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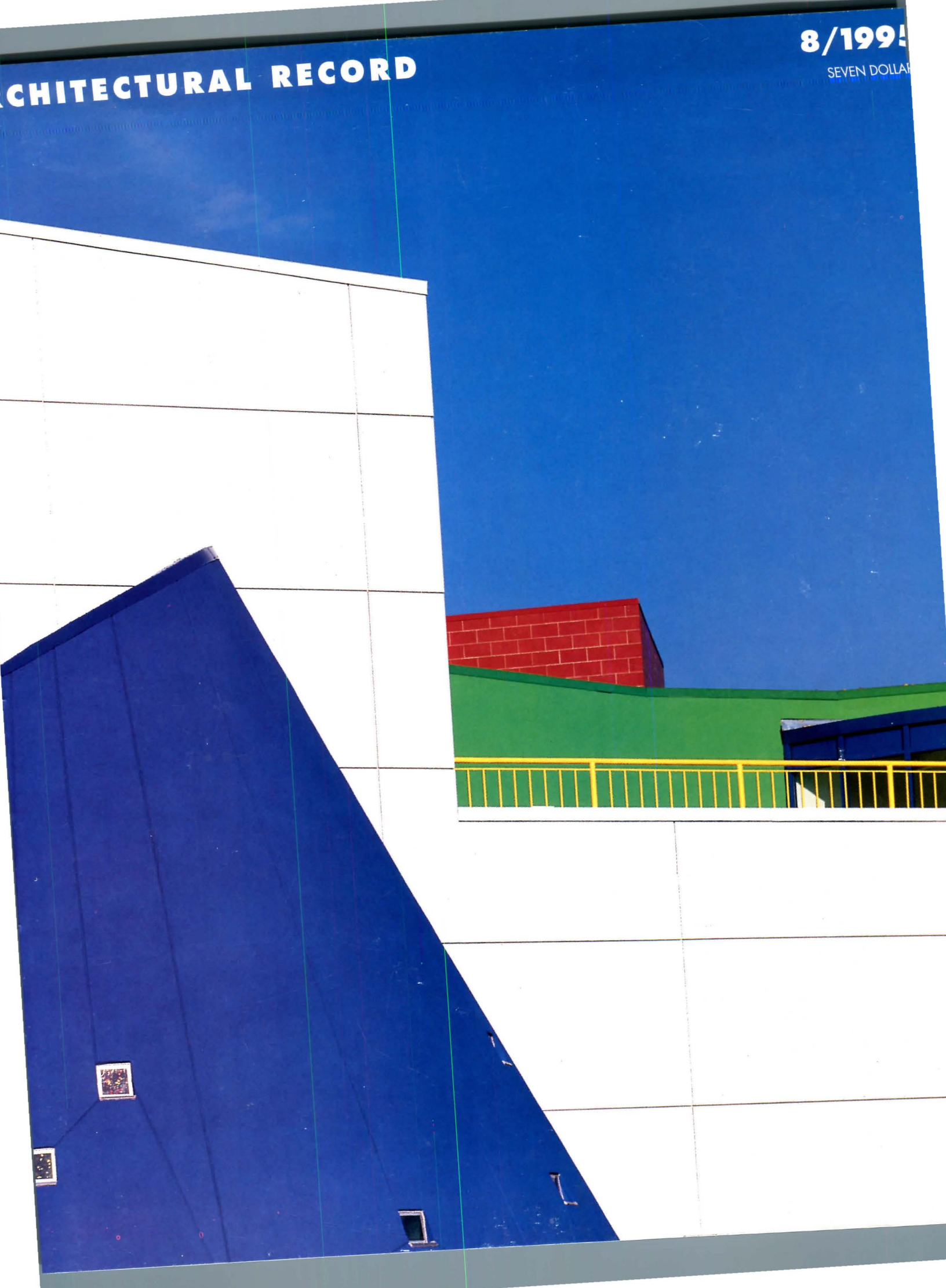

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Letters

ADA Rebuttals

As the chairman of the Access Board (and the first practicing architect to hold this position), I write to express my concern over the inaccurate reporting in "ADA: Barrier Free It Isn't," by Katherine Kai-Sun Chia [ARCHITECTURAL RECORD, April 1995, pages 32 to 33, 113]. Even the photographs—a private residence and a church—are misleading: neither is a facility covered by the Americans with Disabilities Act (ADA).

For example, ADAAG was adopted by the Departments of Justice and Transportation in 1991 as the (enforceable) standard for accessible design in new construction and alterations under the ADA. There is nothing voluntary—or "recommended"—about ADAAG. The guidelines are the law. Constructing a building that does not comply with accessibility requirements constitutes discrimination, which is illegal.

While there is much in this article that I—and the Access Board—would dispute, I do not think it helpful to rebut every assertion made by the author. Surely it would be more useful to practitioners if reliable information and resources on accessibility issues and the ADA were recommended to them.
John H. Catlin, AIA
Chairman, U.S. Architectural and Transportation Barriers Compliance Board
Washington, D.C.

To clarify the record, I was appointed in May 1993 to a 27-member Recreation Access Advisory Committee by the United States Architectural and Transportation Barriers Compliance Board (ATBCB). ATBCB is often referred to as the Access Board. The Access Board, comprised of presidentially-appointed individuals, is chaired by John H. Catlin, AIA. The purpose of the Recreation Access Federal Advisory Committee was to gather information and make recommendations on developing accessibility guidelines for recreation facilities and outdoor areas. I served as Chairman of the Sports Facilities subcommittee. The full committee completed its work in July 1994.

Your article states that ADA Accessibility Guidelines are being continuously compared to the ANSI A117.1 standards and being revised. This is not accurate. Federal regulations establish very specific procedures for changes to federal design standards. The federal regulatory process requires public notices, public comment, and regulatory analysis before federal standards can be changed. For recreation facilities, the Access Board elected to use the Federal Advisory Committee process to involve private citizens with specific expertise to help recommend design standards for these special facilities.

Your article states that ADAAG standards are recommendations. Most are very specific requirements, though innovative alternatives are allowed if they yield equal or greater accessibility.

The quote attributed to me in the second to last paragraph is not accurate. ADA is not a complaint-based process. The enforcement of ADA is complaint-based.

Paradigm Design Group and its parent organization, the Paralyzed Veterans of America, work closely with the Access Board to help promote voluntary compli-

continued on page 97

Calendar

August 4-6
Society of Marketing Professional Services annual conference,Westin Copley Place, Boston. Call SMPS at 800/202-7677 for further details.

Through August 13
Exhibition of "Rem Koolhaas and the Place of Public Architecture" consists of six architectural designs and three urban projects by the Dutch architect. Wexner Center for the Arts, Ohio State University; 614/292-0330.

Through August 19
"Fair Visions: Robert Moses and the New York World's Fair" exhibition includes a 7-ft model of the 1964-'65 World's Fair and shows the relationship between it and the its 1939-'40 predecessor. Lobby, 10 Columbus Circle, New York City, 212/360-3065.

Through August 19
"American Arts & Crafts: Virtue in Design" exhibition showcases 100 examples of furniture, ceramics, and metal work by Frank Lloyd Wright, Gustav Stickley, and Louis Comfort Tiffany, among others. Grand Rapids (Mich.) Public Museum. Call American Federation of Arts at 212/988-7700 for details.

Through August 22
An exhibition of transparencies showing the work of a "younger generation of international architects" is on view at the Museum of Modern Art, New York City, 212/708-9400.

Through August 25
A New York City Landmarks group show of paintings, photography and views by over 25 artists of city landmarks is on exhibition at Michael Ingbar Gallery of Architectural Art, New York City. Call 212/334-1100 for details.

Through September 4
"The Architecture of Bruce Goff, 1904-1982: Design for the Continuous Present" exhibition at the

continued on page 98

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What Price the Arts Endowment ?

The National Endowment for the Arts is one of those concerns that lots of people love to hate. It spends public money, supposedly, to subsidize obscene art, serve the elite interests of the well-to-do, using public resources that could more gainfully be allocated to housing, health care, and other social ends, while a sizable ratio of its grants ends up paying the salaries of art group administrators instead of going to the artist. Private support to non-profit arts groups is an added target for brickbats, in part because deductions by donors are said to remove billions of taxable dollars from the nation's pool, and are an added form of arts subsidy by the government.

Champions of the Endowment and of tax-deductible private donations argue with some reason that there are good sound economic and social grounds for supporting the arts, quite aside from any intrinsic value to the citizen of art as art. Art contributions are "not an expense but an investment." Cited economic benefits include income to owners of nearby restaurants and parking garages; conferences and trade shows; and tourism attracted to cities with strong art offerings (the Port Authority of New York and New Jersey said recently the arts in New York City in the year 1992 generated $3.6 billion in such collateral expenditures.)

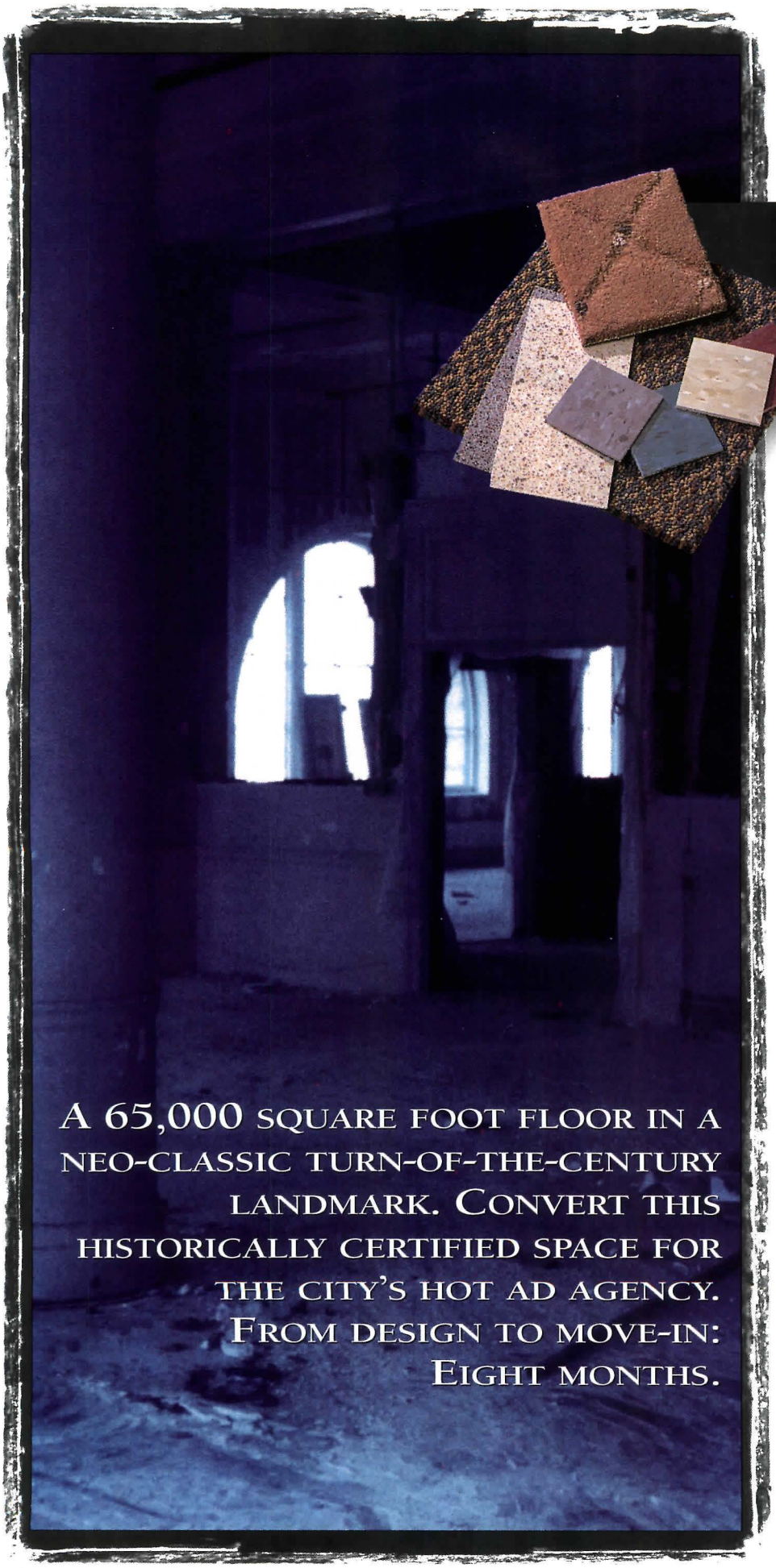
These arguments are important, but they tend to sidestep the real issue: of what value are the arts? It reminds one of the classic restaurant review by former *New York Times* restaurant critic Craig Claiborne, who said about a certain restaurant that its chief asset was its proximity to the Theater District. In other words, an institution should be able to fly on grounds other than solely its collateral values.

Unlike basketball, faster computers, and three-day cruises to Aruba, the arts typically do not make a profit. The reason is in part that the arts in this country and elsewhere have never really been an activity the general public wants. Were this not so, the public would willingly pay, as it does for social security and fighting crime. (For an idea of how the federal government classifies the arts, the Endowment is in one funding package along with agriculture, energy, and Indian Affairs.)

I doubt if there's an American city, large or small, where an architect or other design professional hasn't at some point in the past 25 years obtained an NEA grant. Funds are clearly needed to support research ranging from technology all the way to community and urban affairs. Most of such undertakings are beyond the scope of the private design and construction community, with its skimpy profit margins. Much more, too, needs to be done in the public schools and colleges to raise the public's level of architectural enlightenment.

At this writing, the future funding and indeed the future of the Endowment itself are caught up in a strident squabble. What is needed before any irreversible injury is done is a tough look at NEA's proper mission. What are the yardsticks, in these flinty-eyed '90s, that must be applied to the grant-giving process to measure which grants have little or no ripple effect and those with wide fallout? What level of direct public financing, as opposed to private tax breaks, is needed to maintain a useful level of artistic activity? How is this to be measured? What is the merit in distributing tiny Endowment funds to hundreds of small grantees versus committing to a few a sum that will make a difference?

Until there are answers, Congress will, and the architectural profession should, keep questioning NEA's long-term viability. *Stephen A. Kliment*



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New York State

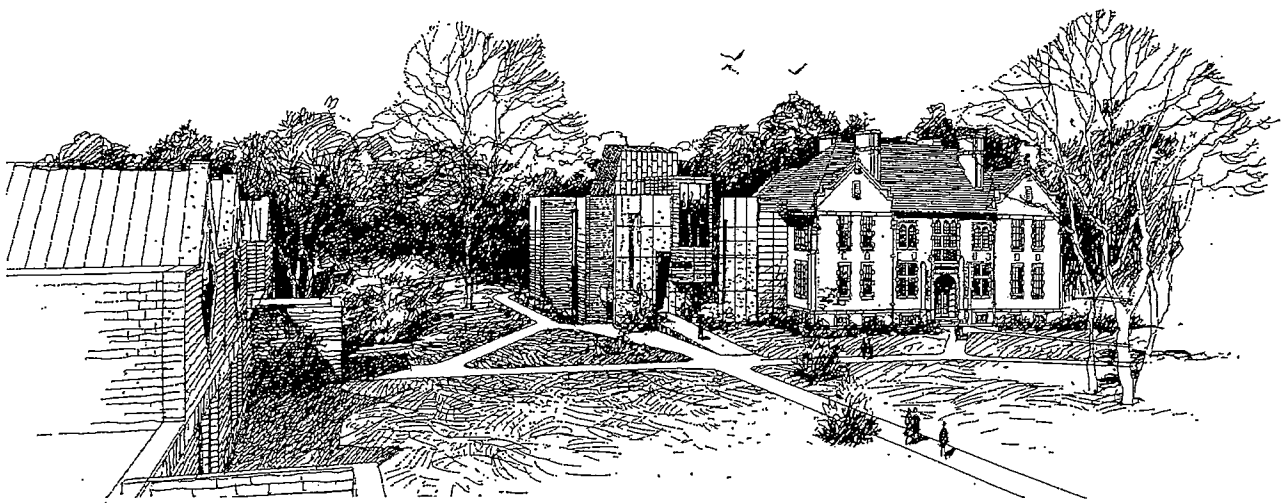
Tod Williams and Billie Tsien Unify A Disparate Campus With Two New Buildings

Even the most pristine settings can use some healing. Two new buildings by Tod Williams and Billie Tsien will forge a sense of unity and purpose at the Emma Willard School in Troy, N.Y. An elaborate science building and a natatorium will add shape to the school's sprawling campus and subtly reconcile a hodgepodge of opposing styles.

The natatorium forms an L with a more brutal, existing gym (2). A long, gentle ramp encloses the third edge of an informal courtyard, and then runs along the building's facade. Inside, the same ramp switches back several times along the interior wall, seeming to suggest the rhythm of waves. The ramp also becomes a forum of sorts, where students can sit and talk, and look down over the yard or the pool.

Across campus, the science building is wedged between the 1930s neo-Gothic Weaver Hall and a more abstract stone structure designed by Edward Larabee Barnes in 1965 (1). The new building's groundface concrete and limestone facade serves as a unifying element between the two conflicting styles. The building also gives a harder edge to the century-old school's main quadrangle. Inside, the stair tower faces the courtyard and the classrooms are pushed to the back.

The building's form—two crucifixes locked together—is based on a fractal model—a anthropological term for a social structure in which small, independent groups are bonded to make a greater whole. Each arm of a crucifix forms a two-student work area. Construction begins next month. *Nicolai Ouroussoff*



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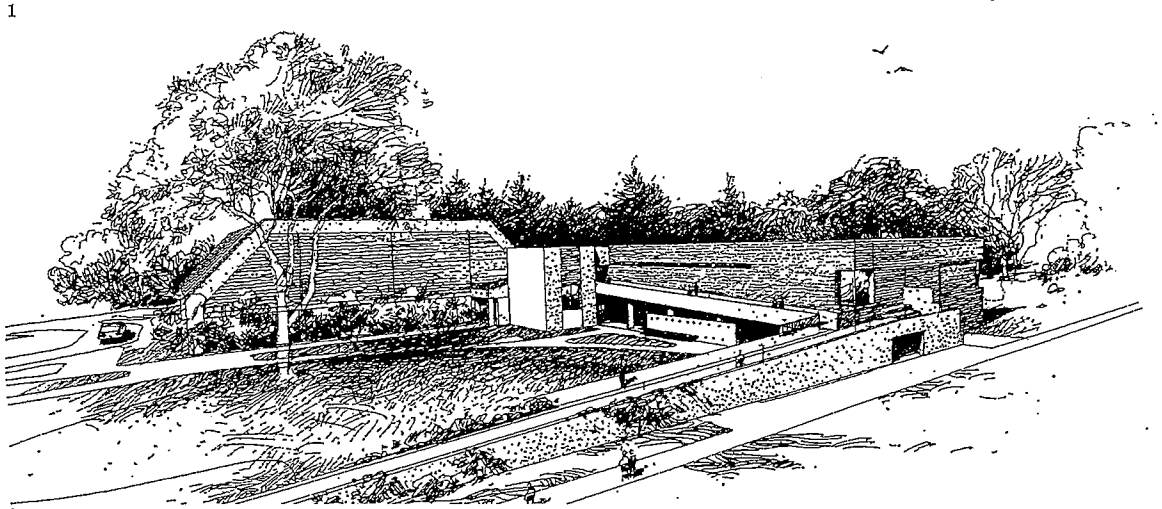

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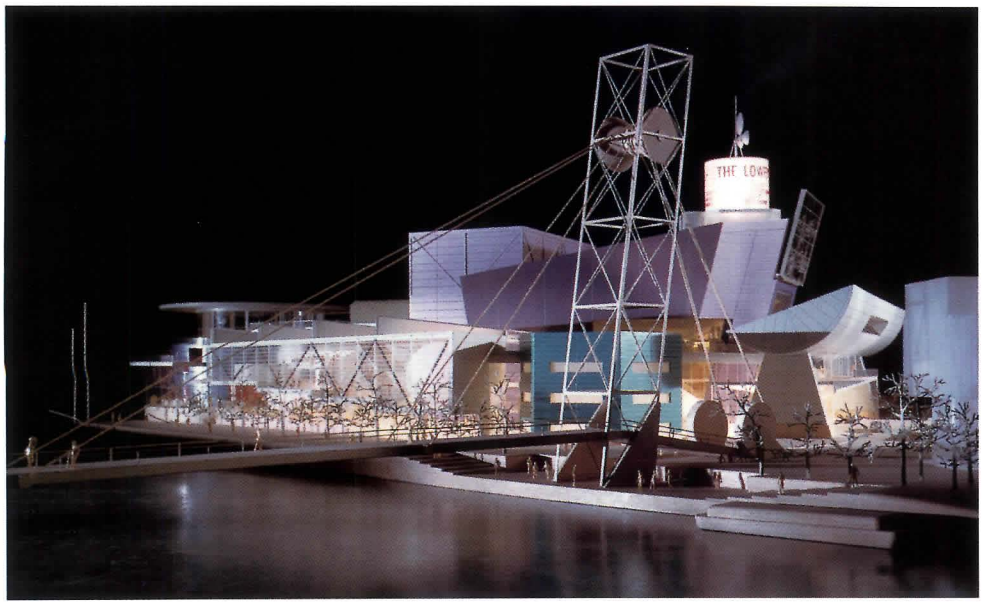
England

Michael Wilford's Leisure-Time Complex To Drop Anchor at a Canal-Side Quay



Michael Wilford's Lowry Centre is a colossal collage of ship-like geometric forms on the tip of a quay near Manchester, England. Visitors will approach the complex across a triangular plaza, which can be covered in winter. They then pass between two gallery shops—ubiquitous as today's art spaces—and travel along walkways that wrap around two theaters, art galleries, shops, and bars. The theaters, on axis with the main entry, dominate the massive arts complex; the 1,650-seat Lyric theater is the heart of the project. From its foyer, audiences will look out over the ship canal. An administration tower is crowned with a glowing display sign. In the foreground, a canted structural tower supports a bridge leading across a canal. The £50-million ($80-million) building will be completed in 1999. ■

Pennsylvania and Michigan

PACs: A Building Type That's Playing Everywhere

1

2

Underlining the growing importance of the performing-arts center as a significant building type, two more PACs are on the boards. At Lehigh University in Bethlehem, Pa., Dagit Saylor Architects' Zoellner Performing Arts building (1) is nimbly designed to play down its massive scale. The $22-million building includes a 1,000-seat music hall, a 350-seat drama theater, and a third, "black box" theater. The bulky theaters are sheltered behind smaller-scale academic spaces, which border a lawn. The two main theaters are also set back to back, creating an arched roof and eliminating the need for a cumbersome flyloft.

Gunnar Birkerts $15-million performing-arts center (2) anchors one end of the Michigan Technological University's linear campus. The 72,000-sq-ft center shifts slightly off the campuses east-west axis to provide views of Portage Lake. The interior of the 1,280-seat main theater is sheathed in wood, and can be reconfigured to adapt to smaller performances. A faceted copper roof will dramatically mark the campus's eastern entry. ■

Briefs

Architects Aid Special Olympics

• The Connecticut Chapter of the American Institute of Architects gave $300,000 in services to the Special Olympics World Games, held in New Haven last month. Projects included the development of a mock New England fishing village and an equestrian venue.

Preservation

• An international preservation center has opened in St. Petersburg, Russia. Founded by the City of St. Petersburg, the Russian Academy of Sciences, and the Getty Conservation Institute, its mandate is to defend the cultural heritage of the city.

Awards

• Lee Dunnette, a New York City architect, was awarded the top prize at this year's Tenth Annual International Competition of Architectural Artwork for his rendering of I.M.Pei's pyramid at the Grand Louvre. The award is sponsored by the American Society of Architectural Perspectivists.

• The New York Landmarks Conservancy awarded Pratt Institute a merit citation for commissioning an "existing-conditions report" on its century-old campus, which includes a Romanesque revival building by Lamb and Rich.

• The National Institute for Architectural Education has awarded Martin S. Felsen of Virginia Polytechnic Institute its $7,000 Paris Prize. Other winners were Tsutomu Sato, University of California at Berkeley ($5,000); and Charles E. Stone, Cooper Union, $3,000.

• Natalie Shivers of the National Trust for Historica Preservation has won The James Marston Fitch Trust Grant of $10,000 for her project, "Research to Support the Preservation of Southern California's Early Modern Architecture."

Consultants Directory Available

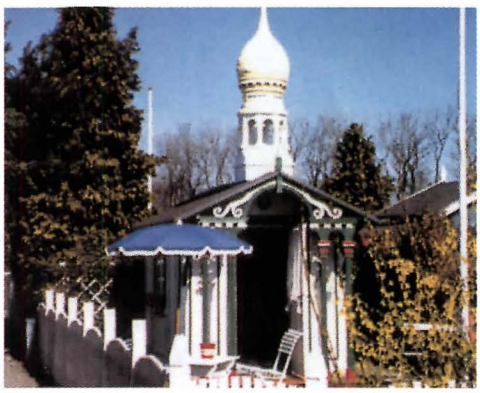
• A new "Directory of Specialty Consultants" published by The McGraw-Hill Companies, lists 2,200 consultants in the United Sates in 43 disciplines. A cross-reference section allows architects to locate consultants in their region. Phone Phyllis Moody, 212/512-4635.

Resigned

• Lane Marshall, dean of the College of Architecture at Kansas State University, has resigned, saying his continuation as department head "would constitute collaboration in the degradation of the architectural education programs" at KSU. ■

Denmark

International List of Architects to Design 'Kolonihavehus' for '96 Exhibition



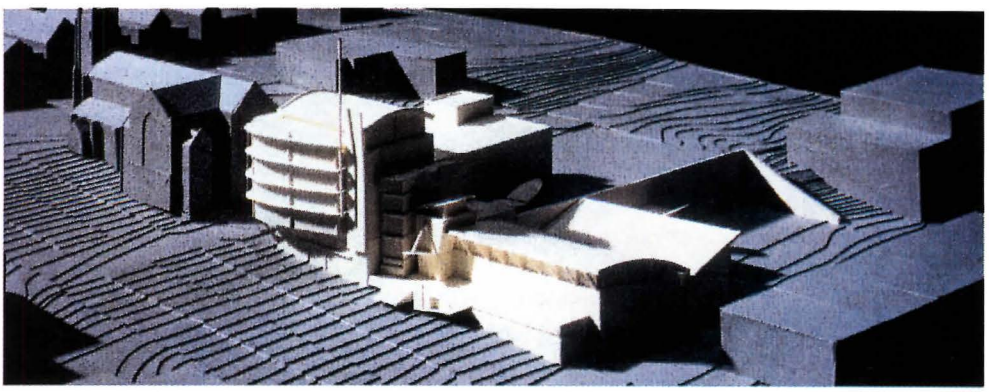
© Kirsten Kiser photos.

A collection of elite architects is designing a "Kolonihavehus" as part of Copenhagen's designation as the cultural capital of Europe in 1996, according to Kirsten Kiser and Christian Lund, architects and curators of the project. The 13 architects will each design a diminutive 65-sq-ft tower house based on the 19th-century Danish garden-community model. Kolonihavehus were originally created on the outskirts of the city by the Danish government to provide workers with a means to escape their daily toil. The government leased small parcels of land to laborers who built the tiny sheds themselves and tilled their gardens in a pastoral commune.

Students from Denmark's Royal Academy will help build full-scale models on a lot landscaped as a traditional "Kolonihave." The architects are: Josef Kleihues, Germany; Richard Rogers, England; Aldo Rossi, Italy; Dominique Perrault, France; Alvaro Siza, Portugal; Markku Komonen, Finland; Mario Botta, Switzerland; Michael Graves, U.S.; Arata Isozaki, Japan; Leon Krier, Luxembourg; Richard Meier, U.S.; Enric Miralles, Spain; Henning Larsen, Denmark. ■

New Jersey

Episcopalian Prep School to Rise In the Heart of Newark



In Newark, the Hillier Group with Todd Geter Architects has designed a preparatory school that expands on the "'moral center" of the community. The 60,000-sq-ft building is divided into two components. A family clinic, church administration, and bookstore are sited on a corner, with a bridge connecting it to St. James Church across the street. The school itself is set back along a side street, and a stone base visually unites the two. The $10-million project will be built with funds raised by the city's First Episcopal district

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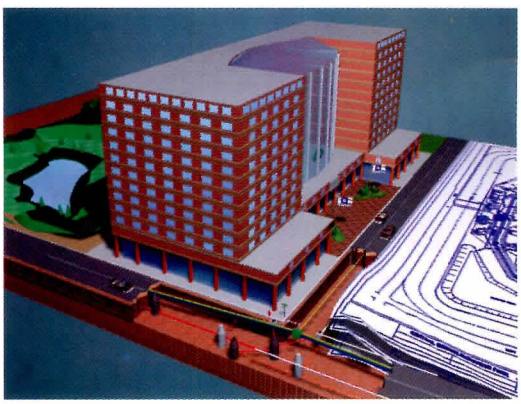

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Williamsburg, Virginia

Federal Aid to Housing, Size of Markets Topped June Housing Conference Agenda

The status and future of housing in this country underwent rigorous scrutiny this past June when an invited group of 120 housing leaders met at Williamsburg, Virginia for two days of what is known in diplomatic circles as "frank" discussion.

The major sponsors were: The McGraw-Hill Companies' Construction Information Group (CIG), publishers of ARCHITECTURAL RECORD; Harvard University's Joint Center for Housing Studies; and the National Housing Endowment.

Top officials from government, including the Secretary of Housing and Urban Development and three assistant secretaries, top brass from the National Association of Home Builders, the National Association of Real Estate Brokers, FNMA, Freddie Mac, state housing agencies, mortgage lenders and housing advocacy groups, manufacturers, and city officials got a lot of pressing housing topics on the table. Six such topics emerged:

•*Restructuring the feds.* A downsized federal role was seen for housing, balanced, in contrast, by a larger state and local role. A key arrow in HUD's quiver continues to be the Community Development Block Grant (CDBG) program, first launched in the Nixon administration and geared to leaving development decisions, including housing, to local levels of government.

The federal government hopes to cut the costs of homeownership through reduced financing, production, and closing costs. It hopes to encourage homeownership by removing other barriers, including racial ones, thereby increasing choice among African-American, Hispanic-American, and low- and moderate-income households.

•*Beyond bricks and mortar.* It wasn't enough, many claimed, to provide housing, especially so-called "public" housing, without also providing critical other amenities, such as health and day care, education, security, playgrounds and, above all, jobs. "You can build housing. You cannot build homes," said HUD assistant secretary Andrew Cuomo.

•*A new market for homeownership.* A large untapped market exists among the millions of new immigrants. A Peter D. Hart Research Associates survey revealed that household median-income levels among immigrant families were close to those of native-born families ($28,000 versus $30,000), yet only 40 percent of immigrant adults own homes, compared to 65 percent among native-born families. Homebuilders should rejoice at this statistic, with some 9-million persons expected to immigrate in the '90s, more than at any time since 1901 to 1910.

•*New technology.* Products will be developed to take the place of those made from endangered sources, including wood. Pre-engineered systems (for example, roofing, insulation, and siding) were proposed, not for the first time in recent history, to control costs.

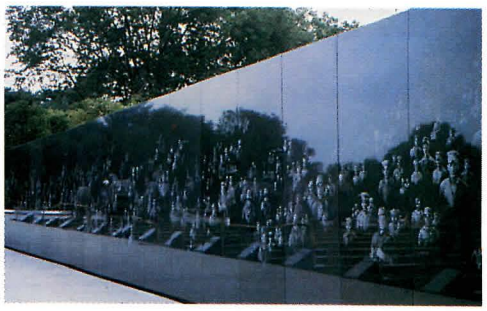
•*Revitalizing central cities.* The case for revitalizing central cities was forcefully made by several participants who stressed the debt owed to central cities for providing—at no cost to the suburbs—sports stadia, art museums, airports, convention centers, as well as jobs. Andrew Cuomo promoted the Clinton Administration's empowerment zones initiative, in which the government would invest $250 million in tax incentives and $100 million in cash grants to distressed areas in each of six U.S. cities, with the goal of attracting private investment.

•*State of the nation's housing.* The Joint Center for Housing Studies' State of the Nation's Housing 1995 report found among other trends that the growth in numbers of households in the South and Southwest continues to exceed that in the North and East; that the home-buying 25- to 34-year-old group is largest in the cities of Los Angeles and Atlanta; that growth in single-person households will continue; and that only 55 percent of households are married couples, compared to 78 percent after World War II.

Summing up, CIG president Stephen Bonner underscored the changing housing environment, above all from the political angle: "We must sort out the implications of less money available at the federal level. Based on links forged at the Conference, we can decide how to advance, as individual forces in the industry, or as a more cohesive group." *S.A.K.*

Washington, D.C.

Korean War Remembered



© Louis Nelson Associates

The Korean War Veterans' Memorial was unveiled last month in Washington, D.C. The elaborate stone wall sits nestled in a wood south of the reflecting pool, opposite Maya Lin's celebrated Vietnam memorial. The new monument is a collaboration of three designers: Cooper-Lecky Architects is the architect of record; Frank C. Gaylord created the central sculpture; and Louis Nelson Associates designed the wall. The triangular site pierces a ring-shaped pool, with the words "Freedom is not Free" at its center. A granite wall, with ghost-like images of doctors, bomber pilots, seamen, and various support troops sandblasted into its surface, runs along one edge of the site. Reflections of the the haunting forms intermingle with those of visitors to the memorial. ■

Indianapolis

For Kids, Play's The Thing

Browning Day Mullins Dierdorf, Inc. has designed a playful new theater for Indianapolis's children's museum. A concourse with exhibition space connects the 32,000-sq-ft addition to the main body of the museum. The dominant structure of the addition is in the shape of a truncated cone, clad in copper, and housing the 320-seat theater and a 76-ft hemispheric projection screen. A smaller cone marks the night entry to the theater. The $14-million project is expected to be completed next summer. ■

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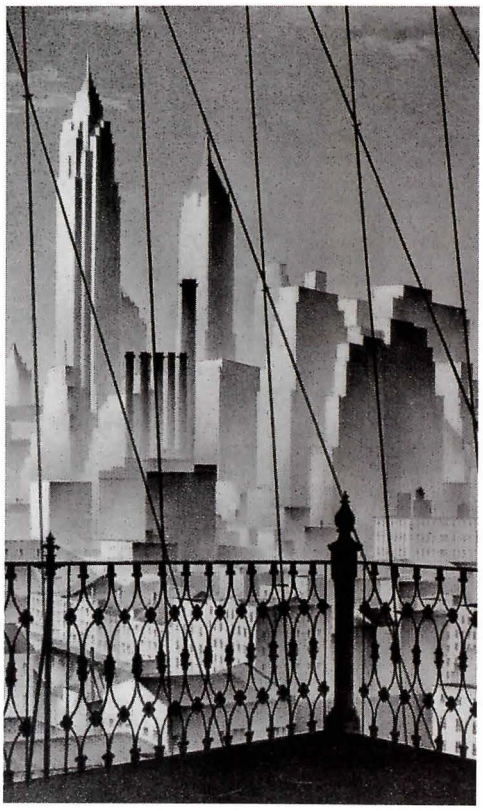
The American Roots of European Modernism

Scenes of the World to Come: European Architecture and the American Challenge 1893-1960
Canadian Center for Architecture, Montreal, through September 24.

There's something slippery about the premise of this debut exhibition in the CCA's ambitious multiyear series "The American Century." While making an impressive case that American architecture and technology influenced pioneering European Modernists much more than portrayed in standard histories, the case itself seems less important than the wonder inspired by the hundreds of diverse objects mounted by curator Jean-Louis Cohen. Europeans were both fascinated and repelled by what Charles Baudelaire denounced as "these wonders of brutishness," Cohen shows. You can actually see, for example, how writer Bertoldt Brecht, filmmaker Fritz Lang, and the Russian artists El Lissitsky and Alexandr Rodchenko were influenced by widely published photos taken by a young Erich Mendelsohn of lower Manhattan's towers rising like weeds out of shadow-shrouded alleylike streets.



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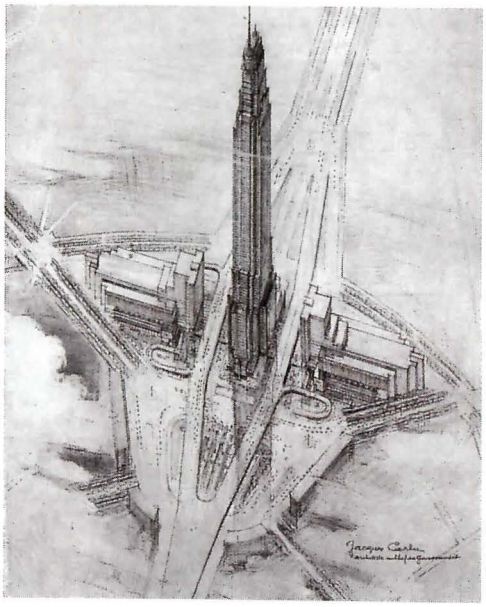

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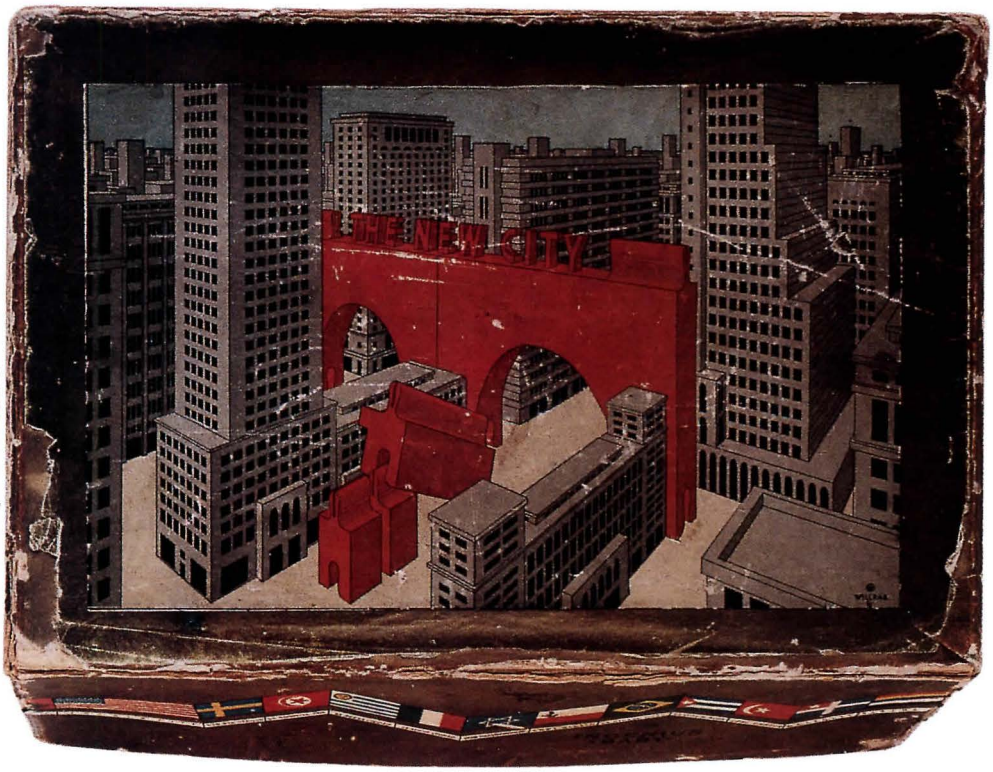
Left: "Through the Steel Lace of the Brooklyn Bridge," (1929) by Russian architect Viatcheslav Oltarjevski. Above: Skyscraper project for La Défense, Paris, by architect Jacques Carlu (1944). Below: A game box, attributed to Wilhem Kreis (Vienna, 1920s).

