWF and Mechanical DesktopWeb formats. It can also work with Internet Web browsers. As with Cimmetry, View is often licensed for embedding in other vendors' products as well.

Framework Technologies showed its Aspects SiteBuilder for the first time. This software offers an easy way to gather project files into a Web site. The system is geared toward indexing and retrieving entire files, rather than smaller representations. But you can put pictures, text, and CAD files saved in more compact formats (DWF, for instance) in the same site if you don't have a network with the bandwidth to easily handle large, original CAD file formats.

Graphisoft's ArchiCAD for TeamWork allows users to share files across a network. One user can be editing one part of a drawing while an associate works on another section. The interface is easy: the users draw fences around what they need to work on. In addition, users can be on a Macintosh while others use Windows 95 or NT. Kamel Software showed its FastLook Plus and FastLook DBMS for publishing documents on the Web, and for redlining. It is particularly easy with FastLook to create hyperlinks in files you are viewing, to "connect" them to other files. As with Cyco, Cimmetry, and others, this software handles images, text, and other non-CAD files, as well as CAD.

Kozo Scandinavia showed DRA-CAD, a Java-based Web

\$39.95 for the plug-in at the user end. You can use AltaVista Tunnel as the "publisher" on the server side; that's where OnSite hopes to profit most.

CAD innovations

Autodesk may own two-thirds of the CAD desktops, but the battle for the hearts, minds, and wallets of architects is certainly not over—at least if this year's A/E/C Systems is any indication.

Keith Bentley, the technical whiz behind MicroStation, explained how he hopes to bring "object intelligence" to his product. This would allow a drawing of a door, for instance, to act like a door "object" rather than as a collection of lines. Bentley will use the Java programming language to modify its MDL language. The result will be JMDL, in MicroStation/J. It's due mid-1998.

This fits with Bentley's strategy to continue to make MicroStation available on many different types of computers. (AutoCAD 14, in contrast, will run only on Windows 95 and Windows NT machines.) Like MicroStation, Java is designed to run on many different machines. But Bentley will have to modify Java somewhat. That means the Java code will be at least partially nonstandard, so each machine-specific version of MicroStation will have to compile the Java code contained in an incoming MicroStation file.

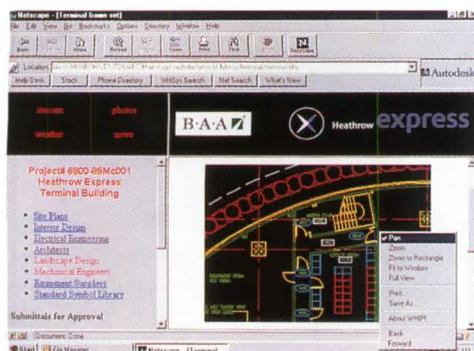
Autodesk's version of object intelligence, ObjectARX, works by putting most of the programming into separate files called DLLs. That way, the drawing files themselves can be fairly small and more easily transmitted over networks. Autodesk clearly has a lead in object technol-

"OBJECT INTELLIGENCE" WOULD ALLOW A DRAWING OF A DOOR TO ACT LIKE A DOOR "OBJECT" RATHER THAN AS A COLLECTION OF LINES.

ogy, but this lead hasn't yet translated into many add-on products. Even Softdesk's Auto Architect 8.0 add-on won't get ObjectARX technology until the fall. Many new niche products were introduced this year, especially for animations, and older CAD packages with small but passionate followings were upgraded. Two packages using AutoCAD's own file format caused a buzz. One of these, from Visio, is discussed in greater depth on page 142. The other, Vdraft from SoftSource, is meant more as a supplement for AutoCAD and as an "engine" for vertical applications than as an outright AutoCAD replacement. Although it reads AutoCAD R12 and earlier files (an R14 reader was announced at the show), most AutoCAD add-ons won't work with it. Its command structure is almost identical to AutoCAD's, but with better on-screen help and the ability to open multiple files. It also runs on small machines; a 486-class with 16 MB of RAM works fairly well.

OnSite Computing offered one of the funkier booths (a beach scene, complete with beach chairs, sand, surfboards, and a Volkswagen Microbus) and a clever idea for file searching on your Intranet: AltaVista's search engine. OnSite, which developed the technology for AltaVista (the most popular search engine for the World Wide Web), calls its Intranet solution for AutoCAD drawings DrawingSurfer. The price is

Viewing AutoCAD drawing in Internet project database for Heathrow. Note links to other items (at left on screen).

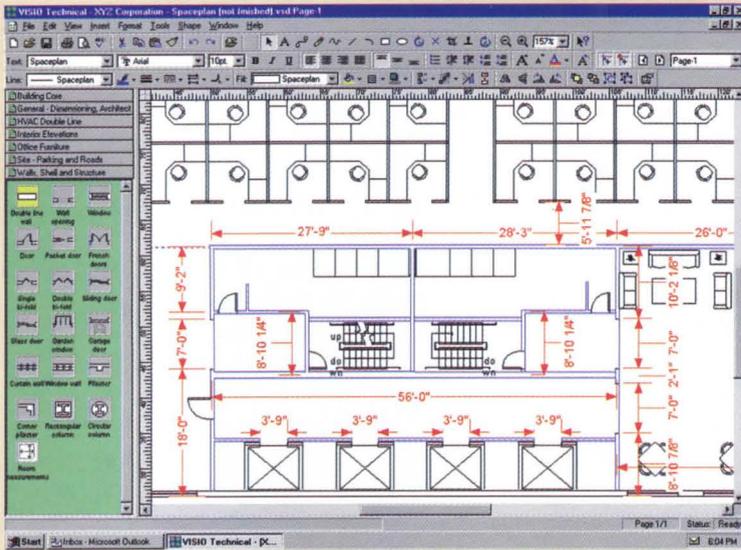


Viewing AutoCAD drawing in Internet project database for Heathrow. Note links to other items (at left on screen).

These AutoCAD clones have good genes. Vdraft developer SoftSource, for instance, developed the original Drawing Exchange Engine (DXE, the standard read-write AutoCAD programmer's interface used in many other CAD packages), and AutoCAD add-ons (Drawing Librarian and Block Librarian).

Visio also showed privately the 5.0 version of Visio Technical, the 2D technical drawing program for which it is best known among architects. It comes with numerous prefabricated shapes and an underlying database engine. The new version will read and write AutoCAD DWG files. Visio has had some problems with AutoCAD 13 translations in the past, but has licensed translation technology from MarComp, the biggest vendor in the field.

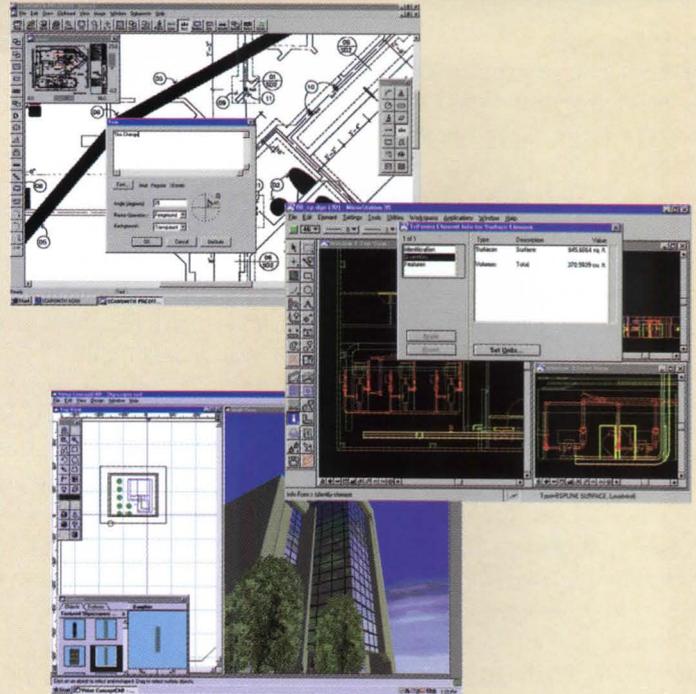
Virtus showed ConceptCAD, a new (it was due to ship in June) architect-specific tool for doing quick conceptual 3D modeling at the start of the design process. As with Virtus's flagship product, designers can



Visio Technical (above) is great for repetitive symbols. ANATech (top

right) makes scanning easy. TriForma 95 (middle) gained accuracy.

ConceptCAD (bottom) roughs out 3D before hardline drafting.



walk through the on-screen model. They can also output VRML, AVI, and 3D Studio files. The final files can be imported into CAD for hard-line drafting, via 3D DXF.

Corel also showed a 3D modeler for conceptual work. It is meant more for the mechanical design market, but has features some architects will like. Corel also sells Visual CADD, a 2D product originally developed by Numera as a successor to Generic CADD.

The 3D-animation field is beginning to get crowded as architects' use of animation tools increases. In fact, a third of the attendees at a preshow gathering of MicroStation users said they used animation in client presentations. But various products have widely different prices and features. The Virtus product, for instance, is more flexible than the new Autodesk Walkthrough, but at \$1,595 it's about five times the price. Autodesk's Kinetix division sells 3D Studio Viz for under \$2,000, however. It has more features than Virtus on the output side, for producing finished animations.

Kinetix also made moves to match Lightscape's design capabilities by adding RadioRay to 3D Studio Max and 3D Studio Viz. This add-on allows designers to simulate the real physical behavior of lights in 3D Studio scenes. Lightscape hasn't been standing still. It cut its price to \$495 a few months back, announced an alliance with lighting vendors and Lumen Micro for direct translation of lighting data files into Lightscape, and improved calculation speed. Import and export between Lightscape and 3D Studio have also been improved.

Need to populate your productions with people, or to check human-factors engineering features such as heights of working surfaces? Check out MQPro from HumanCAD Systems. If you use such products to produce raster images for AutoCAD 14, you may want to see Expert Graphics' RxAutoImage 97 and RxHighlight 97, for fast viewing, editing, and printing.

Nemetschek announced an add-on modeler for AutoCAD 14. Due to be released as we went to press, this AutoCAD add-on will interface with AutoCAD through Autodesk's ObjectARX, and will sell at a low price. Nemetschek, best known for its AllPlan CAD software, expects to release a whole line of inexpensive AutoCAD add-ons under the ARCH

14 brand name. AllPlan also got a major upgrade, with more tools for conceptual design; AllPlan FT 12.3 was due to be released in July.

The extra costs associated with the major CAD vendors' subscription support systems may leave even more running room for the purveyors of "non-AutoCAD" design products. Diehl Graphsoft showed its MiniCAD 7 for Mac and Windows NT/95. Deneba (the Canvas people) showed DenebaCAD and Ditek showed DynaCADD for Windows NT/95—all strong products, each with a unique interface you may find congenial, that will sell for \$500 to \$700 on the street.

Bentley announced its takeover of IdeaGraphix, one of the largest suppliers of MicroStation add-on software. MicroStation will also be getting more accurate drawing entities, with an "extended precision" feature that will prove especially useful to the small number of designers who deal in complex, curved beams. It works by allowing you to add extra points to the end of any element, with 65,000 data points between any two extra points. The resulting file will be backwards-compatible with older versions of MicroStation.

Other software news

Harper/Shuman released the first Windows-based version of its robust Unix CFMS financial-management software. DesignBlocks, a Sweet's/Autodesk product, continues to improve. The second CD-ROM update has a better interface; it can be searched from within AutoCAD and can insert details directly into AutoCAD files. It has to be run locally, on the user's computer, but it can grab new files from network drives.

AEC Software showed its FastTrack Schedule 5.0 for Windows and Macintosh. It allows easy posting of schedules on Internet sites, with embedded hyperlinks to associated files or other Internet addresses. Primavera demonstrated its new Webster, for Web-browser access to project planning and management data. Users can add notes and hyperlinked documents to the project information they see on the screen. Insight Development announced a new version of PrintAPlot, with a batch file feature for unattended plotting. Its Squiggle 3.0, for turning hard-line CAD drawings into sketchlike output, is also a wow.

Hardware news

For the second year, Silicon Graphics ran the most powerful computer at the show, an Onyx2. In a small studio built on the show floor, SGI used the Onyx to do flight simulations animated in real time, on a wrap-around screen more than 3,200 pixels wide. SGI also showed workstations for under \$10,000. Many of the software vendors exhibiting with SGI had ties in the flight-simulation field; they showed wild urban simulations that allow real-time or near-real-time flythroughs. None of the urban models, however, matched ModelCity Philadelphia, which was shown in many venues at A/E/C this year. The Philadelphia model includes a great deal of underlying GIS-based planning data, with more to come.

BAGH, known for its Macintosh-based Architrion, showed the product on a low-priced SGI O2. BAGH also announced its Archi-Design CAD and modeling software for Windows NT/95 and Macintosh.