Perhaps inadvertently, the exhibit shows that the currents of artistic influence flowed both ways. While Cohen reminds us that the marvelous Fiat Lingotto plant (being renovated now by Renzo Piano) was modeled on the integrated manufacturing processes pioneered by Henry Ford in Highland Park, Mich., its rooftop test track (an icon of functionalism for early Modernists) was a purely Italian esthetic fillip.

This exhibition is rare in that it doesn't make you wonder why you're looking at architecture on a wall. Many objects on display have a texture and density that doesn't reproduce well (Mies's charcoal skyscraper sketches, Russian photomontages and bombastic mural-sized renderings, the delicate ink drawings of the Italian Futurists). It's also rare in architecture circles to have so many institutions (58 from 14 countries) contribute material to one exhibition. This one's worth a trip to Montreal, as it will travel only to Europe. Succeeding exhibitions (on F. L. Wright's landscapes, F. L. Olmsted, Disney's Theme Parks, and "The American Lawn") will come to America. *J.S.R.*



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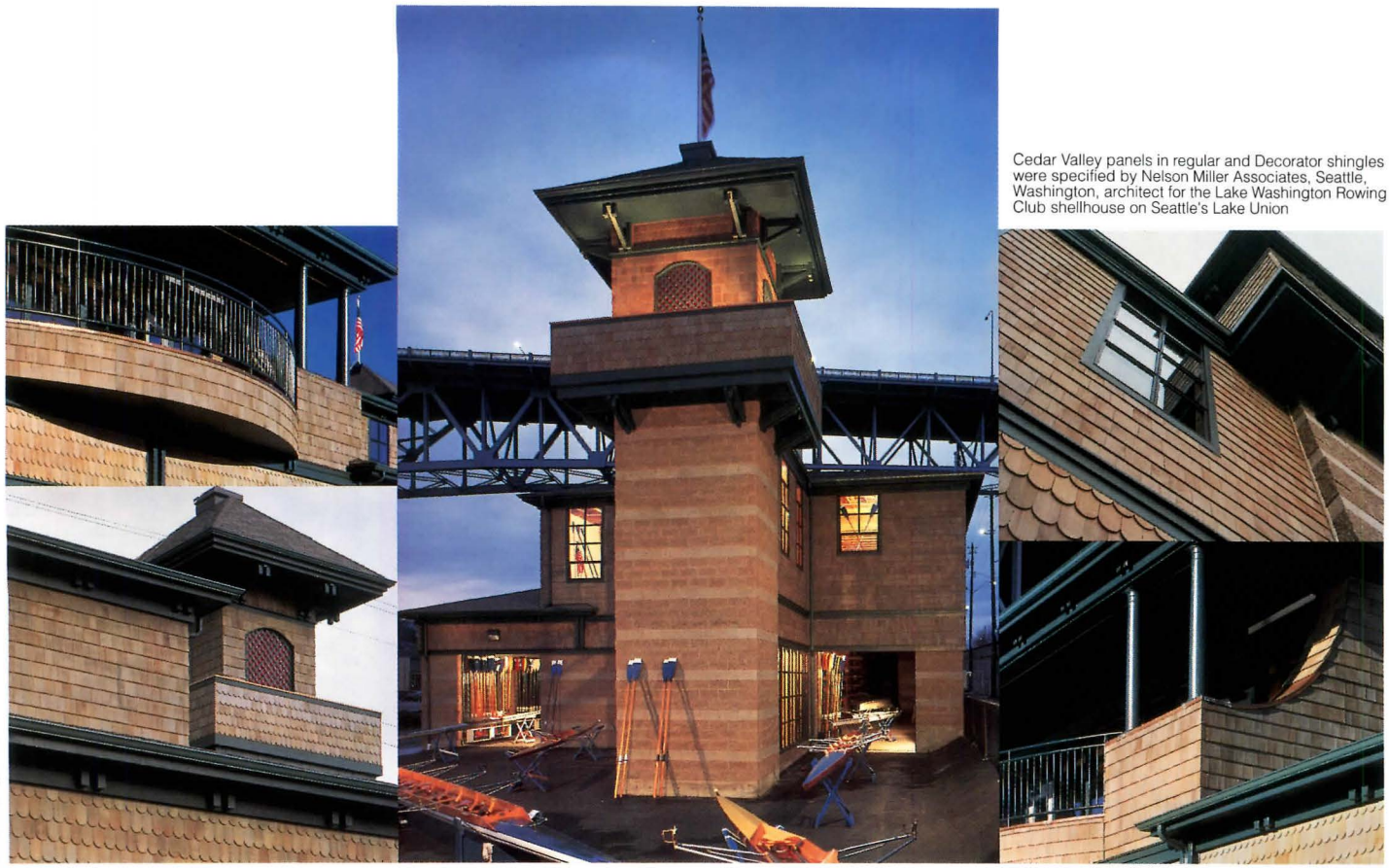

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Chris Eden photos

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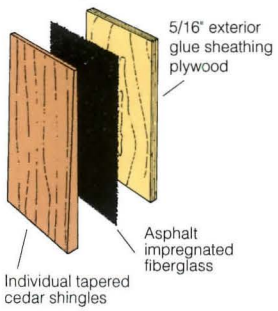

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CD-Wright: Three for Your Computer

Frank Lloyd Wright: Presentation and Conceptual Drawings, *produced by Luna Imaging and the Frank Lloyd Wright Foundation Archives, 1995, $1,500.*
The Ultimate Frank Lloyd Wright, *produced by Microsoft, 1995, $60.*
The Frank Lloyd Wright Companion, *produced by Prairie Multimedia, 1995, $75.*

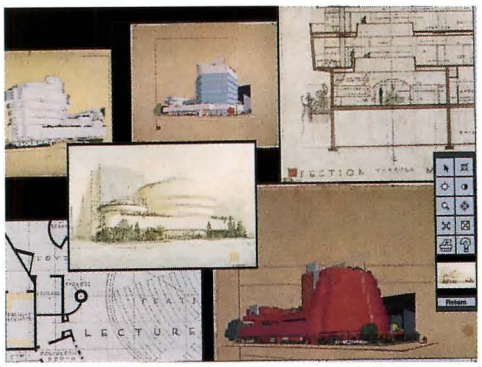
Reviewed by William J. Mitchell

Every architectural bookstore has a corner where the products of the Frank Lloyd Wright scholarly industry jostle for shelf space. Now this competition has shifted to cyberspace. Three CD-ROMs documenting Wright's work have recently been released.

The most ambitious and impressive of the group is Luna Imaging's *Frank Lloyd Wright: Presentation and Conceptual Drawings.* This four-disk collection contains nearly 5,000 high-quality color images of drawings from the Frank Lloyd Wright Foundation Archives, together with detailed documentation on each drawing and project. It is a work of meticulous scholarship. The color-imaging work has been done with great care to achieve maximum fidelity and consistency, and the documentation is extensive. A sophisticated search engine is built in, supporting flexible and convenient graphic browsing, field searches, and full-text searches. This will surely become an indispensable reference for Wright scholars and aficionados.

Microsoft's *Ultimate Frank Lloyd Wright* is a slick hypermedia "edutainment," complete with music and voice-over aphorisms. On one disk, it offers a comprehensive, intelligently organized introduction to Wright's life and work. In addition to text and 2-D images, it includes several excellent computer-generated walk-throughs and some elementary 3-D modeling capabilities. The interface is crisp, clear, and friendly. Novices will find this an engaging alternative to print sources.

Prairie Multimedia's *The Frank Lloyd Wright Companion* is a rather mechanical reworking into CD multimedia format of the material contained in William Allin Storrer's book of the same name. Storrer's catalog of some 500 built works by Wright remains as useful as ever. Extensive cross-indexing has been added, so the material may be explored and assembled in many different ways. But the graphics of the CD-ROM are uninspired and the presentation makes only limited use of digital multimedia's unique capabilities.



Screen from Luna Imaging's FLW disk.

Since numerous books on Wright are readily available, what has been gained by publishing Wright in CD-ROM format? There are several potential benefits, and the CDs discussed here realize them to varying degrees. Most obviously, CD-ROM technology is much more cost-effective than color printing for recording large numbers of high-quality color images and disseminating them to limited, specialized audiences at reasonable cost; Luna's huge drawing database, in particular, exploits this capability. Secondly, digital multimedia productions recorded on CD can seamlessly combine text, images, audio, and video; this advantage is exploited in *The Ultimate Frank Lloyd Wright.* Finally, as all the projects vividly demonstrate, material in digital databases can be searched and navigated in new, powerful, and compelling ways.

But the CD-ROM format has its limitations, and many of its benefits can be realized more fully when multimedia databases are mounted on servers and accessed through high-speed computer networks; the recent explosive growth of the World Wide Web on the Internet demonstrates this. Compact disks are not the wave of the future, but are likely to be a short-lived, transitional phase in the evolution of electronic publishing.

William Mitchell is dean of MIT's School of Architecture and Planning and the author of City of Bits: Space, Place, and the Infobahn.

Briefly Noted

The Architecture of Bruce Goff, 1904-1982: Design for the Continuous Present, *edited by Pauline Saliga and Mary Woolever. Chicago: Art Institute of Chicago and Prestel-Verlag, 1995, 119 pages, $25 (paper).*
The catalog for an exhibit running at the Art Institute until September 4, this book includes essays by architectural historian David De Long, architect Jack Golden, architectural patron Joe D. Price, and others. The essays, along with photographs and drawings, do a good job of capturing the spirit of Goff's unique body of work.

Richard Meier, *by Philip Jodidio. Cologne: Taschen, 1995, 176 pages, $25 (paper).*
A straightforward monograph, this book follows Meier's work from the Smith House in Connecticut, completed in 1967, all the way to the Swissair North American headquarters in Long Island, finished this year. Jodidio, the editor of the French magazine *Connaissance des Arts,* supplies a thoughtful essay that covers the usual points about Meier's buildings and his consistent approach to architecture. The book's design and production are right in sync with the architect's own values: crisp, clean, and high-quality.

Renzo Piano Building Workshop: Complete Works, Volume II, *by Peter Buchanan. London: Phaidon Press, 1995, 240 pages, $75.*
Although he sticks to the usual monograph formula of introductory essay, interview, and individual project descriptions, Buchanan provides so much information and insight on his subject that this book seems unique. Preliminary sketches, all kinds of drawings, lots of photographs, and text that goes well beyond the cursory descriptions found in most other monographs make this publication a real resource, not just a pretty catalog. The 17 works covered range from the Bercy 2 Shopping Center in Paris (1987-90) to Kansai Airport (1988-94) in Japan.

Mockbee Coker: Thought and Process, *by Lori Ryker. N.Y.: Princeton Architectural Press, 1995, 128 pages, $28 (paper).*
Text-heavy and somewhat disorganized, this monograph looks at the work of Samuel Mockbee and Coleman Coker, whose architecture is rooted in fertile Southern soil.

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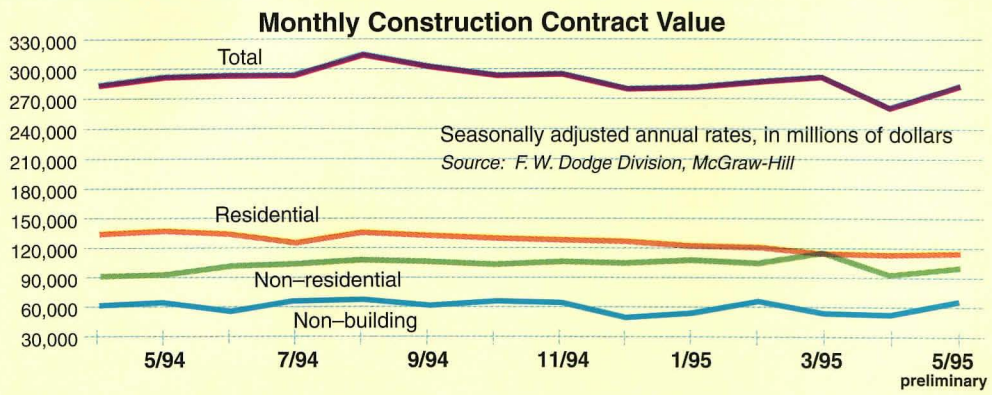
Indicators

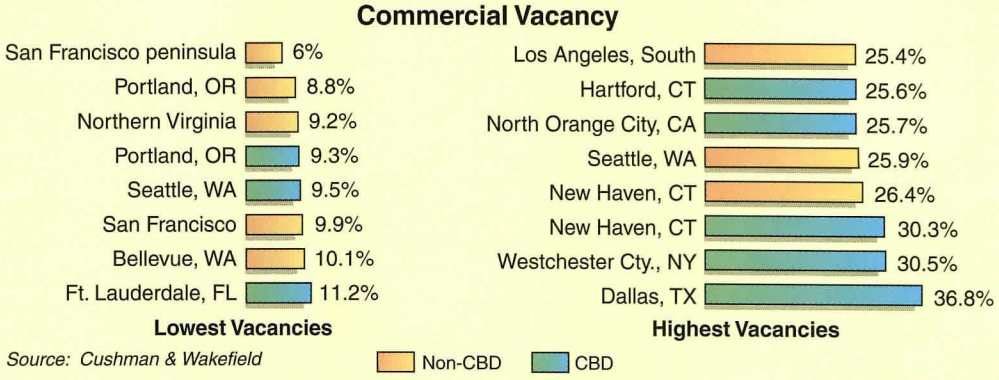
Continued non-residential momentum

Though the lines haven't crossed, the slow but continuous improvement in non-residential construction now places it very close to housing, which had been stronger during 1993 and 1994. School construction has shown almost continuous strength; it's up 18 percent over the same 1994 period. Commercial construction has been mixed: in May, office and warehouse categories advanced; retail declined. Residential volume, virtually unchanged in May, suggests an end to the single-family decline. ■



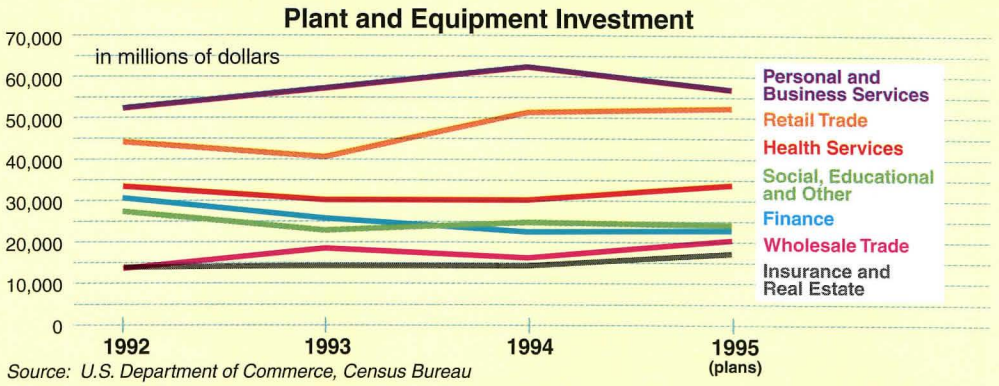
Are office buildings back? Not yet

Office vacancy rates below 10 percent—the magic number that makes new development possible, say experts—are finally beginning to appear in a few cities, according to first-quarter figures from commercial real-estate firm Cushman & Wakefield. Nationwide, average vacancies still hover around 16.9 percent for central business districts (CBDs), and 16.6 percent for non-CBDs. There is improvement, though. Last year the figures were 18.4 percent and 18.3 percent, respectively. ■



Where business is investing

Though there is not exact correlation between plant and equipment investment and building construction, the overall 7 percent increase in spending plans projected by the Department of Commerce bodes well for commercial construction. The charts, however, suggest variations based on business type, with wholesale and retail trade on an upswing, followed by health care. The downward trend in personal and business services may be balanced by upward momentum in insurance and real estate. ■



Short Takes

• **More on-line players:** Most of the on-line services profiled in our earlier report have expanded their offerings (March 1995, pages 40-41, 113). Two new services have since entered the field. AECNET, based in Northport, N.Y., is a private bulletin-board service intended to bring the architecture, engineering, and construction fields together. It has an easy-to-navigate interface and has attracted a number of industry associations. For info, call 516/754-3020 or info@aecnet.com (e-mail). The Global Construction Network is oriented primarily to contractors, but offers forums on such issues as partnering. Info: 800/576-webb (phone), jantevy@gcn.net or url http://fminet.com (e-mail).

• **New EIFS Guide:** A new guide from respected ASTM offers long-needed independent design and specification data for these synthetic-stucco assemblies: *Exterior Insulation and Finish systems: Current Practices and Future Considerations* ($45, $49 non-members), by Mark F. Williams and Barbara Lamp Williams. ASTM, 1916 Race Street, Philadelphia, PA 19103-1187. ■

There's No Claims Crisis Now, But New Challenges Loom

By Tom Ichniowski

Ten years ago, architects were enmeshed in a liability crisis. Claims had soared, with premiums sometimes leaping by 100 to 300 percent on renewal; even then, insurance was scarce. When coverage was available, it was expensive, pegged at 4 to 5 percent of firms' revenues. Architects had become "another pocket to pick" for attorneys, contends Elliot P. Gleason, a senior vice president at DPIC Cos. Inc., Monterey, Calif., a large insurer.

Claims have by no means disappeared, but quietly the crisis has faded. Though the average size of claims has risen, their frequency is down sharply. A weakened design and construction market in recent years is one factor, but industry officials agree that architects share the credit for the turnaround by managing their risks much more aggressively (chart opposite). On the other hand, the amount of individual awards is increasing, evidence of a tougher stand by some owners in making claims and litigating them.

Today, architects are employing an array of tools to manage risk. Some firms still shy from the most claims-prone types of work, such as condominiums, asbestos abatement, and environmental-cleanup work. But a practice that manages risk well, say insurance officials, can safely take on work that others have avoided.

"Remarkable decrease" in claims

Data show the trend. Schinnerer says claims against architects and engineers it insures have plummeted from a peak of 42.2 per 100 firms in 1984, to 22.5 last year, a level that has held through May 1995. "That's just a remarkable decrease," says Ava J. Abramowitz, vice president for program services at Victor O. Schinnerer & Co., Chevy Chase, Md., underwriting manager for CNA, the largest U.S. issuer of liability coverage for design firms. Gleason of DPIC, the No. 2 A/E liability insurer, says that while the number of firms DPIC insures has jumped, "The claims frequency is quite flat." He says, "I think that's a good sign." More insurers are writing coverage, and premiums are down to 2 to 3.5 percent of billings.

Tom Ichniowski is Washington bureau chief of Engineering News-Record.

While the soft construction market is a factor, Paul L. Genecki, a Schinnerer senior vice president, notes that architects' fees have been "up rather steadily and significantly" since 1992 and claims frequency hasn't increased. "The picture is definitely better," says Christopher R. Clark, director of AIA's practice-management programs.

Individual firms generally agree. At Ellerbe Becket, Minneapolis, claims rose after the 1988 acquisition of Welton Becket, Santa Monica, Calif., but since then, "they have steadily declined," says Douglas C. Green, senior vice president and general counsel. From about 17 relatively significant claims, the number has dropped to two. And on an ongoing basis, claims are "less frequent," he says. Why the downturn? Green cites a "much greater inclination of people to want to work things out and resolve matters."

Likewise at RTKL Associates Inc., Baltimore, claims have declined over the past three years even as volume of work went up, says chairman and chief executive officer Harold L. Adams, "but I think also that our firm had established a lot more quality-control checks," and those are showing results, Adams says. For instance, RTKL uses much more peer-review and other third-party consultation techniques to improve documents.

At Hellmuth Obata & Kassabaum Inc., St. Louis, the number of claims has "been fairly stable" over the past 10 years, says Mary Ann Lazarus, director of design resources. She speculates that claims haven't dropped because HOK, one of the largest U.S. firms, may be "perceived as having deep pockets. So we get a lot of lawsuits filed against us. . . . We can't ignore them even though they might be frivolous."

Practicing litigation avoidance

One risk-management tool is communication. DPIC's Gleason says that "architects are disciplining themselves to be more effective in . . . the human-relations side of the job—their interfacing with their clients." Some firms are joining "partnering" teams at the outset of projects to build trust and head off disputes with owners and contractors. When a dispute can't be avoided, firms are turning to methods such as mediation and arbitration instead of going to court. "There's a lot more common sense," adds DPIC's Gleason. Moreover, "Owners are getting savvier and realize you can work things out more peacefully," says Schinnerer's Abramowitz.

One way to avoid claims is to establish a team attitude, through partnering with owners and contractors on projects. In fact, in June 1994, the U.S. General Services Administration began requiring partnering on all projects exceeding $10 million, says former Deputy Administrator Julia M. Stasch. Team members set goals, such as having no litigation, and sometimes sign formal partnering "charters." Among risk-management tools, "Partnering has been a great one," says RTKL's Adams. For example, on the $104-million National Maritime Intelligence Center, in Suitland, Md., RTKL was part of a joint venture with Daniel, Mann, Johnson, & Mendenhall and HOK, which partnered with the owner and contractor. Completed in 1994, "It was near claims-free," says Adams.

Schinnerer's Genecki says partnering "hasn't yet gained universal appeal among architects, but I think it's slowly getting there." He sees it as "most effective on larger projects." While partnering makes dispute resolution central to project administration, not everyone sees it the same way. "Somebody may come out and say, 'Oh, let's partner,' meaning, 'Let me take advantage of you,' " says AIA's Clark. "You have to go into partnering with a clear understanding of what it really is." He warns parties to examine agreements carefully, looking for contract clauses that entail uncompensated work or risk shifting.

At Ellerbe Becket, top managers meet quarterly to discuss risk-related issues. "We encourage people to communicate early" in a project's life, says Green. The firm also carries a "fairly high deductible" on its liability insurance, which "puts the first dollars right out of our own pocket so that there is a cost to letting things get out of control." The firm includes a clause in contracts limiting liability to its fee or amount of insurance coverage. But at The Kling Lindquist Partnership, Philadelphia, "We've never been successful nor have we tried to put a limitation-of-liability clause in any of our work,"

Liability claims are way down, due in large part to aggressive risk management. The search goes on, however, for the best alternative to court and for ways to combat the litigious client.

says Mel J. Sotnick, president and chief executive officer. The firm works for large corporate and government customers, and if it tried to insert such contract language, "Clients will blow us off," Sotnick says. "If you're going to play in that ballpark, you ought to take responsibility for your actions," Sotnick believes.

Services to avoid?

Some firms simply stay away from certain types of projects. Condominiums can be a particular source of claims, for example. "We don't do 'em for that reason," says RTKL's Adams. AIA's Clark says, "It's not necessarily a building type," that's more likely to generate disputes. "It's more a client type."

Condominiums can be contentious because they are "a committee client, which changes during the course of design and construction," explains Clark. The initial client is a developer, but the end-user and ultimate owners are a group of condo residents. "If a developer has cut any corners, they stick out like a sore thumb," he say. Buyers seek damages from the architect, who may have been shut out of construction-phase services. Other types of committee clients are school boards and church groups. Problems may arise when key players change over the course of a project through parish council or school board elections, Clark notes.

But spurning projects on the basis of claims risk can be problematic. When architects began to turn away from asbestos abatement—admittedly encouraged by insurers—Clark says they "reduced their exposures" to risk but also their workload. "They say, 'Oh, geez, we did it to ourselves . . . and guess what—we don't have any fees.' "

Other professionals, such as industrial hygienists and abatement contractors, found they could successfully work directly with clients, reducing the value of the architect's coordinating role. Now, Clark says architects are providing a broad range of services, including design/build, construction management, and incidental pollution remediation.

Mediation: alternate-dispute "darling"

Sometimes claims can't be avoided. But they don't have to escalate to full-blown court-

Will Tort Reform Help Architects?

It doesn't look like Congress will provide liability relief for design firms this year. In March, the House passed three legal-reform measures, including a bill that among other things would limit joint and several liability for architects, engineers, and others in the service industries. Under joint and several liability, if there are multiple defendants on the losing side in a lawsuit and all but one go bankrupt or cannot pay, the remaining defendant is stuck with the entire cost of the award. The House measure would limit the non-economic damages to a party's "share of fault." It also caps punitive damages at three times compensatory damages, or $250,000, whichever is more.

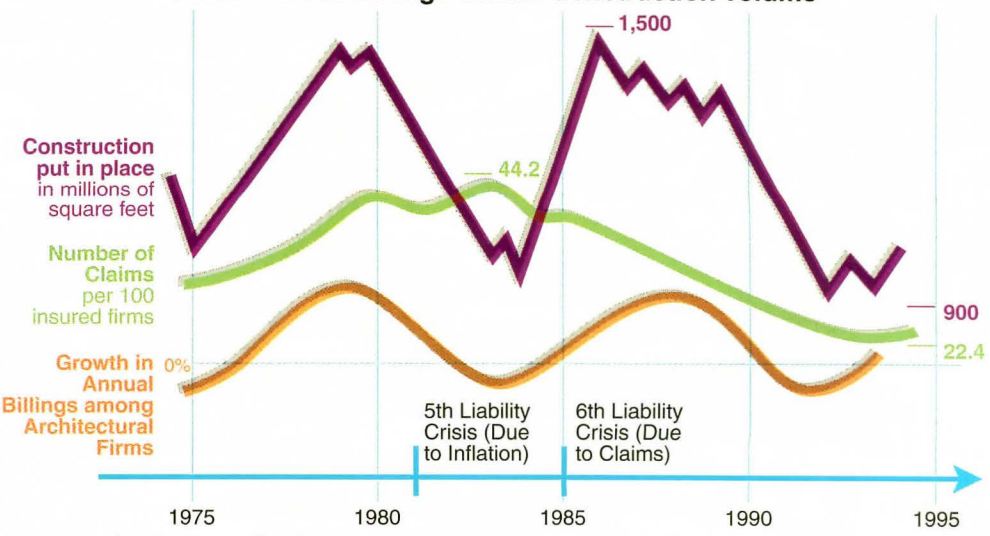
When the Senate took up the issue in May, it only passed a bill dealing with liability for products, not services, and it had no provision curbing joint and several liability. The next step would be a conference committee to work out the differences between the House and Senate legislation. As of mid-June, the matter seemed on hold. Conferees hadn't even been named. Is the legislation dead? "I don't think it is," says a House staffer, "but it depends on whose rumor you listen to."

"In a way, this long wait could be very good," says Alexandra Brkic, legislative assistant for federal legislative affairs at the American Institute of Architects. House Speaker Newt Gingrich (R-Ga.) may decide to hold off until 1996, and try to make it an election-year issue. Presumably, those against the legislation would be portrayed as allied with wealthy trial lawyers, says Jack Kalavritinos, assistant general counsel with the American Consulting Engineers Council.

A delay would give lobbyists for architects and engineers more time to try to build support for their cause and "give us more of a chance of getting a broader bill," says Brkic.

Although passage isn't likely in 1995, "We've come a long, long way" from the position a year ago, says Kalavritinos. If a House and Senate conference doesn't take place until next year's primary elections, he says, "I think all bets are off." *T.I.*

Claims versus Billings versus Construction Volume



Source: AIA, CNA/Schinnerer, F.W. Dodge

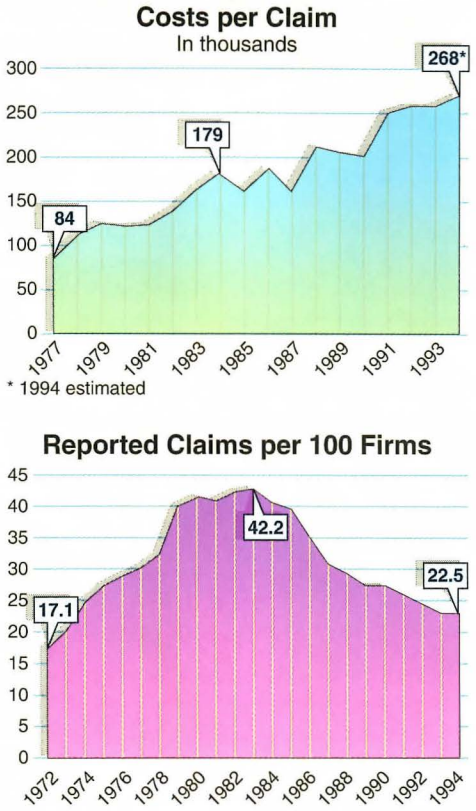
house battles. Firms have embraced various types of alternate dispute resolution (ADR) including mediation and arbitration. DPIC's Gleason says 30 percent of its insureds' pending claims are in some phase of ADR. As recently as early 1991, "it was 10 percent."

Among ADR techniques, "mediation has become the darling," says Schinnerer's Genecki. He says the technique is "quick, it keeps the parties in control of the process. . . and it doesn't need lawyers." He says mediation can cost $200 to $500 per day, while arbitration filing fees range from $500 for claims of $10,00 or less up to $5,000 for claims exceeding $1 million. There are also daily hearing fees. In addition, firms usually have legal counsel, which adds to costs. HOK includes standard language in its contracts spelling out that non-binding mediation be used if there is any controversy, says Lazarus. Sometimes, the language is removed through negotiations with clients. In addition, HOK contracts state that if mediation doesn't work, there would be arbitration for claims less than $75,000. James M. Stevenson, president of Perkins & Will, Chicago, says, "In general, we're very supportive of mediation and in fact are writing it into our contracts more now than we ever have in the past." He adds, "Mediation we see as a process which will keep client and architect and engineer together, [during and] beyond the resolution of the dispute."

"I think people got sick of the burden of paying for litigation," says Ellerbe Becket's Green. For example, a dispute arose on interior work related to a hospital expansion and renovation in Chicago. Ellerbe Becket's project manager and the client's in-house architect "became convinced of the rightness of their respective positions and absolutely would not move." Ellerbe Becket's project manager wanted to start litigation, says Green. The parties chose mediation. Some preparatory work was done, and after a day of mediation, the matter was resolved. "We got paid what I think was a fair amount under the circumstances," he says.

Out of favor: Court and arbitration

Insurers encourage disputants to avoid court. Schinnerer/CNA and DPIC offer incentives to mediate. Genecki says Schinnerer will give



The increasing cost per claim (top) remains troubling, even as aggressive risk management, according to insurers, has caused a huge drop in claims (above).

a firm a credit equal to half its deductible, up to a maximum of $15,000 per claim, if a dispute is settled through mediation. DPIC's plan is similar, but caps the credit at $12,500 per claim. Neither insurer has a similar incentive for arbitration.

Construction-related arbitration cases peaked at 5,440 in 1990, and declined to 4,094 in 1993 and 3,564 last year, says the American Arbitration Association, New York City. Arbitration cases brought by architects against owners have fallen from 266 in 1990 to 122 last year. Owner-versus-architect cases slipped from 153 to just 83 last year.

Arbitration is less in favor now. Once AIA standard-form agreements bound parties to arbitration. As they get revised, according to Dale Ellickson, senior director of the documents program, they now require parties to enter mediation before arbitration. Gleason says, "arbitration is too much like litigation. It's an adversarial process. Someone sits as lord and executioner. . . ." RTKL's Adams says arbitration "seems to always end up being a 50-50 split even when it's not fair."

One Philadelphia architect, who asked not to be named, found out just how "arbitrary" arbitration can be. Sole proprietor of a fledgling firm, she stopped work on a house for a couple who stopped paying, and began pursuing a claim for the unpaid fees. The couple replied with a claim that the architect's failure to complete the work prevented the clients from receiving financing. They sought return of all paid fees and damages. The architect says she had asked the couple whether financial or other difficulties kept them from meeting their obligation, as they had expressed satisfaction with the work.

Since there had been no discussion or agreement that fees were contingent on financing, the architect felt she had a strong case for arbitration. The interior designer on the project had also been served with a similar suit, and the claims went to separate arbitrators. The designer won payment of her fees, but the architect's arbitrator ruled for the couple. Not only was the extent of the award financially devastating (the architect was not insured), the rules applying at the arbitration, she says, "made it impossible to learn why I didn't win. Both parties have to agree to disclosure, and why should the winning side agree?" There is no appealing such a decision, but the architect was able to get the damages reduced in court.

Partly in response to criticisms, an arbitration association task force issued in May a series of recommendations for improving the construction-dispute system. They include a "fast track" plan for claims less than $50,000, and mandatory use of an association program for large, more complicated claims.

The group also called for increased efforts to encourage mediation, partnering, and dispute-review boards; it proposed requiring arbitrators to have at least 10 years' construction-industry experience. Arbitrator-attorneys also would be required to have at least half of their practice in the construction industry. Architect William B.

Higher costs per claim may be attributable to "leaner, meaner" clients who replace project supervisors with risk-shifting contract language, and sue when inadequate budgets prevent completion.

Reiner, principal of Reiner & Associates, San Rafael, Calif., was the task-force chairman. He says that the recommendations are "going to make the arbitration process much faster." Reiner doesn't see mediation as competition for arbitration. "The success rate in mediation has been phenomenal." If it benefits the industry, he says, "I'd rather see things get mediated before they go into arbitration." Not everyone thinks ADR is best in every case. Kling Lindquist's Sotnick says, "If I had to choose how to face an unknown threat, I would prefer to use the law of the place."

The leaner, meaner owner

Not all the liability trends are positive. The average amount of claims at Schinnerer/CNA rose from $179,000 in 1984 to an estimated $268,000 in 1994 (chart, opposite). Sotnick says that in the past owners had a somewhat "forgiving attitude," but now he sees "a different kind of owner." Because of the downsizing at many corporations, client representatives fear being fired, he said. To prove their value, they're becoming "much more strident."

Ellerbe Becket's Green says owners "ask for ever-increasing broad coverage on insurance and indemnification clauses," which shift more responsibility to architects. He says that architects must firmly resist accepting such expansion of risk. Sotnick sees "signs that clients are hard pressed, have inadequate budgets, and are using claims as a way of helping them to balance their budgets."

Schinnerer's Abramowitz says that 5 percent or fewer claims go to court. But those that do can be long, hard fights. Among notable recent cases, two have dealt with government projects, including a courthouse in DuPage County, Ill., and O'Hare Airport's International Terminal (right). Another dispute-prone project is Denver's new airport [RECORD, November 1994, pages 30-37, 97].

But such prominent cases are rare. Schinnerer's Abramowitz says, "I'm not saying that construction is ever going to be un-tense. There's a lot of money involved . . . and there are always going to be problems. But I think people are stepping up to those problems and handling them more and more effectively." ■

Case Settled: When Communications Fail

In November 1993, Group One Design—an architect team that included Perkins & Will, Consoer Townsend & Associates, and Heard & Associates, Inc.—was sued by the city of Chicago over the International Terminal at O'Hare International Airport [RECORD, June 1994, pages 106-123]. The city contended designs for parts of the roof and important mechanical and life-safety systems were submitted late and required substantial redesign. The city sought to recover redesign costs and overtime for contractors who shortened their schedules to permit an on-time opening.

The team denies its work was substandard, says James M. Stevenson, of Perkins & Will, and even began preparing a countersuit, which was never filed. Instead the city and the design team negotiated and announced a settlement last January. The city received $9 million, paid by the project's insurer. The city paid the design team $1.9 million (a lower amount than sought) to settle the claims for fees and additional services, including retainage, says Stevenson of Perkins & Will.

"In our opinion, the claim was about process," says Stevenson. "There was never a total team effort on the project." He said the city was unwilling to try ADR, because it felt it held all the cards in the way its contracts were written. Was the firm happy with the settlement? "In many respects, we were," he says. But he adds that the legal process "should have been avoidable." *T.I.*

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Looking to Appeal: Sick-Building Responsibility

Designed by HOK and Wight & Co., Downers Grove, Ill., a courthouse project for DuPage County, Ill., was completed in summer of 1991. The county contended that hundreds of people "experienced sick-building-type symptoms" within a month of occupying the courthouse. [HOK says the complaints came later.] When independent consultants found inadequate provision of outside air and a group of physicians couldn't certify the air quality, officials moved everyone out. The building was vacant from September 1992 to March 1993, when retrofit work was completed.

The county sued the architects and contractors for more than $5 million. Last December, a jury found the architects and contractors weren't at fault. According to HOK, the jury instead found the county negligent in operating and maintaining the building. In March, the county board voted to pursue an appeal, claiming the jury ignored "uncontroverted medical evidence" as to culpability, says DuPage's attorney. A separate suit by building occupants has been settled. *T.I.*

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When Should You Visit the Quarry?

The characteristics of natural stone are hard to judge from a briefcase-size sample. Sometimes you need to go to the mountain.

By Richard Pieper

Almost invariably, the stone samples delivered to an architect's office carry a caveat which says: "This stone sample is a product of nature and is intended to show approximate color and texture. The sample does not necessarily show the full range of color variations to which such materials are subject. Stone furnished for projects should not be expected to match these samples exactly." The wording of the warning varies, of course, but the message is always the same: it is unwise to base selection or approval for a large or sensitive stone purchase on a few 12- by 12-in. samples. In many cases, a visit to the quarry or to the cutting and finishing plant that will process the quarry blocks is warranted to assure that the architect's needs and design intent are clear to the stone suppliers *before* the stone is shipped to a fabricator or to the job site.

Stone variation

Stone from different sections of the same quarry can vary greatly in appearance and composition. *Sandstones* are sedimentary stones which occur in layers or strata within the quarry. Strata may vary dramatically in thickness from several inches to several feet. Different strata in the same quarry may vary considerably in appearance, durability, and physical makeup. Generally, however, the variable coloration of sandstone is considered an innate aspect of its appearance, and is not considered objectionable. Joints—cracks or seams which occur naturally through the stone in the quarry—and the thickness of the stone strata or beds determine the size of the sandstone blocks that may be extracted. Bluestones, for instance, often occur in thin beds yielding 2- to 5-in.- thick stone appropriate for use in walls or paving. Not all sandstone quarries produce stone thick enough to be sawn for finished building stone.

Limestones and marbles also may show extraordinary variations in appearance. Even Indiana limestone, generally accepted as one of the most uniform of stone masonry materials, has distinct variations in color from gray to buff which govern its selection.

Richard Pieper is Director of Preservation for Jan Hird Pokorny Architects in New York City.

Marble is often so variable in appearance that consistency in coloration or figure is inconsistent with its selection. Variability in appearance is inherent in the material.

Granites are generally quarried from large granite masses, and many display very little variation in appearance. Granites are subject to texture and mineralogic variations, however. A relatively fine-grained granite may display localized coarsely crystalline veins, which are markedly different in texture than adjacent stone. Occasional small clots of dark minerals may show as a prominent spot in an otherwise light field. Rift, the alignment of the crystalline grains within the granite, may also significantly affect the appearance of the finished face of the stone, depending on the direction in which the stone is cut. Minor variations in color are common even in very regular granites. Some granite suppliers grade stone by subtle color variation, and market granite of different hues from the same or adjacent quarries under separate trade names. Tiles or small units from such suppliers are effectively pre-selected, and can exhibit extraordinary consistency in color and texture. Esthetic issues in granite selection are apt to be most sensitive if the granite is highly figured or wild. In such a case, careful selection of slabs or dimensional stone may be required to satisfy the architect's design intent.

Use and finish affects stone selection

Stone units that will be prominent in the finished installation require careful selection. Stone panels which might be satisfactory for curtain-wall installation on a higher floor may not be acceptable for use at street level. Stone for use in a lobby must be even more carefully selected. Architectural firms or construction managers often hire an inspector or consultant to assist with the selection of blocks and/or slabs for large curtain-wall projects where consistency of coloration is of paramount importance. Where extensive bookmatching or other pattern setting is elected, use of a consultant is also advisable.

Appearance selection criteria may be more or less stringent depending upon the finish the stone will receive. A tooled, honed, or flame-finished surface will display variations in color or texture much less readily than a polished surface. If possible, request that samples reflecting typical stone variation be presented in the specific finish that the project requires.

Criteria for stone selection

Selection of a stone must be guided by its appropriateness and durability for the proposed use, as well as by the ability of the quarry to produce it in the sizes and amounts required—within the time period specified. Even granites and marbles that are available in large blocks are subject to size limitations. Seams and cracks within the quarry significantly affect the size and amount of stone that can be used. At the Milbank, S. D., quarries of the Dakota Granite Company, for instance, only 25 to 30 percent of the quarried stone yields useful blocks—nearly 70 percent is waste. North Carolina Granite Corporation's 90-acre quarry in Mt. Airy, perhaps the largest open-face quarry in the world, is notable for its absence of seams or beds within the mass of the stone. Nearly 90 percent of the granite removed is usable. Seams are of little concern if the stone units required are relatively small. But if a project requires numerous large panels for curtain-wall construction, the architect must be assured that the quarry can provide blocks of adequate size on an appropriate schedule.

Visiting the quarry

Most quarry owners welcome visits by architects because they offer a sales opportunity and a chance to acquaint the architect with the quarrying process.

Arrange a visit through the stone supplier, or through the quarry's regional sales representative. Come prepared for mud underfoot in passing from quarry face to block storage areas to cutting sheds. And make sure that the sales representative understands the purpose of the visit beforehand. Is this an initial visit to become acquainted with the quarry and its facilities, and the stone it produces, or is specific information about block sizes and production capability required? If one is visiting to select specific blocks of stone, a quarry representative will accompany the tour to a block-storage area. Don't hesitate to express expectations or needs for figure and coloration. A bucket of water will bring out the color of the stone in the rough

Wire-cut marble face at quarry in Carrara, Italy (left). Marbles, like granites, are often quarried from large stone masses. Block size is limited by the distance between seams and joints and by practical limitations of stone transport and cutting. Limestone slabs on a dolly at stone-cutting plant near Vicenza, Italy (right). Standard slab thicknesses in the U.S. are 3/4-in., mostly for interior use, and 1 1/4-in. for exterior and curtain-wall work. Roughly equivalent thicknesses of 2- and 3-cm are standard in Europe.

Photos by Richard Pieper

block, but viewing stone in block is tricky, and a trained eye is required to understand what will be exposed when the block is cut. After design requirements have been communicated, it is often advisable to allow the fabricator or consultant to make the block selection, and to select stone for sensitive areas after the blocks have been slabbed or roughly cut.

Many granite and marble quarries have complete cutting and finishing plants. Large installations will generally have a gang saw, which uses a series of parallel blades to cut a block into slabs of equal thickness. Companies that operate several quarries may have one facility that cuts all the stone, so to view slabs it may be necessary to visit a separate cutting and finishing facility rather than the quarry itself. Staff at the cutting facility may lay out several slabs to reflect the range of stone currently in production. If the project requires a common size, such as 1-in.-thick panels, a certain amount of culling may be possible. Don't count on careful selection to avoid variations in color or figure if the stone is inherently varied. Accept the peculiarities of the stone or choose a different one.

Questions for the stone supplier

In viewing samples at the quarry, note how they correspond to the samples that were sent to the office. Questions about variation in stone appearance are important. What textural variations appear in the stone? How does color vary? Are any small knots or localized mineralizations likely to occur that might be cut out or used in less visible locations? Will changes in rift or bed orientation vary the appearance of the finished stone units? If so, how much?

It's worth visiting a similar recently completed project that uses a stone being considered. The architect can see how the stone will appear in a similar application. The quarry or sales representative can provide a referral.

For a large or long-term project, a visit to the quarry is an opportunity to evaluate the quarry operation as well as the stone. Has the firm been in business a long time? What percentage of annual volume would this project represent? What period of time is necessary to produce the stone for this project? Are any other large projects slated to begin at about the same time? What lead time is generally necessary from receipt of order to delivery of stone? What types of cutting and finishing are performed at the quarry? What cutting and finishing plants are associated with the quarry, and are their production capabilities compatible with the project schedule? Are any changes in areas of quarry operation envisioned that would lead to a change in appearance of the stone? Is the same stone likely to be available for future building expansion?

Questions of stone durability and suitability for purpose must always be answered first, of course, but stone sales representatives generally recommend that a visit to the quarry or to the cutting and finishing facility take place as early as practicable in the selection process. It is of little use that a stone meets the architect's esthetic criteria if it is not available in the size required or on the necessary schedule. A visit to the quarry often puts stone selection into proper perspective, and reaffirms an understanding of stone as a natural and variable material of exceptional beauty and utility. ■

Additional information

The Building Stone Institute has just published a 32-page guide for architects: *Recommended Practices for the Use of Natural Stone in Construction.* Single copies are available without charge on letterhead request to The Building Stone Institute, PO Box 507, Purdys, N.Y. 10578.

Also, The Marble Institute of America, 33505 State St., Farmington, Mich. 48335 810/476-5558 publishes color-plate books with to-scale illustrations of granite, marble, limestone, and other natural stone from quarries all over the world.

Computer Myths Exploded

By Joseph Vance
"Computers degenerate the design process." "My designs are much too complex to accomplish on the computer." "You people working in the big cities on big projects can afford to do that kind of thing; we can't."

These are typical comments on the subject of designing with computers, encountered in articles, letters to the editor, and postings in various on-line services. One critic even suggested that the use of enhanced computer-generated images has contributed to the loss of the "moral center" of the profession. Why is this?

In large part the reason is quite simple. People always greatly fear what they do not understand. We have all seen computer technology make stunning changes—seemingly overnight—in other industries. Take the field of graphic design. Within the span of two years in the mid-1980s, mechanical paste-up artists became superfluous. Graphic designers were literally forced to either computerize or close up shop.

The changes so far in the architecture profession have occurred much more slowly. Nearly all firms are now using computers in their practice in one form or another. With the continual drop in the price of computer hardware and software, it has been relatively easy for most firms to adopt 2D CAD drafting. After all, drafting has always been a process of production, executed by employees. Incorporating the computer into the *design* process, however, has only happened in a small percentage of practices. The decision is not so simple as buying equipment and hiring a few CAD-proficient employees to operate it. Principals and senior staff must suddenly consider a change in the way they have worked for years. Most have no computer experience whatsoever; many are computer-*phobic*.

Designing projects on the computer can be of more benefit to a firm than simply automating the drafting process. For typical firms, design accounts for 40 percent of the time and fee spent on a job, while construction documents are 35 percent. Still, architects always complain that there is never enough design time. The primary efficiency designing on the computer offers (and this means designing in 3D) is the ability to attach construction-related information to the design you've developed, rather than redrawing the design in a "working drawings" format.

Sophisticated modeling, rendering, and 3D design, you argue, is for the big or cutting-edge firm. Not so. It's true that the work of some firms pushes the envelope of available programs and computer power. Work that small firms do, even detail-driven custom residential, can benefit from the reasonably priced tools now available.

Working in 3D

"Ease of use" in the software you select is the key to successfully designing in 3D. Having to stop and think about how to do something or having to take several steps to complete a single function interferes with the natural flow of the design process. The best applications are defined as "solid modelers." For instance, to "draw" a 3D wall, you select a tool, enter the height of the wall, then simply "click and drag" or use the keyboard to enter the length of the wall. The result is a "real" wall, one that is solid with length, thickness, and height. Applications that are "surface modelers," on the other hand, usually require you to draw a 2D representation of the wall, select the lines, then select another function where the height of the wall is entered and the 2D lines "extruded" as 3D planes. These planes, however, have no thickness. Should you cut a section through your building and view it as a perspective section, you could see inside the walls, which is not the case with the solid modelers.

Applications that allow you to select items like doors and windows from a library, then place them with a single command are also better for designers than applications that require one command to cut the hole in the wall and another to place the door or window.

A wide range of features can automate a great deal of 3D-model creation. In some programs, 2D lines and curves in any imaginable configuration can be automatically converted to such elements as walls, floors, and ceilings. Like 2D CAD, many applications allow you to multiply or drag and repeat 3D elements such as openings, doors, windows, and columns. Programs that allow you to easily manipulate the model in various 3D views greatly speed the process. For instance, you can place a pitched roof in plan, then switch to a 3D side elevation, "grab" the ridge of the roof, and drag it down to the desired height.

Myth: You can't "think" on screen

David Hannaford Mitchell is an architect in New York City whose work consists mainly of custom single-family homes. Mitchell's five-person firm came to designing on the computer after seven years in business. He began in 1990, which proved a propitious moment, as the architectural recession hit New York hard and he suddenly found maintaining staff and related overhead difficult. Mitchell designed his first project on computer that year and has never looked back. His workload quickly recovered to its previous peak, only he discovered he could handle it without assistants due to the efficiency of his computer-based project execution. "My design process has always been a hybrid of math and drawing," explains Mitchell. "Therefore I enjoy the specificity and immediate feedback of the computer model, combined with rapid exploration by freehand sketching over printed computer-generated perspectives [opposite]. I find [the computer] actually enhances my thought process by allowing me to constantly flip back and forth between plan development and 3D development with a keyboard command."

Myth: you can't do detailed design

"A real problem with the traditional process was the difficulty in really studying fine proportion in perspective," Mitchell comments. "Even constructed perspectives were rarely accurate enough for me to be entirely confident when making fine-tune decisions regarding trim size. Now, you can tweak a piece of trim or other design element 1/4 in., and position yourself in the computer model to look at that change and make real judgments about it."

Similarly, Mitchell explains that he no longer has to wait for a hand drawing to be produced to evaluate his design decisions. His comput-

Joseph Vance heads his own New York City architecture firm. He is chairman of New York City/AIA's Macintosh Users Group.

While many firms began with 2D CAD as a productivity aid, the real benefits may only accrue when architects design in 3D.

er models allow him to see changes on the fly, so that he can continue to investigate solutions that need more attention. Mitchell feels his time in front of the screen has not meant big changes in his design process, but has improved it. Once he might have shown clients four or five formal, constructed perspectives. Now they may see as many as 150. As a result, they are far more comfortable that they understand the design before construction starts. According to Mitchell, the three biggest benefits he has seen from computer-based design are, first, getting the design right; second, more thorough presentation to the client; last: increased earnings.

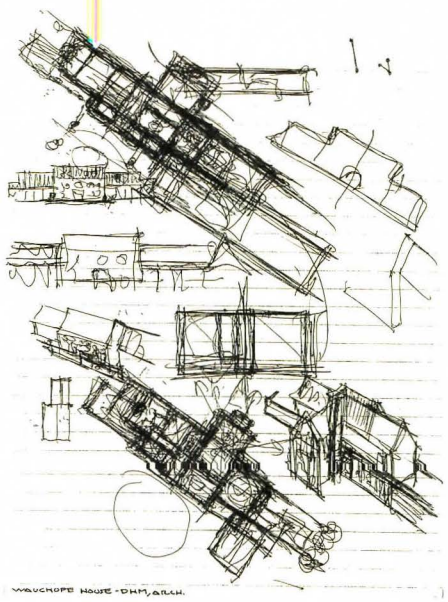
Myth: Proficiency takes years

New York architect Peter John Locascio bought MiniCAD in early 1994, having had only a very brief introductory experience with CAD. By April, he had completed his first design on the computer, an entry for a low-income housing competition. In midsummer of that year, he completed his first set of construction documents, and in September, signed a contract for a $1-million-plus project for the New York City Housing Authority with a tight four-month schedule for design through construction documents (following pages). Even on a such a tight schedule, Locascio felt quite comfortable that he was able to explore and develop the designs to his satisfaction.

Myth: Start with 2D first

Though many architects, like Mitchell, became comfortable with a computer because it supported working methods they were used to, most architects find their methods change and evolve as they better understand what computers can do. Locascio has recently found himself using simple computer models in early design instead of cardboard study models. When he "steps back" some distance from the computer model, it read more abstractly. He can move around it, viewing it as a whole and not just as an assemblage of detailed elements.

Many architects stay with 2D because they perceive 3D as inefficient and difficult to master. In truth, the computer model can add considerable efficiency to the production process because it literally becomes the working drawings. The typical design



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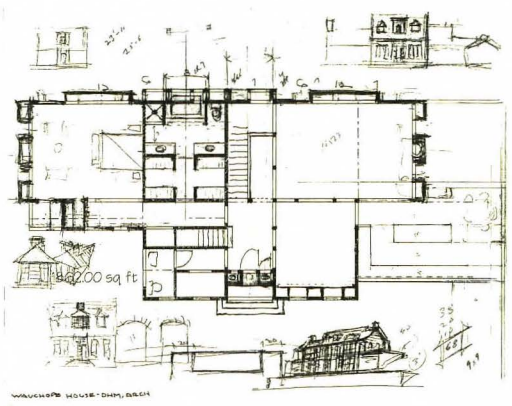

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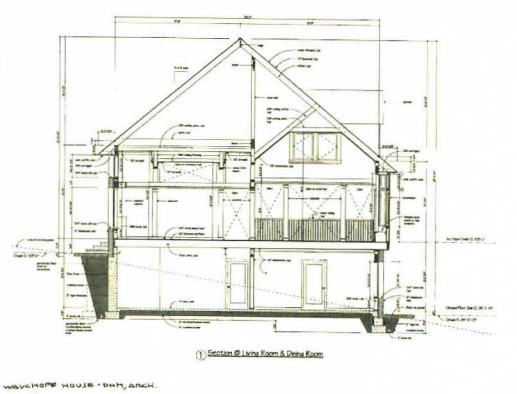

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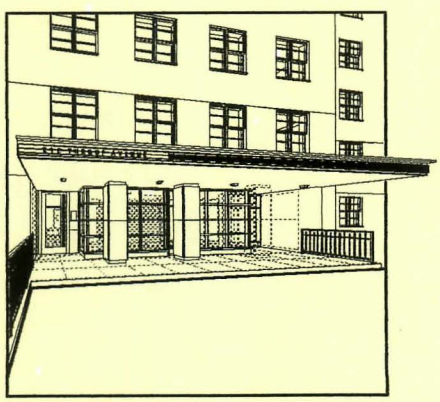
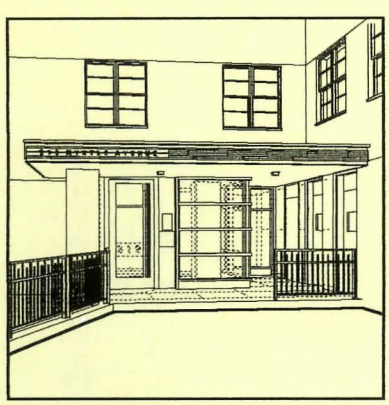
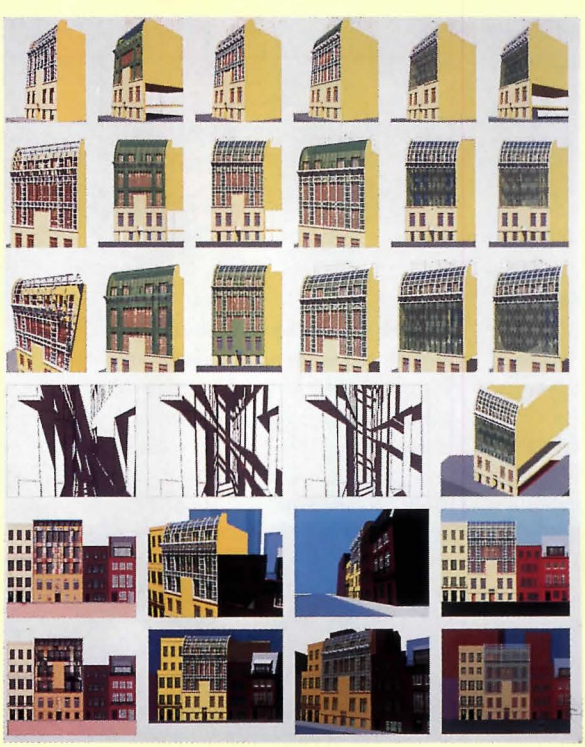
Sketching on screen and off: *Before David Mitchell designed on his computer, he would have made three or four formal constructed perspectives in addition to his own continual series of freehand perspective explorations. By hand, the formal perspectives would take him 7 hours to construct, an employee 1 1/2 to 2 days. Today, he may print out as many as 1,000 images (1, 2, 3), sketching directly over these with pencil for some design studies, making other changes directly on screen (4). Notations transform the model into working drawings (5).*





Engaging the client: *John Locascio was able to explore and develop designs for five different building entry and canopy combinations for the New York City Housing Authority on a tight four-month schedule. The clients, staff architects, commented that consultants rarely gave such clear and detailed presentations.*



Rendering history: *In a townhouse project, Kiss + Zwigard proposed a facade aligned to the street wall of neighboring buildings, permitting the creation of sun porches between the new elevations and the existing set-back elevation. Numerous studies (left) attempted to mesh client and Landmark Commission desires. Assuming the Commission would be more receptive to hand-rendered images, Kiss presented one at the initial hearing. When the board questioned whether he had accurately depicted the effects of the glass, Kiss simply printed his design images on a high-quality printer. The Commission found these images more believable.*

process produces masses of yellow trace and piles of study models, very little of which can be incorporated into the final documents without redrawing. Inexperienced staff members pursuing false design trails quickly consume the budget. 2D CAD streamlines things only minimally.

Those who design on computer say they spend no more time during the design process than they normally would, yet report a 20- to 30-percent reduction in the time it takes to produce construction documents based on the 3D model. Both Mitchell and Locascio have learned to use the 3D design model as the basis for their construction documents, extracting 2D representations, to which are added dimensions, notes, pattern fills, and so on. The equivalent of the base or outline drawing of every plan, section, and elevation is already complete at the start of the construction-documents phase. And since we all know the design process doesn't neatly end with the completion of design development, the designer can make late changes in the model—such as moving a wall or window—and they will be reflected in all other major drawings.

3D productivity enhancements

While macros (mini-programs users create to execute repetitive tasks) are commonly used in 2D, applications permit a more sophisticated version in 3D. A great deal of the work of Lalire March Architects, New York City, is the design of retail stores for chains like Coach, J. Crew, Liz Claiborne, and others. The number of repetitive elements within such designs allowed the firm to use Graphisoft's ArchiCAD, to "decide" some aspects of both design presentation and construction-document coordination.

The "objects" used in ArchiCAD, (referred to as symbols in other programs), are actually bits of computer code that users can delve into if they are so inclined. With no prior programming experience, James Kotronis of Lalire March developed custom objects. Dressing rooms, for instance, always have the same components, but the size will change from store to store. At Lalire March, a designer selects a custom dressing-room object from the library and places it on the floor plan, using two mouse clicks to define the overall size. The object automatically locates the mirror, based on parameters embedded into it, placing it in a pre-established relationship to the door. The object also includes algorithms for locating ceiling light fixtures, wall sconces, an hvac diffuser, and a sprinkler head. Further, items are placed using the correct symbol for each drawing layer: architectural lighting symbols change to electrical ones on the lighting plan. Just prior to plotting, for example, a designer can move a dressing-room mirror that has a light fixture associated with it, because the lighting, hvac, and power plans are promptly updated automatically.

Lalire March uses a similar approach to streamline presentation drawing. One problem that can arise with computer-generated line-drawing perspectives is that the software insists on drawing every line. The drawing clogs where linework is dense. One of the firm's display-case objects, showing a rack of 30 jackets, reads well when viewed up close. To keep the image from being too dense in a perspective view of the whole room, Kotronis discovered that he could program his custom objects so that every time a perspective image was rendered, the display-case object could generate fewer lines, or generate the lines as dashed or dotted, depending on the viewpoint distance.

Though this sounds like gee-whiz stuff, partners Rex Lalire and Christopher March are not raving techno-heads. In fact, neither partner works directly on the computer. Says Lalire, "We certainly cannot say our design is better than before. However we can say good design can be accomplished more quickly." Efficiencies come in other ways. "Of course we still have the case where a staff member might take a wrong turn developing an aspect of the design," March says. "In the old days that might mean hours if not days of wasted time; it now probably means a matter of minutes."

Speed has also been an important benefit of designing on the computer for Laszlo Kiss of Kiss + Zwigard Architects, New York City. From an early effort in completing the design drawings for a competition encompassing an entire Berlin neighborhood, they've refined their technique to the point where dozens of facade schemes for a Manhattan townhouse renovation were developed in photorealistic detail and rendered in three to four weeks (opposite). Kiss says some design explorations would simply not have been possible without their computer. Since the site was within a historic district, the challenge was to create a design that would let in as much light as possible, yet be acceptable to the Landmarks Commission and the local Community Board.

Crucial in securing client approval was the ability to render images showing the quality of sunlight in the space and the view across the street. At the same time, Landmark Commission approval hinged on the size and proportion of openings—even the effects of reflectivity and shadow on the facades. The architects were able to sit at the computer screen and get a feeling for the ways each scheme combined apertures and layers of clear and translucent glass.

Presentation caveats

The fact that the Landmarks Commission found a computer drawing more credible than a conventional rendering doesn't mean that all computer presentation drawings are created equal. Kiss's firm's early presentation efforts with less sophisticated software were not successful with clients, he says, due to the "cartoony" quality of the images.

Clients may also find schematic and conceptual-level computer output troublesome. While the intent may be to show massing, a thought, or a direction, the client reads the hard-line perspective, and finds it uninspired, or thinks of it as *the* design solution. For these situations, it's worth using software that automatically renders the straight lines as "hand drawn." You don't do this to fool the client, but to display the image as a thought or work-in-progress, not "cast in stone."

While no one is saying you either have to jump on the bandwagon or get left behind, I know of too many firms who enjoy designing on the computer (including myself) to think the examples mentioned here are special or isolated cases. I *think* most would agree that any change in the way we work that allows us to spend more time designing and make more money is well worth considering. ■

Objects Take Center Stage

By Steven S. Ross

Software and hardware developers displaying their wares at A/E/C Systems this year offered ways to make Windows-based systems faster and more attractive. The advances include faster display processing, Windows-based printer/plotter drivers, Windows-based document tracking, and faster hardware.

New Macintosh, Unix-based and Windows NT systems were also in evidence. Digital showed new, fast versions of its Alpha chip for Windows NT. The fastest units are triple the speed of the fastest Pentiums.
300 *on Reader Service Card*

IBM showed its new PowerPC chip RS/6000 series for its version of Unix, AIX. Versions of Windows NT and OS/2 Warp are also promised for it.
301 *on Reader Service Card*

Intergraph and others showed computers based on up to four Pentium processors.
302 *on Reader Service Card*

Apple quietly talked about (but didn't show), its new PowerMac 9500 line, based on the new, faster 604 CPU.
303 *on Reader Service Card*

The CAD industry continued to consolidate. Softdesk, the largest developer of AutoCAD add-on software, acquired IdeaGraphix, the largest developer of MicroStation add-ons. Graphic Data Systems Corporation of Englewood, Colo., acquired the MicroGDS line from England's CADCORP.

The Object Wars

Autodesk and Bentley squared off at A/E/C Systems this year, promising more compatibility among their respective third-party add-on applications, and more insurance that files written with third-party applications present can be translated into other file formats. The actual situation falls somewhat short of the hype, however:

• Autodesk calls its initiative an open standard. But it has been developing it in secret; until A/E/C Systems, it was even discouraging its partners from having any contact with Bentley on other matters.

© Steven S. Ross photos

A/E/C Systems' Atlanta show drew over 20,000 exhibitors and attendees (left). Carol Bartz, Autodesk president (below left), promised a certification program to assure third-party compatibility of add-on software with AutoCAD Release 13.

• Bentley is offering an approach that offers better file compatibility, but has some downsides; also, it is somewhat vague on details.

What's going on? CAD is moving from simply putting lines into a drawing, to giving those lines some intelligence. Two parallel lines could be a wall, a pipe, a duct. A collection of lines could be a window or door assembly. In short, a collection of these lines (and, usually, underlying data) can be "objects."

There are great advantages to this approach. A door object, for instance, could cut its own hole in the wall, check for sufficient fire rating, and associate itself with a light switch—always on the side of the door that opens—and proper studding.

Buddy Cleveland, president of Jacobus Technology, says, "I'm convinced that object technologies are going to be in our future. But we need sensible implementation. Standards are needed, but they're not everything." Jacobus is more closely allied with Bentley than Autodesk.

But if you add this "object-based intelligence" to your drawing, where, exactly, does the intelligence reside? Many developers of third-party software that works with AutoCAD or Bentley MicroStation want to put the intelligence in separate pieces of software that exist apart from your drawings.

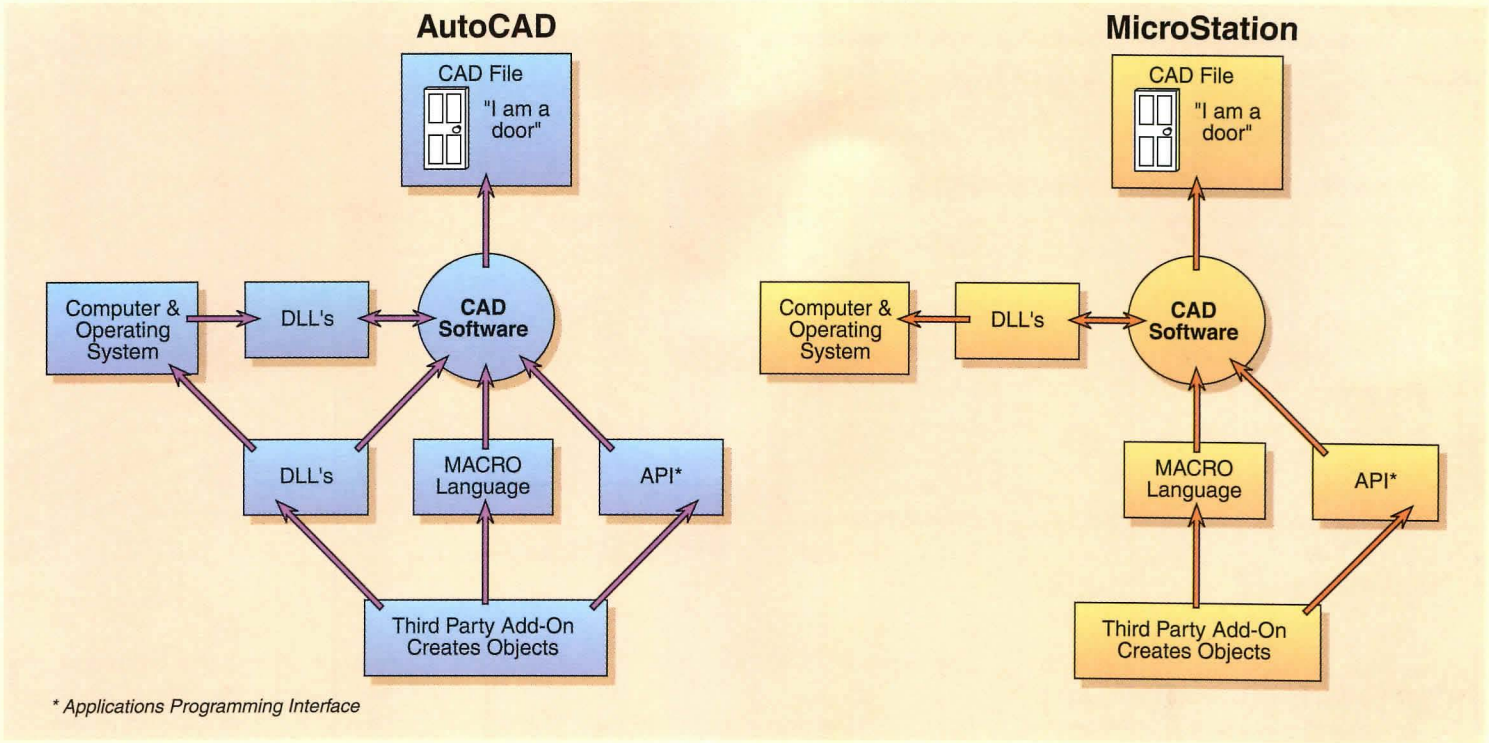
In general, third-party developers want these separate pieces of software to be in the form of DLLs—dynamic link libraries—that "help" a CAD engine such as AutoCAD or MicroStation create and interpret drawings. But unless you have the third-party developer's DLL, large pieces of your drawing would lack intelligence—and may not even be visible.

Autodesk's standardization effort is aimed at setting a minimum level of intelligence for each of about 150 objects by this fall. In the words of programmers, this minimum level is called an "industry foundation class," and there's one industry foundation class for each object type—one for doors, one for double-hung windows, and so forth.

Toward this end, Autodesk recruited a small number of parties for each group of objects of interest to a given profession. For architecture, this came down to 11 organizations, but only one architectural firm—Hellmuth, Obata & Kassabaum (HOK). There are some oddities. Third-party vendor Eagle Point, for instance, worked on the civil engineering objects, but not architecture. Softdesk did architecture.

Autodesk says this was necessary to move quickly. Ian Howell, director of Autodesk's A/E/C Market Group, says few architects, if any, have the programming skills necessary

There's a drive to give drawings more intelligence—and cure speed problems plaguing high-end Windows-based and Macintosh systems. But full system-to-system file compatibility may suffer.



to contribute at this stage. At A/E/C Systems, Autodesk encouraged Bentley and other vendors to join its effort in a AEC Interoperability Association. Also, it was noted that most of the foundation classes expected this fall are based on the STEP effort (a mainly European, 10-year-old effort aimed at standards for product data exchange). Autodesk helped force the STEP effort to actually produce the standards, or be left behind.

Of course, it is to Autodesk's competitive advantage to move as far as possible, while keeping competitors as much in the dark as possible. It is also to Autodesk's advantage, as the industry leader, to make its file structures as incompatible with competitors as possible. Finally, third-party vendors who provide add-ons would, all other things being equal, wish to maximize their market by selling extra packages to end-users (perhaps facilities managers) who want to view Auto-CAD files created with their add-ons—perhaps years earlier, by the architect.

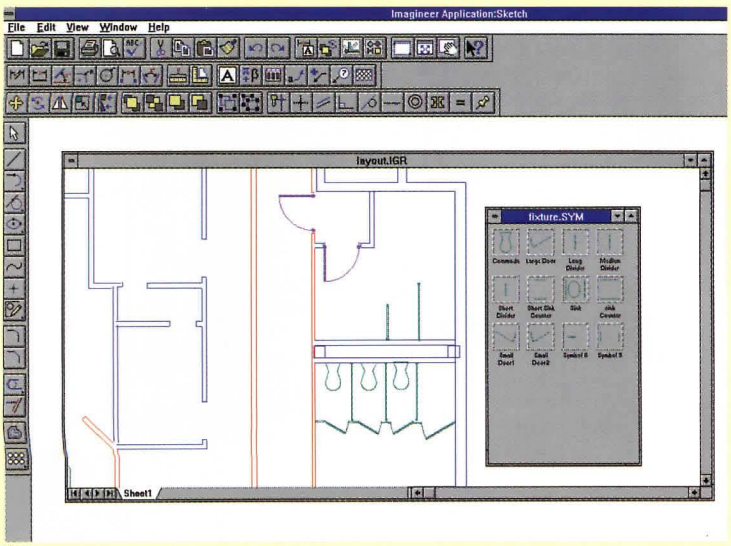
After ARCHITECTURAL RECORD published the broad outlines of all this in May, I heard from third-party vendors (mainly in Europe, where the STEP effort has been sputtering along) who were upset at Autodesk basically "coercing" them into behaving "responsibly." This suggests Autodesk's strategy, although secretive, makes some sense. Howell denied hearing of any complaints about coercion.

An architect's best defense against all this is to know what he or she is buying. You must insist on assurances of maximum compatibility from any third-party vendor. A certification program for add-ons, run by AutoCAD for its vendors (and Bentley for its group), would go a long way toward helping architects make good choices. Autodesk president Carol Bartz says such a program is coming "soon," but refused to be specific. Bentley hasn't even gotten that far in its public pronouncements, but is insisting it will force all its vendors to include all intelligence in the drawing. Bentley has also announced full compliance with Microsoft OLE and CORBA standards, supposedly guaranteeing full data transfer via the Windows clipboard and "drag and drop" utilities.

Quite apart from the marketing issues, there are technical matters that have yet to be solved. Autodesk modified AutoCAD, with

Autodesk and Bentley MicroStation differ in their ways of providing "intelligence." Bentley wants to do it all within its CAD software, with its "macro" language. If it works, there are advantages. Third-party developers will write their add-ons only once, to work on any of the 17 platforms for which Bentley's CAD is being groomed. And because the macros are isolated from the equipment and operating system, the drawings should be more readable over the years.

Autodesk developers are putting some intelligence in their own DLLs (dynamic link libraries)—separate programs that run alongside AutoCAD itself. They gain flexibility, but the DLLs must be rewritten for each operating system, and when operating systems are updated.



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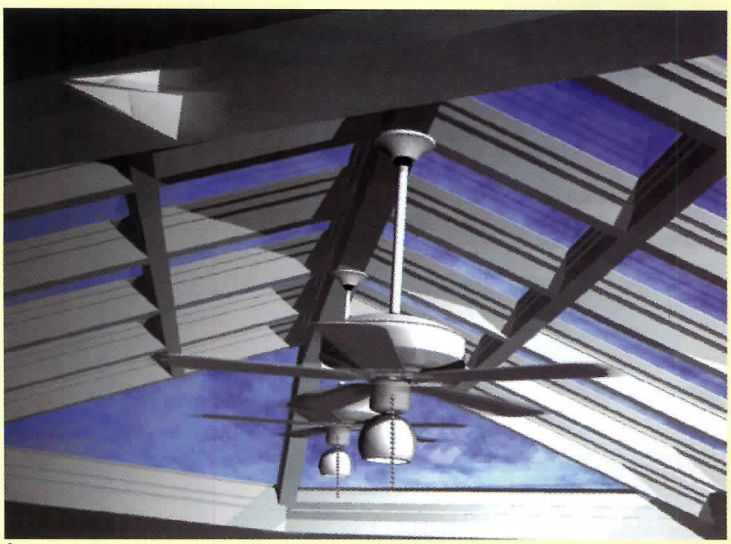
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Release 13, to allow third-party vendors to add their own objects as "entities" to AutoCAD files. More fine-tuning is necessary, but the object intelligence for the resulting DWG files can be in separate DLLs or in the drawing itself.

Bentley says it wants its third-party MicroStation developers to insert all of the intelligence possible into the drawing itself, rather than in DLLs. Toward that end, it is expanding MDL, the MicroStation Development Language, but does not expect full release until the end of 1996.

Computervision says it is adding object-oriented technology to its software (originally, VersaCad); the project is called "Pelorus." Intergraph is doing the same thing, apart from Bentley, with its Jupiter project (more about that later). RECORD plans to review Computervision's latest CAD product, DesignPost Drafting, soon.

Will an intelligent, object-filled drawing be easily translated from one type of CAD file to another, and from one operating system to another? Cleveland points out that DLLs translate easily from operating system to operating system—just recompile, usually.

But, says Cleveland, "If a third-party vendor creates a dynamic link library and goes out of business, *the DLL won't survive* 20 generations of Windows NT."

Because the intelligence becomes part of the file and because Bentley makes its software available on Windows, Windows NT, Unix, and Macintosh (any in many variations of the four), the intelligence is available on all platforms, unlike Autodesk's. It is hard to see, however, how this file scheme can contain what will be an ever-increasing amount of object intelligence. One trick (easy with DLLs, harder with an in-drawing language) is to make sure the intelligence of, say, a door, is imparted to all doors in a drawing without having to be repeated for each one—even if more than one add-on package helped draw the doors.

More on Bentley vs Intergraph

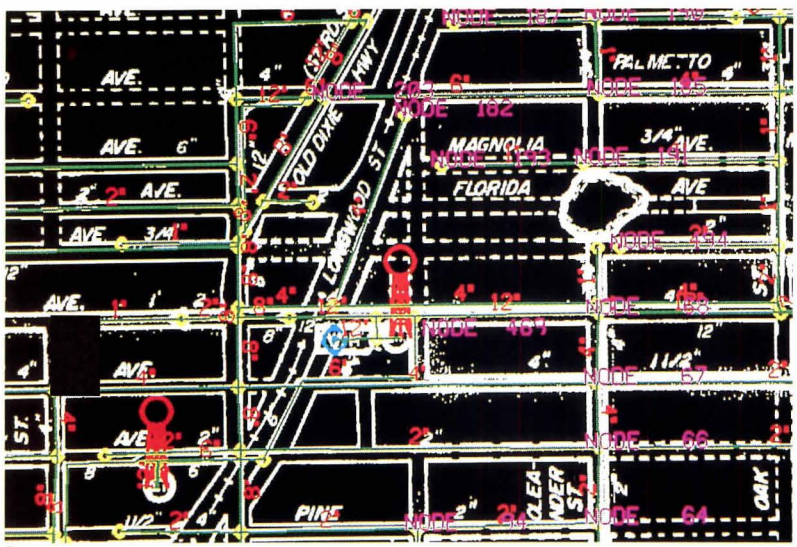
Intergraph owns half the stock in Bentley Systems, developer of MicroStation. But this didn't keep Intergraph Software Solutions from showing a new 2D CAD package, Imagineer Technical, meant for Windows 95 or Windows NT. The final version is not expected until later this year.

Imagineer is not meant to replace a full-blown package such as MicroStation or AutoCAD. It can exchange files with them, however, and can convert rough sketches into polished drawings. Intergraph regards Imagineer as an example of its "Jupiter" technology, where standard software building-blocks are combined into functioning programs that can exchange objects. It is based on Microsoft's Component Object Model and Intergraph's robust Object Linking and Embedding for Design and Modeling, which allows data exchange through the Windows clipboard. Another difference between Bentley and Intergraph (its biggest stockholder and biggest dealer): Bentley is moving MicroStation to every platform—Macintosh, many Unix flavors, and anything that runs Windows NT. Intergraph Jupiter appears to be only a Windows NT/Windows 95 product.
304 *on Reader Service Card*

Intergraph has been selling MOGLE, a Windows graphics accelerator for AutoCAD 13, since early spring. Vibrant Graphics introduced its Soft Engine for AutoCAD 13 for Windows just before the show (there was an earlier DOS version). It accelerates typical AutoCAD drawing functions by a factor of 2 to 10.
305 *on Reader Service Card*

Other CAD Software

Today's CAD packages come with so many goodies built-in that vendors would seem to be hard-pressed to add more. Among the favorites, aside from the object-oriented approach of the big guys, is the ability to do animations and photo-realistic *rendering*, better database links and—this amazed me—speed and ease of actually drawing.