EnCAD showed its new NovaJet series of giant inkjet printers. One model prints 50 inches wide, the other prints 60. The company also released a line of low-cost inkjets, as did Epson. ANatech showed its Eagle SLI scanner line with ScanSmith Predator software for easy cleanup of scanned images. You can change the parameters of part of a scan (for cleanup of random dots, for instance, or reconnection of broken lines) without affecting the rest. ■

For more information, circle number on Reader Service Card

AEC Software/FastTrack Schedule 5.0 for Windows **195**
 ANatech/Eagle SLI Scanner **196**
 Archibus/FM I*Net Toolkit **197**
 Autodesk/2D DWF **198**
 Autodesk/Kinetix 3D Studio Viz **199**
 BAGH/ArchiDesign CAD **200**
 Bentley/ModelServer, IdeaGraphix **201**
 Cimmetry/AutoVue Professional **202**
 Corel **203**
 Cyco/AutoManager View 2.0 **204**
 Deneba/DenebaCAD **205**
 Diehl Graphisoft/MiniCAD 7 **206**
 Ditek/DynaCADD—Windows **207**
 Eagle Point **208**
 EnCAD/NovaJet **209**
 Epson **210**
 Expert Graphics **211**
 Framework Technologies/Aspects SiteBuilder **212**

Graphisoft/ArchiCAD for TeamWork **213**
 Harper and Shuman/Unix CFMS **214**
 Hitachi **215**
 HumanCAD Systems/MQPro **216**
 Insight Development/PrintAPlot **217**
 Kamel Software/FastLook **218**
 Ketiv **219**
 Kozo Scandinavia/DRA-CAD **220**
 Kruse/Continuum **221**
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YOU'LL WIN IN THE CAD CLONE WARS

Autodesk and Bentley are watching their backs. For Autodesk, it started three years ago with a flawed release, R13. Softdesk, dependent on Autodesk for sales of its own add-ons, developed an AutoCAD clone called IntelliCADD. It uses exactly the same entity set as plain-vanilla AutoCAD DWG, so files do not need translation. It also uses AutoLISP and ADS, two of the three AutoCAD programming interfaces—ways to meld add-on software to the core CAD engine. It supports more than 90 percent of AutoCAD commands.

Softdesk was already testing, but stopped in June 1996. Sources say Softdesk's board got cold feet about bringing IntelliCADD to market. But its existence strengthened Softdesk's negotiating hand. Last December Softdesk, with annual sales of \$40 million, was acquired for \$90 million in Autodesk stock.

According to the Federal Trade Commission, the IntelliCADD team (some of whom had developed the original ADS interface for Autodesk) wanted to buy it from Softdesk. Softdesk had agreed to sell, but only if Softdesk itself was acquired

by a company other than Autodesk, the FTC says. The FTC, worried about an Autodesk monopoly, forced Softdesk to divest itself of IntelliCADD anyway, before approving the merger. The head of the IntelliCADD developer team formed Boomerang Technology, which bought IntelliCADD on February 21 and sold it to Visio for almost \$7 million that day.

The FTC also forbade Autodesk from interfering with attempts to hire people from the IntelliCADD team, or with attempts to market the product. In addition, Autodesk and Softdesk agreed not to try to reacquire IntelliCADD until 2007 without notifying the FTC. The decree became effective just before A/E/C Systems. Visio was showing IntelliCADD—which it is calling its "Phoenix" product—with add-ons from Ketiv, Cyco, Eagle Point, and Hitachi. Ketiv announced a version of its architectural add-on, ArchT, for Visio. The add-on, for \$500, combined with Visio's expected \$500 street price, will (by this fall) procure roughly what \$5,000 buys today from Autodesk. Ketiv says ArchT was recompiled for Visio in a matter of hours. If other vendors do the same, Visio will soon have thousands of add-ons.

There is one major difference

Like AutoCAD, Visio's clone picks up the Microsoft Office command structure, with extra palettes for drawing commands. The command-line window, like AutoCAD's, can be removed or moved to the bottom of the screen.



between the Visio and AutoCAD systems. Visio uses VBA (visual basic for applications) as the interface for attaching object-oriented add-ons to the CAD engine. Autodesk has developed its own approach, ObjectARX, which add-on vendors say is easy for them to use. Although it is the Microsoft standard, VBA is not widely used in the CAD world. Visio says it can adapt to ObjectARX if necessary. Autodesk could make ObjectARX entities harder to read, but that would also cause problems for AutoCAD users, forcing them to buy add-ons to view drawings as well as create them. And it would restrict add-on vendors, who would like to sell for CAD programs other than AutoCAD.

Even worse for Autodesk, Visio has strong ties to Microsoft. But perhaps the folks at Bentley

shouldn't gloat. At a press briefing after his keynote panel, Intergraph Chairman and CEO Jim Meadlock said Intergraph tries "to complement [Bentley] MicroStation with smaller, vertically focused software." Intergraph had eight new architectural and engineering software products at A/E/C, including Imagi-neer Technical 2.0, a 2D sketching and CAD package.

Meadlock said that long-term, "we will do MicroStation-compatible files and eventually replace the [MicroStation] core over five years." Seems a strange strategy, since Intergraph owns half of Bentley and acts as dealer for about 20 percent of its sales. Asked about that, Keith Bentley noted only that Intergraph must move from selling low-margin computer equipment to higher-margin software to survive. —S.S.R.

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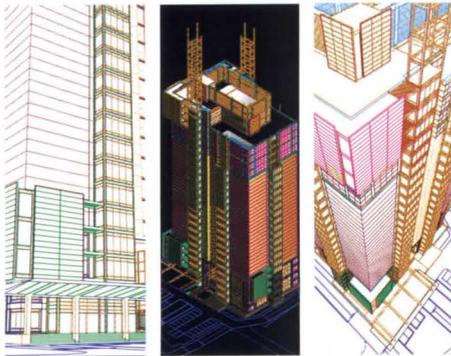
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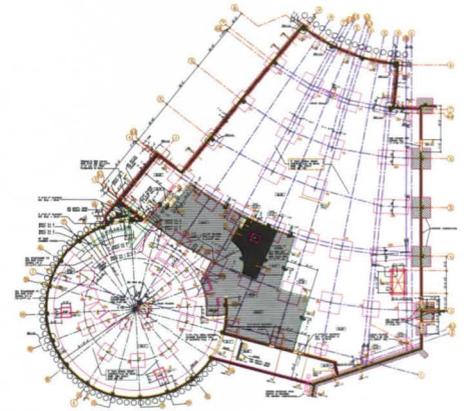
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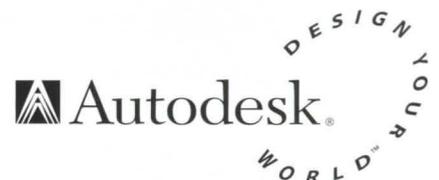
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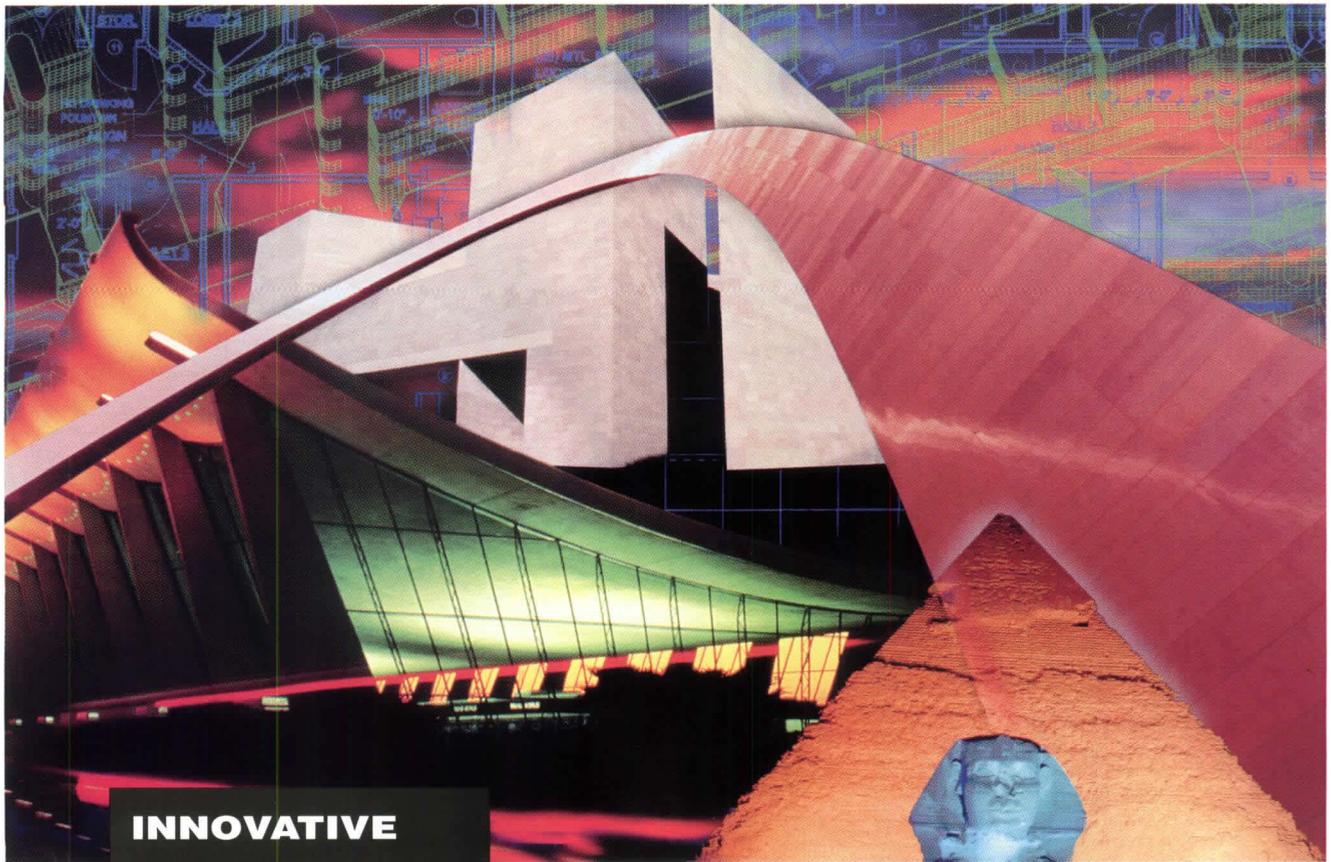
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NEW PRODUCTS

INNOVATIVE MATERIALS AND PRODUCTS FROM '97 TRADE SHOWS

Going to trade shows can be a total-immersion method of acquiring building-product expertise—or, at the very least, of understanding what the manufacturers want to tell you. Shows are also an effective way to collect continuing education units, and the demand for CEU courses has improved the quality of the seminars themselves. But shows are time consuming and relatively expensive to actually get to. So here's an armchair tour of some recent events.

1998 Shows

The Builders' Show National Association of Home Builders. Dallas, Jan. 16–19. 800/368-5242

National Roofing Contractors Association Las Vegas, Feb. 8–11. 847/299-9070

Kitchen & Bath Industry Show Chicago, April 17–19. 800/527-0207

Construction Specifications Institute Baltimore, June 25–27. 800/689-2900

American Institute of Architects San Francisco, May 14–17. 617/859-4475

Coverings (International Tile & Stone Expo) Orlando, Fla. April 22–25. 561/747-9400

Lightfair Las Vegas, May 27–29. 404/220-2217

Sponsored by the National Association of Home Builders, the Builders' Show is the largest trade show, both in terms of attendance and exhibits. Traditionally held in the same city for three consecutive years (it was Houston in 1995–97), next year the NAHB show starts a three-year run in Dallas. Attendees run the gamut, from small building contractors, foremen, and prospective homeowners to the Del Webb of the home-building industry. The

show—and the trends and futuristic products it showcases—attracts a lot of media attention. This year builders seemed interested in learning more about New Urbanism, though there is resistance to implementing land-use strategies, like back-loading alleyways, that cost real money. Product trend: still more stainless steel, with even clothes washers sheathed in shiny metal.

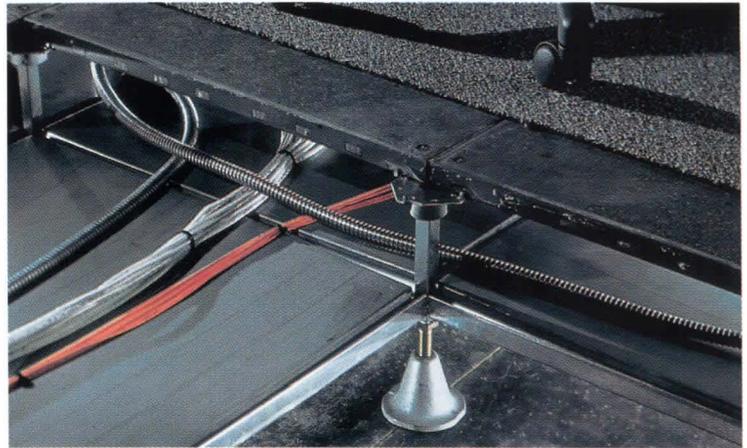
The National Roofing Contractors Association has sponsored annual conventions for more than 100 years. Who attends: roofing contractors, consultants, and architects interested in the performance of roof materials. Most spending is in reroofing, generating subspecialties such as sprayed-in-place polyurethane systems. Entrepreneurial types, the roofers prefer speakers drawn from a conservative pantheon. This year, hot products included metal roof shingles and AutoCAD-based roof-design software.