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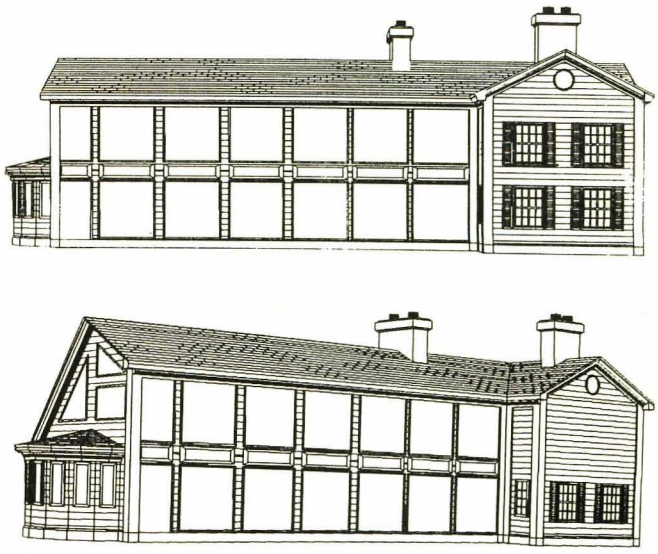

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One interesting (non-commercial) demonstration along ease-of-use lines came from a student group, The Multimedia Research Project at Cal Poly State University's Dept. of Applied Art and Design.
306 *on Reader Service Card*

Another is Archillustrator 4.0, a delight to draw with. Use it to create a 3D model from a plan view, drawn either inside the program or imported. It is particularly strong in "brick and stick" construction. The price is under $400. RECORD is planning a full review in an upcoming issue.
307 *on Reader Service Card*

auto-des-sys form-Z, in most ways the most flexible modeling software for the Macintosh, will be getting a Windows version; a preliminary "alpha" was shown. Release is expected late this year. The company also announced Renderone, form-Z with advanced rendering, including photorealistic ray tracing. The rendering engine is from Lightwork Design Ltd.
308 *on Reader Service Card*

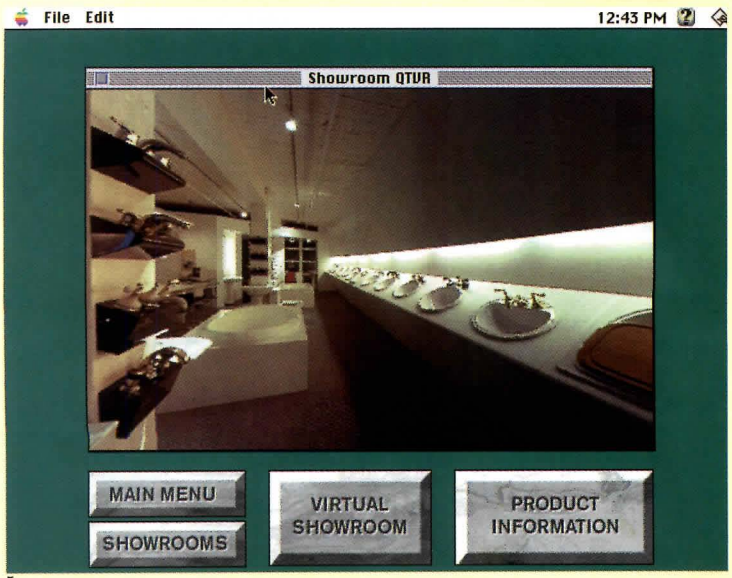
Architrion, which once held a major share of the Macintosh CAD market, came back under its new owner—BAGH Technologies—with a new version, 6. Originally, this 2D/3D package had a flaw—its underlying database was integers in blocks. Thus, it was fast (important for the Macintosh computers of a few years ago) but couldn't do sloping-roof lines on the original database. The new version, which superimposes a second database on top of it, is expected to be out by this fall, in Mac and Windows versions.
309 *on Reader Service Card*

Cadkey, Inc., showed its top-of-the-line Cadkey product for Windows and Windows NT, but the excitement for architects is still around its $150 DataCAD product.
310 *on Reader Service Card*

Graphisoft showed its ArchiCAD with the ability to produce Quicktime VR animations. The VR Extension is available on all ArchiCAD platforms (Windows, Windows NT, Macintosh and Power Macintosh) but VR scenes must be created first on a Mac. Quicktime animations are extremely fast and compact; a full room rendered for all sides is typically 200K at quarter-screen resolution (320 by 240 pixels), so animations can be passed around on floppy disks. ArchiCAD 4.55 began shipping 4.55 for Windows NT on the Digital Alpha CPU last April.
311 *on Reader Service Card*

Graphsoft, the MiniCAD people, unveiled plans for a Windows version of MiniCAD 5.0, its full-featured CAD-and-database package, to be released later this year. It displayed Blueprint, its 2D drawing package, based on the 3D MiniCAD.
312 *on Reader Service Card*

1. Intergraph sees Imagineer Technical as an example of its Windows NT "Jupiter" technology, in which standard software building blocks are combined into functioning programs that can exchange objects.
2. Cal Poly State's Multimedia Research Project demonstrated its non-commercial imaging program as an easy-to-use drawing package.
3. Intergraph's transportation, site design, and coordinate-geometry products were on display.
4. Architectural Office, also by Intergraph, offers easy-to-use design and production tools to streamline design, layout, and presentation process.



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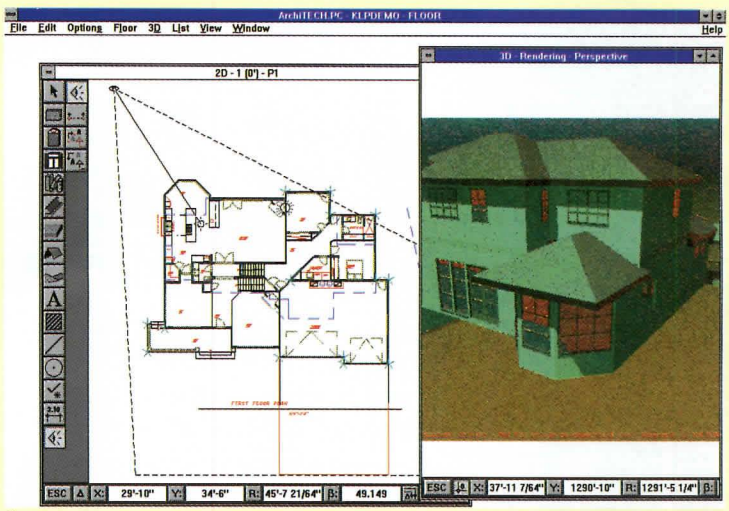

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A year ago, IBM could manage only a one-person booth in the corner of the exhibit floor to display its A&ES Version 2.3 CAD software (available early September). This year, however, it mounted a major display, in conjunction with its push to sell RS/6000-series computers equipped with the PowerPC CPU chip and the AIX (Unix) operating system. A&ES is a full-featured package of CAD programs, originally developed in conjunction with SOM in Chicago. Bentley's drawing tools have been used to design and construct the 1996 Atlanta Olympics. Its database links are powerful enough to handle other tasks, including ticket sales.. This year, IBM added the ability to write and read AutoCAD DWG files (through the licensed Autodesk OEM engine) .
313 *on Reader Service Card*

Nemetschek showed its ALLPLAN, a drafting and modeling package used in Europe; it is said to be the top-selling CAD package in Germany. You can edit in 2D or 3D with it. Now the company hopes to sell it in North America as well. The American division is being headed by veteran CAD marketer Malcolm Davies.
314 *on Reader Service Card*

SoftCAD USA showed ArchiTECH PC, also a European import, with an eight-year history. As do many European CAD packages, it combines 2D drafting, 3D modeling, bill of materials, and advanced plotting.
315 *on Reader Service Card*

Visio, formerly Shapeware, showed its Visio Technical software. This package allows you to build drawings out of basic shapes as well as the normal CAD entities. It comes with symbols that "act smart." Stretching a desk symbol, for instance, does not make it wider. There's a 32-bit version due as soon as Windows 95 ships. RECORD expects to be reviewing this package soon.
316 *on Reader Service Card*

Xitron showed version 3.0 of its cheap ($495) but feature-laden XCAD drafting software; the package is already 32-bit and a Windows 95 version is promised for this coming month. There's a $99.95 Architects Toolbox for it from New Dimensions. RECORD will be reviewing XCAD in an upcoming issue.
317 *on Reader Service Card*

Third-Party Add-on Software

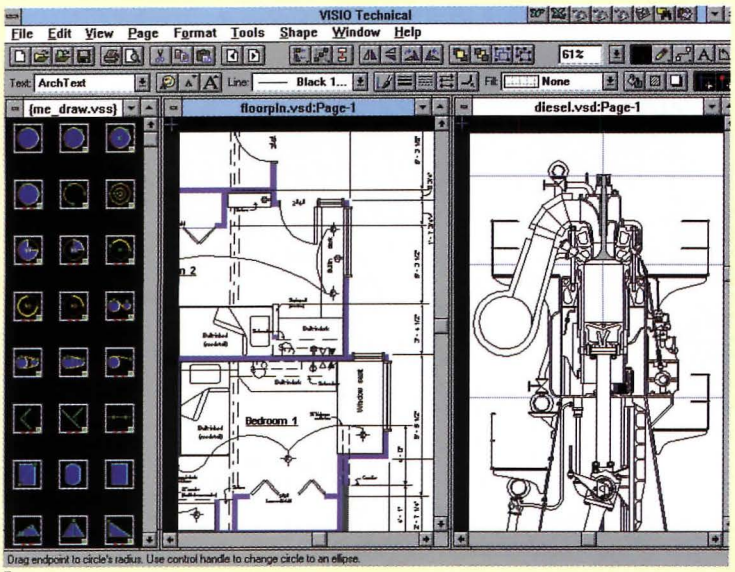
Most of the third-party action, of course, was linked to add-ons for AutoCAD and MicroStation. A popular add-on solution involves speeding up AutoCAD 13 graphics in Windows. But Autodesk itself announced WHIP, a three- to ten-fold speed-up as part of a free maintenance release due about as we went to press. It's based on the HOOPS technology Autodesk acquired a few years ago.

Perhaps the most clever and most generally useful add-on is not, strictly speaking, a drawing tool. It's ClickFlick, which allows you to add a customized tool palette to your cursor. Once you select a tool, the palette disappears until you complete the action. It works with any Windows software. RECORD plans to review it in more detail in an upcoming issue. The vendor is MiraTech.
318 *on Reader Service Card*

Cadsoft showed its APDesign, an example of software that does lend "object intelligence" to AutoCAD drawings. It's meant mainly for the brick and stick market, and for panelized construction. There's a new, more general CAD package as well, Build!; it was demonstrated at the meeting. Build! is easy to draw with, and has drawing tools typical for the housing industry.
319 *on Reader Service Card*

Eagle Point Software announced new financing, and showed the latest of its AutoCAD add-ons for civil engineering and architecture.
320 *on Reader Service Card*

Lightscape Technologies showed its new radiosity-based visualization tools (which allows faster, photo-realistic 3D) with support



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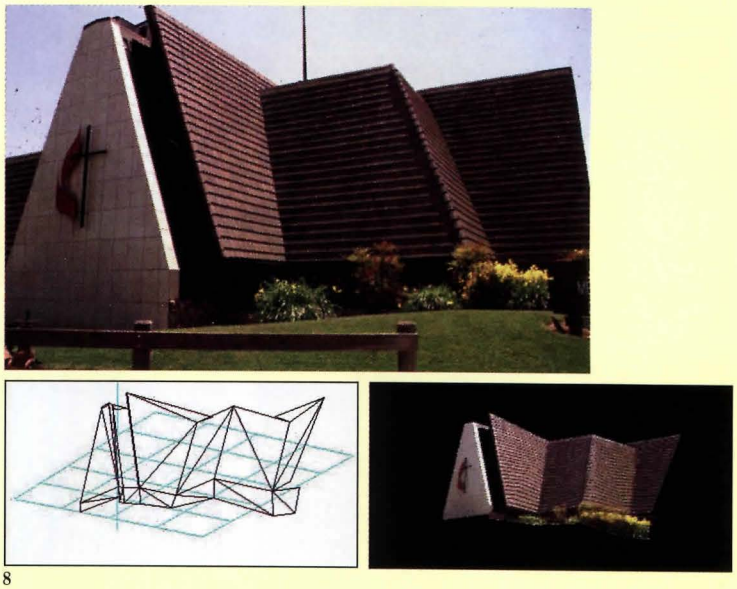
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for VRML (Virtual Reality Modeling Language), more or less the standard for 3D graphics on the Internet. This allows well-equipped architects and clients to share a walkthrough even if they are separated by thousands of miles. VRML browsers were originally developed on SGI systems, and are expected for Windows and Macintosh by fall.
ß**321** *on Reader Service Card*

KETIV Technologies released ARCHT for AutoCAD 13. This is a full-featured package aimed at more animated architectural work (RECORD expects to review it in the near future). The firm is also cooperating with Timberline; ARCHT has links to Timberline's estimating software.
322 *on Reader Service Card for KETIV*
323 *on Reader Service Card for Timberline*

Man and Machine showed several symbol libraries for AutoCAD and AutoCAD LT. There are three separate libraries (internal architecture, elevations and sections, and plan views) for architecture specifically, and one for heating, plumbing and air conditioning schematics. The symbols, in native DWG format, were developed in Germany.
324 *on Reader Service Card*

Synthonics showed a suite of products for turning photos or scanned images into wireframe 3D images and animations. Take two photos of a building, from two points, and Wireframe Express (formerly 3DExpres) turns them into a wireframe (you can apply bitmaps from the original images to fill in the wireframe surfaces with a separate QuickLook module); it exports via DXF to CAD. Express Mapper turns Wireframe Express files into 3D Studio files. 3D Maker takes two photos and turns them into a 3D image. We'll be reviewing Synthonics later this year.
325 *on Reader Service Card*

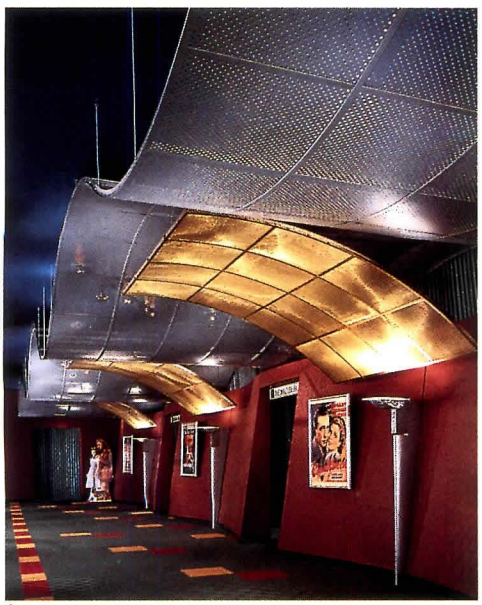
speedikon Software showed speedikon/M, an A/E/C-specific add-on for MicroStation. The company, a subsidiary of IEZ AG in Vienna, is now distributing speedikon in the U.S. . The package does conceptual modeling, hvac, even facilities management.
326 *on Reader Service Card*

Vibrant Graphics showed its new ToolKit for MicroStation 5.0, to create on-screen tool palettes and modify referenced drawings.
327 *on Reader Service Card*

Part II of RECORD's coverage of the 1995 A/E/C Systems Show will appear in our September issue. Categories of software to be reviewed then: GIS; Facilities Management; Document Handling; Output Devices; Financial Management; Specification Writing; Digitizer Tablets; Digital Photo Documentation. SSR

5. Graphisoft showed its ArchiCAD that produces Quicktime virtual-reality animations. Note transparent quality and depth in lavatory image.
6. ArchiTECH PC by SoftCAD USA is an import from Germany with an engine combining 2D drafting, 3D modeling, advanced plotting, and bill of materials capabilities.
7. Visio Technical builds drawings out of basic shapes, plucking them from a palette and moving them to the drawing.
8. Synthonics turns photos or scanned images (top) into wireframe images (above left), then into 3D Studio files using two drawings of the building—the software converts them into a 3D image (above right).

Suspended-Grid Ceiling Works in Three Dimensions



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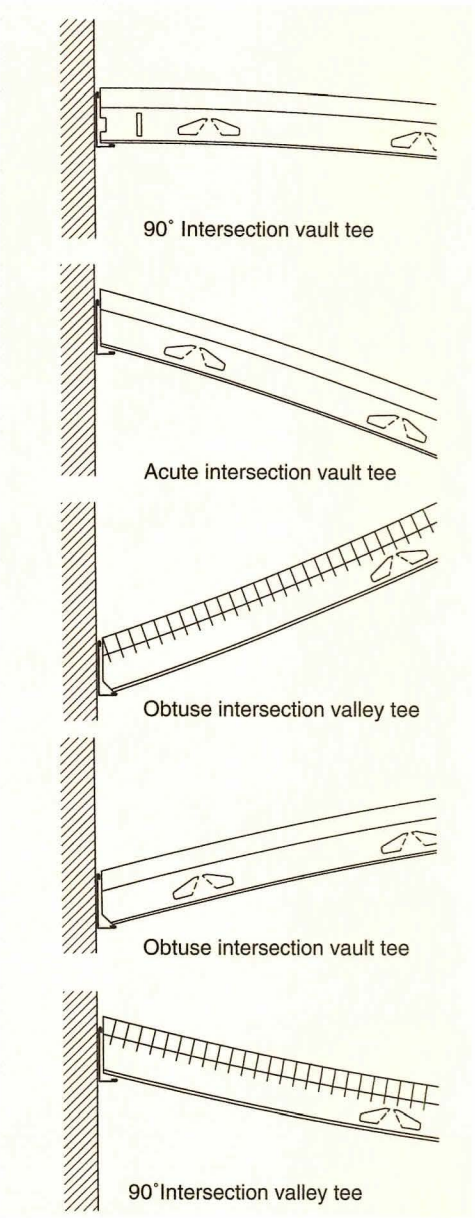


330. Ceiling kit-of-parts

USG Interiors has come up with a decorative ceiling option that allows for curves in three dimensions. Called Curvatura, the system twists and tweaks a standard suspended grid assembly into compound curves that resemble computer-generated topography.

Designed to provide as many custom shape and size options as possible, the wave-like ceiling is made of a standard range of tee segments, wall-attachment clips, and infill panels. Vault, valley, and straight tees can start from the wall at different angles (see details) or not touch the wall at all. Grids carry 2- by 2-ft infill panels—flat sheets of perforated or plain metal, woven wire mesh, or translucent fiberglass-reinforced plastic—curved in the field to follow the undulations of each segment and fastened to the grid with hold-down tabs. Wrapped fiberglass batts can be placed behind the panels for spot noise control. Architect Walter Pancewicz, of The Aria Group in Oak Park, Ill., worked with the USG Product Design & Development team on the system's first commercial application, a California Pizza restaurant in Boston (opposite, 4), designing the assembly as artwork that gives interest and movement to the ceiling of a relatively small space. Curvatura design aids include tracings of given lengths, a template to create totally custom patterns from standard arcs, and an AutoCAD-compatible disk. 800/950-3839. USG Interiors, Chicago. ■

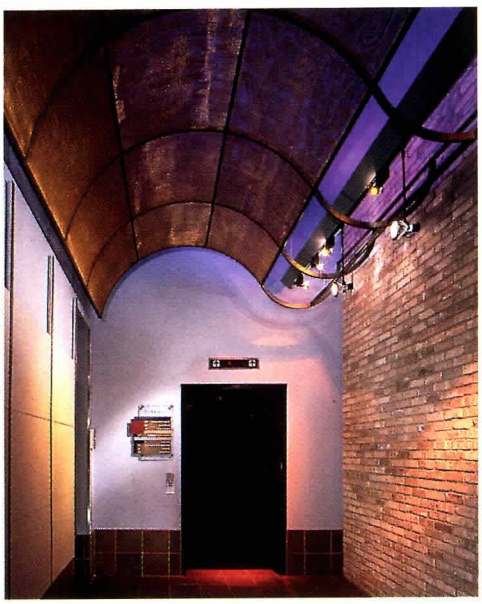
1. Valerio Dewalt Train Associates, Inc.
2. Tainer Associates, Ltd., Architect
3. Yetta Starr, Starr Design Associates
4. Aria Group, Architect

Careful Cure

331. Anti-graffiti protective coating

A two-part (sacrificial) system developed in New York City has proved effective in facilitating graffiti removal from vandal-prone structures such as the Brooklyn Bridge as well as sound barriers, where scrawls can't be treated quickly. Described as virtually invisible and less expensive than other sacrificial coatings, G-Pro permits graffiti removal with just pressurized hot water. It is said not to leave a residue or shadow on the surface after cleaning. 718/937-7740. Horn Restoration Corp., Long Island City, N.Y.

Rewriting Murphy's Law of Dirt Pickup



© Karant & Associates photos (1, 2, and 3)

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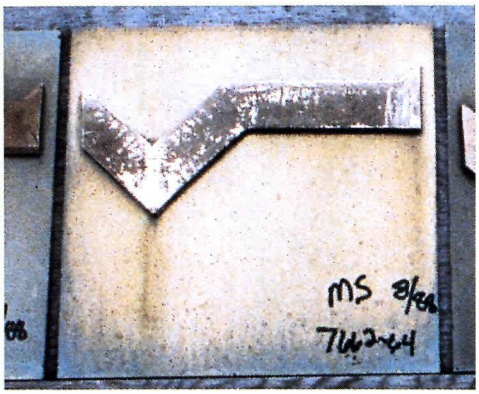
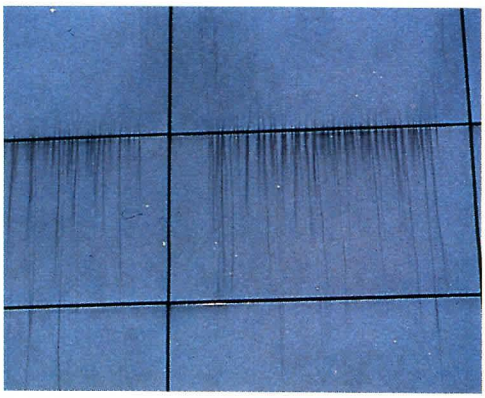
When considering anti-graffiti treatments, make sure that the cure isn't worse than the disease. Products appropriate for a dense substrate may actually harm more porous ones such as brick, and the historic status of the structure itself may restrict product choice. Select for these criteria:

- *Permeability*—any coating must allow for vapor transmission from the substrate.
- *Appearance*—shouldn't alter the gloss or darken the color of the surface.
- *Exposure*—should be little affected by weathering and ultraviolet radiation. ■





332. Reformulated silicone sealants
Weatherproofing sealants are prone to chalking (left in photo above) and streaking (right) These and other performance problems have been addressed by a new elastomeric caulk introduced at the Construction Specification Institute show in June.

756 silicone is specifically designed for use with porous-stone and metal-panel claddings where esthetic considerations are important—and where fluid migration, soil runoff, and streaking are particularly noticeable. While chalking tends to be more of a problem with organic-based sealants (such as urethane) as they weather, streaking is more common with silicone compounds because of the cure rate and (low) surface hardness of the material.

Andreas Wolf, a research chemist with Dow Corning, has formulated Murphy's Law of Dirt Pickup: the more flexible and durable (tenuously adhering) the sealant, the higher the rate of dirt accumulation on the surface. The stiffer and less durable the sealant, the lower the dirt pickup. To create a high-performance sealant less prone to the streaking caused by dirt run-off, he tinkered with the surface tension of the silicone to create a low-energy condition that repels dirt from the exterior and keeps plasticizers from migrating through the surface to stain adjacent porous or micro-porous surfaces.

The new surface-modified sealant is a two-part silicone formulation that requires mixing prior to use. It is described as a medium-modulus product that can accommodate plus or minus 50 percent movement in a properly designed joint, and is said to be able to bond well with most building materials. It is not, however, intended for use in structural-glazing applications. Nor can it be used inside, as it needs both atmospheric moisture and exposure to UV to cure properly. Installation requires the usual surface preparation and priming as recommended for various substrates; 756 is compatible with several types of backer rods. Standard colors are white, limestone, gray, bronze, and black; custom colors are available on a special-order basis. Sealant may be painted within six months of installation, if desired.

Also new at the CSI show: 2001 Ultraclear, another silicone product with specific properties, has no color of its own and resists yellowing over time. A one-part formulation, Ultraclear is described as ideal for esthetically demanding applications such as glass butt, miter, and lap shear joints. When used between adjacent glass surfaces, it weatherseals without distorting window views, and gives an "all-glass" appearance to glass-block partitions and shower enclosures. It is compatible with most glass, acrylic, and polycarbonate glazing sheets. 800/346-9882. Dow Corning Corp., Midland, Mich. ■

Product Briefs/CSI Show

For more information, circle item numbers on Reader Service Card.

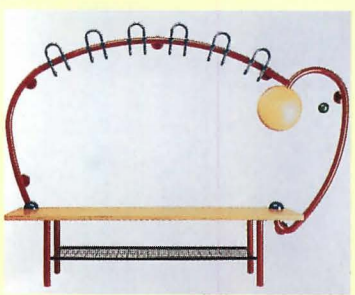
333. Hurricane-code glazing
Glass laminated with Saflex interlayer has passed all parts of the revised Miami-Dade wind-resistance test protocol, in framing configurations from several manufacturers, such as this high-rise window wall from Arch Aluminum. Laminated glass offers passive storm protection, and does not intrude on sight lines, view, or a building's exterior plane. 800/248-6844. Monsanto, St. Louis.

334. Rolling doors in color
Cornell's galvanized, stainless-steel, and aluminum service doors, fire doors, grilles, and closures are now available in 40 standard colors on a quick-ship basis. Doors meet a range of special needs, from fast-acting fire doors to light-tight shutters. A new technical binder offers architectural-design, detail, and specification help. 800/233-8366. Cornell Iron Works, Inc., Mountaintop, Pa.

335. Composite double-hungs
The Integrity window, made of wood on the inside with a structural exterior of Ultrex composite, now comes in a traditional double-hung configuration. An integral accent ledge on the check rail serves as a built-in sash lift; all interior components are paintable. Available in over 50 standard sizes, design permits multiple assemblies as shown. 800/346-5128. Marvin Windows, Warroad, Minn.

336. Expanded fire-glazing line
Pilkington's Pyrostop fire-rated, multiple-light glazing, laminated with transparent intumescent interlayers, is now available in North America. Offered in make-ups labeled for up to 120 minutes, Pyrostop meets radiant-heat transfer (fire wall) and safety-glazing requirements. Distributed in a joint effort with Libby Owens Ford. 800/426-0279. Technical Glass Products, Kirkland, Wash.

337. Special-shape masonry
New Monumental Series ground-face masonry units come in larger sizes (up to 16- by 24-in.) and architectural shapes, such as a water table (left), cornice and sill designs, keystone arch, curved column units, and slanted and chamfered-edge quoining units. Some sizes also offer a glazed-face option. 800/233-1924. Trenwyth Industries, Inc., Emigsville, Pa.

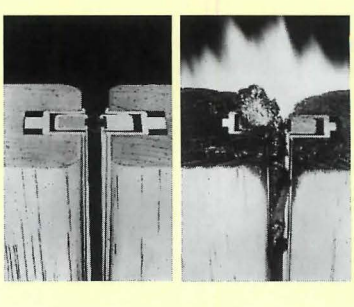


338. Childcare furnishings
Door and window hardware, washroom accessories, benches, and wardrobe specialities appropriate for nursery and kindergarten-age children are made using colorful, round-edged nylon-covered-steel components. The "elephant" (left) combines a wood bench with coat hooks on a curved railing. Options include picture holders and 13 colors. 717/293-1313. HEWI, Lancaster, Pa.

339. Wood retrofit windows
A new type of remodel window, the Precision Fit double-hung, comes with a full-perimeter frame, ready to install within an existing opening without sacrificing the existing trim. The sash pivots at the center for glass cleaning; narrow-profile frame and muntins maintain opening size. Made-to-order with a wood interior and clad exterior. 800/84-PELLA. Pella Corp., Pella, Iowa.

340. Tongue-and-groove panels
Made in 4- by 8-ft plywood-backed panels, 2-in.-exposure narrow-bead (1/8-in.) pine resembles the planking used on Victorian-era porch ceilings. Suggested for interior and sheltered exterior use as wainscotting, ceilings, walls, and cabinets, panels come sanded smooth and ready to paint, stain, or varnish. Shiplap edge; APA graded V-171. 800/BUILD-GP. Georgia-Pacific Corp., Atlanta.

341. Heat-welded gray roofing
Scrim-reinforced for tear- and puncture-resistance, Hi-Tuff/EP single-ply roofing membrane comes in a new gray color, in addition to white and black. Roofing carries UL Class A rating for fire resistance, and meets FM I-90 wind-uplift requirements. Edge metal and seam caulk available to match. 800/621-7663. JPS Elastomerics Corp., Northampton, Mass.



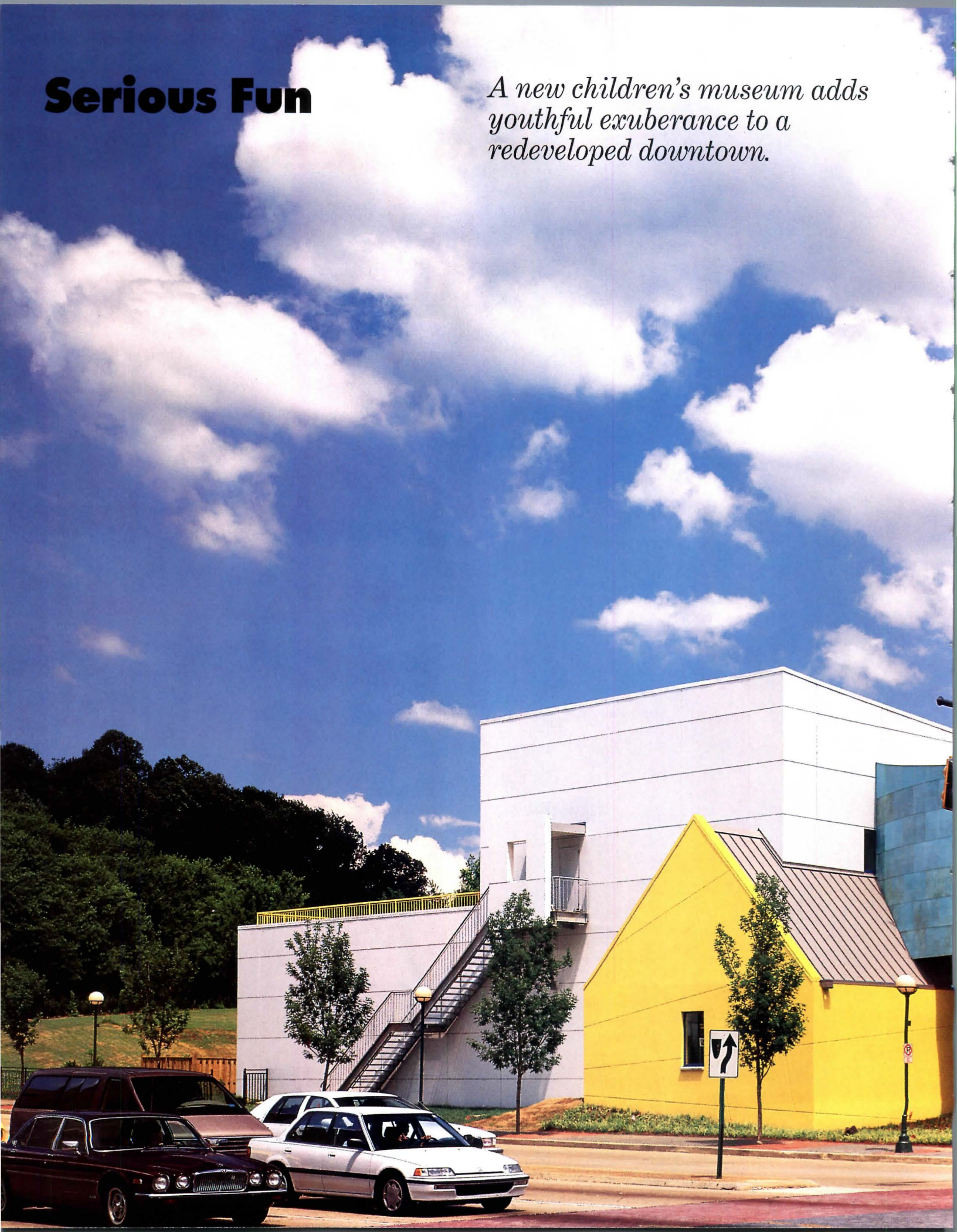
342. Life-safety door seals
A new pourable intumescent configuration can withstand in-use impact in applications such as meeting stiles. "Soft puff" material permits opening and resealing under fire conditions, and protects occupants from flame, heat, and smoke as per NFPA and other code standards. Systems can be retrofit; comes in gray, brown, and customized colors. 800/635-5335. Zero International, Bronx, N.Y. ■

In his report on changing trends in industrial facilities, Building Types Study 729 (page 86), RECORD associate editor Clifford Pearson writes "walls are figuratively (and sometimes literally) coming down." In Europe, walls of a different kind have tumbled, necessitating a new European Court of Human Rights in Strasbourg, France, designed by Richard Rogers Partnership, to resolve disputes among citizens of different nations (page 70). In Harrisburg, Pennsylvania, Bohlin Cywinski Jackson has enlivened a potentially faceless office building and garage wall with overlapping and contrasting layers of concrete, brick, glass, and metal (page 64). At the Creative Discovery Museum in Chattanooga, Tennessee, Lee Skolnick sought to break down not only walls but also, in his words, "the black box" typical of children's museums (page 56). In contrast, architectural firm Perry Dean Rogers built a bridge to link the old and new campus of Hamilton College (page 80).
Karen D. Stein

Manufacturers' Sources listed on page 105

Serious Fun

A new children's museum adds youthful exuberance to a redeveloped downtown.



Creative Discovery Museum
Chattanooga, Tennessee
Lee H. Skolnick Architecture + Design Partnership, Architects and Exhibit Designers

ɜe Skolnick considers himself something of an expert on children. ˙t's not just that he has two of his own; but in the 15 years since he opened his New York City-based firm, he has designed 12 permanent exhibits and buildings devoted to educating while entertaining youngsters. In fact, his growing practice, which includes his wife, Jo Ann Secor, a museum educator, and institutional planners, is a recognized resource in the recently emerged field of children's museums. Skolnick's own philosophy about such work is summed up with child-like directness. "You can't talk down to kids," he says.

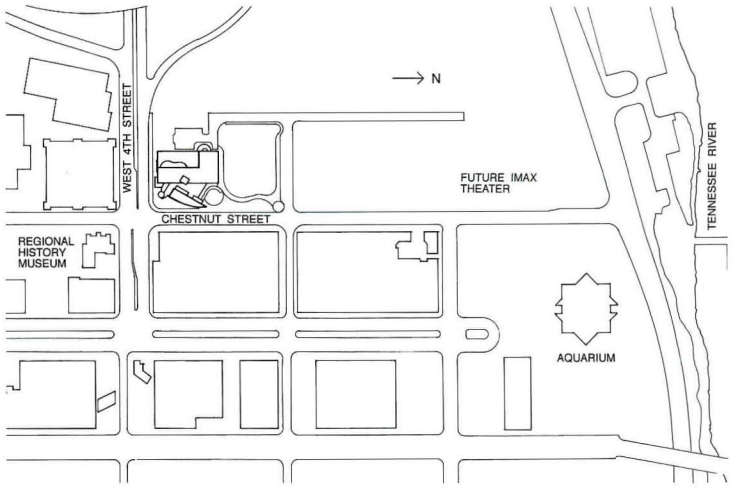
Skolnick found a kindred spirit in Andrée Caldwell, a trustee of the Hunter Museum of American Art in Chattanooga, Tennessee, who approached the architect about adding a children's wing to the institution. With popular support and a $5-million seed grant from an enthusiastic local patron, the project quickly grew into its own facility, which Caldwell now directs. Like many former industrial centers, Chattanooga had experienced dramatic commercial and residential flight from downtown, leaving behind an array of low-rise industrial structures. A consortium of developers purchased an abandoned vocational school on a sizeable lot downtown; as part of the negotiation, the city retained a corner parcel, which was donated to the project.

With the recent opening of the new Tennessee Aquarium, designed by Cambridge Seven Associates (see site plan right), an adjacent two-acre waterfront park by New York City architects and artists, SITE (not shown), and, last May, Skolnick's Creative Discovery Museum, there are new reasons for people to go downtown again. Indeed, the Chattanooga visitors bureau is hoping the museum alone will draw some 300,000 people from a 150-mile radius during its first year of operation.

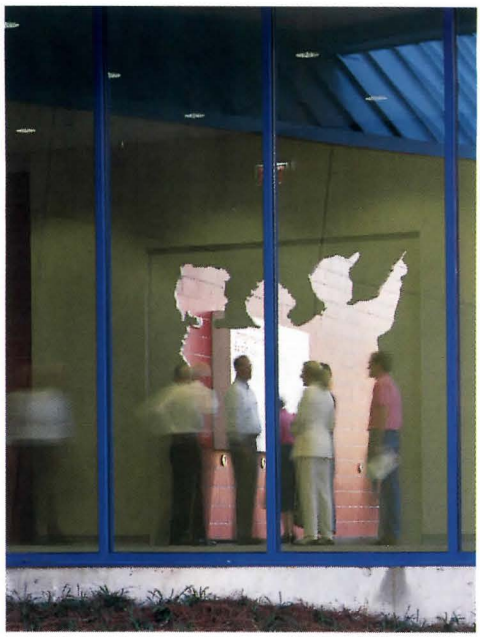
Skolnick's charge from Caldwell was "to create something world-class," he reports. His response is "based on the creative process—an integration of the arts and sciences." Located at a major traffic intersection, the building has a 65-foot-high flag-pole/science tower draped with oxidized copper panels that is visible from the interstate off-ramp on West Fourth Street. Skolnick set the entrance to the museum along more picturesque Chestnut Street, giving the building three public facades (previous pages and opposite). The fourth side is essentially a blank wall of white porcelain enamel panels punctuated by the truncated purple stucco cone of the party room. The curved glass wall of the "water wedge" contains brightly colored interactive water sculptures visible from the outside by day and night (above right); air is forced up along the inside of the glass wall to avoid condensation. It arcs toward the Aquarium and the Tennessee River beyond, providing the entrance with a forecourt and sculpture plaza. Skolnick's partner Paul Alter calls the 42,000-square-foot building's mixture of forms, colors, and materials "aggressive, but friendly." Skolnick says "assertive."

A large lobby accommodates a ticket desk, museum shop, and heavy stroller traffic (following pages). Large-scale displays occupy the atrium, which leads to progressively specialized areas. In creating the exhibits, which were devised with school outreach programs in mind, Skolnick and his team focused on subjects and activities they thought children would enjoy and learn from: painting and printing in the "artist's studio," music listening and composition in the "musician's workshop," a mock archeological dig in the "scientist's field lab." How did the the architect know all this would interest the museum's principal audience? He tested them with an in-house expert—his 9-year-old daughter. *Karen D. Stein*

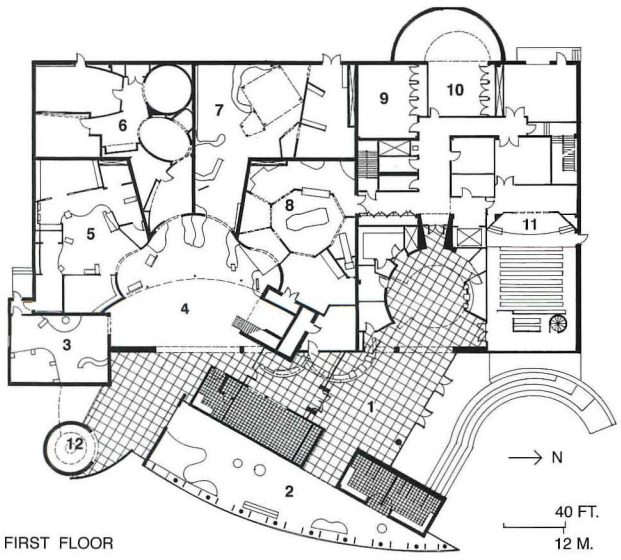
©Peter Aaron/Esto photos



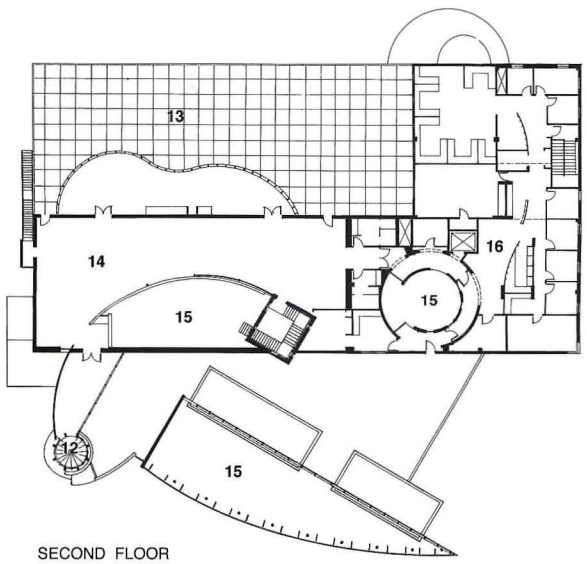
Initially conceived as an addition to the existing Hunter Museum of American Art, the Creative Discovery Museum evolved into a full-fledged stand-alone institution. Located within Chattanooga's redeveloped river-front district, the $16-million museum is a short walk to the new Aquarium, another new downtown tourist attraction, and the Regional History Museum (site plan above). Future development is slated for the site adjacent to the museum; both parcels were previously occupied by a vocational school.



In laying out the sequence of public spaces and exhibit areas, the main focus was on "how you choreograph the experience," says Skolnick. "We wanted the procession [through the museum] to subliminally reinforce the message of the interaction of art and science." A forecourt along Chestnut Street formed by the 120-foot-long wedge-shaped glass wing (photos top left) screens the entrance from the highway exit ramp at West Fourth Street and funnels visitors into the main lobby (plans below and photo bottom left). An atrium accommodates large-scale displays and leads to denser, more specialized areas (following pages), including an artist's studio and field scientist's lab. The "Little Yellow House" is a play space for preschoolers. A 65-foot-high "science" tower contains displays on optics and provides a rooftop viewing platform.



FIRST FLOOR



SECOND FLOOR

1. *Lobby*
2. *Water wedge*
3. *Little yellow house*
4. *Atrium*
5. *Artists' studio*
6. *Musicians' studio*
7. *Field scientists' lab*
8. *Inventors' studio*
9. *Meeting room*
10. *Party room*
11. *Auditorium*
12. *Tower/observation deck*
13. *Terrace*
14. *Exhibit*
15. *Open to below*
16. *Office*


DO IT ALL!

Up Close

One Stop Shopping. Having designed exhibits for other architects' children's museums and, conversely, building shells for other designers' exhibits, Lee Skolnick was able to do both at Chattanooga's Creative Discovery Museum. Planning for the nascent institution and schematic design coincided, according to the architect, a process that avoided the supposedly flexible "decorated black box" typical of children's museums. An in-house team of educators led by Jo Ann Secor helped conceive the museum's mission and a series of joint programs with local schools. Hands-on exhibits allow children to experience different creative and scientific pursuits directly.

The atrium (top left) connects the lobby (middle left) with exhibit areas (bottom left). Offices surround a double-height lobby (opposite).

Credits

Creative Discovery Museum
Chattanooga, Tennessee
Architects and Exhibit Designers: *Lee H. Skolnick Architecture + Design Partnership—Lee H. Skolnick, Paul S. Alter, principals; Andrew Fethes, project architect; Miguel Cardenas, Olga Rodriguez, Sergio Paz, Robert Portnoff, and Roberta Sloan, building team; Jo Ann Secor, Robert Portnoff, Audrey O'Malley, Cynthia Smith, Ellen Leerburger, Cory Munson, Scott Briggs, Jan Schmidt, exhibits team*
Engineers: *Superstructures (structural); Altieri Sebor Wieber Consulting Engineers (M/E/P); Watt & Estes Consulting Engineers (civil);*
Landscape Architect: *Whittington & Associates*
Consultants: *Downtown Riverfront Planning & Design Center (planning); Fisher Marantz Renfro Stone (lighting); Pentagram (graphics)*
Construction Management: *Turner Construction (building)*
Project Management: *Whirlwind & Company (exhibits)*


Members

Double Split

New Office Building and Garage
Pennsylvania Higher Education
Assistance Agency
Harrisburg, Pennsylvania
Bohlin Cywinski Jackson, Architect

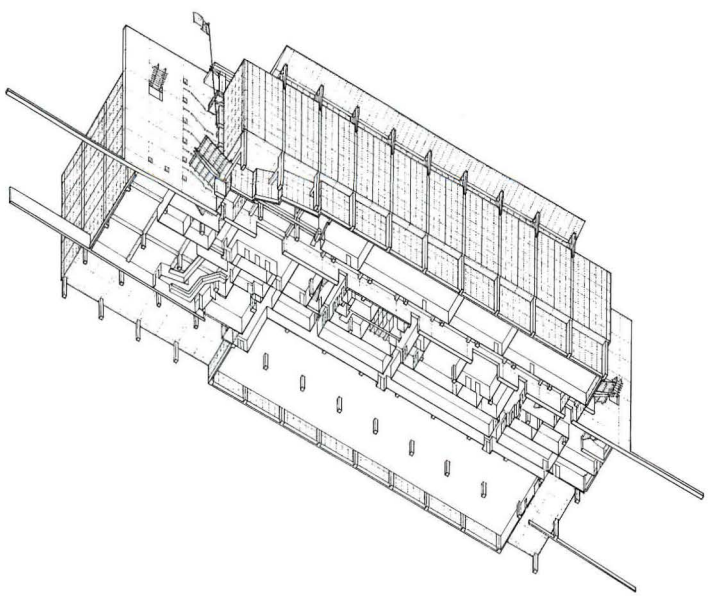
ıe Pennsylvania Higher Education Assistance Agency, which runs nancial aid programs for higher learning institutions in the state, decided to consolidate its 1600-strong staff on a single site. The goal was to provide a flexible arrangement of work and support spaces for 23 departments—along with privacy for the many employees who deal with confidential financial information.

The site offered both an opportunity and a challenge. Long, narrow (200 ft. by 1000 ft.), and flat, it straddled a low density, mixed-use neighborhood of no great urban distinction; at the same time, it bordered a major axis leading to the Pennsylvania state house. Hence, a commanding but sensitively scaled design would not only add a sense of place to the local community—it was to be the first major building in this redeveloped area—but also help reinforce a major approach axis to the capitol. Programmatically, the building had to distinguish between spaces and staff that dealt with the public, and flexible back-office loft-like space that could be subdivided to accommodate changing activities of the various departments.

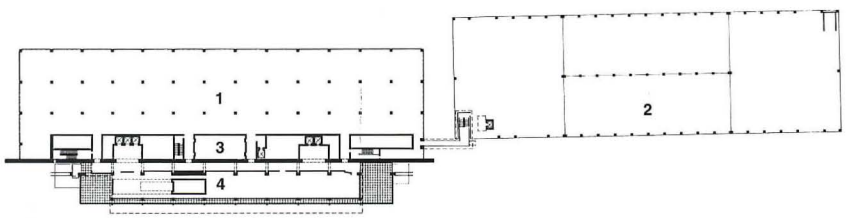
Architects Bohlin Cywinski Jackson resolved matters in characteristically bold, simple fashion. The sturdily horizontal 375,000-square-foot building—there's also a seven-story unadorned concrete parking structure on one end of the site connected at each level with the office building through a tier of dark skeletal bridges—is divided along its long side by a great blue seven-story 400-foot-long masonry wall into a "fronthouse" and a "backhouse." The narrower fronthouse, geared to reduce its scale, say design partner Bernard Cywinski and collaborator Peter Bohlin, by means of a highly articulated structure, indented wall planes, and a subtle roof overhang, faces the street, and contains the public entrances to the agency. It has clearly defined lobbies and circulation patterns.

In contrast, the steel-framed loft-like backhouse, bulkier and clad in a tight glass skin of clear or reflective low-E coated glass, houses support operations on a much larger, highly secure floorplate, divided by movable partitions.

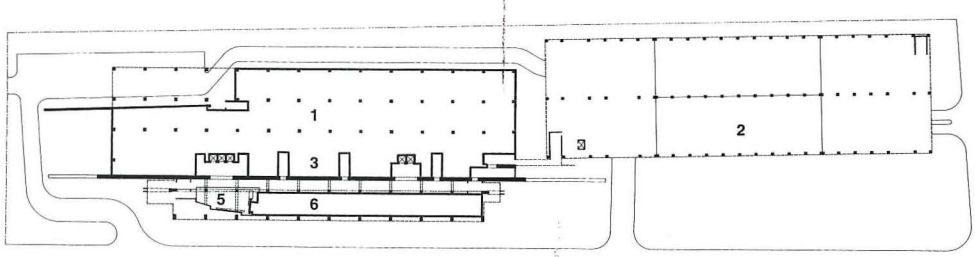
The savings in structure and mechanical systems stemming from the low elongated plan were used, according to project architect Cornelius Reid, to provide a high level of finishes and quality of detailing, yet the facility was erected for an unusual $86 per square foot, which included sitework, movable partitions, and systems cabling. *S.A.K.*



An attached poured-concrete parking garage (above, foreground), is set back from the office building's street facade to reveal the blue-brick wall that separates open, flexible "backhouse" operations space from fixed administrative "fronthouse" functions facing the public, and including the main entrance (top).



SIXTH FLOOR



GROUND FLOOR

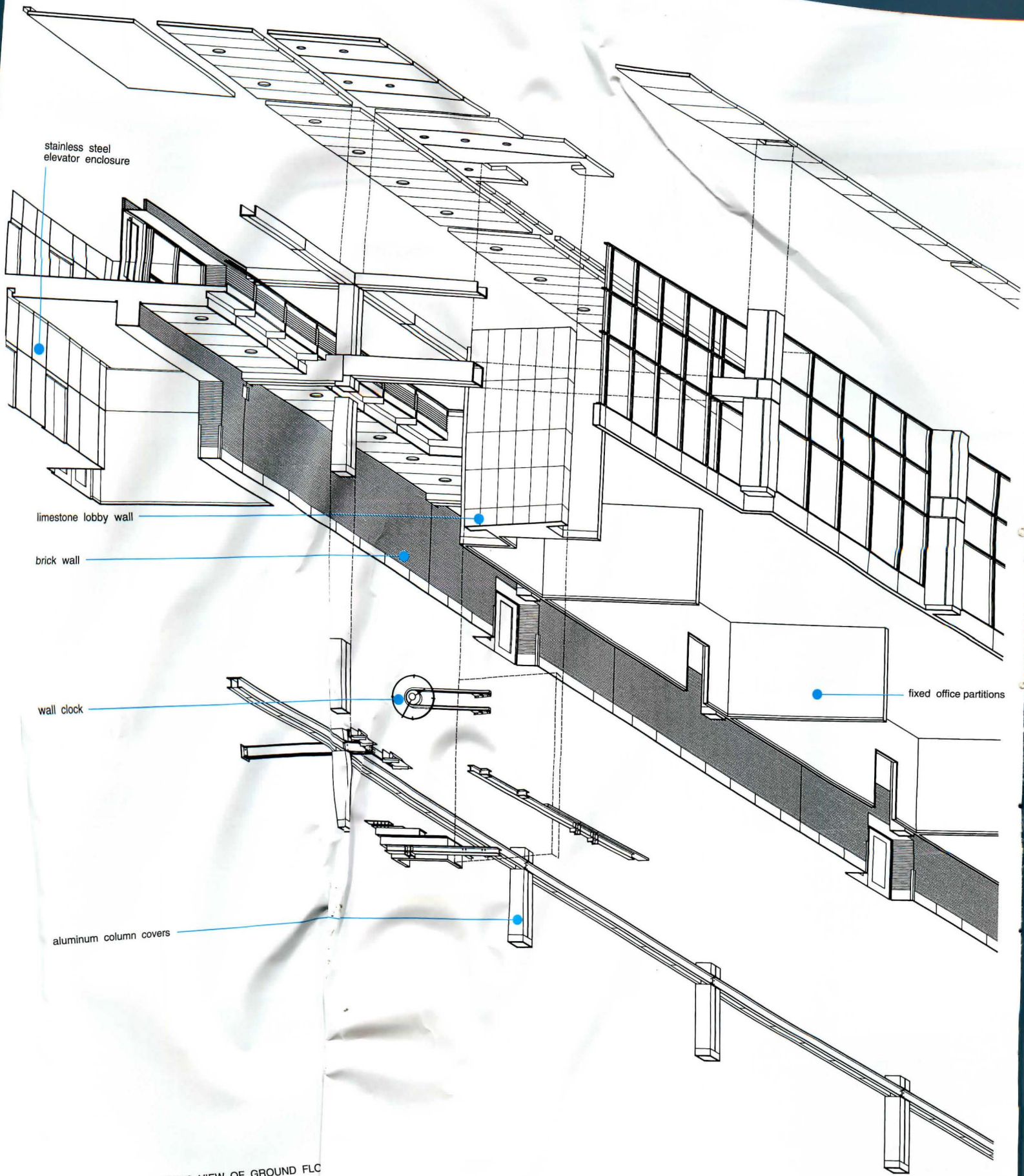
N

94 FT.
28 M.

The elongated footprint of the open-office floors allows most work stations to receive some natural light. Users have outside views through floor-to-ceiling windows. Glare on computer screens is controlled by standard parabolic diffusers on fluorescent overhead fixtures and by the nature of the glazing. Most is low-E reflective glass—distinctly blue on the front of the building and blue-gray on the back. Exceptions are the windows on the executive penthouse (below, left), shielded by a broad overhang, and the ends of the main corridor. There the architects provide spatial variation not only through clear views, but by raising the typical nine-foot ceiling to 11 feet and creating a vertical instead of horizontal space.

"Eyebrows" on the west facade (top, right) serve more to break up the large plane of glass wall than to provide total sun protection. Concern for keeping the computers running and the spaces habitable during electric breakdowns produced dual cable feeds and hvac systems at the ends of each floor that normally serve only half of the area, but can serve it all for limited periods. Electric-company supply comes from two separate system sources and, failing that precaution, an on-site generator.

1. *Open office area*
2. *Garage*
3. *Vertical circulation and mechanical rooms*
4. *Executive offices*
5. *Lobby*
6. *Recruiting, legal, administration*



EXPANDED ISOMETRIC VIEW OF GROUND FLC

The drawing (opposite) reveals the care the architects took in detailing the building. It shows the relationship of the various lobby finishes, including the aluminum curtain wall facing the street (photo upper right). Note also the manner in which beams pass through the curtain wall, the connection of aluminum column and beam covers, the stainless-steel elevator-shaft enclosures, the blue limestone sheathing with granite corner guards, and the specially designed clock (center) the architects squeezed into the tight budget.

A typical backhouse open-office floor (below) shows a neat wide-open space. However, various groups are able to arrange furniture and high and low partitions to meet changing needs.

Credits

New Office Building and Parking Garage for the Pennsylvania Higher Education Assistance Agency

Owner: *Capital Commercial Corporation*

Architect: *Bohlin Cywinski Jackson—Bernard J. Cywinski, Peter Q. Bohlin, principals; Cornelius J. Reid, project architect; Joseph Bridy, Kenneth Mitchell, Paul Sirofchuck, Richard Stokes, Adam Glasser, Kelly Vresilovic, Terry Surjan, Michael James, Maria Segal, Nancy Sokolove, project team*

Engineer: *Brinjac Kambic and Associates (structural, MEP, civil)*

Consultants: *Professional Systems Engineering (audiovisual, acoustic); R. M. Corsi and Associates (food service)*

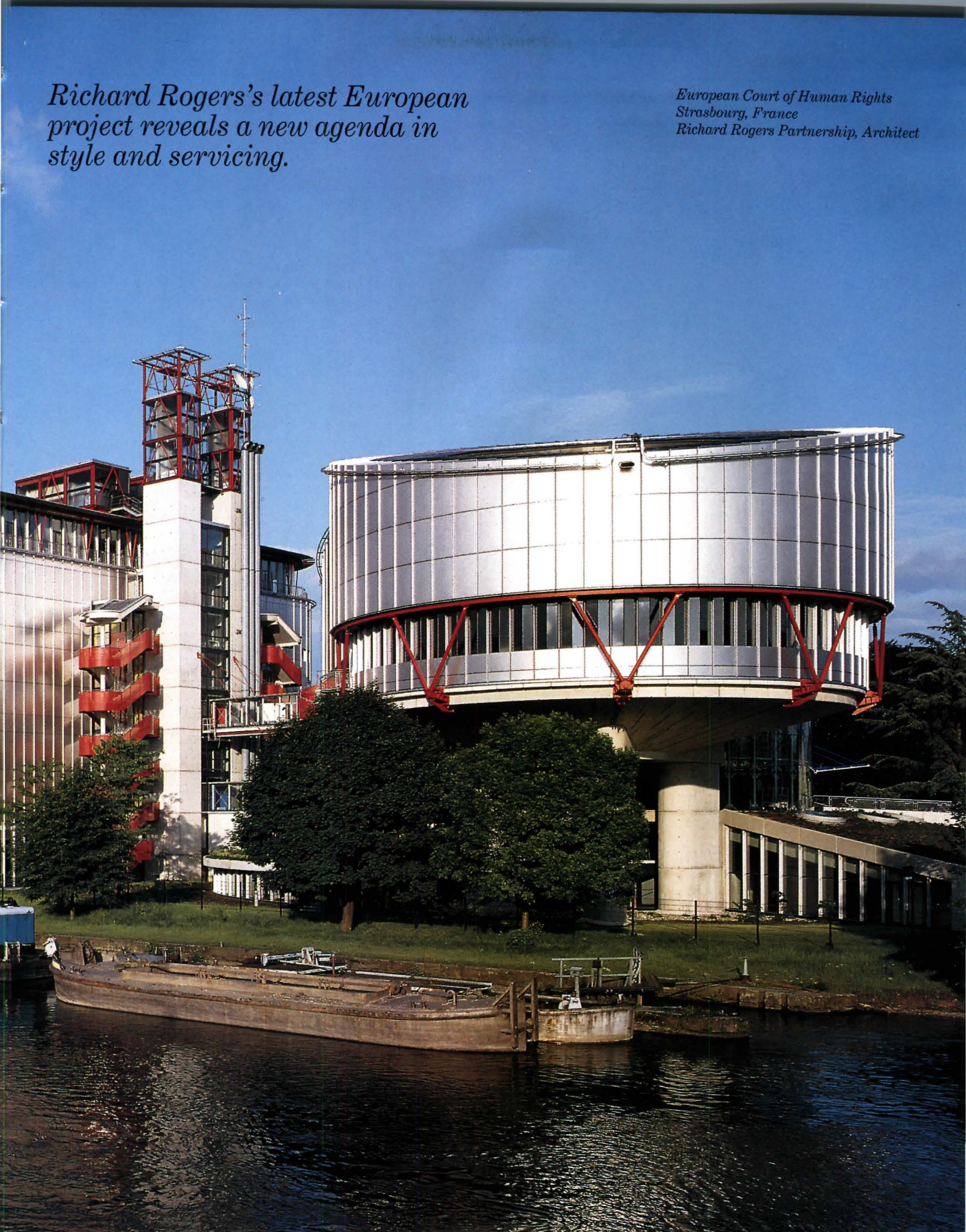
Joint Venture General Contractors, Office Building: *Ritter Brothers, Ltd. and H. B. Alexander and Son, Inc.*

General Contractor, Parking Garage: *H. B. Alexander and Son, Inc.*

Court in the Middle

Richard Rogers's latest European project reveals a new agenda in style and servicing.

European Court of Human Rights
Strasbourg, France
Richard Rogers Partnership, Architect



In the mid-1970s, Richard Rogers, in collaboration with Renzo Piano, created one of the architectural icons of our age: the Centre Pompidou in Paris. In the mid-1980s, he designed Lloyd's of London [RECORD, November 1986, pages 104-117], the apotheosis of structural and building-services exhibitionism. What may prove to be Rogers's key building of the 1990s is rather different.

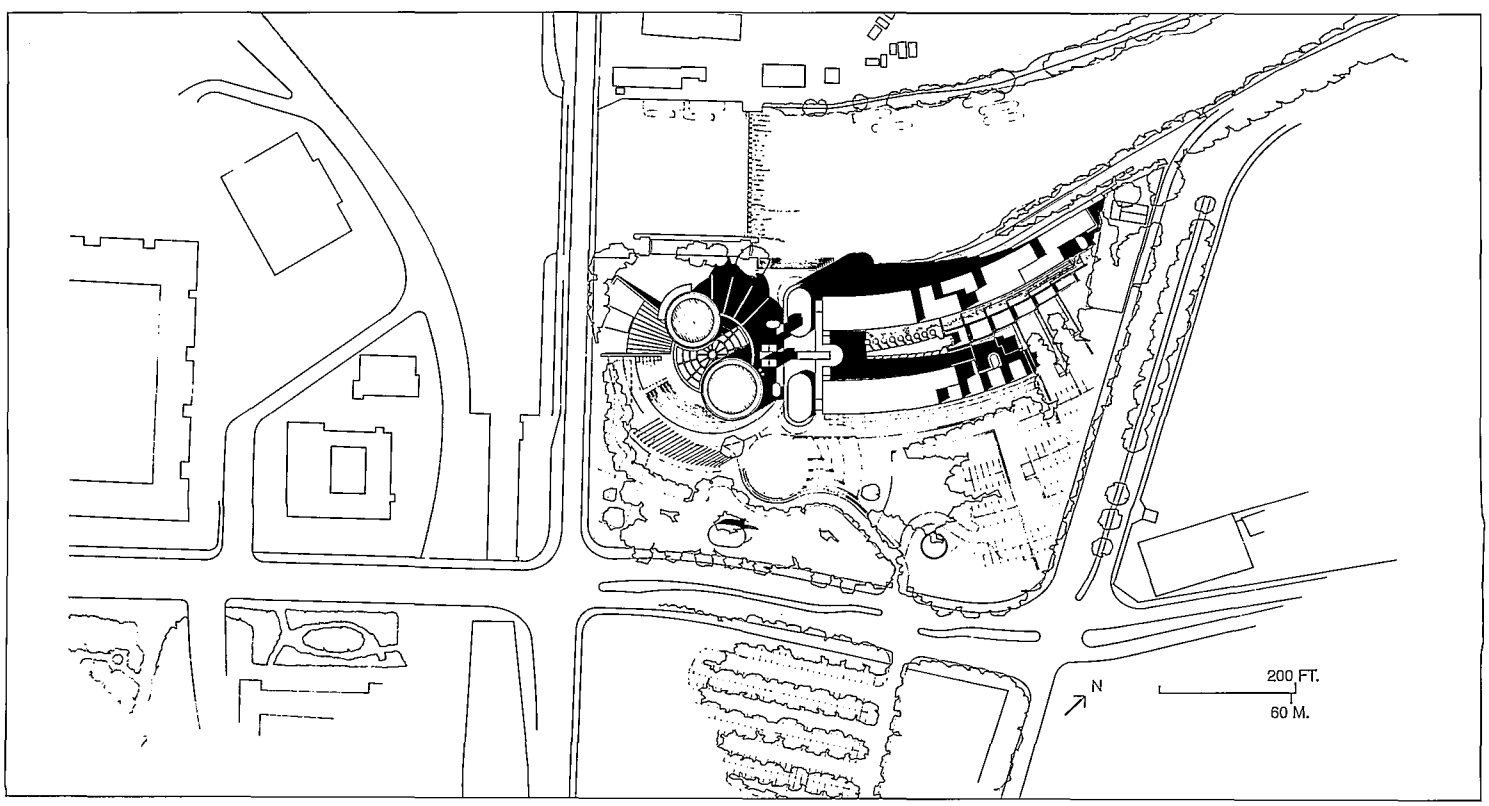
In his drawings, Rogers has long shown a different stylistic streak influenced by Expressionism; the European Court of Human Rights is his first building in this idiom. Whereas Lloyd's is about controlling nature, the court reveals a new, softened Rogers, who now acknowledges Lloyd's is all but obsolete and seeks instead harmony with nature. This building is "low tech" and "green," and, what's more, it says so: by past Rogers standards, the detailing of services is the model of discretion. Lloyd's is notorious for its abundance of external ductwork carrying air to central spaces. The Court, however, makes do with operable windows, despite Strasbourg's harsher climate. "It's a little further down the road to greenness," says Rogers. "Sustainable development is now pushing things hard. Lloyd's took energy considerations on board, but for the first time this [Court] building is largely naturally ventilated." In addition to plants that will eventually tumble from giant window boxes down the facade, water will cascade through a central courtyard between the two administrative blocks, an effect reminiscent of Joseph Paxton's designs at Chatsworth gardens, providing both real and psychological cooling.

It can only be wishful thinking that the official description of the buildings of the European Union and Council of Europe clustered along the river outside of Strasbourg is "a campus." In truth, this grouping of offices more closely resembles a drab executive park than any intellectual arcadia. As these administrative bodies prepare to expand following political upheavals in Eastern Europe and the rush of applications to join the European Union, the buildings will soon be outgrown. Now there is an opportunity to ensure European idealism is expressed in architecture as well as it is in political rhetoric. Rogers's court is the first step. Future plans calls for a European Parliament designed by up-and-coming French partnership Architecture Studio—a spectacular addition.

The Court itself has an unusual history. A local architect was thrown off the job in 1989 when then French President François Mitterrand refused to lay the foundation stone, claiming that since the new facility would be of international importance it should have an architect of international repute. Rogers won the ensuing competition with a scheme that separates the main court chambers from the commission offices (see plans and sections following pages). The chambers are dramatic metal-clad drums connected by a cylindrical glazed lobby. The offices stretch out from this central hub in two parallel curving blocks with successive floors stepped back like the decks of an ocean liner. The concrete and glass of their exterior is broken up by the planters and sunshades at each window.

Materials are not opulent, and what is basically cheap is made cheerful by the liberal use of primary colors. Bold references to the Russian Constructivism of the Vesnin brothers are evident in the bright red metalwork of the elevator shafts and rooftop chilling-plant rooms and to the Expressionism of Erich Mendelsohn in the organic form of the building as it follows the bend in the river.

The Court is the latest in a slew of notable works by British architects on the continent, particularly in France. Will Alsop's blue battleship of a regional administrative center in Marseille [RECORD, June 1992, pages 96-99] and Sir Norman Foster's Carré d'Art library/museum in Nîmes [RECORD, October 1993, pages 62-71] are two spectacular recent examples. Despite these successes abroad, Britain conspicuously refuses to return the favor by awarding significant commissions to foreign architects to build on its soil—an inequity worth pondering within Rogers's new European Court. *Hugh Aldersey-Williams*



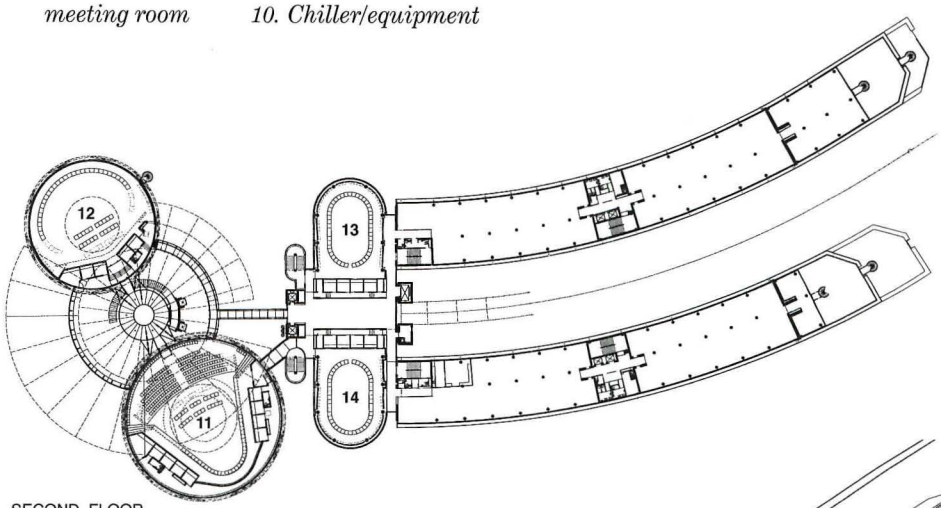
©Paul Raftery/Arcaid photos

The European Court of Human Rights hugs the bank of the river that meanders through the site of the Parliament facility in Strasbourg, France (previous pages and below left). The building by Richard Rogers bears little resemblance to a traditional court, but whether this makes it genuinely more approachable remains to be seen. It still has the imposing bulk of official architecture and justice literally hangs heavy in the air as you walk beneath the cantilevered court-room drums into the glass lobby (below right).

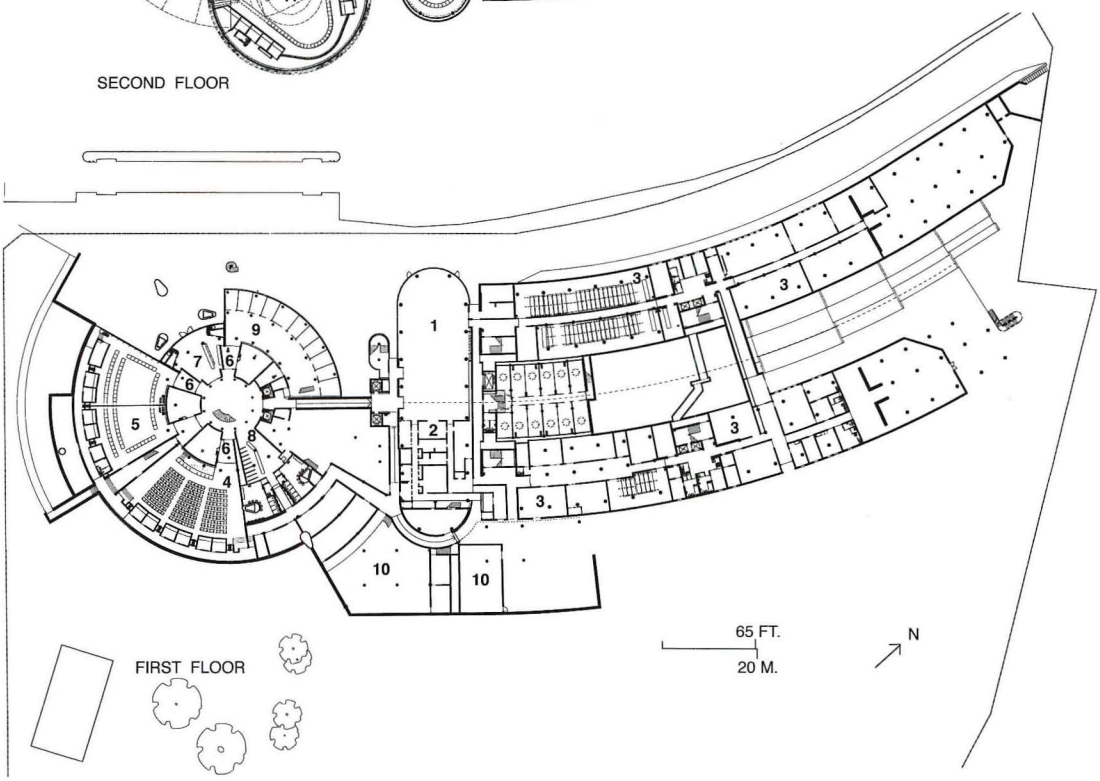
Much of the budget has been lavished on the formal end of the building, where the courtrooms and commission and judges' chambers are clad in stainless steel. Bridges link courts with administrative areas, which accommodate 300 staff members, mainly in spartan offices opening off corridors that run down the center of each curved wing.

Future expansion was key to the project since European institutions are changing quickly. The office terraces can be easily enlarged by elongating the serpentine curves (plans right).

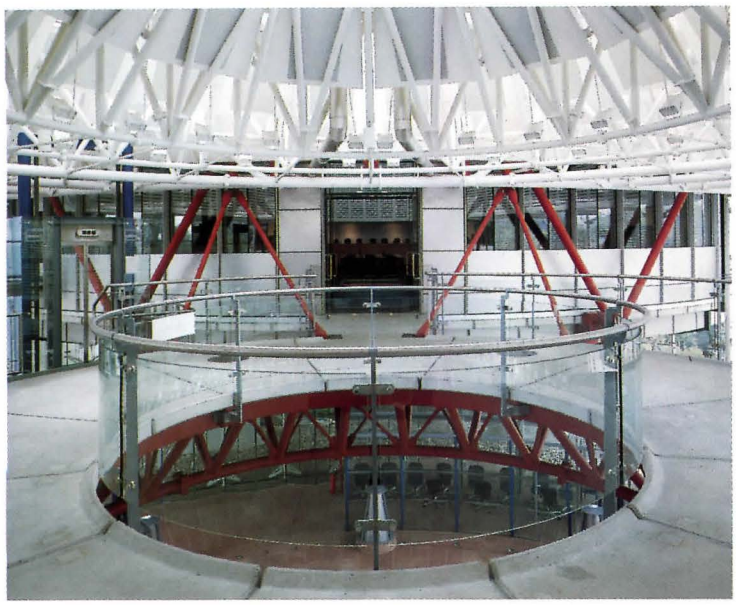
1. *Restaurant*
2. *Kitchen*
3. *Office*
4. *Press/visitors*
5. *Administration meeting room*
6. *Vestibule*
7. *Cafe/bar*
8. *Telephones/ coat room*
9. *Library*
10. *Chiller/equipment*
11. *Court room*
12. *Commission room*
13. *Court meeting room*
14. *Deliberation room*

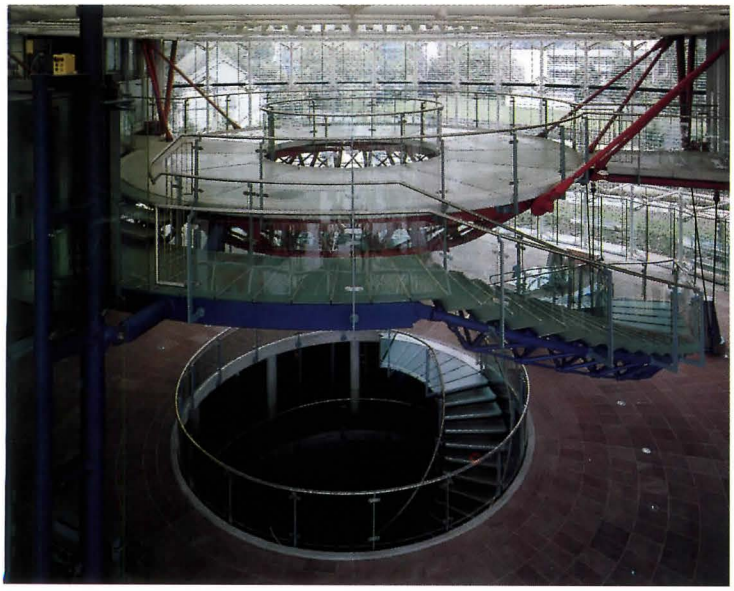


SECOND FLOOR



FIRST FLOOR

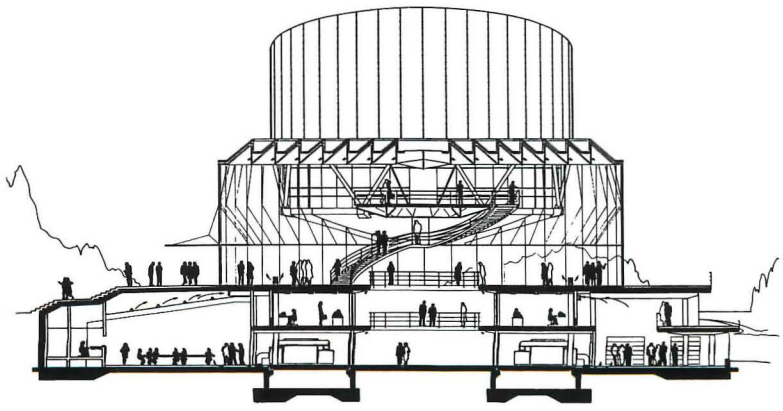


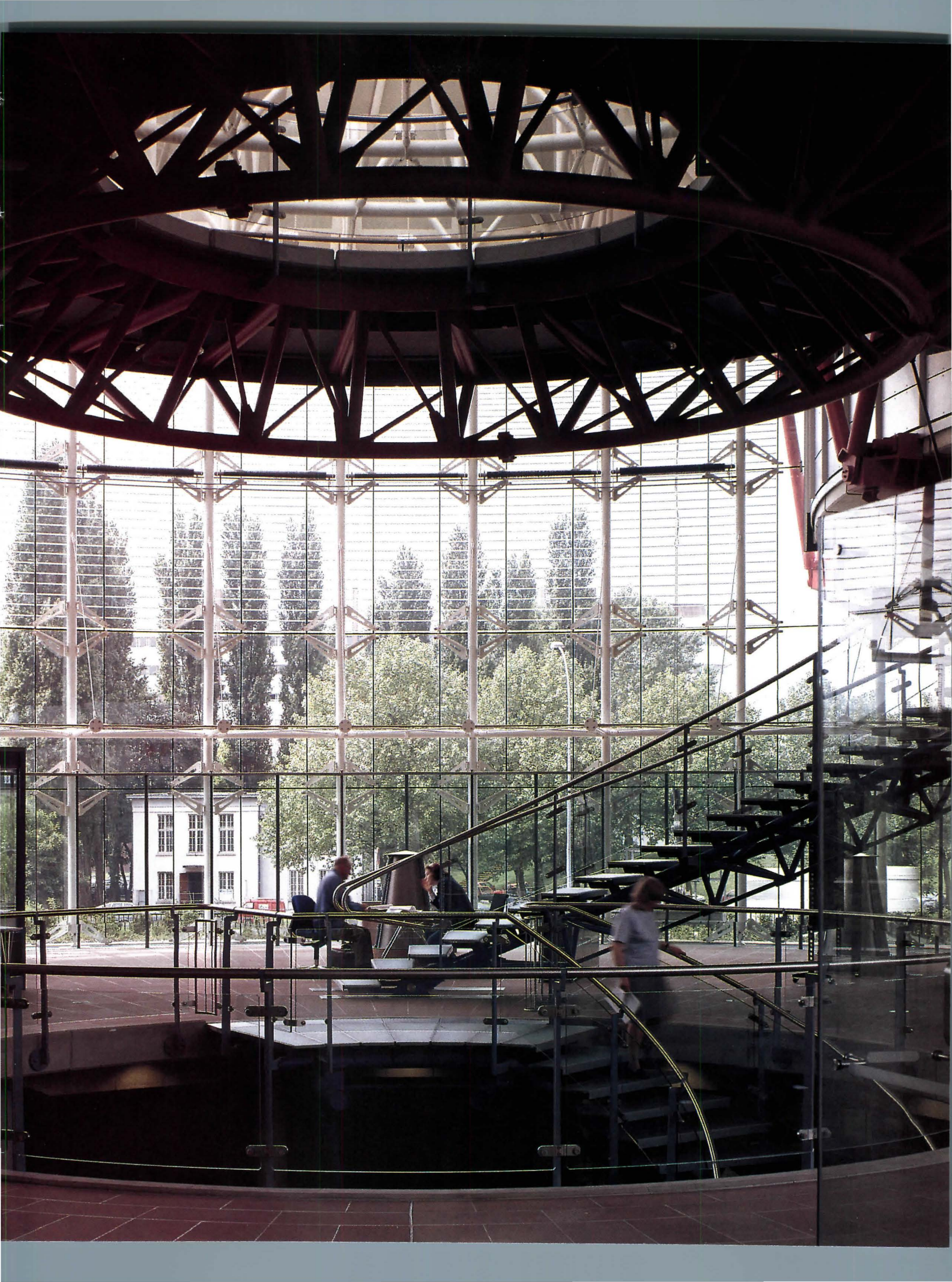


Up Close

Justice for All. The European Court of Human Rights is the ultimate arbiter of grievances among citizens of most of the European nations. Plaintiffs with a legitimate case (approximately half of those who visit the facility) are first referred for consultation with officials in one of the small chambers located in the block between the office wings and the court rooms. If their complaint is deemed serious, it is heard by permanent representatives of member countries in the commission room, the smaller of the two court rooms. If it remains unresolved, it is referred once more, this time to a visiting panel of judges, which meets for one week every month in the large courtroom.