A "new" show—Coverings, formerly the International Tile & Stone Expo—features loads of tile and stone in exciting exhibits. With a large international contingent from Spain, Italy, and Asia, this show's recent move to Orlando from Miami wasn't completely popular.

Chicago's Neocon was a lively event this year, with "distribution" the hot topic. Contract manufacturers showed desks, partition walls, ceilings, and floors (see right) getting electrified. In the news: Hon bought Allsteel, and the Merchandise Mart purchased the rights to Los Angeles' Westweek show. Trade-show giant Miller-Freeman made a preemptive acquisition of New York's Interplan show (the descendant of Designer Saturday), combining it with a North American version of Paris-based Batimat, another Miller-Freeman property, creating a new conglomerate event to be held in New York's Javits Center this fall.

This month, RECORD covers some of the building-product trade shows held in the first half of 1997. This and the following pages include products introduced at the NAHB, NRCA, AIA, CSI, Coverings, and Neocon shows. The items in this alphabet soup of building materials and interior furnishings are "editors' choices," picked because they seem to represent trends in the industry. The RECORD LIGHTING section contains a page of new fixtures introduced at Lightfair, held in New York City in late April, and contributing editor Steven Ross reports from the A/E/C Systems show, pages 139–42. Literature appears on pages 152–53.

—Joan Blatterman, New Products Editor



Multiple-level raised floor

Interface Architectural Resources (AR), a subsidiary of carpet manufacturer Interface, Inc. that markets the C-Tec brand of raised flooring, describes itself as a specialist in solutions that anticipate future office requirements.

At the Buildings Show component of Neocon this June, the company displayed an interstitial raised-floor system that accommodates both wiring and HVAC distribution. The design creates two or three separate layers beneath the raised-floor panels, supported by the same pedestal, which combine

the functions of sheet-metal over-ceiling air ducts with those of underfloor wire and cable raceways. Widely used in Europe, underfloor air distribution is considered the most efficient way to circulate conditioned air. A segregated air-distribution plane creates an unobstructed pressurized supply-air plenum without requiring expensive wire jackets; flexible "airflow chimneys" bring cooled (or warmed) air up to in-floor baffles exactly where it is needed for occupant comfort. The power and data cables are run in the UL-listed space directly under the flooring panels, making them accessible without disturbing the HVAC plenum. Mechanics can level the pedestals from the walking surface, again without contaminating the air plenum. By consolidating air-distribution and wiring functions, the interstitial system actually reduces slab-to-slab height requirements. 800/691-8600. InterfaceAR, Kennesaw, Ga. **CIRCLE 235**



Interstitial system has separate distribution planes. Installation shows the scale of the flooring panels.

PRODUCT BRIEFS



▲ Rustic-look tile floor

Made by the Spanish firm Zirconio to meet commercial specs, Dover tile has a semimatte, "layered" surface that resembles rusticated stone. Tile comes in limestone-like colors (gris is shown) in 12- and 16-in. squares. 800/789-TILE. Florida Tile, Lakeland, Fla. **CIRCLE 236**

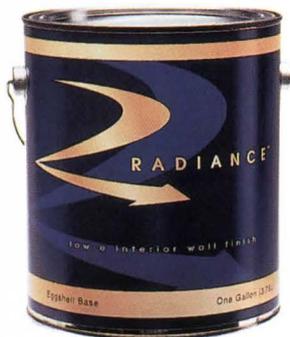


▲ Pattern-intense modular

A new PVC-free carpet, Movements is said to be the first cut-pile, bonded modular with an integral cushion backing. Suitable for even the heavy rolling traffic of airports, the line uses bold patterns for a seamless effect. 706/880-5511. Milliken, LaGrange, Ga. **CIRCLE 237**

▼ "Low-e" house paint

A new latex-type paint developed by Sonneborn, Radiance evolved from a German "stealth" coating technology that masks the infrared signature of military vehicles. Applied to ceilings and walls, the paint keeps interiors cooler in summer by blocking solar heat. In winter, homes stay warmer as radiant energy is reflected back into the space. Offered in 73 colors. 800/433-9517. ChemRex, Inc., Shakopee, Minn. **CIRCLE 238**



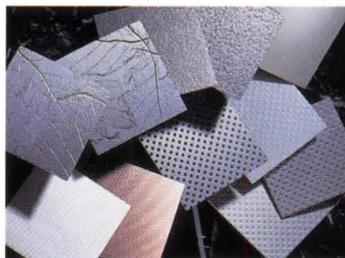
▼ Euro-design shower valve

A distinctive arched style, Talia bath fittings include a lever-handle shower control with thermostatic temperature or pressure-balancing valve options. Grohe America, Inc., Bloomington, Ill. **CIRCLE 239**



▲ Space-saving mobile storage

The museum-storage installation shown above illustrates the range of specialty Equiptovation shelving options available (medical storage is a specialty). Offered in site-specific depths, widths, heights, and access, mobile aisles can hold solid-metal and wire-rack shelving. Carriages sit on a floor system that can be leveled on uneven surfaces. 800/323-0801. Equipto, Dallas. **CIRCLE 242**



▲ Industrial-tech laminate

A collection of metal surfaces bonded to a phenolic backing, DecoMetal provides an industrial aesthetic for fixtures, furniture, and other interior uses. There are 32 laminate and nine solid-metal options, including gold leaf, matte steel, and polished aluminum. Architect's guide offered. 800/FORMICA. Formica Corp., Cincinnati. **CIRCLE 240**



▲ Cooperative-effort fire door

An "industry first" 90-minute double-egress wood fire door was developed by a team consisting of Zero International (intumescent seals), Georgia-Pacific (fire-rated mineral core), Adams Rite (top-rod-only concealed vertical rod exit), and VT Industries (no-metal-edge wood-veneered doors). 201/467-7878. **CIRCLE 243**



◀ Glass-panel space divider

Widely installed in malls and other commercial interiors in Europe, the Cascadia space divider is made of laminated-glass sections that glide down from an over-door housing to create a secure yet transparent wall. No floor-level storage space is needed. The chain-drive motor is operated by push button; a safety device halts the descent if an obstacle is sensed. Walls are 11 ft wide by 10 ft tall; sections can be linked by a movable center post to create corners and longer spans. 800/869-9685. Modernfold, Inc., New Castle, Ind. **CIRCLE 241**



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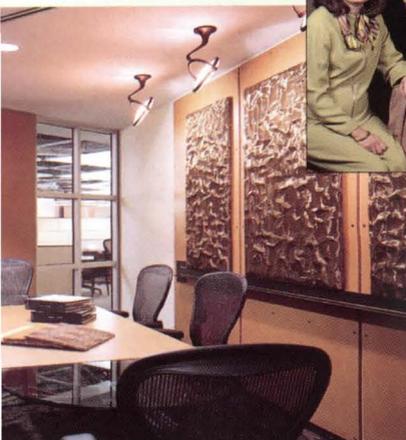
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CIRCLE 55 ON INQUIRY CARD

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PRODUCT BRIEFS

► 90-degree corner window

With no mullion, an all-glass corner unit is one of the custom-window designs available in a choice of wood frame: oak, cherry, maple, or mahogany interiors in place of the standard pine. This permits kitchen windows to match cabinetry, if desired. 800/477-6808. Weather Shield Mfg. Inc., Medford, Wis. **CIRCLE 244**



▲ Insulation for steel studs

Foamular extruded-polystyrene insulation can be placed between brick-veneer walls and steel framing; anchors penetrate the board to tie masonry to steel. A vapor barrier reduces steel corrosion and moisture damage. 800/828-7155.

Owens Corning, Toledo, Ohio. **CIRCLE 245**

▼ Danish Modern revival

The Chieftain armchair, designed by Danish architect Finn Juhl in 1949, has become a classic of Danish Modern style. Unique elements include a floating seat that rests on crossbars; frame is turned walnut. Baker Furniture, which originally made many Juhl designs, is re-issuing the chair and three other pieces. Kohler Co., Kohler, Wis. **CIRCLE 246**



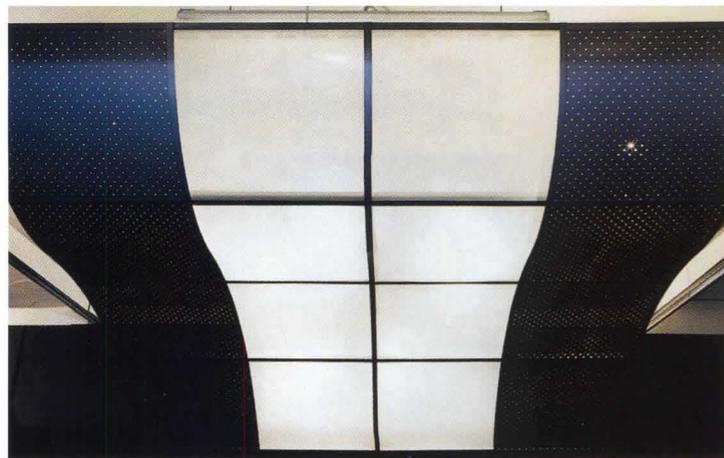
▼ Large-project Corian

Using direct delivery and standardized construction steps to reduce the installed price for a Corian bath, a new firm specializes in fabricating and supplying bath vanities, counters, and shower surrounds for large, multiple-room hotel and hospitality remodels and new construction. 888/BUY-CORIAN. Vanity & Wet Wall Direct, Austin, Tex. **CIRCLE 247**



► New look for curved ceilings

Several additional infill-panel options are available in the Curvatura "3D" grid-suspended ceiling. Flexible Diamondflex mesh has an unusual pattern of light-catching perforated and twisted aluminum; translucent FRP panels (pictured) become light fixtures when backlit. Also, new edge trims permit any given panel to become a finished perimeter element. Free templates and software help architects and designers create custom ceilings that arrive at the job site ready-to-hang. 800/USG-4YOU. USG Interiors, Inc., Chicago. **CIRCLE 248**



▼ Stone-look ceramics

A new floor and wall line, Cobblestones come in five colors, three sizes of field tile, and sculptured trim and high-relief frieze pieces. The installation shown here uses two sizes of wall tile set with a molded trim that can also be a chair rail or countertop edge. Summitville Tiles, Summitville, Ohio. **CIRCLE 250**



▼ Stern upholstery

Robert A. M. Stern's textile collection translates remembered elements of locales from an architect's grand tour of Europe into evocative motifs in upholstery fabric, such as this jacquard with a Wiener Werkstätte feel. Hickory Business Furniture, Hickory, N.C. **CIRCLE 251**



▲ Custom table tops

A new visual for food service: custom tops. Photos, logos—any design—can be created in laminate from a designer's sketch. 800/449-8677. Home on the Range, Durham, N.C. **CIRCLE 249**

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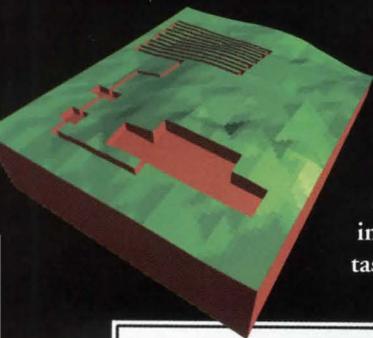
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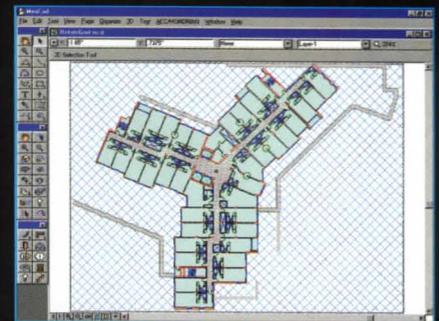
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1001	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1002	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1003	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1004	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1005	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1006	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1007	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1008	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1009	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1010	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1011	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1012	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1013	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1014	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1015	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1016	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1017	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1018	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1019	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1020	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1021	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1022	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1023	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1024	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes
1025	Office	1	Sq Ft	1000	Common	Yes	Yes	Yes	Yes

MiniCAD 7— The only thing small is the price.

CIRCLE 56 ON INQUIRY CARD



PRODUCT BRIEFS



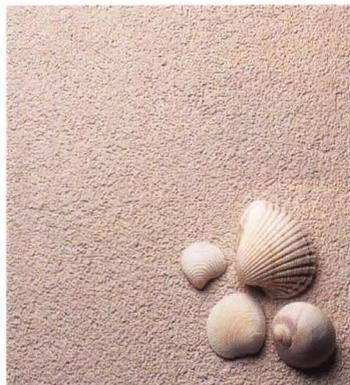
▲ Maritime-flavor floor

Kentucky's new Aquatica wood floor pattern achieves a ship-deck effect by alternating 3/8-in.-thick by 3-in.-wide strips of Brazilian cherry wood with narrower strips of red oak. A rugged construction shipped prefinished, the floor is suitable for either direct-nail installation or gluing with a Type II mastic. Sample program available to designers. 502/451-6024. Kentucky Wood Floors, Inc., Louisville, Ky. **CIRCLE 252**

▼ Mildew-resistant wall finish

Originally developed as a durable exterior finish, Dryvit's textured PMR (Proven Mildew Resistant) coating is increasingly used as an interior wall treatment. Particularly suitable for abuse-prone, high-humidity environments such as hotel corridors, PMR finish can replace vinyl wallcoverings with an attractive coating that lets walls "breathe." The product also is said to inhibit soiling from airborne dirt. A sample program provides swatches of all PMR textures. 800/556-7752. Dryvit Systems, Inc., West Warwick, R.I.

CIRCLE 253



◀ Retrofit cabling system

Intended for open-plan work environments, Cablefloor adds a flexible power, voice, data, and video cabling capacity that needs only 2 1/2 in. of overall height. Access-floor panels are made of a fire-rated cement/wood fiber composite; support cylinders are V-2 fire-rated polypropylene. Individual floor panels are held firmly by screw-down nylon corner clamps. 800/999-3567. Flexspace, Inc., Seattle, Wash. **CIRCLE 255**

► Built-in side-by-side

A 42-in.-wide model is now available from Sub-Zero, making built-in refrigeration more appropriate in kitchens where floor space is at a premium. Units may be faced with almost any paneling (not more than 1/4 in. thick); both colored- and stainless-steel panels may be specified. A new architectural design guide provides templates and dimensional information on all Sub-Zero refrigerator/freezer equipment. 608/271-2233. Sub-Zero Freezer Co., Inc., Madison, Wis.

CIRCLE 254



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PRODUCT BRIEFS

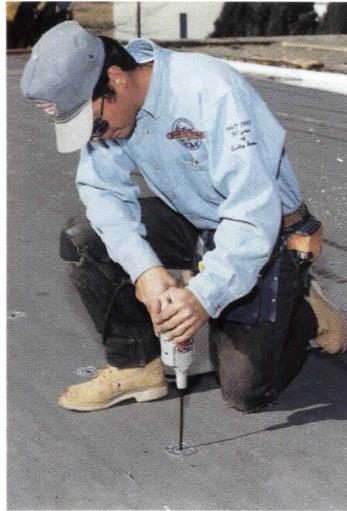
▼ Out of prison

A maker known for ultra-rugged institutional plumbing introduces Meridian, a line of stainless-steel toilets and wash-basins for less-abused public wash-rooms. 818/336-4561. Acorn Engineering, City of Industry, Calif. **CIRCLE 256**



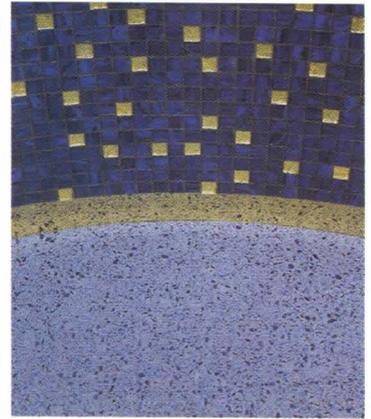
► Cushioned roof sheet

A single-ply sheet developed for reroof applications, FleeceBack consists of a nonwoven backing laminated to a .045-in.-thick Sure-Seal (black) or Brite-Ply (white) weatherproofing membrane. The fleece provides a puncture-resistant, cushioning element useful over existing roofing surfaces where foot traffic is anticipated. Carlisle also offers a Windows-compatible CD-ROM with all current product information, as well as design details in AutoCAD format. To view, access carlisle-syntec.com (Web page). 800/4-SYNTEC. Carlisle SynTec, Inc., Carlisle, Pa. **CIRCLE 257**



▼ Glass "terrazzo"

A new material from Bisazza, an Italian firm famous for glass mosaics, Logos is made by mixing glass granules of different colors in an organic resin. Cast into tiles of various sizes and thicknesses, Logos is suitable for high-traffic floors, interior or exterior walls, and counter-tops. As the colored aggregate is glass, it will not stain. Technical data, performance-test results, and an architectural sample program are offered. 305/597-4099. Renato Bisazza, Inc., Miami. **CIRCLE 259 ■**



◀ Tile and stone care

TileLab is a new system of 11 cleaners, sealants, and restoration products. The line includes new Surface Gard, a polymeric sealant for unglazed tile, natural stone, concrete, and grout, which is applied simultaneously over tile and grout to create an invisible stain barrier. 800/272-8786. Custom Building Products, Seal Beach, Calif. **CIRCLE 258**

A CROWNING ACHIEVEMENT IN FIXTURE DESIGN

Each new member of Lumière's Coronado line of metal halide fixtures is a unique specification grade fixture designed to use the newest in high technology natural color rendering metal halide lamps.

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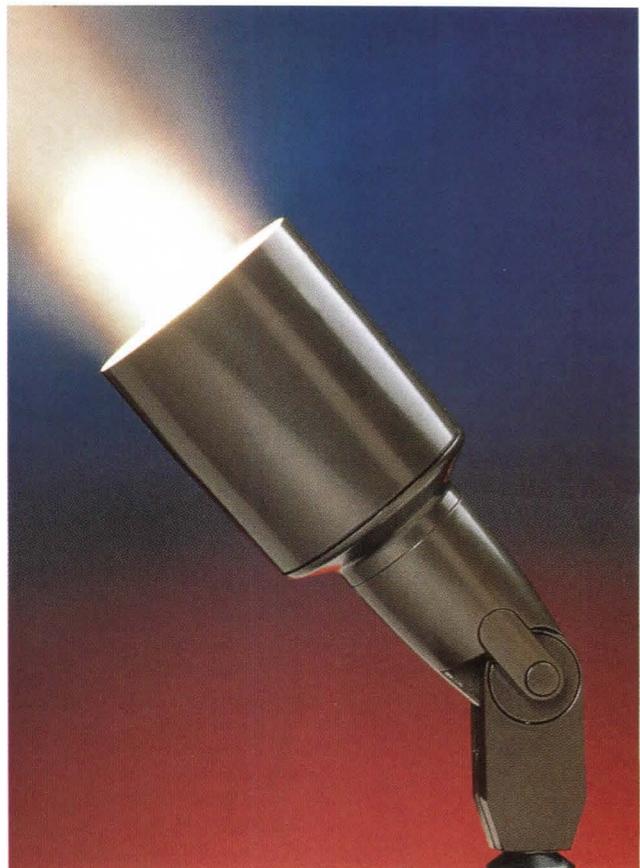
Available in versions to accept the PAR 20, 35 watt (Cat. #720), PAR 30, 35 or 70 watt (Cat. #730, pictured), and PAR 38, 70 or 100 watt (Cat. #740) metal halide lamps. Coronado fixtures can be mounted in the ground, on trees or walls, and can be remoted from their waterproof composite ballast compartment.

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CIRCLE 58 ON INQUIRY CARD

PRODUCT LITERATURE

Water-jet fabrication service

Specializing in design and cutting technology, this Iowa firm has acquired an expertise in custom fabrication of ceramic tile, natural stone, and solid metal into wall and floor mosaics, signage, and countertops and edge treatment. An architectural brochure describes the extensive water-jet capacity: 15 machines working in three shifts are available, computer-guided to create almost any desired pattern in these solid materials. Also available is the Medallion Portfolio, a collection of less costly standardized floor motifs that can be specified in almost any colorway, in stone, tile, or resilient sheet. 800/394-8145. Creative Edge Corp., Fairfield, Iowa.

CIRCLE 260

Task-specific matting

A 20-page color catalog illustrates all of this maker's commercial, institutional, and industrial matting. Among the floor products offered are antifatigue mats, walk-off runners for entrances, and resilient mats for exercise areas. 330/773-7651. Musson Rubber Co., Akron, Ohio. **CIRCLE 261**

Historic-preservation guidelines

Prepared by the Heritage Preservation Services Division of the National Park Service, the newest "Briefs" explains and illustrates ways to control rising damp, graffiti on sensitive materials, and the restoration of historic floorings. Each 16-page publication is illustrated by photographs and contains a bibliography of

additional information sources. There is a small charge for each publication; a quantity discount is offered. National Park Service, Washington, D.C.

CIRCLE 262

Fire-protection board

Data sheets describe the newest Caico passive fire-protection materials, including Caico-Board. Made of rigid mineral wool, the asbestos-free board can provide fire resistance in areas where traditional spray-applied materials cannot be used. Tested for a fire performance of up to four hours, it is suitable for columns, beams, and floor/ceiling assemblies. 201/347-1200. Isolatek International, Stanhope, N.J.

CIRCLE 263

Preventing roof blow-offs

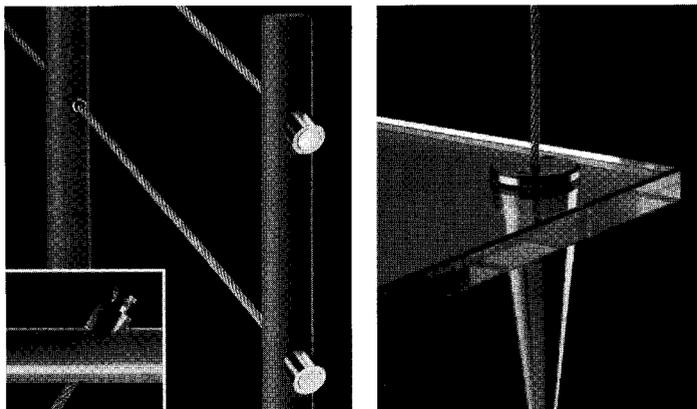
An architectural catalog describes different Springlok reglets, termination bars, and flashings designed for specific wall and roof substrates, and anticipated loading at the site. Flashings and other roof-perimeter treatments have been wind-tested to 110 mph. 800/237-9773. Fry Reglet Corp., Alhambra, Calif.

CIRCLE 264

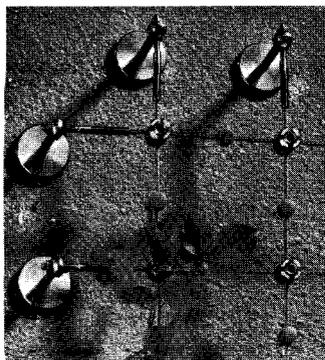
Hatches and vents

A 16-page catalog covers all Milcor heat and smoke vents, roof hatches, and sidewalk and floor doors. Using a page for each configuration offered, information includes installation-detail drawings, a list of all standard-size options, and guide specifications for each application. 800/528-1411. Milcor LP, Lima, Ohio.

CIRCLE 265



Jakob® INOX LINE



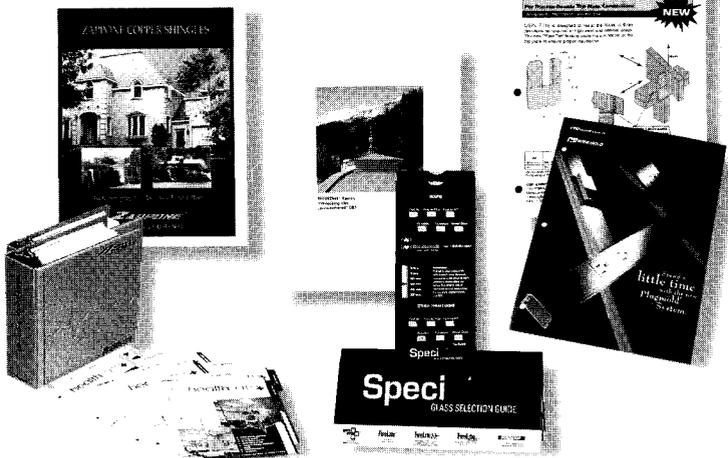
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CIRCLE 59 ON INQUIRY CARD



PRODUCT LITERATURE



Metal shingles

Joseph Zappone's roof design replicates the longevity of European metal-shingle roofs in an American-manufactured product. Made in either solid copper or aluminum, the shingles have a "shadow-cup" profile that puts most of the metal evenly on the roof deck, permitting foot traffic without denting the material. Individual units interlock, enhancing wind- and rain-resistance. A data package also describes a new copper bay-window roof kit, with shingles, trim, counter flashings, and nails for 6- and 8-ft-wide bays. 800/285-2677. Zappone Mfg., Spokane, Wash. **CIRCLE 266**

Lighting for healthcare spaces

The Thomas Healthcare Lighting Design Binder is arranged in a logical sequence of areas through a hospital, clinic, or long-term care facility. Each fixture included in the binder addresses a specific need, such as clean-room fluorescents, downlighting appropriate for birthing suites, and secure parking-garage lights. The binder covers lighting made by all Thomas brand lines: Capri, Day-Brite, Emco, Gardco, McPhibben, Matrix Controls, Omega, and Thomas. 601/842-7212. Thomas Lighting Group, Louisville, Ky. **CIRCLE 267**

Interlocking zinc roofing

A six-page brochure explains the advantages of Rauten roof and wall "tiles" (shingles), which come in square and pointed shapes installed so that the diagonals lie in the direction of the fall. An interlocking cleat element minimizes the amount of nailing or soldering

required to create a weatherproof, wind-resistant zinc cladding. 604/291-8171. Rheinzink Canada, Ltd., Burnaby, B.C.