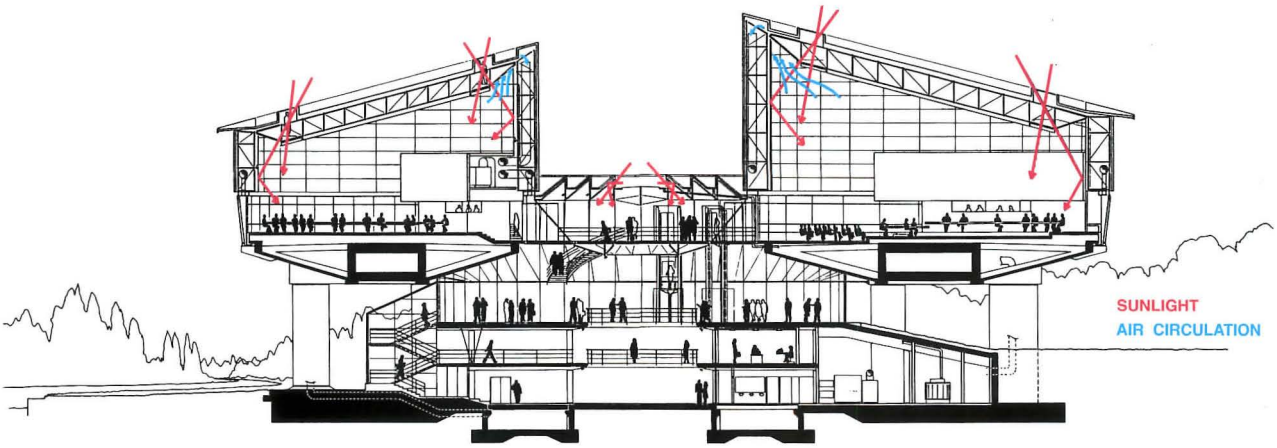
The main entrance opens on a sweeping flight of stairs into the stone-floored, glazed lobby (section below and photos bottom and middle left). Plaintiffs, defendants, counsel, and spectators ascend free-floating spiral stairs or use glass elevators to an aerial circular walkway (top left), which leads to both court chambers. Judges circulate along a separate bridge, which links to a deliberation chamber and private offices. The central spaces are the only parts of the building that are air conditioned; the high thermal mass of concrete on exterior surfaces and operable windows makes air conditioning unnecessary in the office wings. Dedicated heating plants allow building wings to be heated according to use.

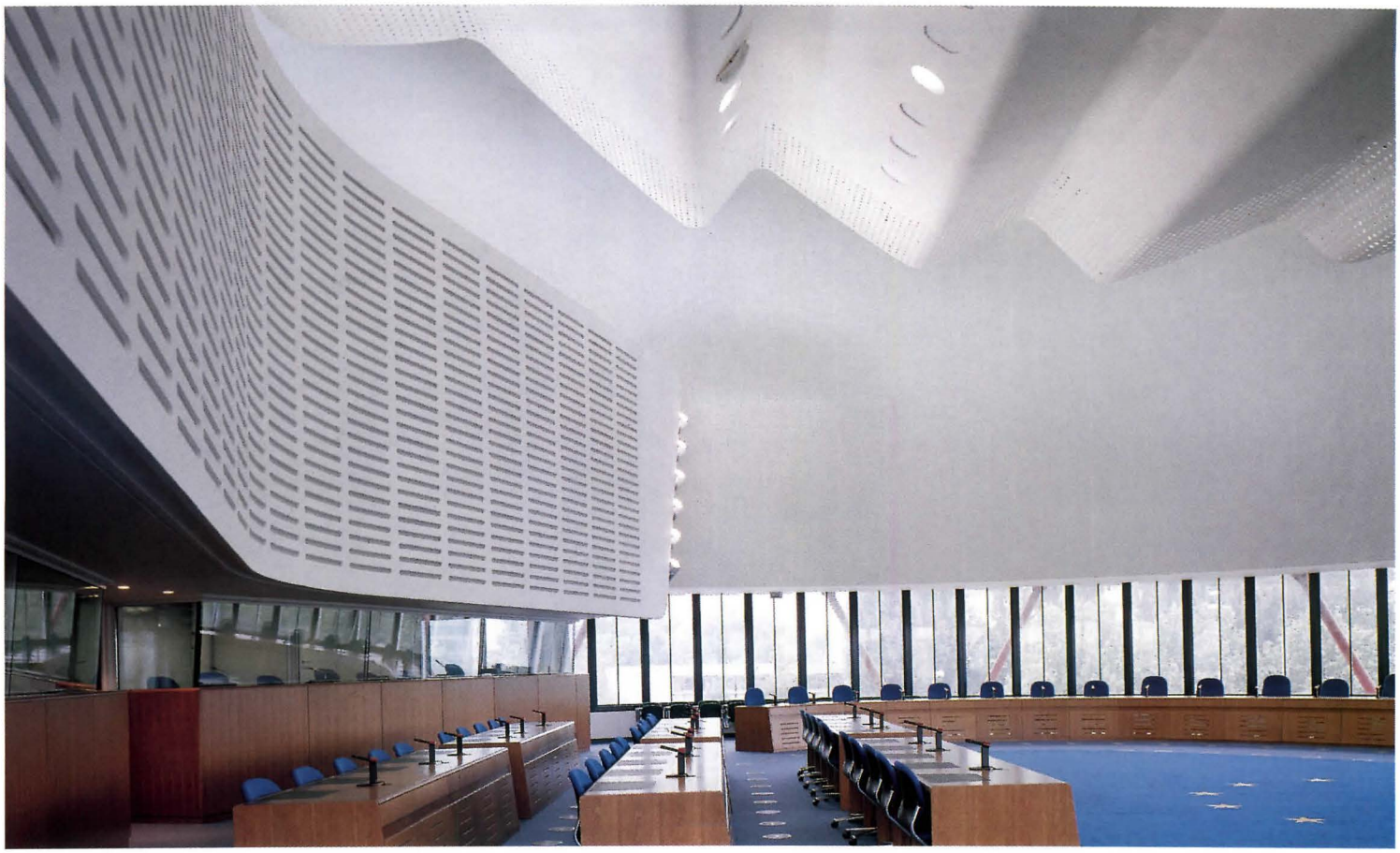




The smaller chamber is where the bulk of cases are heard by a panel of permanent commissioners who sit in a semi-circle (opposite top). Plaintiffs, defendants, and counsel face them while translators occupy booths at the rear. In the court room (left and opposite bottom) there is also public seating. Both chambers are of similar construction, with dramatically sliced ceiling planes. Natural light filters in along the edges of the rippled suspended ceilings, which, with their acoustic perforations and pastel hues, evoke the civic idealism of the United Nations headquarters in New York City.

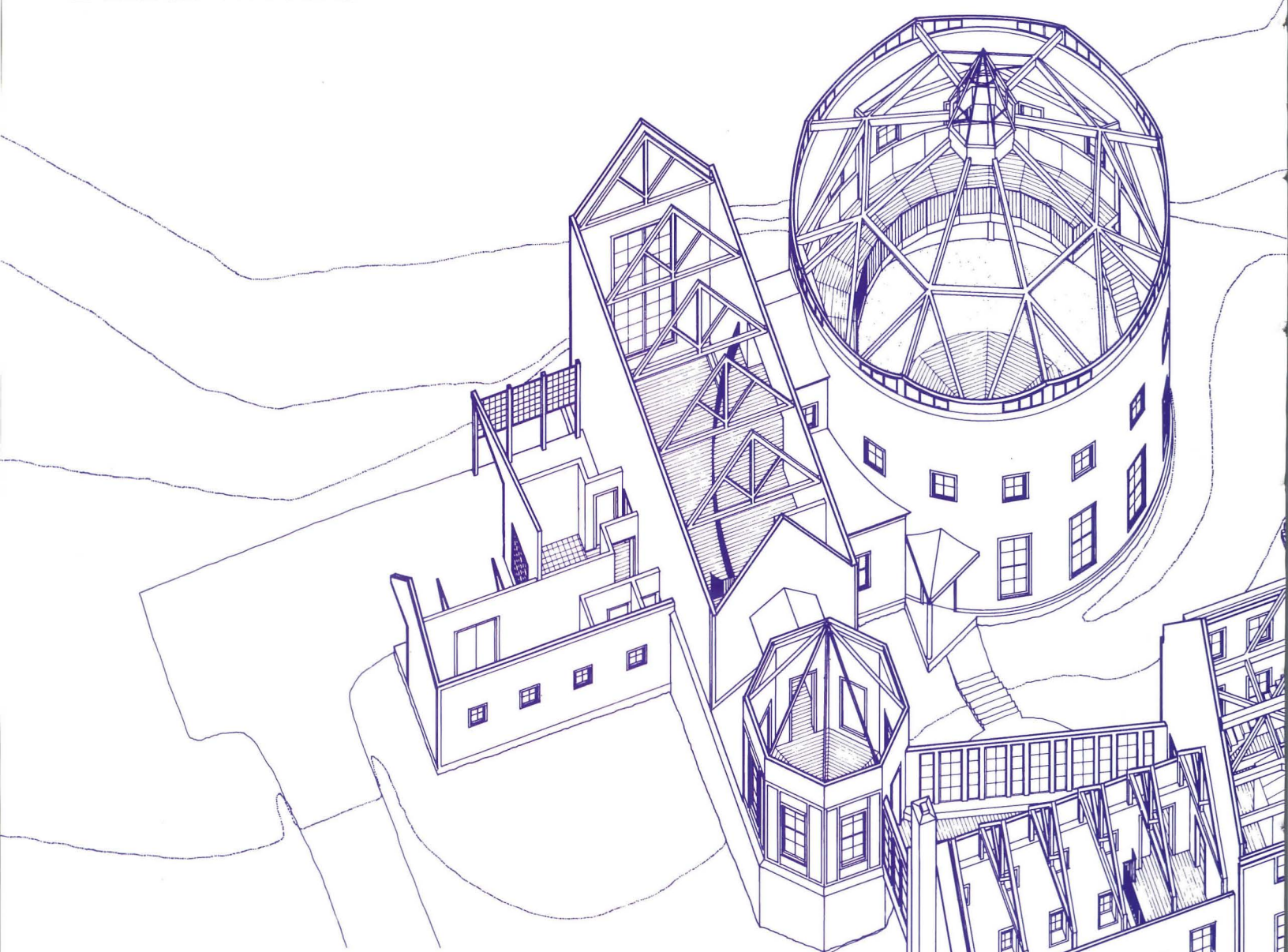
Credits
Court of Human Rights
Strasbourg, France
Client: *Conseil de l'Europe; Ville de Strasbourg*
Architect: *Richard Rogers Partnership—Laurie Abbott, Peter Angrave, Eike Becker, Mike Davies, Elliot Boyd, Karin Egge, Marco Goldschmied, Pascale Gibon, Lennart Grut, Ivan Harbour, Amarjit Kaisi, Sze-King Kan, Carmel Lewin, Avtar Lotay, John Lowe, Louise Palomba, Kim Quazi, Richard Rogers, Pascale Rousseau, Yuli Toh, Sarah Tweedie, Andrew Tyley, Yoshiyuki Uchiyama, John Young, project team*
Site Architect: *Atelier d'Architecture Claude Bucher*
Engineers: *Ove Arup and Partners; Ominium Technique Européen*
Consultants: *Thorne Wheatley Associates (quantity surveyors); David Jarvis Associates and Dan Kiley (landscape); Lighting Design Partnership (lighting); Sound Research Laboratories and Commins Ingemansson (acoustic)*





inks in Space And Time

Walter J. Bieneke Student Activities Village
Hamilton College
Clinton, New York
Perry Dean Rogers & Partners, Architects



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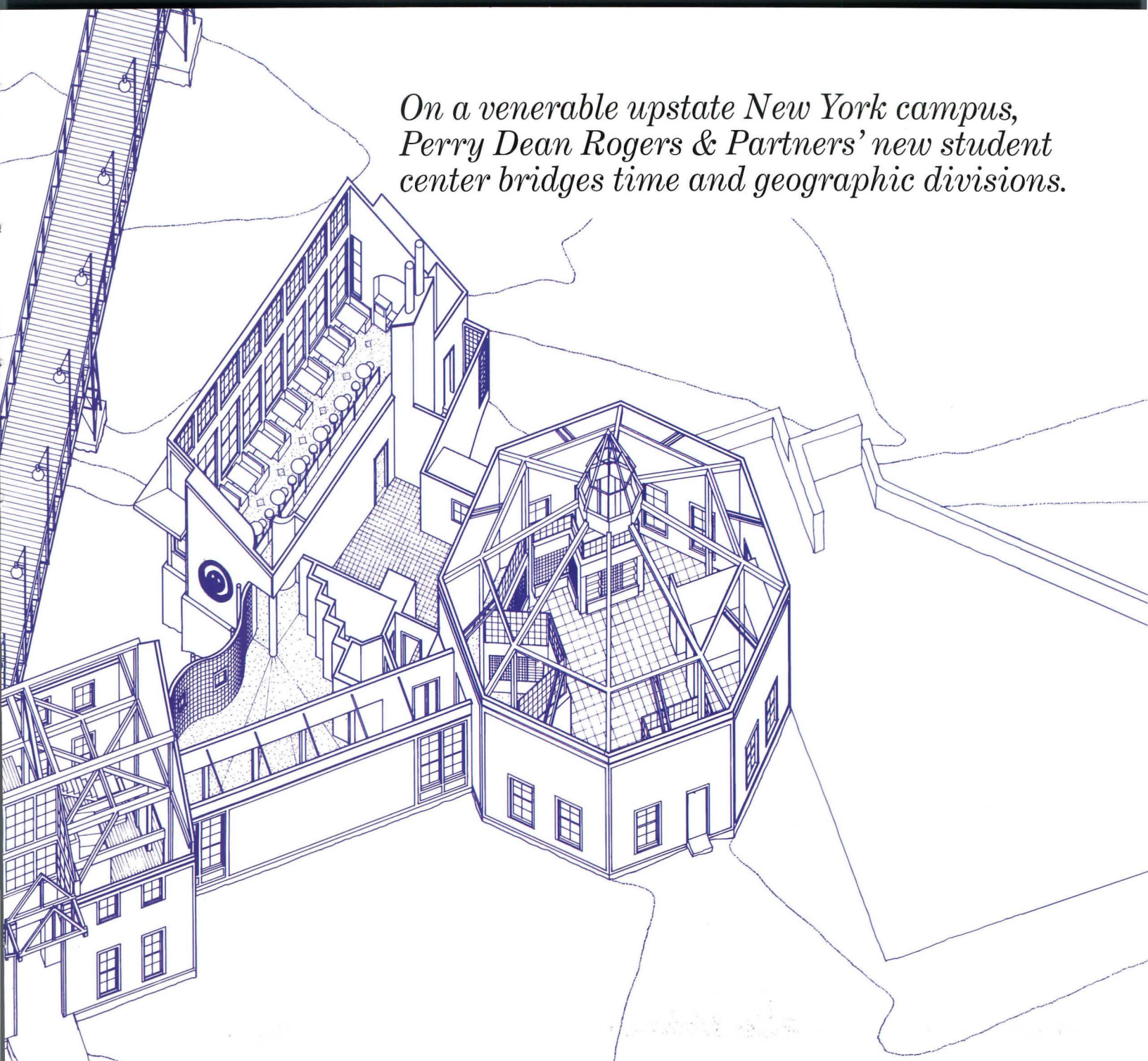
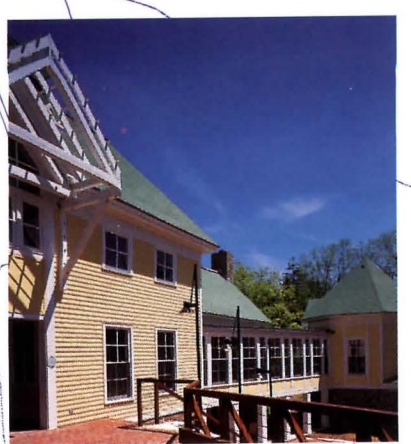
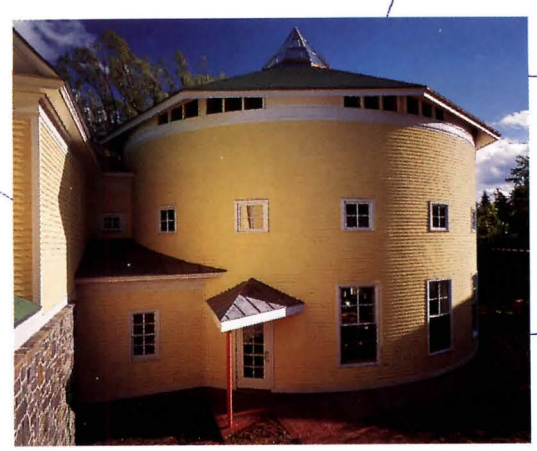
On a venerable upstate New York campus, Perry Dean Rogers & Partners' new student center bridges time and geographic divisions.





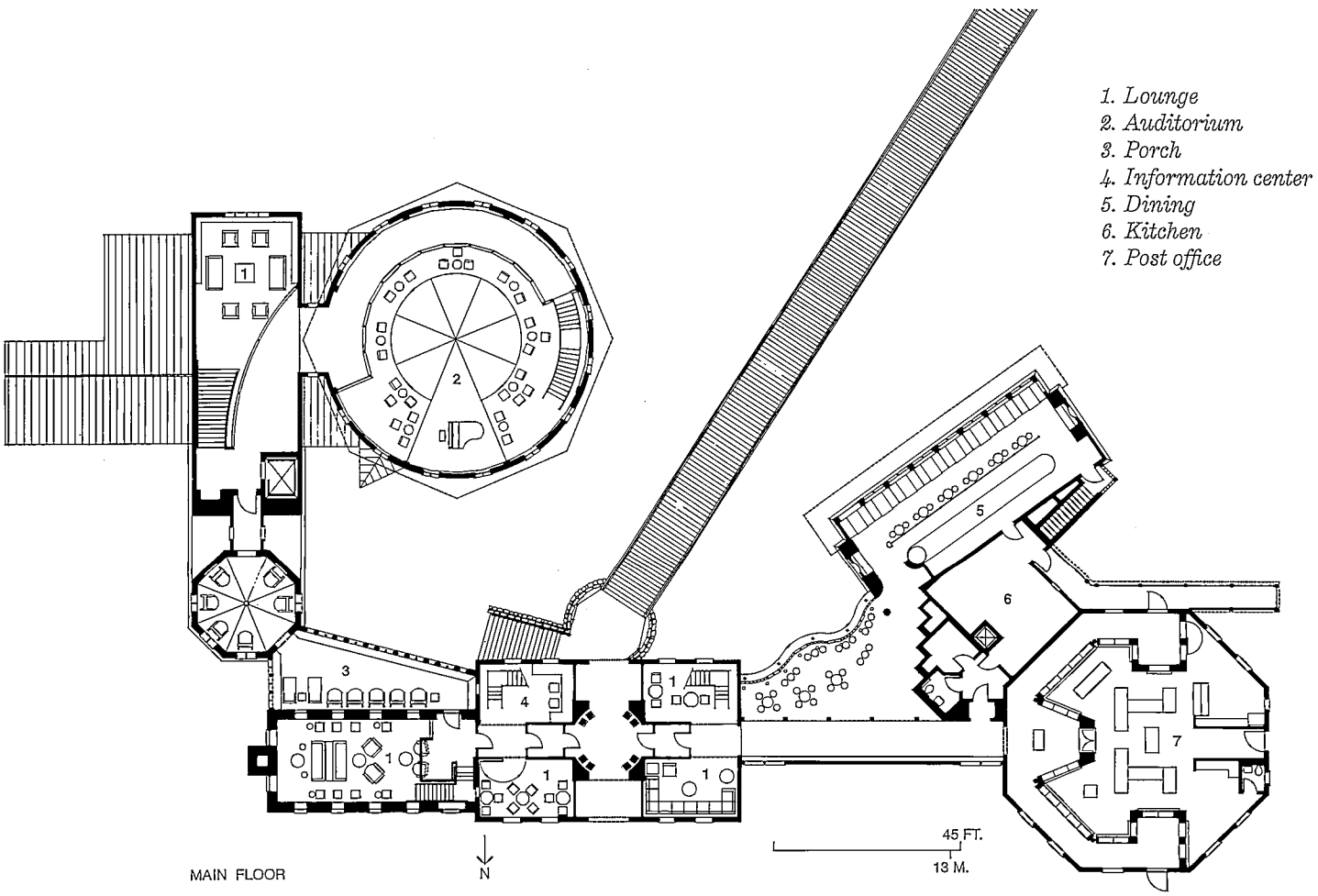


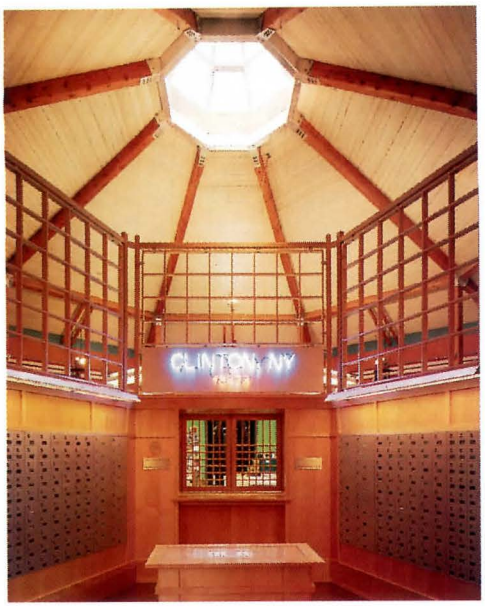
Most of Alexander Hamilton's namesake college was completed early in the 20th century. Its builders used a straightforward vernacular of local stone, yellow-painted wood, and green roofs for buildings loosely arranged around a quadrangle north of College Road (at bottom of plan below). To the south, perched on the edge of a deep ravine, still stand barns recalling the area's agrarian roots. During the 1960s, the college started the new Kirkland Campus made up of massive Brutalist style exposed-concrete structures located across the ravine and mercifully hidden by trees in the summer from the otherwise pastoral setting. Both it and the old student center, a quarter mile down the road, were isolated from the original campus.

In the late 1980s, Hamilton was caught up in the competition for students typical of other higher education institutions—especially when they were private, relatively small, and remote. The trustees thought an indoor swimming pool would do the trick and called in Perry Dean Rogers. The trustees were impressed when the firm recommended that, if the college was to build a pool, it should be a real attention-getter—a full-size NCAA facility. They also welcomed the architects success in continuing the scale and character of the old campus in such a large new structure. It was the start of the firm's involvement with the school that now includes planning and upgrading existing facilities.

The latest phase of new construction called for a centrally located student center that would unite both campuses, yet be part of the old one. The architects reused a Hamilton landmark on axis with the quadrangle—a large salt barn teetering on the edge of the ravine and on the brink of ruin—as the centerpiece of a "village" that houses a large-scale program in an array of small-scale structures. These recall a variety of local prototypes, including many farm structures and a 1950s diner. New amenities include a post office, an information center, a theater, multiple lounges for large gatherings and study, and, in the diner, dining. For the salt barn to serve for human habitation, the architects had to replace the leaky windowless walls. But they preserved the barn-like appearance by replacing its large central doors with a generous open corridor that slices through the building to terminate a bridge across the ravine, connecting new and old campus at last.

"There are high-tech lighting, acoustics, and cabling housed in this low-tech structure," says project architect Frank A. Chirico, who not only worked on design development, but on site representation as well. General contractor Charles Gaetano—more accustomed to building houses—used very basic construction methods for the $4.8-million wood-frame structure, including hammers instead of nail guns, and manual hoists instead of cranes. Foundations presented a special challenge since the ravine side of the site was land fill, which required poured-concrete walls almost as tall as the buildings themselves. The auditorium required 2-by-12 studs to contain air-handling ducts and acoustic baffling. The result is a room that caused its first-concert conductor to stop in mid performance to comment on its acoustic "perfection." Of special note in a round room is the baffling's elimination of unwanted reverberation. *Charles K. Hoyt*





While the architects used traditional campus colors on the exterior, bright contrasts inside caused much discussion at first—especially in the maintenance department where painters, anticipating repairs, objected to any color that was not standard issue. The cheerful interiors are especially appealing during the gray days of local rural winters. And despite the contemporary approach, the architects have retained much of the traditional flavor.

The school administrators backed the architects' scheme and handled objections with aplomb—even hanging revered stained-glass portraits, including Alexander Hamilton's, in the most colorful lounge (top right) so that they seem to float in air. The interior of the diner (bottom left) accentuates its '50s inspiration.

Credits

Walter J. Bieneke Student Activities Village, Hamilton College
Clinton, New York
Owner: *Hamilton College*
Architect: *Perry Dean Rogers & Partners—Charles F. Rogers, II, principal-in-charge; Martha Pilgreen, senior associate-in-charge of design; Frank A. Chirico, project architect; Richard Terrell, Bruce Hutt, Koonshing Wong, Mark Cottle, Edward Polk, project team*
Engineers: *BR+A Consulting Engineers (mechanical); Brennan & Associates, Inc. (structural); R. G. Vanderweil (electrical); Stetson Harza (civil)*
Consultants: *Jerry Kugler (lighting); Acentech (acoustic); P. J. McCarty (plumbing); Tom Succop (landscape)*
General Contractor: *Charles A. Gaetano*

Manufacturing Design in a Post-Industrial Age

Perhaps no portion of our economy has been more affected by the electronic revolution and the globalization of trade than the industrial sector. Computers, robots, and cheap off-shore labor have closed hundreds of factories around the country and transformed many others into workplaces that would hardly be recognized by Samuel Gompers or Charlie Chaplin's hapless working man in *Modern Times*. Though there are still factories with assembly lines and chimneys that belch scrubbed hydrocarbons into the sky, the nature of much manufacturing has changed dramatically in the last decade. As a result, facilities to house these new processes have changed as well.

"What's happening is machines are getting smarter," says Julie Snow, principal of Julie Snow Architects, a Minneapolis firm that does a great deal of industrial-facilities design. "And so are workers." Snow explains that the "laborer is not just an extension of a machine—not just a muscle. Today, the laborer communicates with the machine, often a computer, on an intelligent level." In the past, a factory worker usually performed the same task over and over and was responsible for just one small part of the entire manufacturing process. While this kind of production still exists where labor is cheap, it no longer makes sense in many parts of the United States. Instead, companies are investing in sophisticated equipment, reducing the number of workers, and giving their remaining employees more responsibility. Rather than sitting at an assembly line, laborers work in teams—moving around the plant floor, performing a variety of tasks, and often dealing with the total manufacturing process.

Because workers must perform more complex and varied tasks, training has become a critical part of the work process. Most new manufacturing facilities include training areas, where existing as well as new employees learn the latest techniques and skills. Continual learning is now a key element of the working world. Snow's firm, for example, is finishing a training center for Philips Plastics, a longtime client, that brings together training, new-product development, and manufacturing. While such functions may not, at first glance, seem to belong together, companies are finding that old distinctions often get in the way of innovation. As a result, walls are figuratively (and sometimes literally) coming down. "The higher level of responsibility and trust given to workers must be reflected in the architecture," says Snow. "So you're seeing factories that are more open, with more sunlight and more shared spaces like break-out rooms for managers and workers to use together."

Smaller is better

Keeping managers in direct contact with workers is affecting the size of factories as well. For example, Philips Plastics limits the size of its factories to 200 employees, says Snow. Instead of expanding a facility and adding another layer of management, the company would rather build a new factory and keep its management structure lean. In the past, storage space was a major component in almost every factory. Today, corporations emphasize "just-in-time" manufacturing, in which materials arrive at the factory right when they are needed and are shipped out as soon as possible. With inventory reduced to a minimum—and storage seen as a luxury—the warehouse component of many factories is now kept as small as possible.

While much about the manufacturing process is changing, many companies remain in old industrial locations. To upgrade their images and reflect modernization happening inside the factory, some companies are paying more attention to the public face of their facilities. For example, the giant chemical company Pfizer has been revamping its sprawling manufacturing campus in Groton, Connecticut, over the last few years. Following a master plan and designs prepared by Centerbrook Architects and Planners, Pfizer has reorganized vehicle circulation to eliminate traffic bottlenecks and moved various functions around to bring order to a collection of buildings that had grown

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As manufacturing changes, the role of the architect is evolving from the giver of form to someone who integrates design with the industrial process.

haphazardly during the last five decades. Some buildings on the campus date from the First World War, when they served as the Liberty Ship Yard, and by 1989 they looked a bit ragged. So an important aspect of Centerbrook's designs is to create a new identity for the complex—one that would project a more modern face to the public. To that end, the architects designed a new front door to the campus that includes a main gate and automobile court defined by a curving steel-frame structure (opposite right). A new color palette of beige buildings with white elements such as pipes and tanks brings the structures together visually and gives the campus a brighter, cleaner look.

In Chicago, the architectural firm Sonoc/Hutter/Lee has helped transform an aging steel factory into an attractive industrial campus (opposite left). Part of the city's efforts to keep industry from fleeing, the project uses steel arches, landscaping, and street furniture to integrate the complex with its upscale residential and commercial neighbors. Paid for by two companies that have operated on the site for more than 100 years—A. Finkl & Sons, a producer of custom steel forgings, and A. Lakin and Sons, a tire recycler—the project involved closing one street to general automobile traffic, while inviting the public to walk through the area and learn about the industrial district. In addition to designing the outdoor spaces and creating a new public identity for the district, the architects also designed a new shipping facility on the campus and renovated several of the old buildings for industrial and training uses. "This partnership of residential, commercial, and industrial interests has aided in the success of all participants, and, therefore, the neighborhood and city at large," says architect Scott Sonoc.

In some fields, technology has changed manufacturing so much that old definitions of what is an industrial facility hardly apply. For example, if Henry Ford were to walk into Sega of America's product-development facility in Redwood City, California (the heart of Silicon Valley), he would have a hard time figuring out where the manufacturing is done (below left). Filled with "whiz kids" tapping away at computers, playing music in studios, and testing the latest video games, the place has no blue-collar workers, punch-clocks, or assembly lines. Although it looks like the offices of one of those hip new advertising agencies, the Sega facility actually develops, tests, and produces the master CDs for the company's popular video games. It may not be a steel mill, but as architect Lisa Bottom explains, it produces "America's main export—entertainment."

An unstructured place for producing computer-age products

Bottom's firm, Bottom Duvivier Architects, designed the facility in an existing two-story tilt-up building and worked hard at creating an unstructured, slightly raw, but always playful environment. The complex includes a video-production facility, recording studios, compact-disk press labs, offices, conference rooms, and a training area. Stocked with games still in development, the reception area doubles as a testing lab.

Like more and more companies these days, Sega understands the need to reduce the time it takes to develop new products and to be able to adjust to market changes. As a result, flexibility is increasingly stressed in the design of industrial facilities. "With product-cycle times getting shorter, disposability is a key," states Bottom's partner, John Duvivier. Unfortunately, this is as true for a company's architecture as it is for its products. With change a given, many companies are no longer willing to invest in buildings that will last. In this kind of climate, the role of the architect is changing. Less a giver of form, the architect today must integrate space with process so that the entire facility works as efficiently as possible. Part of the challenge for architects will be showing that good design pays off in the industrial workplace. *Clifford A. Pearson*

© Chaz McGrath

F.W. Dodge Contract Award Data
Manufacturing Buildings

Year	Millions of Dollars	% change	Millions of Sq. Ft.	% change
1980	9,162	18.0	220	10.6
1985	8,133	-11.2	165	-25.0
1990	8,384	3.0	128	-22.4
1991	8,290	-1.1	100	-22.1
1992	8,889	7.2	95	-5.2
1993	9,011	1.4	110	16.3
1994	10,327	14.6	139	26.8
1995	10,825	4.8	150	7.6

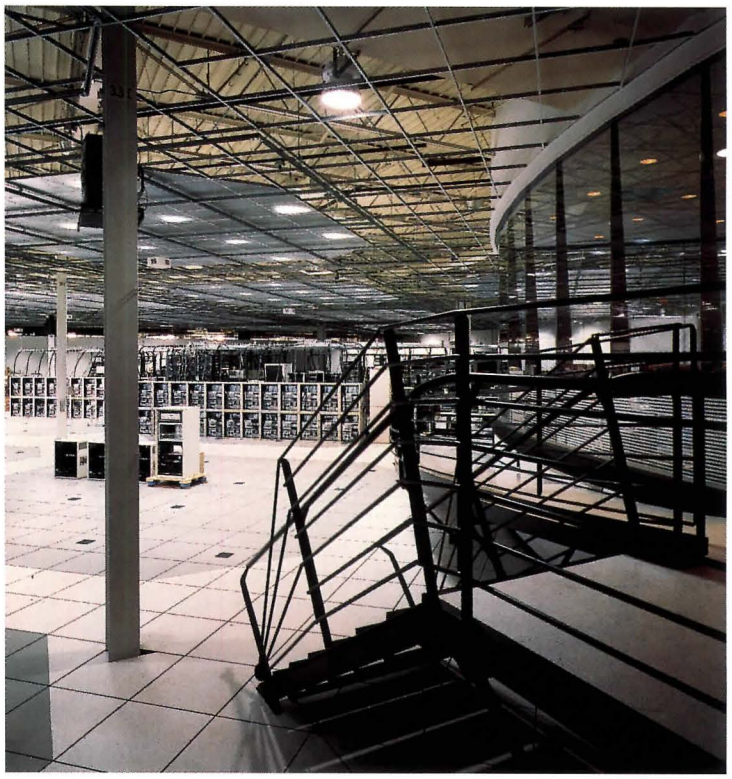
The Finkl project in Chicago (opposite left) and the Pfizer campus in Connecticut (opposite right) retain old buildings. Sega's facility (left) points to the future.

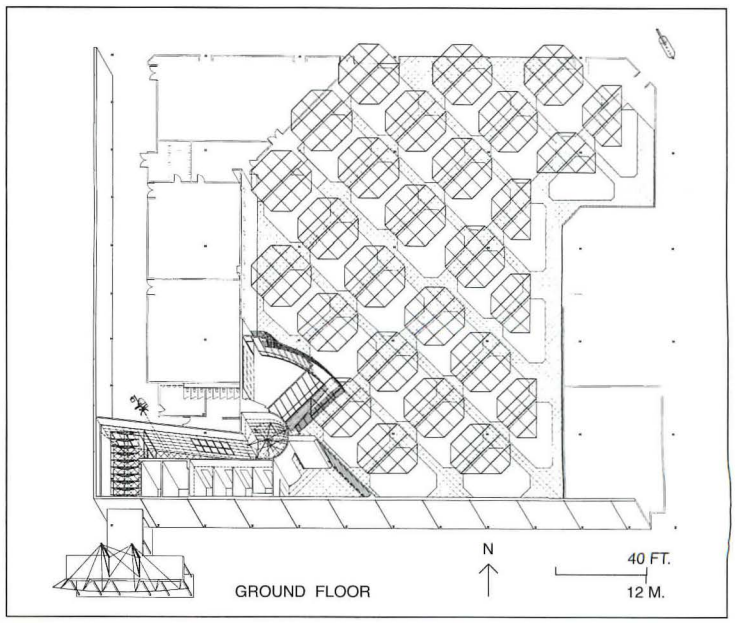
Powered by the economy's turnaround and pent-up demand, manufacturing construction registered significant gains in both 1993 and 1994 (chart).