CIRCLE 268

Wire distribution

A color brochure describes Plugmold Plus multioutlet wire- and cable-distribution equipment, including duplex receptacles and field-replaceable surge-suppression devices. Available in either metal or nonmetallic configurations, the series comes in 15- and 20-amp versions. 860/621-0049. The Wiremold Company, Bristol, Conn. **CIRCLE 269**

High-wind, seismic straps

Detailed drawings and cut sheets illustrate a number of new Kant-Sag connections for wood construction. Included are plates, twisted straps, and sill connectors that resist loads in three directions, as required by high-wind and seismic codes. Each page demonstrates the proper nailing and positioning sequence for the connectors. 800/328-5934. USP, Montgomery, Minn.

CIRCLE 270

Fire-rated glazing guide

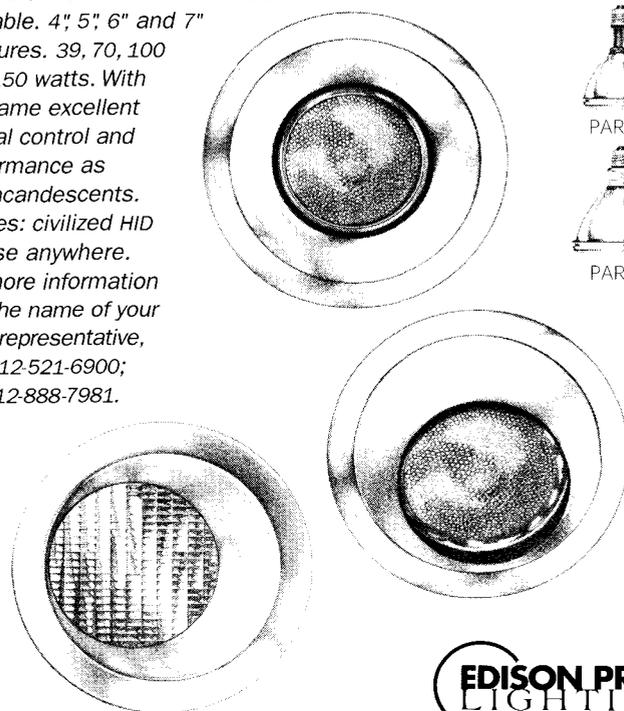
An expanded version of this sources' popular glass-comparison tool, the 1997 SpeciFIRE slide chart matches product characteristics with required size and fire-rating information. A new feature: a checklist with questions the specifier should ask before approving fire-rated glazing. The guide is free to qualified design professionals. 800/426-0276.

Technical Glass Products, Kirkland, Wash. **CIRCLE 271** ■

CIRCLE 60 ON INQUIRY CARD

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1998

The editors of ARCHITECTURAL RECORD announce the 43rd annual RECORD HOUSES awards program. This program is open to any registered architect; work previously published in other national design magazines is disqualified. Of particular interest are projects that incorporate innovative programs, building technologies, and use of materials. There is an entry fee of \$50 per submission; please make checks payable to ARCHITECTURAL RECORD.

Submissions must also include plan(s), photographs (transparencies, slides, or prints), and a brief project description bound firmly in an 8 1/2-by-11-in. folder, and must be postmarked no later than October 31, 1997. Winning entries will be featured in the 1998 RECORD HOUSES. Other submissions will either be returned or scheduled for a future issue. If you would like your entry returned, please include a self-addressed envelope with appropriate postage.

Submissions should be mailed to:

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sessions, code development hearings, and educational and professional development events. Expo '97 will be held September 28-30. To register, contact BOCAI, 4051 W. Flossmoor Road, Country Club Hills, Ill. 60478. For information, call 708/799-2300, x248; fax 708/799-4981; or E-mail order@bocai.org.

October 5-9

**Los Angeles Convention Center
Los Angeles, California**

Combining Autodesk University and CAD Camp, Autodesk Design World is a meeting of

users, developers, and dealers. Events include a hands-on look at new technologies. Call Mark Cohen or David Radoff of Upstart Communications at 510/420-7979.

October 14-19

**Sweeney Convention Center
Santa Fe, New Mexico**

The 51st National Preservation Conference, sponsored by the National Trust for Historic Preservation, addresses the theme of "People and Places: Living in Cultural Landscapes." For information, write the National Trust, 1785 Massachusetts Avenue N.W., Washington,

D.C., 20036; call 800/944-6847; or E-mail santafe_npc@nthp.org.

October 17-18

Seattle, Washington

The Interfaith Forum on Religion, Art, and Architecture PIA is sponsoring "Light and Sound for Sacred Spaces," an exploration of innovative approaches to acoustics and lighting in religious buildings. Call Jean Barber at the AIA at 202/626-7305.

October 23-25

**Outrigger Prince Kuhio
Honolulu, Oahu**

The annual convention of the Society of American Registered Architects will include a design awards banquet, seminars, and business sessions. To register, contact Michael Jones, SARA, at 619/299-8891.

October 23-28

Memphis, Tennessee

"Architecture in Perspective," The 12th annual convention of the American Society of Architectural Perspectivists, features seminars and workshops, as well as a portfolio exchange, an auction, and tours of Memphis architecture. To register (by September 23), write Alexander Lee, ASAP, 52 Broad Street, Boston, Mass. 02109; or call 617/951-1433, x225.

October 28-30

**Georgia World Congress Center
Atlanta, Georgia**

MetalCon International '97, the annual conference and exhibition focusing on the use of metal in design and construction, will include industry meetings and more than 500 exhibits of products, services, equipment, and technology. For information, call 800/537-7765.

October 29-November 2

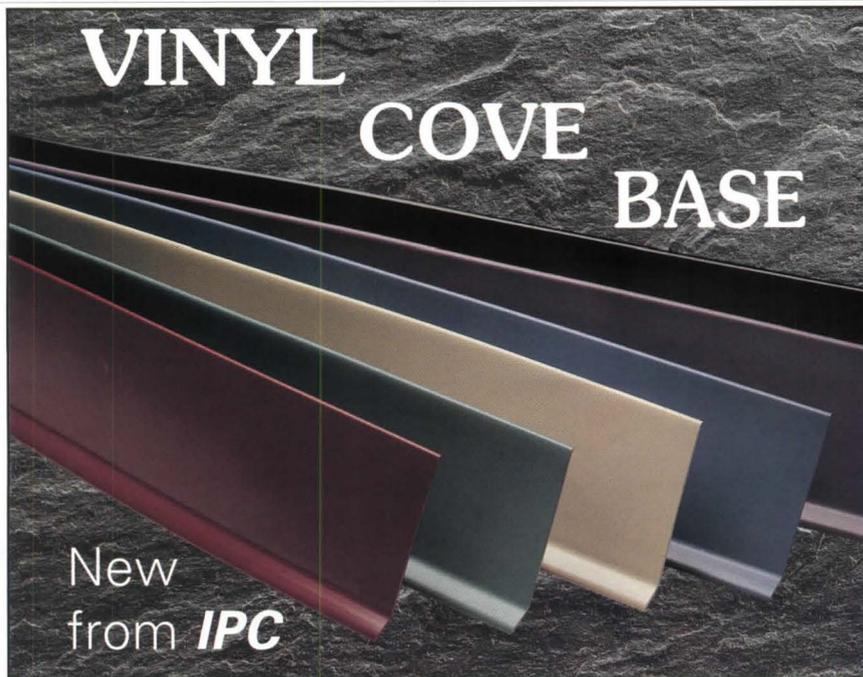
Mexico City, Mexico

The next meeting of the AIA's Committee on Design will be held in Mexico City. Contact David Roccosalva at the AIA at 202/626-7418.

October 30

**National Press Club
Washington, D.C.**

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shop led by Tom Peters, will be presented. For information, write the National Summit on Building Performance, 655 15th Street, N.W., Washington, D.C. 20005; or call 202/639-4160.

October 30–November 2

Austin, Texas

“Linking Practice with Place: How To Do Your Best Where You Are” is the theme of the 1997 Green Building Conference. A trade show exhibition and a competition for a low-income, energy-efficient, green home will also be held. Write the Green Building Conference, P.O. Box 90008, Austin, Tex. 78709; or call 512/264-0004.

November 6–9

**Omni Netherland Hotel
Cincinnati, Ohio**

The AIA’s Historic Resources Committee is sponsoring a conference on historic county courthouses. Contact David Roccosalva at the AIA at 202/626-7418.

November 6–9

Miami, Florida

The environmental issues facing our nation will be the focus of “Environmental and Economic Balance: The 21st Century Outlook,” a conference sponsored by the AIA, the U.S. Green Building Council, and the U.S. Department of Energy. For registration information, call the AIA at 202/626-7482.

Competitions

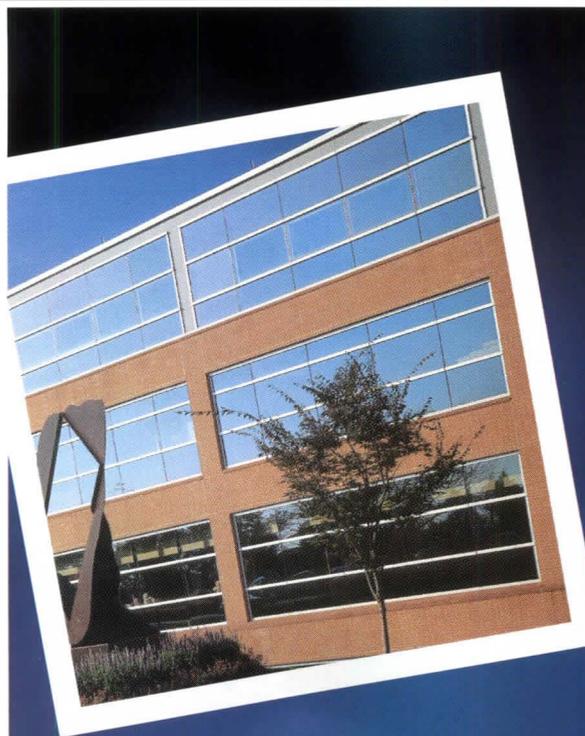
Upcoming deadlines for the **1998 AIA Honors and Awards** program are as follows: Twenty-five Year Award, submissions due September 5; Honor Awards for Interiors, entry deadline August 22, submissions due September 19; Honor Awards for Urban Design, entry deadline September 12, submissions due October 10; Fellowship, submissions due October 24; Edward C. Kemper Award and Whitney M. Young Jr., Citation (nomination by national board member required), submissions due October 27; Honorary Fellowships, submissions due November 7; Young Architects Citation (nomination by AIA component required), submissions due November 21; Architecture Firm Award, Henry Bacon Medal for Memorial Architecture, Institute Honors, and Thomas Jefferson Awards for Public Architecture and ACSA/AIA Topaz Medallion for Excellence in Architectural Education, submissions due December 12; Honorary Member-

ships (nomination by national AIA board member required), due December 19; and AIA/NCMA Design Awards of Excellence, entries due January 16, 1998, submissions due February 20, 1998. For more information, call Robin Lee at the AIA at 202/626-7390.

Concept House '98 is an international competition for the design of a live/work prototype suitable for mass production with a unit cost of 100,000 pounds sterling (roughly \$150,000). The design should accommodate up to five people, have a home office, employ new technologies, and be energy efficient and suitable

for construction on a greenfield or brownfield site. September is the submission deadline. The winning design will be built and exhibited at the 1998 Daily Mail Ideal Home Exhibition in London. For information, call Lynne Glazzard, RIBA Competition Office, 44/113-234-1335.

The Boston Society of Architects invites entries in **Unbuilt Architecture**, an annual program open to practitioners, educators, and students. Submit entries by August 21 to Unbuilt Architecture, BSA, 52 Broad Street, Boston, Mass. 02109. For information, call 617/951-1433, x232. *(continued on page 159)*



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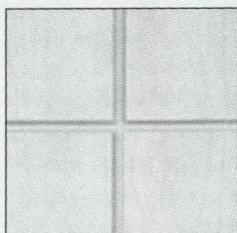
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DATE EVENTS BOOKS

(continued from page 157)

The annual **Shinkenchi Residential Design Competition**, sponsored by *The Japan Architect*, will be judged this year by Swiss architect Jacques Herzog of Herzog & de Meuron. The theme is "House of Collaboration." Entrants are asked to work in collaboration with an artist or art student to draw an exhibition space for contemporary art for any site. Use two sheets of paper; no electronic media. Write Shinkenchi-ku, 31-2, Yushima 2-chome, Bunkyo-ku, Tokyo 113. Entries must be received by September 10.

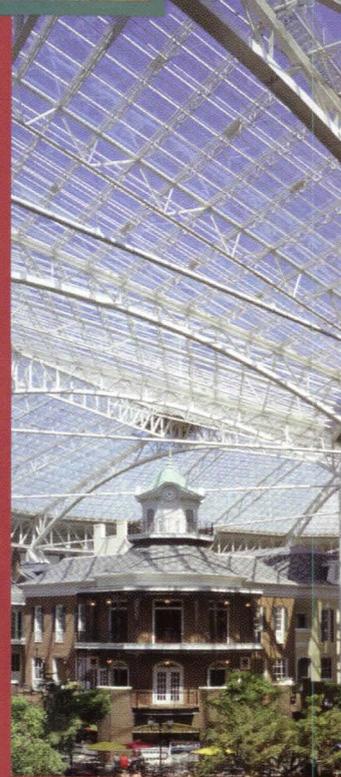
The Urban Studies and Architecture Institute has launched an international ideas competition for ferry terminal buildings in Manhattan, Brooklyn, and Queens, connecting with La Guardia Airport. The **Fluid City/Point by Point: Ferry Stations, New York** may be entered by practitioners who completed their terminal degree within the last ten years, as well as architecture, urban design, landscape, and interior design students. Registration deadline is September 15; entries are due January 15, 1998. Write USAI, 10 West 15th Street, Suite 1126, New York, N.Y. 10011; call 212/727-2157; or E-mail Ldusainst@gnn.com.

Meei Jaw Publishing Co. announces the second annual **Taipei International Architectural Design Competition**, based this year on the theme of "absence of tradition." The competition is open to all design professionals and students and will be juried by Herman Hertzberger and C. Y. Lee. The deadline is October 1 for registration and October 15 for submission of entries. Write Meei Jaw Publishing, 12f, no. 413, Hsin-Yi Road Sec. 4, Taipei, Taiwan, Republic of China; or call 886/2-729-9900.

The Environmental Design Research Association and the journal *Places* announce an awards program for **environmental design research and practice**. Two categories of awards will be included: "design research" awards for projects that investigate the relationship between physical form and human behavior; and "place design awards" for completed projects that demonstrate excellence as human environments. Open to designers and researchers in a range of fields, from architecture and planning to environmental psychology and sociology. Jurors include landscape architect Lawrence Halprin and Donlyn Lyndon, FAIA. Deadline for nominations is November 15. Write Janet Singer, EDRA, P.O. Box 7146, Edmond, Okla. 73803; call 405/330-4863; or E-mail edra@telepath.com. ■

(For this month's Books section, see page 23)

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CIRCLE 65 ON INQUIRY CARD

LISTENING TO LANDSCAPE ARCHITECTS *continued from page 49*

Franklin: a recognition that important issues and problems are growing more complex.

This recognition is opening doors for American landscape architects abroad. He explained, "What's peculiarly American about our landscape architecture is that it regards what the community wants, what the environment needs, and what the client wants and needs as being part of a big puzzle that has to be fitted together." Such an attitude—together with their environmental ethic, their business savvy, and the ability to start and stop on a dime—makes American landscape firms popular with overseas clients.

What other trends did the panelists observe? Nearly all expressed confidence about their future. Projects are becoming larger, more significant, and more interesting. Walker was, perhaps, the least optimistic, being convinced that the public is turning away from nature. "Environmentalism is like a lot of things that are popular, like family values," he said. "The media whips up a frenzy, but I don't see effective demand in terms of increased budgets."

What about the fact that 85 percent of Americans describe themselves as environmentalists? Van Valkenburgh was convinced that the environment's increasing degradation is heightening the public's appreciation of nature. Indeed, said Roberts, "landscape architecture's environmental ethic is pervasive all over the world." O'Donnell added that one of the hallmarks of the 1990s is a now-clichéd concern about sustainability: "We're much more interested than we were in the 1980s with being good stewards, with preserving limited natural resources."

Not always definable in traditional terms

The world economy, the panelists pointed out, is also creating new ways of working. Franklin explained that often "the work I do isn't definable in any traditional terms." His firm sometimes finds itself participating in two- and three-day charrettes, sponsored by an international client who gathers the outstanding experts from seemingly unrelated disciplines to define and solve problems posed by proposed large-scale development on a particular site. The exercise is far more efficient, Franklin observed, than the traditional planning process that stretches over a two-to-five-year period and is often obsolete upon completion. Many international companies, he added, now expect new facilities to be planned, designed, and operational in six months' time.

In surveying future markets, the panelists noted that the reclamation of industrial sites and of deteriorated neighborhoods, toxic sites, extraction areas, and the like will play an increasingly prominent role. And that work, Walker said, "tends to be centering, because it uses land that is already serviced, attracts the educated (research centers, the entertainment industry), and has a cultural component. It's not just land and housing. I think in our world we do have opposite, mindlessly opposite trends." A trend that worries Van Valkenburgh is the paucity of highly experienced and talented fellow practitioners. "We're like a pancake that's too thin," he said.

Are landscape architects heading in the same general direction as architects? Perhaps you won't be surprised to hear this panel said "yes" but/and "no." Walker saw divergent paths: "Because we didn't come from the same place, we're essentially different in our orientation and outlook." Roberts agreed: "Regrettably, architects have that ridiculous race for fashion and style; landscape architects are not always driven by having to do something god-damned different." But a more optimistic Carmichael had the last word: "The underlying concerns of both our professions are good design and an environmental ethic."

To provide a better picture of how the landscape architecture profession works, we take a closer look at four of the designers who participated in the RECORD roundtable. These profiles show some of the diversity in backgrounds and approaches found in the profession.



WILLIAM H. ROBERTS:

Taking the interdisciplinary path

Trained as an architect, Roberts "drifted into landscape architecture," he says, because it seemed more interesting than the construction details he labored over as a novice designer. "When you're revitalizing urban waterfronts or planning a new university campus," he says, "design encompasses cultural, environmental, behavioral, and political issues." He liked the broad opportunities.

Wallace Roberts & Todd, a 100-person international firm employing all manner of designers, planners, and engineers, took root in 1963 when Roberts and three other young University of Pennsylvania faculty members—landscape architect Ian McHarg and architects David Wallace, FAIA, and Thomas Todd, FAIA—submitted a competition-winning master plan for Baltimore's Inner Harbor. They founded their practice on the then-progressive idea of integrating the building professions into interdisciplinary teams, which Roberts still regards as the firm's greatest strength. Instead of incorporating small groups of engineers, environmental planners, landscape designers, and interior designers within a large architecture practice, as do large A/E firms, WRT built up a collaborative practice in several equally strong disciplines.

The firm's interdisciplinary nature and the fact that it has offices on both coasts (Pennsylvania, Florida, and California), provides a flexibility that buffers it from the effects of recession. After benefiting from the office and residential construction boom of the 1980s, for example, WRT was able, during the recession of the early 1990s, to shift its emphasis to planning and landscape architecture and to public, institutional, and overseas clients.

But the firm's broad capabilities also blur its identity. When Roberts tells a client how diverse his firm's services are, the response is often, "So you're an architect." As a result, WRT frequently seeks clients looking for planning services and promotes its architectural abilities only after having proved itself as a planner. "We can be like a chameleon," says Roberts.

About 70 percent of the time the firm works directly for the client, an arrangement Roberts finds preferable to working for an architect. "If we're responsible for all the hydroelectric studies, all the environmental studies, community planning, site planning, signage, and up to the walls of the building, the client inevitably gets better services, because we are free to challenge the architect if there are wasteful solutions." He also finds joint ventures with architects problematic, because "it's better for one person to be in charge."



MICHAEL VAN VALKENBURGH:

Finding a context for Modernism

One of landscape architecture's most respected firms, Van Valkenburgh Associates of Cambridge, Massachusetts, has become known for blending the Modern movement's essentially placeless language with more contextual responses, for developing a strongly sculptural approach, and for tackling the needs of degraded contemporary landscapes. Among the
(continued on page 162)

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(continued from page 160)

recently completed projects of the 15-year-old, 13-person firm are the 85-acre Mill Race Park in Columbus, Indiana; the master plan and design for the renovation of Harvard Yard for Harvard University; the 4.5-acre expansion of the Walker Art Center Sculpture Garden for the Minneapolis Park and Recreation Board; and the master plan for the Iowa Center for the Arts at the University of Iowa, Ames.

"Sometimes we work for architects, sometimes they work for us," explains Van Valkenburgh. He prefers collaborating with "architects who are pushing the limits of the envelope." The designer credits his firm's success to "working 50 percent harder to be 10 percent better, to misquote Venturi."

As a teacher and as the former chair of the Harvard Graduate School of Design's landscape architecture program from 1990 until 1996, Van Valkenburgh worries about several current educational trends. One is that many landscape architecture programs are run by people who may have Ph.Ds but little or no practice experience. He also laments a tendency among some state university programs "to try to quantify and therefore obscure the importance of design."

Disagreeing with those who believe that design should be taught as a collaborative discipline, Van Valkenburgh finds that it's hard enough for students to master their own discipline. He also believes that teaching has veered too far in the direction of stressing process over product. "I don't think we should return to empty formalism, but we should place more emphasis on assessing the quality of the projects we make as a consequence of all this environmental and other input," he says.

Most important, however, Van Valkenburgh is convinced that in order to prepare designers for an uncertain future the schools should be educating them as generalists. He says, "I went through one of those BLA programs—it was a good one—where they tried to figure out the five or six things that people were doing in offices and then built studios around campus planning or playground design, vest-pocket parks, whatever. There are larger ideas you need to have in design."



PATRICIA O'DONNELL:

Where heritage and environment intersect

In 1982, when she founded Landscapes, a five-person firm that specializes in preservation, O'Donnell held two master's degrees: one in urban planning (with a preservation emphasis), the other in landscape architecture (with a concentration in applied behavioral research). The services her firm offers range from preservation planning, design, construction, and interpretation and management of historic sites and museums; through rehabilitation, ecological restoration, and maintenance planning for urban parks; to community preservation and interpretive planning. Her clients include municipal and recreation departments, not-for-profit citizen groups, the National Park Service, museum boards, and institution managers and personnel.

O'Donnell, who also founded the National Association of Olmsted Parks in 1970, has restored Olmsted parks in Rochester, New York, Louisville, Kentucky, and Baltimore. She says that in the 1970s "environmental values cycled back to intersect with cultural ones. You had this intersection between heritage and environment." One of the challenges of her work in historic preservation is reconciling the often-conflicting requirements of nature and culture. How do you approach a problem, for instance, in which the structural integrity of a historic building, beloved in part for its vine-covered facades, is threatened by those same vines?

Another requirement of particular importance to O'Donnell's work is "thinking of resources in a broader time frame," she says. "You have to make

sure what you plan and design can be sustained, can be managed five years from now, 10 years from now." Her reports to clients, consequently, include proposals for future maintenance and rehabilitation, and her relationships with clients tend to be long-lasting.

Because Landscapes' clients tend to be public agencies and institutions, much of its work consists of trying to reconcile the interests of diverse groups and committees. This consensus-building process, O'Donnell explains, is a large part of every landscape architect's work. To the surprise of many architects, perhaps, it is also O'Donnell's favorite type of work.



COLIN FRANKLIN:

Understanding social and natural systems

Franklin was introduced to landscape architecture in the early 1960s as a young British architect working in Islamabad, Pakistan, on a Modernist plan that seemed to him unrelated to the local topography and culture. After earning an MLA from the University of Pennsylvania, Franklin and his landscape architect wife, Carol, joined with Leslie and Rolf Sauer—a scientist and an architect/landscape architect/planner, respectively—to found Andropogon in 1975. (The firm takes its name from the American field grass that is the first to colonize and heal the landscape after it is disrupted.)