Motorola Customers Center for Systems Integration

Schaumburg, Illinois
Holabird & Root, Architect

In its renovation of 36,000 square feet of factory space at Motorola's sprawling campus outside of Chicago, Holabird & Root transformed a generic industrial building of the 1960s into a sleek, crystalline facility that projects technological sophistication. A hybrid facility where Motorola performs the final assembly, testing, and demonstration of very expensive, custom-designed communications systems (such as 911 emergency telephone networks), the building must accommodate factory workers, Motorola sales executives, and the top government officials who purchase such electronic equipment. An old warehouse wasn't the place to impress customers who might end up spending $100 million a pop. So the architects added a metal canopy above a new glass entryway and inserted an angled, oxidized metal wall





leading to a glass-ceilinged rotunda (opposite left). Two conference rooms are entered from the rotunda—a 30-seat space with one glass wall, and a smaller room raised five feet above the factory floor and wrapped on two sides by glass-and-metal-finned walls. Both conference rooms overlook the manufacturing area, so customers can watch their systems being assembled and tested. By projecting one conference room into the factory space (below and opposite right), the architects were able to integrate the key components of the program—reception, demonstration, and manufacturing—says Tod Desmarais, project designer. In terms of the manufacturing process, the new design lets Motorola work more than twice as fast as it did in the past. A module system of work sites on the factory floor provides plenty of power sources for machines to plug into, as well as efficient circulation around each assembly area. And by turning work modules at a 45-degree angle to the building's existing column grid, the architects were able to fit four extra work sites into the same space. Remarkable too is the rapid schedule for the project: four months from beginning of design to end of construction. *C.A.P.*

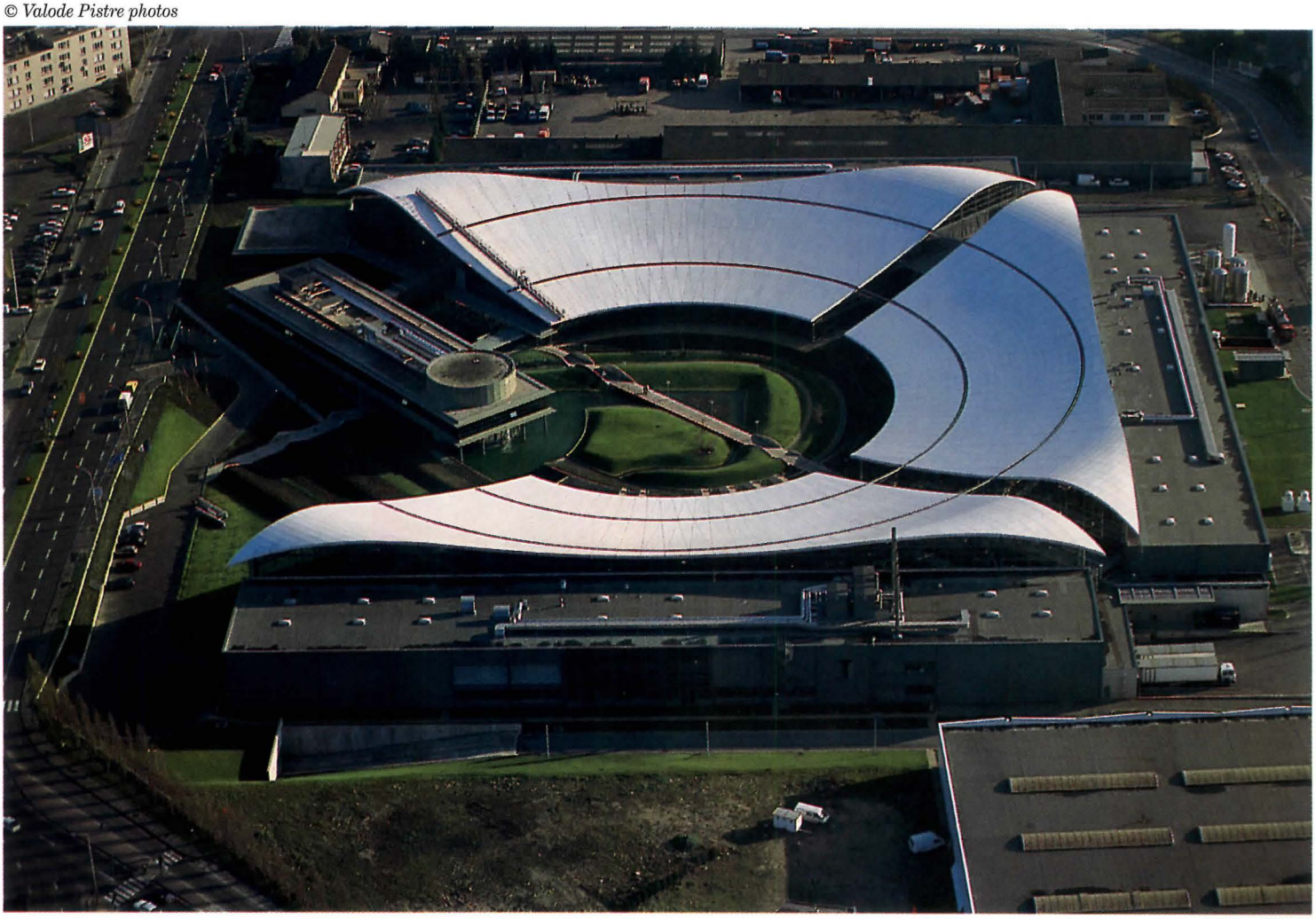
Credits

Motorola Customers Center for Systems Integration
Schaumburg, Illinois
Architect: *Holabird & Root—Gerald Horn, partner-in-charge; Tom Meyer, project manager; Tod Desmarais, project designer; Khatija Hashmy, project architect; Patricia Sicha, interior designer*
General Contractor: *Rudolph V. Schuh Co.*

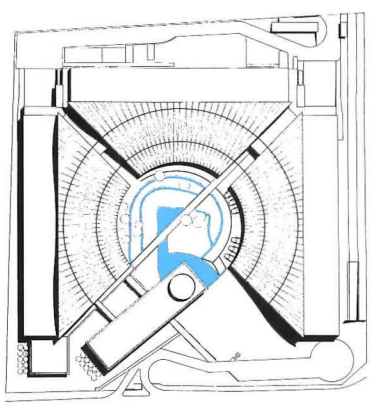
Usine L'Oréal

Aulnay-sous-Bois, France
Valode & Pistre et Associés, Architect
Ove Arup & Partners, Structural Engineer

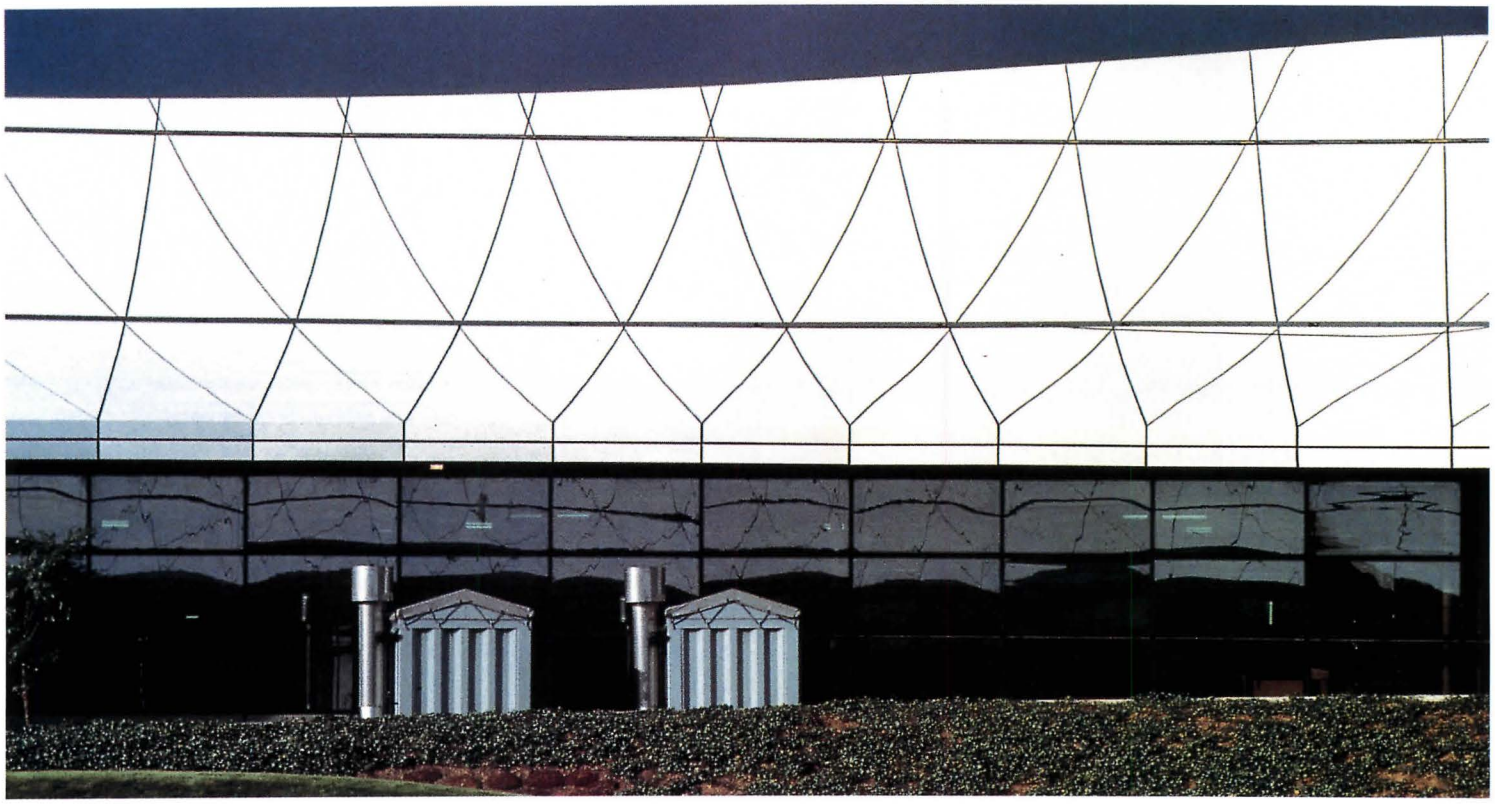
Located at Aulnay-sous-Bois, northeast of Paris and not far from Charles de Gaulle airport, this factory and administration headquarters is an international showcase for L'Oréal cosmetics. The bold architectural form and precise detailing of the 325,000-square-foot structure express the company's stated commitment to quality at all levels. From the sweeping roof that curves in two directions to the rolling earth berms and winding reflecting pool that animate the central garden, this project distinguishes itself from the boxy factories of yesteryear. The Paris-based firm of Valode & Pistre et Associés, which has designed industrial facilities for Renault, Shell, and Apple France, won the L'Oréal commission in a design competition by using the image of a three-petaled flower floating above the ground. The flower-in-

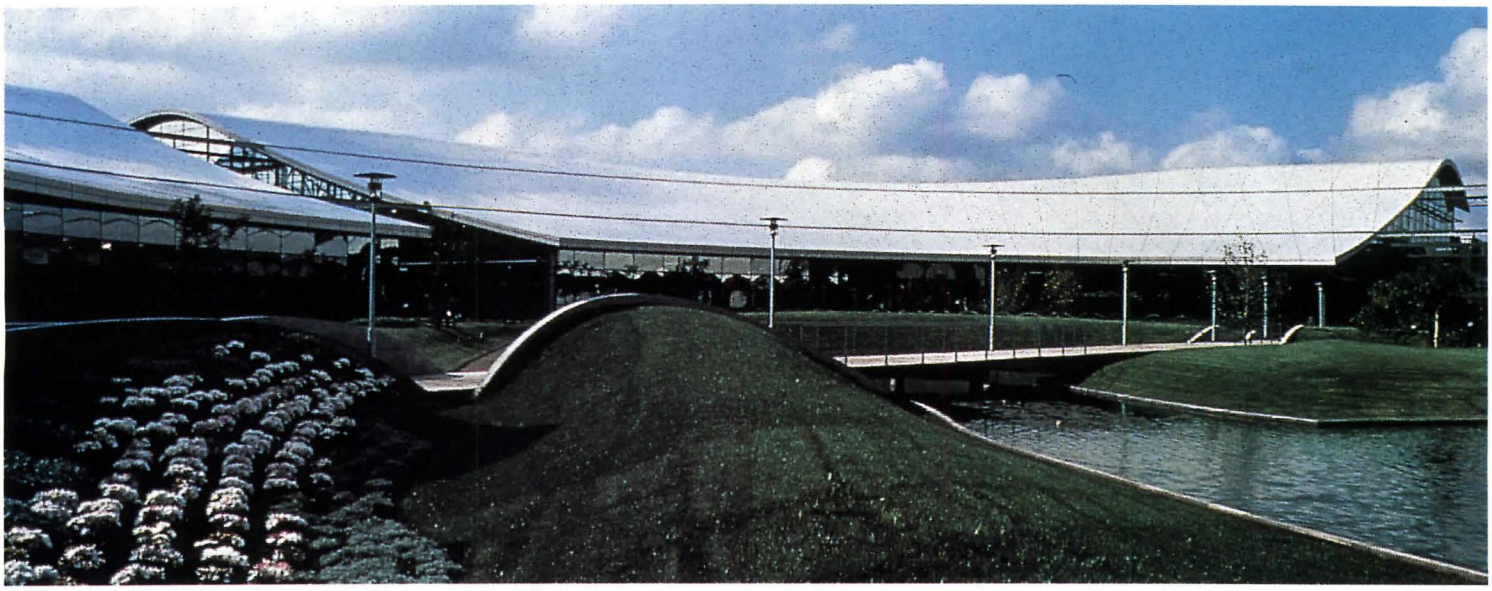


Built on a tight 432,000-square-foot site on the outskirts of Paris, the 325,000-square-foot manufacturing and administration complex turns away from its suburban context and focuses on a rolling artificial landscape that echoes the great curves of its roofs. Abstract in its design, the central garden (opposite bottom) creates a playful environment with berms, flowers, a snaking pool, and a narrow bridge.

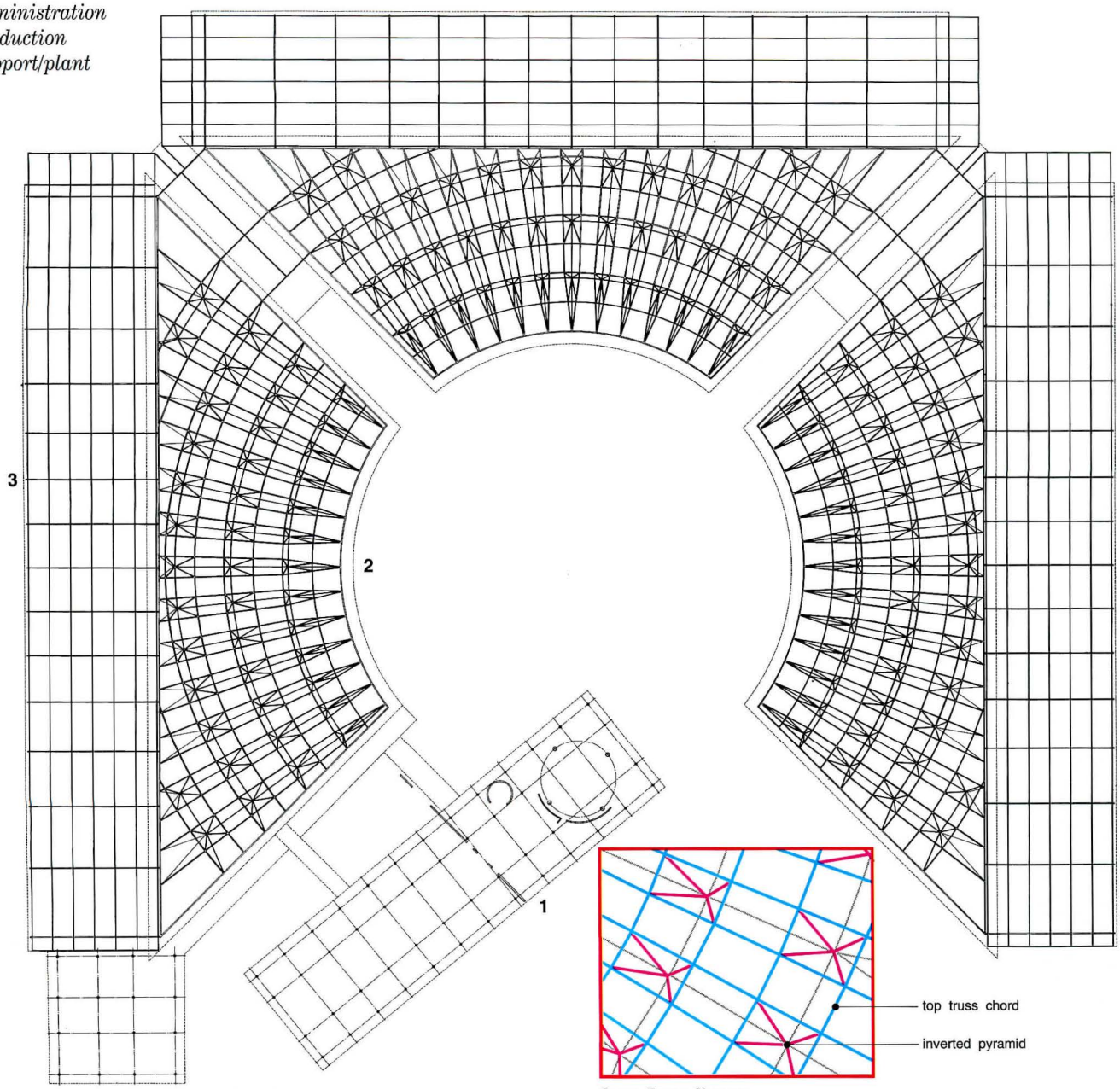


a-garden metaphor appealed to company executives, who saw it as a way of referring to a traditional ingredient of some cosmetics, while at the same time expressing faith in the latest technology. Each petal is a curving metal roof draped over a 200-foot-by-430-foot clear-span space frame. Each sweeping roof covers one of the factory's three production units, while flanking, flat-roofed structures enclose plant, storage, and support spaces. Because the trend in manufacturing today is to update and change processes frequently, the client needed column-free interiors that would be as large and flexible as possible. In addition, it wanted the building to have "a connected experience," where all employees—managers and workers alike—would feel they were part of the same team, says Richard Hough, the director-in-charge of the project for the structural engineer, Ove Arup & Partners. The project's sweeping roofs and central outdoor courtyard, visible from almost the entire complex, are two devices the architects used to create a common sense of purpose among L'Oréal employees. As an office facility, the rectangular administration building breaks from the radial geometry of the manufacturing structures and juts into the circular courtyard. A curving, glass-walled presentation room on the ground floor of the administration building looks out onto the garden and the rolling form of the production units. Working with Arup and the late engineer Peter Rice on the superstructure, Valode & Pistre designed a tubular space frame of radial and circumferential Vee trusses for the flower-petal roofs. To add a



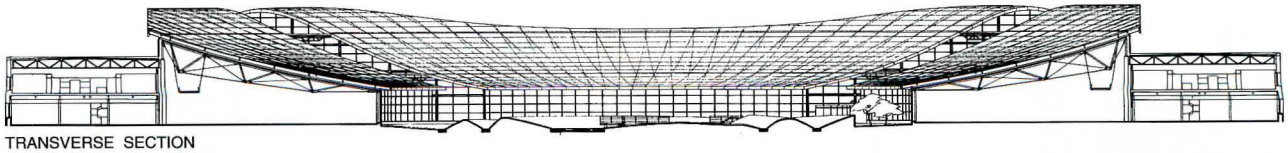


1. Administration
2. Production
3. Support/plant

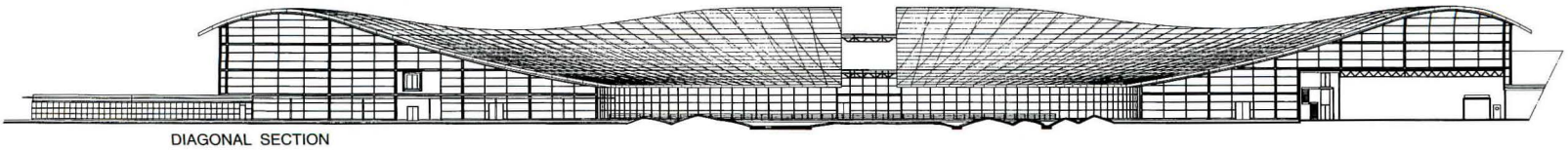


STRUCTURAL PLAN

Space Frame Close-up



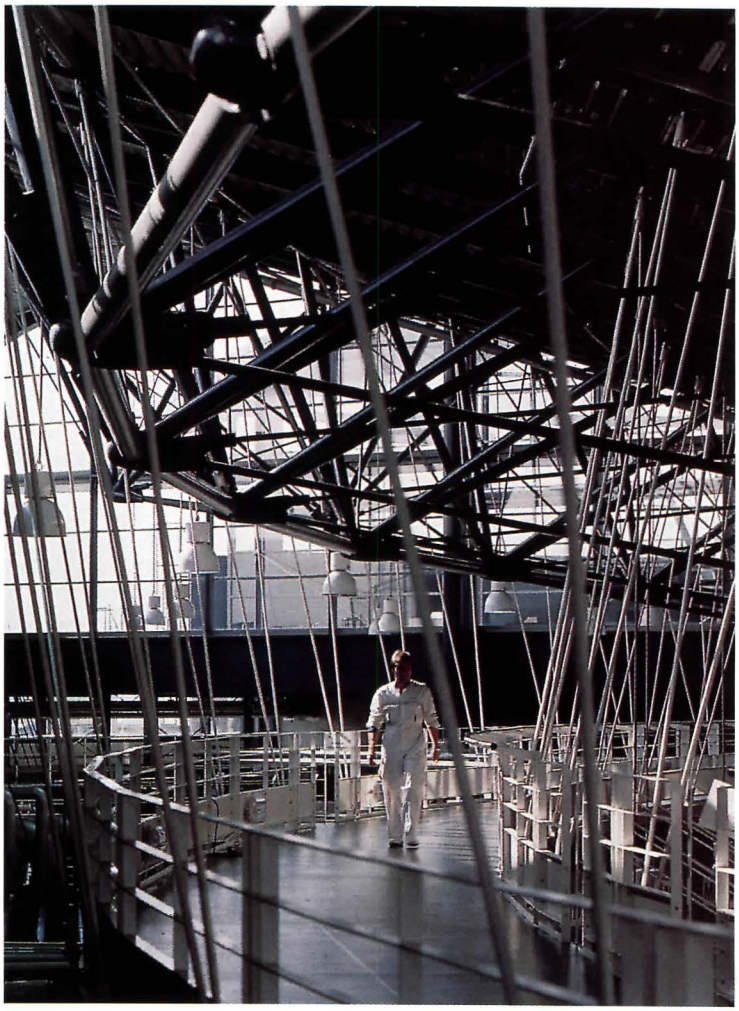
TRANSVERSE SECTION



DIAGONAL SECTION

sense of scale and rhythm to the large production spaces under the roofs, the designers used inverted four-fingered pyramids as punctuation marks in the space frame (see close-up drawing, opposite). Clad in white aluminum, the roof itself is an open-jointed panel system resting on an exterior purlin grid that allows water to drain between the panels. To clean and maintain the roofs, the architects and engineers designed an access bridge that moves along curving rails set into the roof panels. The bridge is stored off the roof, out of sight. With its dramatic roofs, bold geometry, and Zen-like circular garden, the Usine L'Oréal at Aulnay-sous-Bois shows how architecture can break the stereotyped images of factories and make these facilities special places in which to work. *C.A.P.*

Credits
Usine L'Oréal, Aulnay-sous-Bois Paris, France
Owner: *L'Oréal*
Architect: *Valode & Pistre et Associés—Frank Privé, project chief; Eric Schoebel, Cécile Fridé, Antoine Rebière, Bruno Valode, project team*
Engineers: *Ove Arup & Partners (structural)—Peter Rice, Richard Hough, Mike Banfi, project team; Setec Batiment (substructure)*
Landscape Architect: *K. Gustafson*
General Contractor: *Bouygues*



The architects and engineers used structures and materials to make the factory's interior as light and open as possible. For example, the curtain wall at the building's gable ends works with the bulging form of the roof to bring sunlight into the production area (left and above left). A second-story walkway is suspended from the roof and overlooks the manufacturing floor (above right).

CALL FOR ENTRIES

RECORD HOUSES 1996

The editors of ARCHITECTURAL RECORD announce the 41st 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 $15 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 be postmarked no later than October 31, 1995. Winning entries will be featured in the 1996 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:

Karen D. Stein
RECORD HOUSES
ARCHITECTURAL RECORD
1221 Avenue of the Americas
New York, New York 10020

LETTERS *continued from page 4*

ance with ADA. We encourage ADA compliance by writing articles, providing technical assistance, and conducting educational seminars. We are more than willing to assist you in providing accurate information concerning ADA design issues and promote full awareness of ADA requirements.
Kim A. Beasley, AIA
Managing Principal
Paradigm Design Group

ARCHITECTURAL RECORD *responds:*
Regarding Mr. Catlin's correction about about ADAAG being adopted by the departments of Justice and Transportation in 1991, I was given other information via the U.S. Department of Justice Civil Rights Division. The Justice Department is still reviewing the proposed rule that would adopt the ADA Accessibility Guidelines as the ADA Standards for Accessible Design in new construction and alterations for government buildings, not now covered by ADAAG.

The clarification Mr. Beasley has stated in his letter regarding his participation on the ATBCB was not stated during these conversations. *Katherine Kai-sun Chia*
The statement that ADAAG standards are recommendations was an editing error. However, the degree to which ADAAG guidelines apply is subject to much confusion. In a conversation with Mr. Catlin, he indicated that ADAAG is the standard design guideline to be used. When a local code has elements that are more stringent than ADA, the designer should follow the local code. In other words, since most local codes have accessibility provisions, an architect is required to adhere to both ADAAG and the local code.

The images shown with the story did not state, but perhaps implied, that the facilities were covered under ADA. Their purpose was to show innovation in the provision of accessible elements.

The United States Architectural and Transportation Barriers Compliance Board offers technical assistance, with its primary expertise in the interpretation of ADAAG:
•202/272-5434 (voice)
•800/USA-ABLE (voice and text telephone)
•800/993-2822 (TTY for people with hearing or speech impairments)
•202/272-5447 (fax)
•202/272-5448 (electronic bulletin board via modem)
It is preparing a guide to ADAAG. The Justice Department handles ADA complaints and can give guidance on questions of what is regarded as "readily achievable," and so on: 800/514-0301 (voice), 800/514-0383 (TDD). It also offers new technical documents on the design of specific complying elements, like accessible routes. *Editor*

Looks Like a Duck?
After looking at the "residences" in Record Houses 1995, one wonders where all this nonsense will lead us. Put these houses all together and we have a strange zoo of rare one-of-a-kind animals unable and unwilling to communicate with one another, all doomed to extinction. Turner Brooks's house may not be a duck, but it certainly resembles a dog complete with upright tail [RECORD, April 1995, page 93]. The telling photograph of the Frank Israel house plopped down on the hillside with other non-look-alikes might be mistaken by 95 percent of the public as a just-after-the-earthquake shot.
William Hamilton Roehl
Architect
Noank, Connecticut

CALENDAR *continued from page 4*

Art Institute of Chicago includes scale models of four of Goff's unrealized projects, photographs, notes, and ephemera. Designed for the Institute by Bart Prince. Call 312/443-3600 for more details.

September 8 to October 28

An exhibition of "The Architectural Drawings of Herzog and DeMeuron" at the Forum for Contemporary Art, St. Louis, will show 40 drawings of the Basel, Switzerland-based architects, Jacques Herzog and Pierre de Meuron. Concurrent with the exhibition will be a showing of "Construction Intention Detail," featuring drawings and photos of projects by three other Swiss architects and two small models by Herzog and DeMeuron at Washington University School of Architecture. Call 314/535-4860 for more information.

Through September 19

"An American Landscape: The Art and Architecture of Charles A. Platt" is on exhibit at the Octagon, Washington, D.C. Call 202/626-7564 for details.

October 6-9

"White Chimneys" exhibition in a Philadelphia Victorian Gothic home showcases the work of more than 30 interior and landscape designers. Call 215/247-8191 for details.

October 6-9

The annual International Marble exhibition is to be held in Verona, Italy. Call 011/39-45-829-8282 for more information.

October 21-22

A seminar on "The Ornament of Classical Architecture" will be held at the Institute for the Study of Classical Architecture, New York Academy of Art. Workshops and demonstrations will also be held during the two-day seminar. Call 212/570-7374 for more information.

November 1-3

Interplan 1995 (formerly Designer's Saturday) moves this year to the New York Coliseum, where 550 exhibitors will display interiors products for 10,000 attendees. Call 800/950-1314 for details.

Competitions

- Submittals for the Professional Services achievement awards are due Aug. 4. Call PMSA at 704/521-8890 for entry rules.
- "Unbuilt Architecture" competition submissions are due Sept. 26. Entry fee is $50 for each submission. Call Boston Society of Architects, 617/951-1433 ext. 232, for details.
- Society of American Registered Architects invites architecture students to submit work done in conjunction with school or independently. Entrants must register by Oct. 6, and submit projects by Oct. 13. Call SARA at 708/932-4622 for details.
- Shinkenchiku Residential Design Competition entries, which will be judged by Jean Nouvel, are due October 18. Contact Shinkenchiku-sha Co., Ltd., 31-2, Yushima 2-chome, Bunkyo, Tokyo 113, Japan.
- National Commercial Buildings Council of the National Association of Home Builders is calling for entries for its 1996 awards of excellence competition. Two awards divisions cover small- and large-scale projects, including the categories of urban renewal, recreational facilities, office buildings, retail projects, historic rehabilitation, institutional, commercial interiors, and medical facilities, among others. Submission deadline is August 25. Call 800/368-5242, ext. 455 for entry brochure and other information.
- A Linoleum Flooring Design Competition, sponsored by Forbo Industries, is accepting projects designed using its Artoleum floor-covering product. Deadline for submissions is Dec. 31. Grand prize is a five-day trip to Holland for two; second prize is a $1,500 cash award. A student award of $1,000 will also be made. Call 800/842-7839 for entry forms and rules. ■

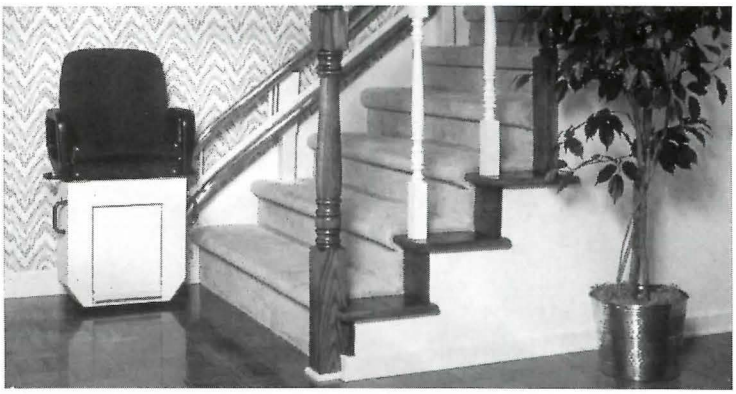
New Products

343. A whole other thing

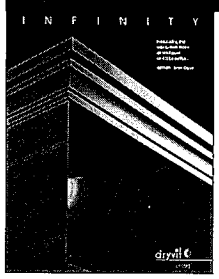
Prompted by population demographics (we're all getting older), accessibility improvements initiated to comply with Americans with Disabilities Act guidelines, and ongoing revisions in limited-access elevator codes, Dover Elevator has established a new subsidiary, Dover Accessibility Products (D.A.P.), to manufacture and market residential elevators, stair chairs, and platform-type wheelchair lifts.

The new cable/hydraulic residential elevator (model 405H, not pictured) has many of the features found in Dover's commercial lifts, such as microprocessor control systems and optical floor sensors, that are said to provide a quiet ride with smooth, self-leveling floor stops. Standard accessories include Formica paneling, illuminated cab and hall push buttons, emergency lighting and battery-operated backup lowering during power outages.

The Model 180 stair chair (top, right) has an unusual battery-powered, self-contained traction drive, using polyurethane wheels to grip both sides of dual, smooth-surfaced ("toothless") steel guide rails. The 300-lb-capacity unit can handle straight runs and curves, and can be mounted on either the inside or the outside wall of staircases. A hand-held wireless remote calls the lift from any stop. An exterior-use configuration may be specified. For public areas, D.A.P. platform lifts (bottom right) are also self-driven, powered by batteries that recharge automatically at each terminal landing point. Units fold, and can be parked away from the stair run if there's enough space by the landing. Designs permit entry from front or side; lifts can be ordered for straight and curved runs, and for exterior use. On-line CAD help will be available. 800/994-4327. Dover Accessibility Products, Inc., Memphis, Tenn. ■



Product Literature/CSI Show

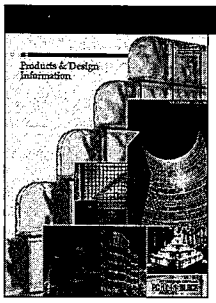


400. Cavity-wall EIFS

A 12-page catalog illustrates how Infinity PE (pressure equalized) and MD (moisture drainage) systems provide a weatherproof exterior envelope in environments with high wind pressures and humidity. The Infinity program offers critical-detail design help, installation oversight, and tested performance. 800/556-7752. Dryvit Systems, West Warwick, R.I. *

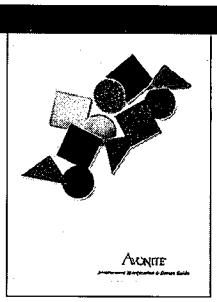
401. All sorts of connectors

A 76-page catalog gives loads and configurations for all types of wood-to-wood, wood-to-masonry, and wood-to-concrete connectors, anchors, hangers, and holdowns. A new custom program makes gusset plates and ornamental shapes up to 3-gauge thick from an architect's CAD drawings. 800/999-5099. Simpson Strong-Tie, Pleasanton, Calif.



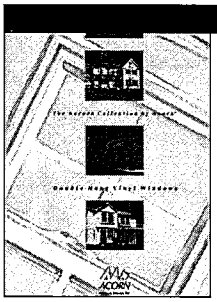
402. Designing with glass block

A design guide shows architectural uses of glass block and brick, and features new products such as endcurve and endcap shapes, unusual sizes in the Decora pattern, and block for high-security settings. Seismic and wind-load data included; specification guidelines and an architectural binder are available. 800/992-5769. Pittsburgh Corning, Pittsburgh.



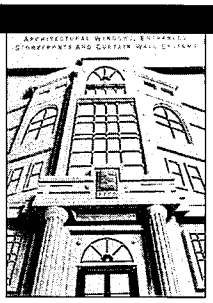
403. Solid-surface guide

A colorful product-data folder highlights commercial, retail, food-service, health-care, and residential applications of three different Avonite materials: a Class I-label product, thermoformable Formstone, and decorative Class III sheets in a wide color range. An eight-page *How to Specify* booklet is included. 800/4/-AVONITE. Avonite, Inc., Belen, N.M.



404. Vinyl-window line

Made with an acrylic-modified, UV-stabilized vinyl described as color-fast, dent resistant, and corrosion proof, Aurora windows have a multi-chambered, extruded frame. Product catalogs give glazing options and sizes for single-hung, awning, rolling, and picture units, as well as patio doors and special-shape windows. Acorn Window Systems, Detroit.



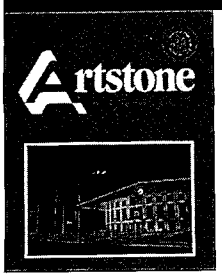
405. Curtain walls/entrances

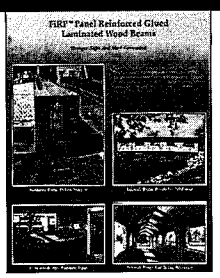
This maker's 1995 catalog provides complete descriptions and details for architectural curtain-wall, door, storefront, and window product lines, as well as newly acquired RotoSwing automatic entrances. An enclosed specifications chart references all systems. 800/221-4169. EFCO Corp., Monett, Mo. *

* *Product Data on CAD disk*

For more information, circle item numbers on Reader Service Card.

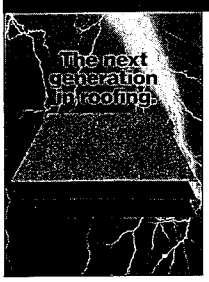
Product Literature/CSI Show

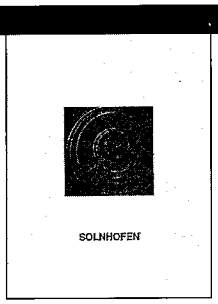




406. Decorative cast stone
A capabilities packet illustrates cast-stone installations across the midwest, listing projects and the design architects responsible. Case studies showcase large-scale cast panels with original graphics, custom signage, and precisely color-matched reproductions of terra-cotta details. 800/967-2076. American Artstone Co., New Ulm, Minn.

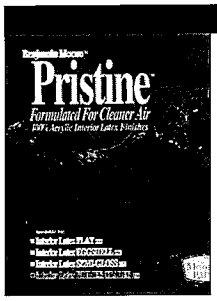
407. Reinforced glulam
A catalog describes how new FiRP Glulam combines the compressive strength of wood with greater tensile strength provided by synthetic-fiber reinforcement to increase the design capacity of the beam, allowing longer spans and greater loads for a given member. ICBO approval is pending; fire- and load-test data is available. Timberweld, Billings, Mont.





408. Best-of-both roofing
A new system, GAF's CompositeRoof is said to combine the strength of fiberglass-reinforced built-up roofing with the elongation and flexibility of Ruberoid modified-bitumen membranes to achieve a superior strain-energy rating. A brochure gives design and test data on the multiple-ply torch-or-mop roof. GAF Materials Corp., Wayne, N.J. *

409. Fossilized limestone
A capabilities booklet describes different types of Solnhofen stone, extremely durable limestones found in a single German quarry. Dramatic installation photos show the stone as flagging, paving tile, and cladding. Dendrites and other inclusions give the stone a unique appearance. 415/647-3088. Solnhofen Natural Stone, Inc., San Francisco.



410. Zero-VOC paints
Color-chip cards and technical brochures introduce Pristine, an all-acrylic, solvent-free interior paint that is virtually odor-free even when wet. Made with new resins and different raw materials, and produced on its own line, quick-drying Pristine comes in over 900 colors, primer coats, and three finish glosses. Benjamin Moore & Co., Montvale, N.J.

411. Tile and stone materials
A 16-page architectural catalog describes how Laticrete installation products are designed to perform as a system. Cutaway illustrations and technical drawings detail tile and stone on exterior and interior walls and floors, and used as an exterior cladding. All data available in CAD format. 800/243-4788. Laticrete International, Inc., Bethany, Conn. *

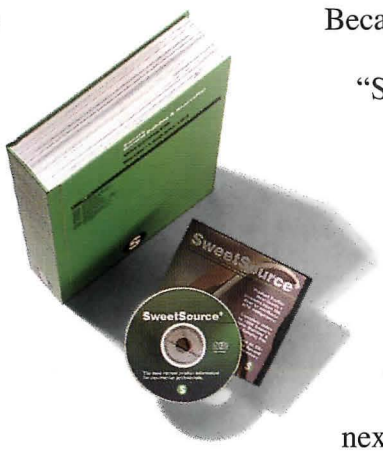
* *Product Data on CAD disk*

For more information, circle item numbers on Reader Service Card.

Face it, they're not teaching this stuff by the book anymore.

Used to be, the only way to find detailed information about a construction product was to sift through a stack of books and binders. It may have taken a while. And it took even longer if you wanted to compare it to another product. In another book. On another page.

These kids have no idea what that was like. Because right now, Sweet's is helping future construction professionals at Auburn University and 400 other architecture, design, and construction schools learn how to find, compare, and select materials using the SweetSource CD.



The Sweet's System offers complementary print and electronic resources for design and construction professionals.

Which means they have instant access to all the detailed product information they need, including specifications, color photographs, and CAD drawings. And to make things even easier to find, SweetSource cross-references every product to the Sweet's Catalog Files.

So the same projects that used to take a couple of days take these kids just a couple of hours.

And if you think that's impressive, just imagine what someone with your experience could do. Because after all, we created SweetSource for you.

"Sure," you say, "but these kids grew up using computers. How long would it take me to learn a program like that?"

Oh, about 15 minutes.

So go ahead. Give SweetSource a try. And the next time one of these fresh new faces comes your way, maybe you can teach them a thing or two.

For more information or to request your copy of the SweetSource CD, call 1-800-992-0535.

Sweet's Group
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1221 Avenue of the Americas
New York, NY 1020
1-800-992-0535

Circle 26 on inquiry card

Manufacturer Sources

For your convenience in locating building materials and other products shown in this month's feature articles, RECORD has asked the architects to identify the products specified.

Pages 56-63

Creative Discovery Museum, Chattanooga, Tenn.
Lee H. Skolnick Architecture+Design Partnership, Architects and Exhibit Designers
Glazed masonry units: Burns & Russell Co. (Spectra-Glaze). Composite cladding panels: A-T-I (Alucobond Technologies, Inc.). Curtain walls and entrance: Arch Aluminum. Fixed-sash windows: EFCO. Fin-supported glass wall: Pilkington Glass, Ltd. Metal roofing: Baird & Wilson. EPDM membrane: Versico. Pole-tops and bollards: Spaulding. Wood interior doors: Mohawk Flush Doors. Upward-acting doors: Raynor. Acoustic ceilings and resilient flooring : Armstrong World Industries. Suspension grid: Chicago Metallic. Custom woodwork: Southeast Millwork. Paints: Sherwin-Williams Co., Stores Div. Laminates: Formica Corp. Track lighting (exhibits): Staff.

Pages 64-69

Pennsylvania Higher Education Assistance Agency, Harrisburg, Pa.
Bohlin Cywinski Jackson, Architect
Roofing: Carlisle SynTec Systems. Curtain wall, entrance, and punched windows: Kawneer Co., Inc. Glazing: PPG Industries, Glass Group. Column cladding: A-T-I (Alucobond). Clay-coated brick: Glen-Gery Corp. Metal soffits: Hunter-Douglas. Ceiling panels: Baker Metal. Lobby wall: Buxy Blue Limestone. Glazed demountable walls: Virginia Metal Industries.

Pages 70-79

European Court of Human Rights, Strasbourg
Richard Rogers Partnership, Architect
Curtain wall: CFEM.

Pages 80-85

Walter J. Bieneke Student Activities Village
Hamilton College, Clinton, N.Y.
Perry Dean Rogers & Partners, Architects
Standing-seam metal roof: Pulver. Green shingles: Celotex. Wood-framed windows: Kelly Window & Door Co. Landscape luminaires: Sterner. Skylight: Sunglo Skylight Products. Rolling doors: Cookson. Flush wood doors: Eggers Industries. Stile and rail doors: Christiana Millwork (custom). Lever-handle locksets: Apahouser. Acoustic ceilings: Armstrong World Industries. Paints: Benjamin Moore & Co.