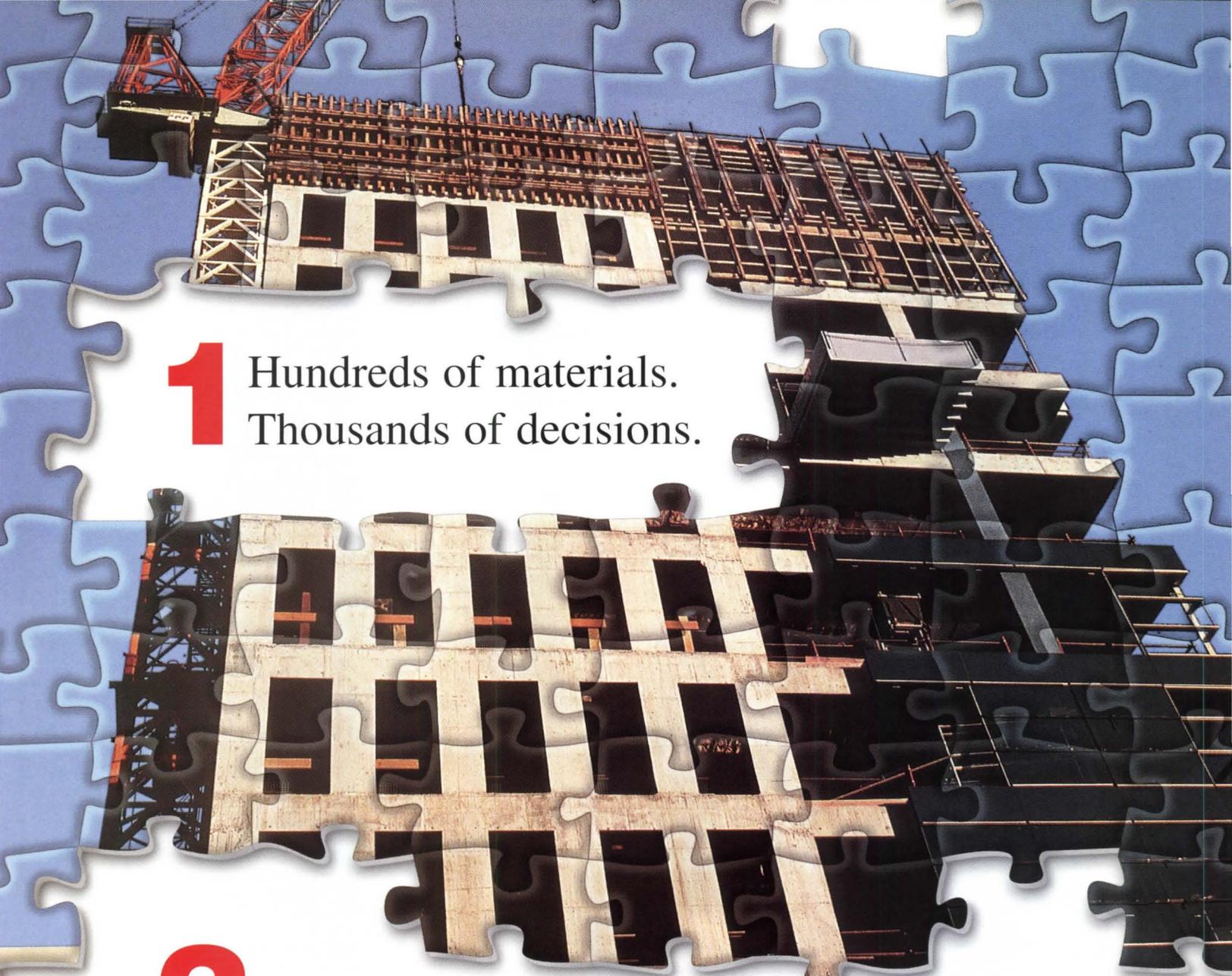
"We were interested in taking Ian McHarg's philosophy of combining natural science with landscape architecture and making a new discipline, what he called ecological design," says Franklin. The partners hoped to expand the meaning of collaboration, allowing all team members to stretch beyond their own disciplines and become "much more open and fluid in their approach," says Franklin.

Andropogon's completed work includes a master plan for part of New York's Jamaica Bay, which serves as a "refueling stopover" along the Atlantic Flyway for 326 species of birds. In Denver, the firm created a natural drainage system for the Stapleton Development Plan, integrating site drainage and storm-water management into a continuous system of swales, wetlands, and ponds. And the firm is now on a design team that is working to create a model for the U.S. Navy's nationwide program of renovating bases according to sound environmental principles.

"We're very good technically in understanding social and natural systems," says Franklin. "We go in with the idea of a participatory process and tend to work well with institutions. Some of the best things that happen on the job come from people who don't like something—committees, neighbors."

Work in the Third World comprises a small but significant proportion of the 20-person firm's workload. Franklin maintains it allows him "to see in sharper focus problems we have here." His experience in flood-plagued Sri Lanka, for example, underscored the reality of climate change and the need for regional sustainable planning. The firm's new roadways for the capital city of Colombo will incorporate storm-water management via a porous paving material that absorbs runoff. "We're thinking of the road as a major instrument in the environmental mix, getting synergies from putting roads in the right places," Franklin explains.

His overseas work has also involved him in new working methods that are collapsing the planning process from years into days and blurring distinctions between professions. Franklin sees these changes as healthy, making an analogy to the teamwork that developed the atom bomb in the 1940s at Los Alamos, New Mexico. He says, "I'm fascinated by the way these different scientists, all emigrés, were pulled together and had to find new ways of working. This is what America does." ■



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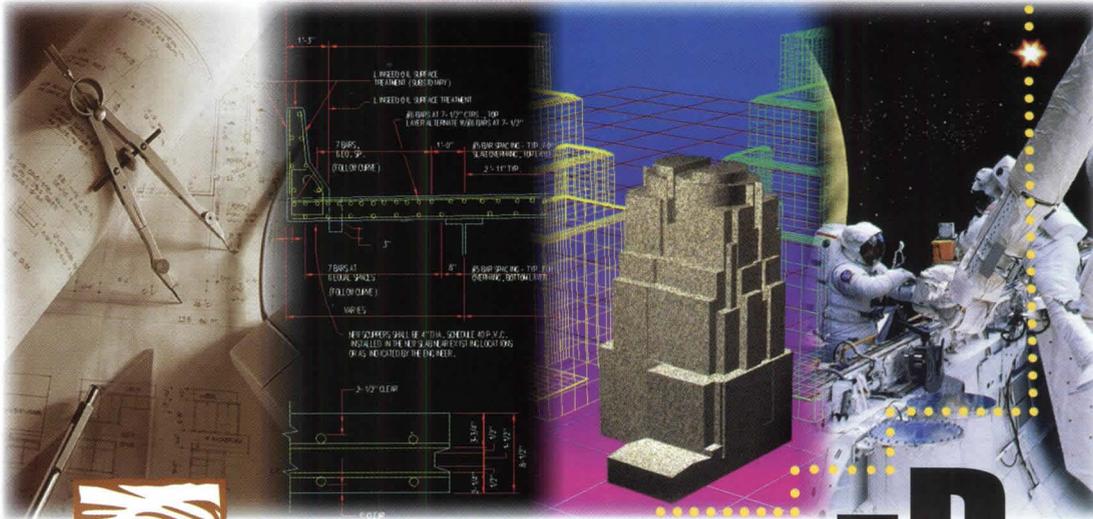
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**AIA / ARCHITECTURAL RECORD
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INSTRUCTIONS

◆ Read the article “Case Study: SONY CD Factory Presents a High-Tech Lighting Challenge” (pages 123–28) using the learning objectives provided to focus your study.

◆ Complete the questions below, then check your answers (top of page 174).

◆ Fill out the self-report form on page 174 and submit it to receive two AIA Learning Units.

—Mark Scher, AIA Director Professional Education Products and Services

Questions

1. In terms of lighting, why would an architect need to understand CD-ROM manufacturing processes?

2. Modify the SONY project lighting objectives so that they might apply to other industrial projects.

3. Detail the main lighting elements of the SONY clean room and

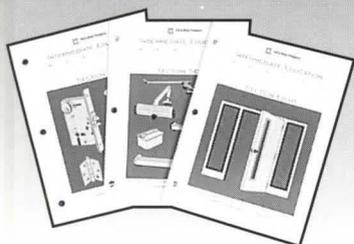
describe the implications of equipment planning to its illumination.

4. The combination of overhead staging and task lighting in the replication area for CD-ROM inspection was problematic. How would a special viewing booth solve the problem without increasing the lighting?

5. Describe the natural lighting problem in the staging area and offer two solutions for future projects for assistance during facility start-up.

6. Many commercial projects include warehouse and docking areas. What lessons might be transferrable to other facilities?

7. What data-collection techniques used by the DELTA team are applicable for predesign programming as well as post-occupancy evaluation?



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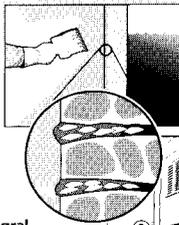
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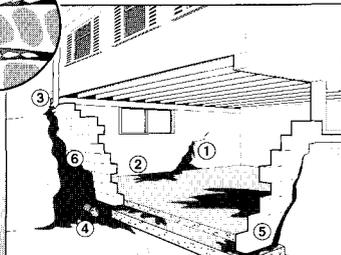
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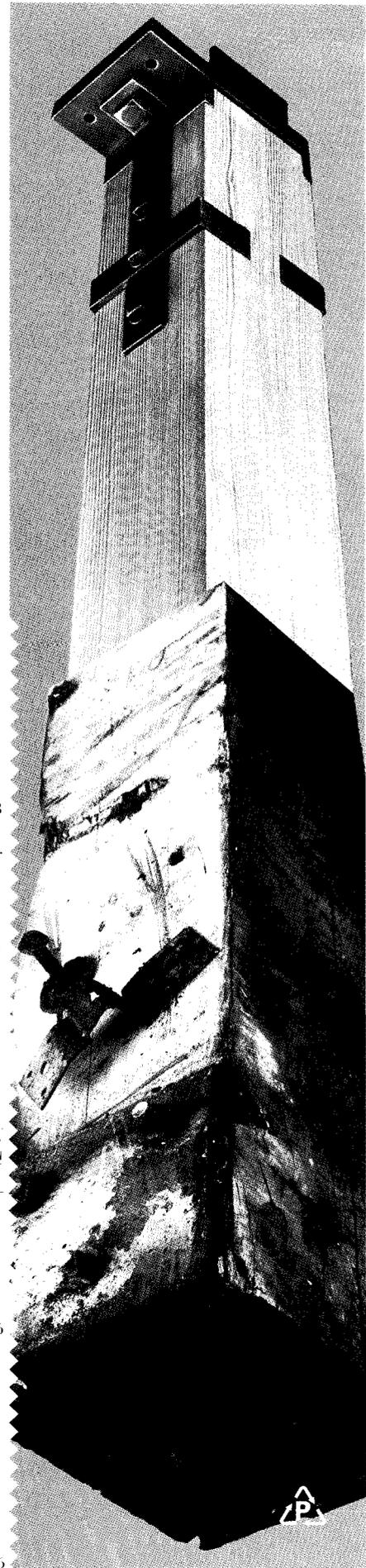
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AIA / ARCHITECTURAL RECORD CONTINUING EDUCATION

ANSWERS

Answers refer to the article “Case Study: SONY CD Factory Presents a High-Tech Lighting Challenge” (pages 123–28). The questions appear on page 172. To receive CES credits, fill in the self-report form below.

1. The lighting in the manufacturing spaces needs to accommodate the many visual tasks involved in CD production and to meet clean-room standards for some of the manufacturing processes.
2. Create work spaces with good task visibility and visual comfort for employees. Minimize energy use by using energy-efficient lamps, ballasts, luminaires, and controls. Create bright, visually stimulating spaces to help keep workers alert. Keep the initial cost of the lighting installation within budget. Install energy-efficient lighting products.
3. The lighting must prevent adding dust to the air or disrupting air flow over surfaces in the room. The SONY plant uses recessed 2-by-4-ft clean-room luminaires with three F32T8 lamps and electronic ballasts providing ambient light. These luminaires are sealed to Class 10,000 standards. Horizontal illuminance in the room depends on the changing amount of equipment in it: machinery blocks light and lowers illuminance on the floor. This may or may not be a problem, but lighting calculations need to take into account the ultimate space

configuration and what equipment may need to be added, removed, or be mobile (as in technical, medical, and office facilities).

4. This viewing booth could be specifically designed to enhance viewing tasks by using side lighting, a selective light spectrum, specular reflections, diffuse lighting, and other techniques suited for visual-inspection tasks.
5. Sunlight through high clerestory windows in the adjacent corridor creates glare and reflection on the computer screens in the staging area facing the windows. Immediate solutions would be to install glare-control devices on the clerestory windows (i.e., shades) and higher-luminance screens with antireflection coatings for monitors and VDTs.
6. Warehouse: A white-painted ceiling combined with uplighting lowers the contrast of the bright light source against the ceiling, reducing the sensation of glare. The bounced light from the ceiling helps make light levels more uniform and softens shadows cast by objects below. Shipping: Workers face extreme glare and attendant shadows from a high-candlepower light source close to their line of sight when exiting trucks during loading/unloading. Lower-brightness lamps and a larger reflector system providing diffuse light into trucks improves the lighting.
7. Rating surveys on user preferences, their visual tasks, and what they are trying to see; checklists; and structured on-site user interviews.



AIA / CES SELF-REPORT FORM

(Use to report learning units earned for Architectural Record only)

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“Case Study: SONY CD Factory Presents a High-Tech Lighting Challenge” (pages 123–28)

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I hereby certify that the above information is true and accurate to the best of my knowledge and that I have complied with the AIA Continuing Education Guidelines for the reported period.

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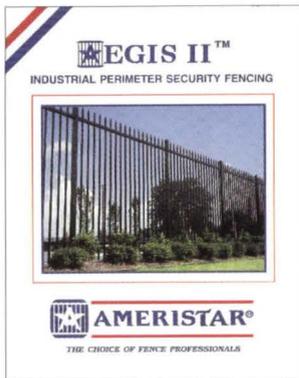


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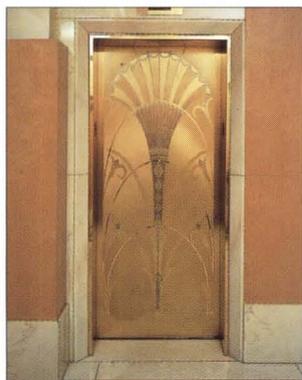


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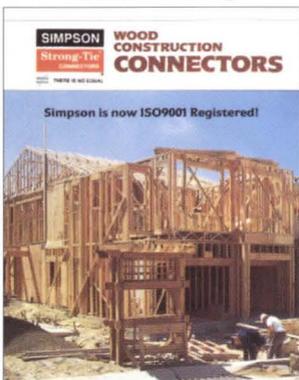


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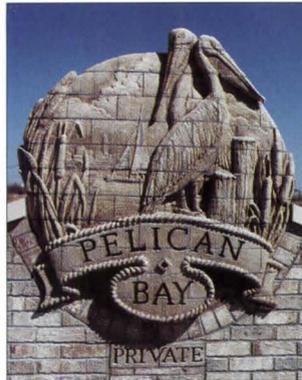


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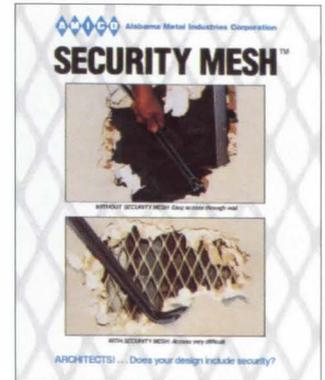


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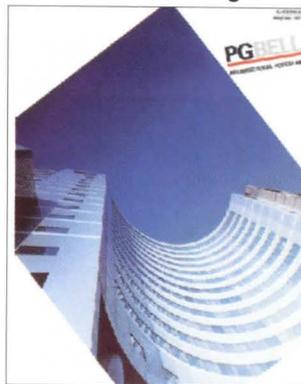


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Omega Fence Systems

CIRCLE 137 ON INQUIRY CARD

Pan-Tech

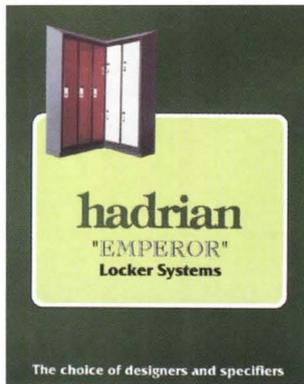


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Access Industries

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**Avoid Annoying Glare
10 to 1 MH spacing**

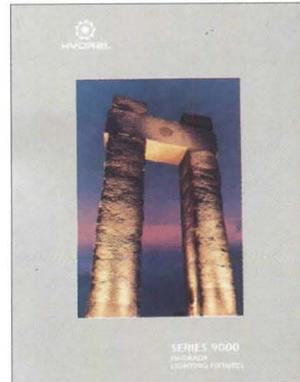


Hydrel's new 9600 Series Recessed Wall-Step Lights with improved beam patterns and unique internal glare control achieves remarkable 10 to 1 mounting height to spacing ratio. Patented sealing technology and modular construction provide air cooling for reduced size and simple installation/maintenance. Up to 100 watts HID. Hydrel, Sylmar, California.

Hydrel

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In Grade Up Lights



This 36 page catalog covers the new, innovative 9000 series Ingrade Lighting fixtures. See how modular design makes a difference in performance, installation, maintenance, and durability. Available in a variety of configurations, this series accepts lamps to 175W HID, 250W incandescent. Architectural and landscape illustrations include recommendations for the most common applications. Hydrel, Sylmar, California.

Hydrel

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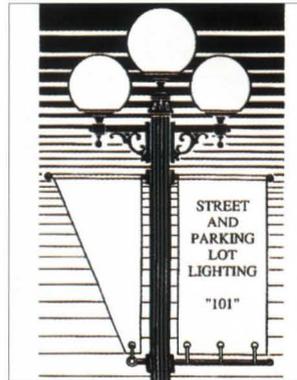


At 10,000 hours average—twice the life of standard MR-16's—the Ultraline's™ titanium reflector coating provides consistent color throughout the life of the lamp. Now with upgraded quartz burner, ultraviolet emissions are reduced at UVA, UVB and UVC wavelengths. Medium and wide beam versions available: 35W and 50W. Product Inquiries: (800) 218-7446.

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Sternberg Vintage Lighting

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Hubbell Lighting, Inc.

CIRCLE 148 ON INQUIRY CARD

New Simkar Catalog

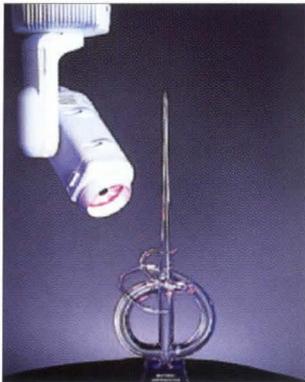


New Simkar catalog contains complete specifying information for recessed and surface fluorescent fixtures. Full-color throughout, the 48-page catalog follows a useful "specification sheet" format with large product photographs, dimensioned mechanical drawings, photometric data, and comprehensive listings of mounting options, lenses and louvers, ballast/lamp configurations, special features and more.

Simkar

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Excelite, Inc.

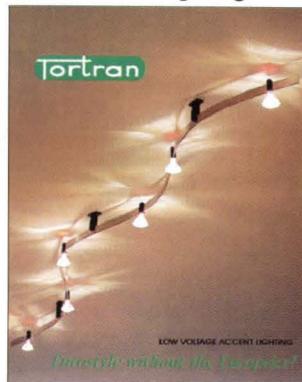


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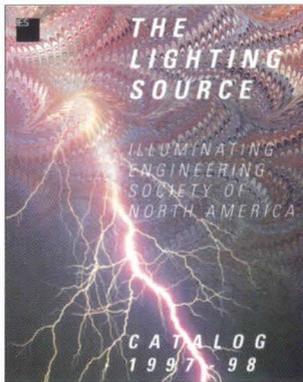


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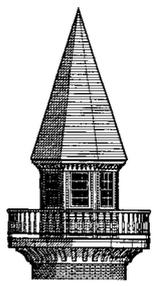
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THE FUTURE Forecasting from demographic trends, a strategic consultant envisions much more than statistics.

BY ELIZABETH A. KROL

Embedded deep in the futuristic fantasies of science-fiction writings lies a morsel of truth, a whisper of what may come. Like a fortune teller's ramblings, they spark a percolating little doubt: "What if it's true?"

Well, according to futurist guru Jerry Epperson, we should consider Disney's ideal new town, Celebration, for a peek ahead. Full-blown sci-fi, with mind control devices and big brother, it is not, but a thread of Huxley or Vonnegut is in its fabric. The town's homes, completely computerized and high-tech, take a Brave New World-ish step. Police can monitor all the houses electronically, and kids carrying tyke-size, beeperlike toy alligators can be summoned by the touch of a computer key.

Disney has its believers and its nonbelievers, and Epperson is a believer. "If you're in Florida and you don't see Celebration and you're in any part of the design trade, you're missing a real opportunity to see the future," Epperson says with the zeal of a prophet. He preaches the gospel of the town of the future, which now has 500 houses to call its own.

This fortune-teller draws his conclusions from demographics, not crystal balls. As a strategic consultant to the furniture industry, investment banker Epperson looks into the future for his clients. The managing director of the Richmond, Virginia-based Mann, Armistead & Epperson, he spoke to an audience of building-product manufacturers, distributors, architects, and designers at this year's Coverings trade show in Orlando, Fla., on the major

demographic shifts that will force change in architecture, design, and building in the future.

Casting his gaze forward in time—40 years forward, to be exact—Epperson spoke of a sputtering end to the great American



melting pot. The population, no longer overwhelmingly white, will comprise double the current number of African-Americans, quadruple the number of Hispanics, and five times the number of Asians. These changing dynamics, Epperson believes, will spawn separate ethnic suburbs that cater to the tastes of individual cultures. For architects, this means a new clientele and a new way of working.

But even before those 40 years have passed, another cultural shift will manifest itself: the aging of the baby boom generation. For the 77 million 33- to 51-year-old baby boomers, the death of their parents may leave them with small fortunes. By the year 2010, Epperson estimates, baby boomers will have

inherited \$16 trillion. Older but not poorer, this population will have the means to purchase a second home or to construct a dream house, with all the bells and whistles. Switching houses will dump a glut of starter homes on the market, swamping

dential spaces. More bedrooms, larger bathrooms, and more details, he says, will characterize the baby boomer's home of choice.

Fighting the battle of the bulge or the batter of daily life, baby boomers will have their new bathrooms—in their second homes, their dream houses, or their retirement homes—equipped with work-out machines, spas, whirlpools, maybe even big-screen TVs. These amenities will focus time and friends in the realm of the bathroom, or so the story goes.

Epperson envisions prosperous times for the furniture and home-design industry. Ninety-five million Americans are unnecessarily miserable in "under-decorated" homes, he says, and they need help. He proposes "Project Vision," calling for the end of the furniture and home-decor store and the advent of custom interior design for all. By paying a fixed fee per month, like a credit-card bill, homeowners can have the interiors of their dreams within their economic reach. For architects offering interior design services, Epperson's plan could translate into a monthly retainer for ongoing in-home work.

Entertaining in bathrooms and the end of do-it-yourself decorating? Perhaps. Whatever the specifics, Epperson says, a huge generation with lots of money to spend will feed a demand for more services from architectural firms. ■

Celebration, Fla.: The future of the American home, or an anomaly?

the anemic ranks of 44 million 18- to 33-year-old Generation X-ers.

But with the swing of the pendulum, somewhere around the year 2005, a tidal wave of 64 million "echo boom" kids, who are now under the age of 18, will reach maturity. More starter homes will be needed to accommodate their massive numbers—and the near-elderly baby boomers who may be abandoning their larger homes for smaller ones.

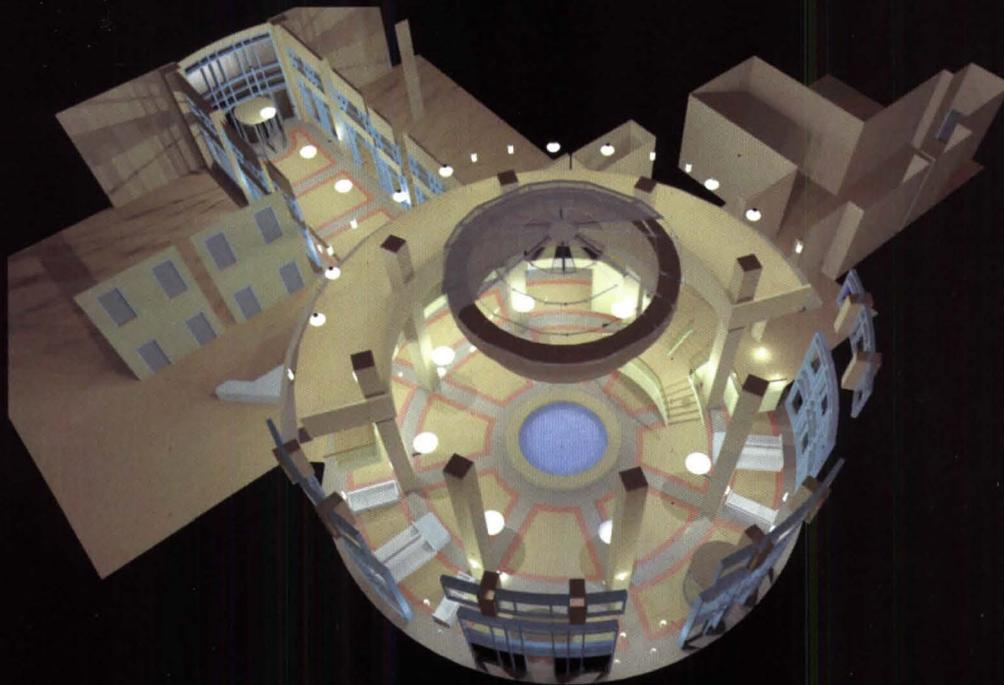
Extrapolating from statistics, Epperson predicts that such significant demographic developments will lead to a revolution in design—or at least a different approach to resi-

Elizabeth A. Krol, a summer intern at RECORD, attends the S. I. Newhouse School of Public Communications at Syracuse University.



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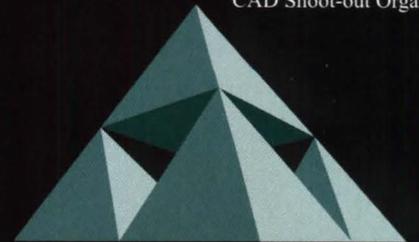
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CAD Shoot-out Organizer



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