Pages 88-89

Customers Center for Systems Integration, Motorola, Inc., Schaumburg, Ill.
Holabird & Root, Architect
Oxidized-metal wall: Lundstead Metal. Fabric wall-coverings: Bernhardt Textiles; DesignTex; Deepa. Glazed partition and railings: Northwest Structural Steel. Armless sofas: Vitra. Pyramid-pattern and ramp flooring: Metropolitan Terrazzo. Raised flooring: C-Tec Grand Rapids. Paints on metal surfaces: Benjamin Moore & Co. High-bay lighting fixtures: Holophane Lighting. Ceilings (conference center): Armstrong World Industries. ■

Computer-design sources

Architects cited in The Profession article "Computer Myths Exploded," pages 28-31 in this issue, work with the following CAD systems:

David Hannaford Mitchell Architect
- Macintosh PowerMac 7100, 24m RAM, 500m hard drive
- Graphisoft ArchiCAD v. 4.55

Peter John Locascio Architect
- Macintosh PowerMac 7100, 24m RAM, 500m hard drive
- Graphisoft MiniCAD 5.0.2

Lalire March Architects
- Macintosh, various models including PowerMacs
- Graphisoft ArchiCAD v. 4.55

Kiss+Zwigard Architect
- Macintosh PowerMac 8100/80, 64m RAM, 1 gig hard drive
- Form-Z v2.5

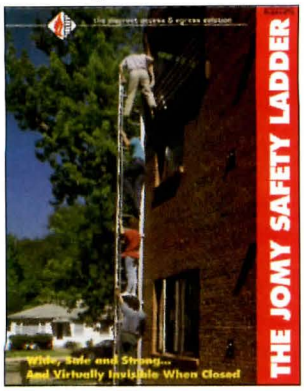
Bryce & Palazzola
- Principal: Compaq Concerto pen-based 486 laptop, 20m RAM. Other staff: a combination of 486- and Pentium-based PCs
- AutoCAD Release 12 ■

Correction

The image of the Euregio Office Building, a prize-winner in the computer Delineation Awards [May, p. 39], was printed upside down. RECORD regrets the error. ■

Manufacturers' Spotlight

The Discrete Access & Egress Solution

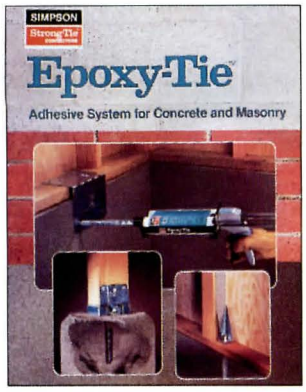


Security requirements, space constraints and aesthetic considerations are a few of the problem-solving applications for the JOMY Safety Ladder. The ladder's discrete appearance makes it an ideal solution for access and egress requirements. The ladder looks like a drainpipe when closed, but opens to a heavy-duty ladder with slip-resistant rungs and a safety rail. Jomy Safety Ladder Co.,1728 18th St., Ste. 201, Boulder, CO 80302. Phone 800-255-2591.

Jomy Safety Ladder

Circle 29 on Inquiry card

Anchoring bolts easier with EPOXY-TIE ™



Low-cost epoxy system for retrofits in concrete or masonry provides stronger anchoring than can be achieved with mechanical anchors. Epoxy-Tie™ bonds with surrounding concrete; anchor is less prone to side-burst during close-interval installation. Higher resistance to moisture and vibration than mechanical anchors. Full information in brochure **F-ET**.

Simpson Strong-Tie® Co., Inc.

Circle 30 on Inquiry card

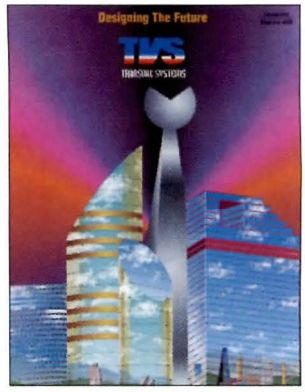
Stone Panels

Ultra-Lite natural granites, marbles, limestones & slates. Offering natural stones with 80% less weight. Reinforced for high impact & flexural strength. Especially well suited for renovation & reclad. Saves on back-up framing & structure requirements. Reduce installing labor costs. Used on building exteriors throughout the world. Also elevator cab & lobby cladding, ceilings & locations requiring real stone but less weight.

Stone Panels, Inc.

Circle 31 on Inquiry card

Automated Vacuum Transport Systems



Waste and/or soiled Linen

- Perfect for large hospitals and similar buildings that serve thousands of people
- Improve the building environment, management, and maintenance
- Full-vacuum and gravity/vacuum tecnology
- Custom design each system to building specifications

Transvac System, Inc.

Circle 32 on Inquiry card

New Fireplace Tested as a Wall Furnace

Heat-N-Glo Fireplace Products has taken its direct-vent technology and incorporated it into a new high performance fireplace. Model 6000 Supreme is a high efficiency fireplace (thermal efficiency up to 74%) and has a AFUE (Annual Fuel Utilization Efficiency) rating of 63%. Also, the 6000 Supreme is standard with a variable regulator to adjust the flame and BTU input with the turn of a dial. Heat-N-Glo, 6665 West Hwy 13, Savage, MN 55378, 1-800-669-HEAT.

Heat-N-Glo

Circle 33 on Inquiry card

Bicycle Lockers

CycLockers are all-steel modular bicycle storage cabinets that accommodate two bicycles per unit. Modules can be used individually or in linked groups sharing common walls. Choose from over 170 coating colors, two-toned color schemes, or stainless steel versions. For new brochure call 1-800/547-1940 ; request extension 530. Columbia Cascade Co. Portland, Oregon.

Columbia Cascade

Circle 34 on Inquiry card

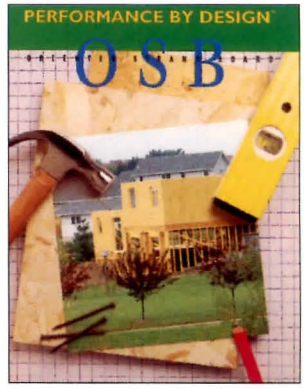
Accessible Lavatory Insulation

A full color catalog will explain the different Handy-Shield safety covers offered for the new or retrofit projects that need to comply with the American Disabilities Act. The specific use, sample specifications, drawings and color choice are all summarized in this easy to understand catalog.

Plumberex

Circle 35 on Inquiry card

OSB: Performance by Design



Get the latest word on oriented strand board, the engineered structural panel. Range of panel size and thickness means fewer design constraints and less waste. Applications include: wall sheathing, roof sheathing, subfloors, single-layer floors, and I-beams. Plus, OSB is approved by all major model building codes. Call the *Structural* Board Association (416) 730-9090 or fax (416) 730-9013.

Structural Board Assn.

Circle 36 on Inquiry card

Richard Thomas, A.I.A., San Antonio, TX
"Ceco buildings erect fast so it makes project completion predictable for our contractors."

Richard J. Loeschke, Jr., A.I.A., Annapolis, MD
"I design to my client's precise needs. Ceco allows me the flexibility to fulfill both the functional and aesthetic requirements I demand. They work for me. Not the other way around."

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For almost half a century Ceco Building Systems has worked with architects with one objective in mind -- to satisfy your clients' needs. We have the talent, the systems and the products to meet your expectations of what a pre-engineered building should provide, and we work with you in a way that is compatible with your style.

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Ceco Building Systems

For more information about Ceco call 1-800-474-CECO.
Plants in Columbus, MS; Mt. Pleasant, IA and Rocky Mount, NC.
Headquarters: Columbus, MS

Circle 66 on inquiry card

It's ironic, but the same elevator shaft responsible for the safe passage of people, power and communications lines, can also turn into a deadly conduit for fire and smoke.

Which brings us to this safety point: While you can find shaft wall component manufacturers that claim savings on labor and materials, only the USG Cavity Shaft Wall System claims performance certification under actual on-site conditions.

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Baltimore

Lighting to Rejuvenate a Mid-Atlantic Metropolis

Baltimore will soon be awash in new light. The city is going ahead with "Brighten Baltimore," a five-year program to both improve street lighting and light up more building facades. So far, several towers on the city's skyline have been brightened up, including the World Trade Center, the NationsBank Tower, and the historic Bromo-Seltzer Tower. The plan—outlined by the Philadelphia firm Grenald Waldron Associates—is to make streets safer and dramatize the city's skyline. Over 100 downtown buildings were pinpointed for illumination, and 33 singled out as crucial to the plan. A photograph (top right) shows the skyline as it is, and a computer-generated rendering (below right) shows what is envisioned, using concepts ranging from general floodlighting to playful neon. In the streetscape plan, emphasis was placed on safety and creating a warm, cozy environment. Various guidelines are set for the illumination of plazas, parks, parking lots, and alleys. The idea is not to dramatically increase the amount of lighting, but to provide a more diffuse, comfortable light than is currently provided. Presently, bright cobraheads often make it harder to see, and make streets seem more threatening. The proposal also suggests keeping storefront lights on until midnight (they are now often turned off by 9:00 or 10:00 p.m.), and using open grilles for security. These let light shine from the store's interior, and the total effect is a more welcoming city. ■

New York City

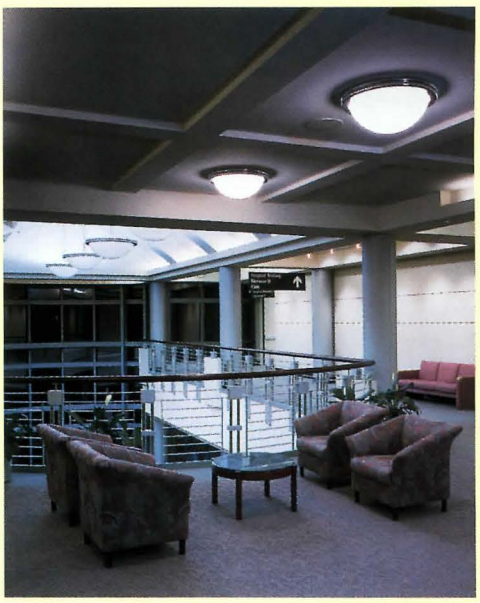
Digital-Imaging Studio Gets a Soft Touch

© Ken Hansen Imaging

"This is what can happen when you can get your client to visit your office," says lighting designer Domingo Gonzalez, who designed the lighting for Ken Hansen Imaging. Client Steven Kiviat was quite taken with the upturned industrial-fluorescent strips in Gonzalez's own office, a low-budget solution that worked with architect Allen Klein's flowing shapes for the 6,000 sf space. Open-gimbal-ring track fixtures with PAR floods are used to light art on perimeter walls. ■

Overland Park, Kansas

Medical Center Given Comfort Lighting



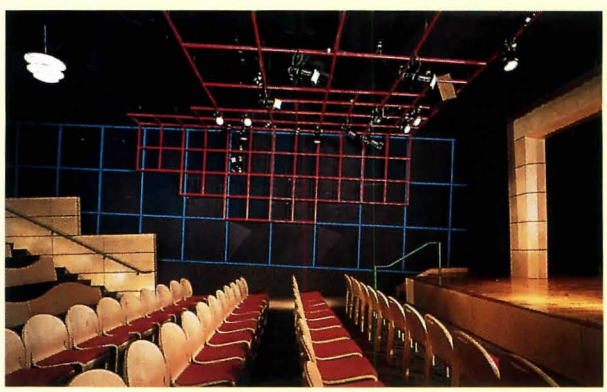
© Spillers photos, Courtesy Lam Lighting

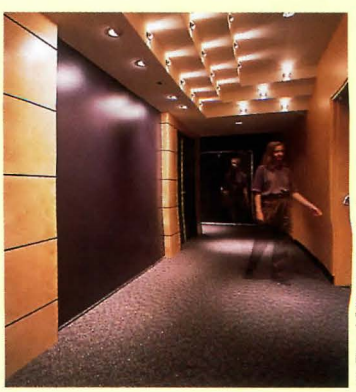
Menorah Medical Park, in Overland Park, Kansas, is a new facility in a highly competitive medical-services market. The completely integrated, expandable healthcare campus contains 82,000 sf of outpatient ambulatory-care facilities, designed from the ground up to be "the finest facility for outpatient services in the area." It includes a cafe and complete support services. An attached 89,000 sf, two-wing building contains private physicians' offices. Architectural Consultants, Inc. was charged with imagining everything that would be needed to make the facility draw patients and professionals. The resulting building is carefully conceived, from landscaping that preserves a large thicket of trees to the selection of beautiful wood paneling and furnishings that make Menorah look more like a country club than a medical building. Likewise the lighting, designed by Ed Tranin of Tranin Design Associates, was intended to look non-institutional, unobtrusive, and be energy efficient. In seating areas, and some lobby spaces, Tranin used milk-white, bowl-shaped pendants with heavy chrome rims, lamped with metal halide. These have been installed in coffers in surface-mounted conditions, and elsewhere are suspended from chrome stems (above right). The pendants have a direct-indirect distribution to provide soft illumination, while MR16 track provides scalloped wall washing. Menorah's corridors and waiting areas are also graced by a number of nicely detailed fluorescent cove details (above left and right), that vary according to the available ceiling conditions. Lighting designer Tranin also specified compact-fluorescent downlights to keep energy use to a minimum. ■

San Francisco

Randall Museum Auditorium Lighting Grabs Rave Reviews

An auditorium at a popular children's museum sat in an unfinished state for 25 years before being completed by ELS/Elbasani & Logan Architects in joint venture with Marcy Li Wong, Architect and The Engineering Enterprise. Four pendants of classic Danish design with 500W incandescent lamps light the house, and a grid for theatrical lighting was added as well (left photo). In the foyer (right photo), the stepped ceiling is washed by 20W incandescent running lights, usually found on yachts. 50W MR16 wall washers add applause. ■





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Design

Briefs

The Lighting Research Center of Rensselaer Polytechnic Institute, Troy, N.Y., is publishing a new newsletter, *Lighting Futures*, which will cover significant lighting trends and issues that affect the industry. For information, phone 518/276-8716.

The IESNA has released two new publications: *Design Criteria for Lighting Interior Living Spaces* and *The IESNA Recommended Practice for Lighting Casinos and Gaming Facilities.* To order, phone 212/248-5000 or fax 212/248-5017. ■

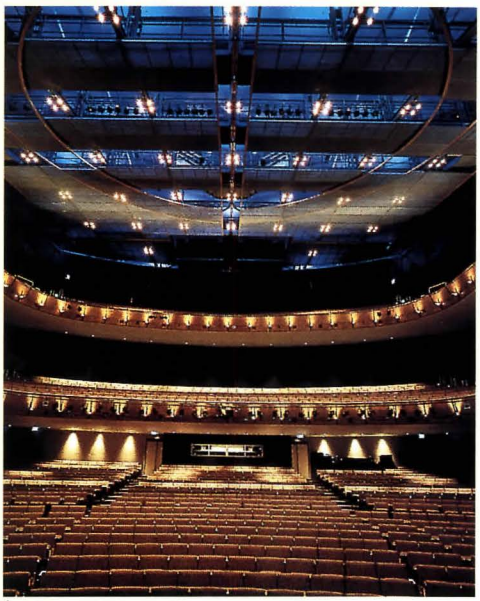
Cincinnati

Delta Concourse a Kit of Parts

At Delta Airlines' Cincinnati International Airport Terminal, Horton•Lees Lighting Design's team was faced with a number of diverse lighting and architectural conditions. Large-scale architectural volumes, and a variety of daylighting conditions made specification of expensive, small-scale, off-the-shelf luminaires inappropriate. The solution was the development of three luminaire types using a "kit" of standard components. One example of the luminaire types developed is found in a skylit concourse (below), where an uplight strip, punctuated by inexpensive utility downlights fitted with perforated-metal hoods, brings brightness on gloomy days and a retail-like quality to the space. Elsewhere, other custom direct-indirect fluorescent luminaires were created from the kit: curved white acrylic, perforated metal, and incandescent downlights. ■

Chicago

IALD Lighting Design Awards Given at Chicago LightFair



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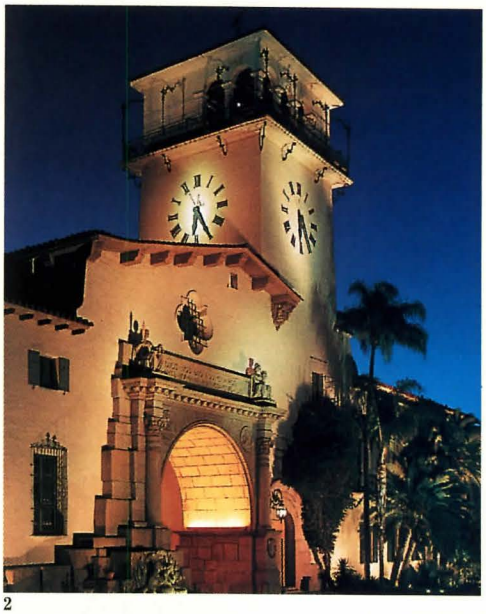

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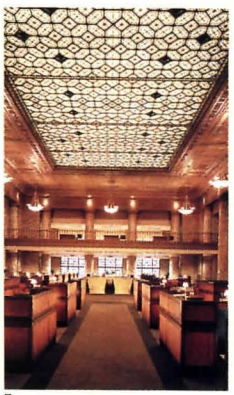

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Fifteen designers received 1995 International Association of Lighting Designers Awards for everything from a casino in Biloxi to a bagel shop in Seattle. Awards of Excellence were given to two firms: Horton•Lees Lighting Design, Inc. for its interior work on the Ahmanson Theater in Los Angeles, and Ross De Alessi Lighting Design for lighting at the Santa Barbara Courthouse. Horton •Lees was cited for transforming the uninspired 1960s theater into "an intriguing home for the performing arts." A highlight of the project is a diaphanous metal scrim which floats above the audience (1). For the lighting of the courthouse, Ross De Alessi used soft, incandescent lamps to dramatize the Spanish-Colonial landmark's stucco and sandstone facade (2). Leonor Bedel & Asociados received a citation award for the interior lighting of the Basilica Nuestra Senora del Pilar in Buenos Aires (3); Hunsicker Brothers Lighting and Elliott + Associates Architects received a citation for the Ackerman McQueen Advertising offices in Tulsa, Okla. (4); and Schuler & Shook, Inc. a citation for the restored main banking floor of the LaSalle National Bank in Chicago (5). Other citation winners were: Equation Lighting Design Ltd. of London; Gallegos Lighting Design of Northridge, Calif.; Focus Lighting, Inc. of New York City; S. Leonard Auerbach & Associates of San Francisco; Lighting Design Partnership Ltd. of London; Fisher Marantz Renfro Stone, Inc. and Lighting Planners Associates, Inc. of New York City and Tokyo; Ann Kale Associates, Inc. of New York City; Douglas Baker Lighting Consultant of Newport, R.I.; Adams/ Mohler Architects of Seattle; and Lynn Redding Lighting Design of Cheyenne, Wyo. ■

Chilling Out: Do Lighting Upgrades Always Reduce HVAC Costs?

By Lindsay Audin

When vendors pitch lighting upgrades for energy efficiency, they may also claim that energy savings beyond those gained by improving the lighting system will be experienced because building cooling loads will also be reduced when lights are turned off. On the face of it, it makes sense. But these claims often ignore that some or all of these savings may be negated either by an increased need for seasonal heating, or by the way the hvac systems are designed or operated. On the other hand, other benefits, such as recovered peak-cooling capacity, are often ignored.

Almost all the wattage used by a fixture ends up as heat somewhere. Even light itself is converted to heat as it strikes room surfaces. As a result, all the wattage of free-standing wall or pendant-mounted fixtures heat the spaces they light. Similarly, some of the heat from recessed fixtures directly heats a space, while the remainder warms air in the plenum above the hung ceiling (see diagram). When that air circulates back to the air handler, its heat is removed by the cooling coil. Only the heat held by air that is exhausted leaves the building without creating a load on the cooling system.

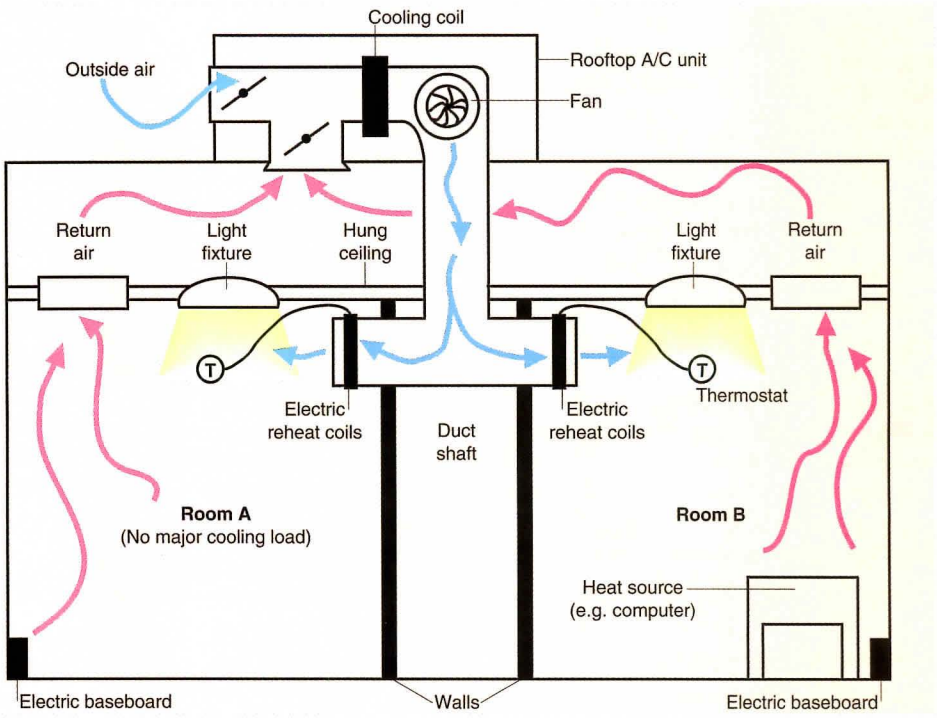


Illustration by Matthew Dvoroznak

When one hvac system serves spaces with different cooling or heating loads, electric reheat coils and baseboard heaters may undo the savings from a lighting upgrade.

Simultaneous heating and cooling

Many air-conditioning systems have one central cooling coil that serves a number of spaces with different cooling needs, such as offices, a computer room, and a conference area. To handle such diverse loads, the temperature of the air discharged off the cooling coil must be set low enough to sufficiently cool the warmest zone, say a computer room. This may be too cold for the offices, so heating coils (controlled by room thermostats) reheat the overly cool air to a level comfortable for these spaces.

These are often referred to as reheat, dual-duct, or multi-zone systems, and would react to a reduction in cooling load due to a lighting retrofit by actually having to *increase* their heat output. Similar results may occur for induction and fan-coil systems, depending on their piping and controls. In such cases, little or no cooling savings are seen, and energy for heating actually increases in the summer.

When the reheating coils are electric, removing lighting wattage will cause them to come on more often to keep room temperatures constant. Not only are there no cooling savings, but now even the wattage saved by the lighting upgrade may be negated by the additional power drawn by the electric coils.

Where reheat coils have been disconnected, a common measure left over from energy "crises" of the past, there is nothing to balance the reduced cooling load due to a lighting retrofit, and summer room temperatures may drop into the low 60s. In one building, a reheat system had to be turned back on after a lighting upgrade. In another, occupants actually turned on portable electric heaters in the summer, defeating some of the benefit of the lighting upgrade.

In some geographic areas, the cooling-coil discharge temperature can be reset to a higher level after a lighting retrofit. Hvac costs, for both heating and cooling, will then be reduced since less reheating occurs as over-cooling is reduced. Unfortunately, this trick may not work in coastal or southern climates where a building's humidity is controlled by maintaining a low cooling-coil temperature.

On the other hand, increased heating costs are nearly always ensured by a lighting upgrade. When rooms get cooler in winter, thermostats (and users) respond by calling for more heat. In most cases, the cost of extra heat is much less than the savings due to lowered electrical consumption for lighting, so this penalty is small. There is, however, an important exception to that rule. Some (or all) of the energy benefits of a lighting upgrade may be negated when electric baseboards supply the heat.

Eliminating one kilowatt-hour (kWh) of heat from lights may result in consumption of another kWh by baseboard resistance heaters. The net result may be zero savings during the heating season. And where both electric reheat coils and electric baseboards

Lindsay Audin is energy manager for Columbia University and lighting research consultant to E-Source, a Colorado-based energy-consulting group.

When vendors claim cooling savings from a lighting retrofit, beware. Retrofits do bring savings, but sometimes they are of an unexpected nature.

are common, there may be little or no net savings from a lighting upgrade.

Other modern buildings may be equipped with electric boilers, so it pays to verify that even hot water baseboards are not served by a hidden electric-resistance heat source. The net effect of such hvac interactions may be that little (or no) measurable savings will appear on electric meters in the summer (due to electric reheat) or in the winter (due to electric baseboards). Such "all-electric" buildings are therefore rarely good candidates for lighting upgrades.

Electric heat pumps, however, deliver several units of heating for every unit of power they consume, so taking away one kWh of heat from lights requires a heat pump to use only a fraction of a kWh to replace it.

Simplistic computer analyses mislead

Some analysts have used computer simulations to quantify cooling savings from lighting upgrades, but such models are often too simplistic and bear little resemblance to the ways that existing hvac systems are designed or actually operate. Some models, for example, do not properly account for the electric power used by cooling auxiliaries (such as chiller pumps), often assuming that their wattage varies with the cooling load. Unless controlled by sophisticated variable-speed drives, most fans and pumps run at the same speed and duration regardless of minor changes in load. As a result, such simulations often overestimate hvac energy savings. In the author's experience (which includes both computer modeling and metering of savings after large lighting upgrades), claims of net hvac savings after a lighting upgrade are, at best, speculative and, at worst, misleading.

What should you tell your clients?

In different parts of the country, cooling is much more expensive than heating due to different utility rates or operating periods. In such locations, net hvac savings may occur. On the other hand, buildings located where the heating season is much longer than the cooling season could actually see a net increase in hvac costs. Unless one is quite familiar with a facility's hvac system, it may be best to simply say that hvac savings will be small compared to the savings that will be gained by reducing lighting-system wattage.

Because heat from lighting is commonly included in the sizing of cooling equipment, reducing that load creates spare peak-cooling capacity: it's like making a chiller plant larger, at no extra cost. Such extra capacity may be used to cover increases in load due to new office equipment—the fastest growing source of cooling load—or a reduction in chiller efficiency from an EPA-required conversion to a non-CFC refrigerant, for example. As a building's cooling load grows, it becomes increasingly difficult to maintain comfort on the hottest summer days, so increased spare capacity translates into fewer "hot" calls on such days.

"Some reheat, dual-duct, or multi-zone systems react to a reduction in cooling load due to a lighting retrofit by actually increasing their electric heating system output."

Bottom-lining the benefits

Every 100 kilowatts (kW) removed during a lighting retrofit cuts cooling load by up to about 28 tons. When the costs for cooling-system auxiliaries, supplying new electric service, adding ductwork and piping, etc. are included, total expenditures of $3,000 to $5,000 per ton are not unusual, so installing an air-conditioning system that can handle that much cooling today could cost over $80,000. Additional cooling equipment is often necessary to handle loads from new computers, copiers, and other heat-emitting devices, so a lighting upgrade can produce significant cost avoidance.

For example, assuming that 20 percent of heat output is dumped through exhaust air, the avoided-cost for new cooling plant construction due to the elimination of 1 kW of lighting is:

(28 tons ÷ 100kW) x (100% - 20%) x $3,000/ton = $672/kW.

Taken another way, depending on the measures taken, reducing lighting wattage from a typical average of 2.5W/sq ft down to 1.5W/sq ft costs $1 to $2/sq ft (or less, when lesser wattage reductions occur), so the cost of eliminating that same kW in the form of lighting is about:

(1,000W/kW) x $1/sq ft ÷
(2.5 - 1.5)W/sq ft = $1,000.

Comparing these two figures, we see that the "harvested" cooling capacity is worth almost as much as the cost of the entire lighting upgrade. One could thus claim that the new lighting has nearly paid for itself before even being turned on.

In one real-life example, building owners considered converting a garage area into a mainframe-computer space. They asked if the building had enough cooling capacity to handle such a load increase, estimated at over 20 tons. Initial estimates for new cooling equipment exceeded $50,000, but an earlier lighting upgrade had freed up over 100 tons of central-plant capacity, making much of that expenditure unnecessary. The extra capacity harvested by the lighting upgrade was money in the bank.

Harvesting still more capacity

It is also worth noting that upgrading buildings with high-efficiency lighting can free up existing electric-service capacity by reducing wattage demand and raising power factor. This was found to be true with the garage that was converted into a mainframe computer room. Adding additional electrical service ranges from $50 to $250/kVA, depending on the geographic area and amount of work to be done, so if more service capacity is needed, the cost that can actually be saved and the amount of capacity gained depends on a number of factors, but is still additional money in the bank. ■

Lighting on the Bleeding Edge

By James Robert Benya

What gets lighting designers into trouble is creativity. A new product is introduced, and we just have to use it in a new design. Most of the time, the products are developed carefully, supported by research and testing, and are available to the contractor at the right time during a project. But sometimes we just can't resist riding along what I call the *bleeding edge*, where our creativity and faith in new products results in projects that are either truly incredible, or else result in embarrassment, dissatisfied clients, and outright disasters.

The lighting manufacturing industry labors under constant pressure, from both competitors and specifiers, to produce products in months that are expected to last for years. Granted, a product that is born of this R& D pressure cooker may operate fine in a laboratory. But in the real world, with ordinary power, temperature variations, humidity, and the brute forces of people and nature, a product may suddenly exhibit less than wonderful behavior. Maybe a product suffers a total failure, or maybe only an illogical "phantom" failure, like when a certain kind of lamp and switch combination causes a premature lamp failure, and nobody knows why.

As either a designer or a manufacturer, if you've avoided getting cut by the bleeding edge, you're lucky. I probably don't have to prove this point to anyone, but here are a few recent examples of products that hit the marketplace with unfortunate consequences for those involved with them, whose names I have omitted to protect the wounded. To be fair, it's worth noting here that many of the products whose stories I'll tell have been redesigned and are now used successfully. Other products still beg for attention.

Black boxes that blew

The high failure rate of electronic ballasts in the early 1980s postponed the general acceptance of the product for about 10 years, and is one of the biggest wounds the lighting industry has ever faced. The problem was not that electronic ballasts would not work, but simply that the circuit designs and components used by some companies could not endure the demands of full-time service on ordinary commercial power. Now that many lessons have been learned, the electronic ballast is a safe bet. But it still pays to beware of new companies or models—reliable ballasts are difficult to design.

And it was not just T12 and T8 ballasts that suffered from high failure rates. Several manufacturers' compact-fluorescent ballasts had notoriously high failure rates. Occupancy sensors had their days of infamy before becoming relatively reliable and stable, and I have had a number of problems with dimming systems that suffer from a kind of "electronic senility"—their memories come and go. To avoid the bleeding edge in electronics, be wary of "new concepts," and especially all-new ideas, until a reasonable maturation time has passed.

A new generation of ballast woes

The latest problem with electronic ballasts is a real doozy. Those following the evolution of electronic ballasts will remember the potential power-quality problems that were presented by them, and the work done to reduce ballast-current harmonics to under 20 percent. But in the zeal to have better power quality, ballast designers developed very-low-harmonic-distortion ballasts, under 10 percent and as low as 4 to 5 percent.

Unfortunately, when turned on under certain conditions, some of these products will cause a current in-rush of about 100 to 150 times normal—at the high end about 10 times greater than the in-rush caused by an incandescent lamp. This creates a high potential for damaging ordinary switching and control devices—even a specification-grade toggle switch isn't rated for this level of switching current. At least one controls manufacturer has developed an occupancy sensor using zero-crossing switches to counter this. Still, designers and engineers should practice caution when specifying very low harmonic-distortion ballasts and control systems.

Those odd end-of-life-conditions

The euphemism "non-passive end of life" came from an unexpected problem with conventional metal-halide lamps. If the end of life comes when a lamp is operated on regular on-off cycles, the lamp will simply not start. But if the lamp is operated continuously throughout its life, when its time is up it will literally explode. Unfortunately, it took 24,000 hours of continuous use for the first customer to detect this condition—unanticipated by the manufacturer. Fortunately, metal-halide lamps are now required to have some protection against arc-tube explosion, either within the lamp or fixture.

A similar problem has existed with small-diameter fluorescent lamps when used with electronic ballasts. The cathode fails at the end of the lamp's life, but the electronic ballast can overheat the support wires, converting them to cathodes and continuing what would appear to be normal operation—that is until someone notices smoke coming from the molten lamp base. Electronic ballasts for T5s and other small lamps are now being redesigned to detect this problem and shut down before melt down.

Fortunately, most end-of-life problems are limited to the notorious color-shift of metal halide and some high-pressure sodium lamps. Claims of close-color tolerance and minimum color shift seem hard to believe when you observe a room with lamps in every color of the rainbow—with warm-colored cool lamps and cool-colored warm lamps. It makes one long for our halogen days, doesn't it?

But halogen lamps can also experience a non-passive end-of-life event, especially the thin-film infrared reflecting and high-wattage quartz types. These are sensitive to physical shock when hot; the filament responds to impact or even movement by shorting or failing. The earliest IR lamps were so sensitive one didn't dare adjust one once it was operating. Improvements have been made, but it is still important to be gentle when adjusting those PAR display lamps.

Color, UV, and IR

Funny color problems occur with every type of fluorescent lamp, and even MR16s. Compact fluorescent color can vary with the burning position. When used in combination, 3500K rare-earth lamps from different manufacturers don't match; the 3000K metal-halide lamps certainly don't look like any 3000K fluorescent lamps, which don't look like 3000K halogen lamps—assuming the contractor didn't rewrite the spec and install all 40W cool whites anyway.

The "bleeding edge" is where a lighting designer's faith in brand-new products results in projects that are truly incredible, or are embarrassing humiliations that leave everybody wounded.

With compact fluorescents, especially the 13W twin tube, the amount of ultraviolet radiation is substantial. White-painted reflectors or cover glass usually absorb the radiation. But the polished aluminum used in most CFL downlights reflects the UV and concentrates it. You might want to think twice about putting them over that $10,000 oriental rug the interior designer has specified for the lobby of that law firm. And forget about using any type of fluorescent lamp for that energy-efficient museum project.

But metal-halide is the all-time champion UV emitter, especially the quartz-tube-type lamps. Even with the required cover glass, the amount of UV from the luminaire is many times the amount emitted by a halogen or incandescent lamp. Some grocers who have tried metal-halide display lighting of produce believe it prematurely ages the fruits and vegetables. And these products aren't on display very long.

Infrared emissions have the potential to be problematic, too. The compact fluorescent emits ultrasonically modulated infrared light. So does a television remote control. Obviously, using table lamps with CFLs in them in the den poses the risk that an inconvenient interaction with the TV will be created.

Where did the light go?

Fluorescent lamps are notoriously temperature sensitive. But tests at Lawrence Berkeley Laboratory discovered that for most compact-fluorescent luminaires and applications of screw-base CFLs, the *application thermal factor,* which accounts for non-recoverable light loss due to heat, was as high as 15 to 20 percent. Both burning position and bulb-wall temperature contributed to this characteristic. These losses are so significant that most specification downlights are now being designed with some sort of ventilation or heat sinking to minimize them. And many newer lamps are being developed using amalgam technology to provide stable light output over a broad temperature range.

Meanwhile, metal-halide lamps continue to exhibit severe lumen depreciation, losing as much light in the first 1000 hours of their lives as fluorescent lamps do in their entire lifetimes. Near the end of its life, a metal-halide lamp has often experienced a 50 percent drop in lumen output. Be sure your lighting calculations include a suitable light-loss factor.

Resolving conflicts

Nearly every lamp, ballast, and luminaire manufacturer has experienced some disasters—sometimes caused by a lighting-system component they didn't make. A lighting system after all, usually requires products manufactured by different companies, and even the skill, labor, and materials provided by the contractor can come into play. When there are problems it often takes time and adjudication to identify who is at fault, and often no single party has the skill or responsibility to resolve them. And when there are problems, the only thing everyone seems to have in common is that they are all equipped with a finger to point at everybody else.

The resolution of a problem is probably the ultimate test of the designer's professionalism and the manufacturer's integrity. For the designer's part, he or she should be expected to work with the manufacturer to resolve problems, usually at their own expense. Designers should be advised of the risks and benefits of using new technologies and ideas and, if possible, given the option to use conventional technology. It is often smart to do small installations to confirm the success of a new product before repeating a potential mistake—and harvesting the liability that goes along with it—on a very large project. I don't mean to imply that the designers should avoid small or new companies; but they should be able to expect these companies to stand behind their products far into the future.

So, if you're going out on the bleeding edge, it is extremely important to make sure that adequate protection for you and your client is built into the contract documents. Make certain that warranty periods are sufficiently long, and provide for labor and materials to replace defective or failed systems. Make the contractor completely responsible for problems that arise from unapproved substitutions or failure to observe contract documents or other details. Make a single party responsible for systems coordination and operation, even if that party makes only a portion of the system. Require that all of the lamps come from the same manufacturer.

Benya's holy grails

This is also not to discourage those manufacturers who endeavor to try something new, even though it is extremely annoying that there are a few companies out there who introduce new products that are not quite ready to manufacture, and won't be until they get a sizable number of orders. Before you specify something new, you may want to get a commitment from the manufacturer. Bleeding-edge lighting designers who believe too many promises are especially prone to losing some blood.

In 1976 the Department of Energy proudly announced the Hollister Lamp in response to the energy crisis. It was to be a fluorescent lamp without electrodes. In 1991, it as introduced by someone else as the "QL-lamp." In 1992 it was introduced as the "E-lamp." In 1994 it appeared under the "Genura" alias. We still don't have an electrode-less product that is available for general use and specification, and we could really use one. Don't count on the sulfur lamp yet, either. The lamp may last forever, but the microwave unit is only rated at 10,000 hours.

Other examples of new products that lighting designers dream of are:

- An electronic ballast for the 150W metal-halide lamp.
- The T2 fluorescent lamp.
- An affordable electronic ballast that is dimmable.
- Low-cost lightweight electronic ballasts for most HID lamps.

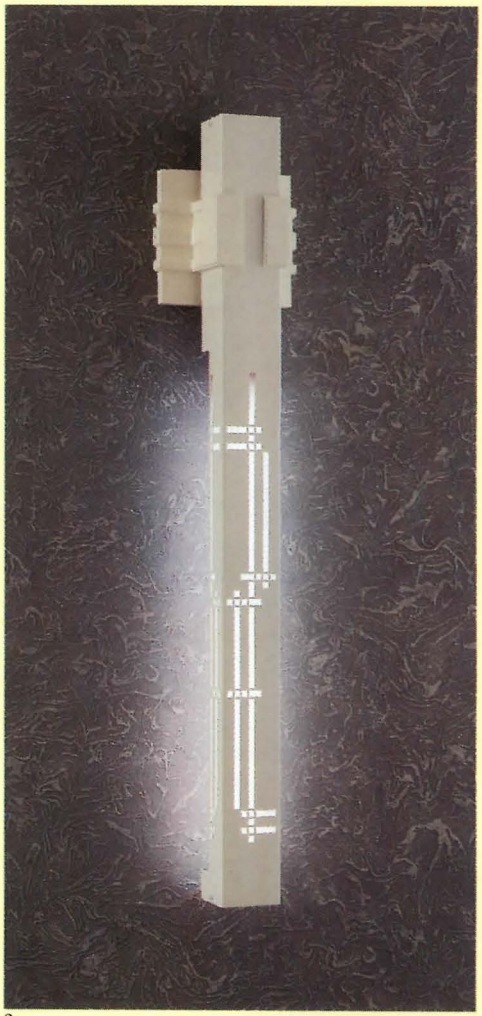
So, that's the bleeding edge. Manufacturers must not stop trying to develop new products, and lighting designers must not stop trying to be creative by applying wonderful new products that will allow better lighting with less energy use. Everyone just watch your step and keep the Band-Aids handy. ■

Back from the Drawing Board

344. Tooling up
According to head designer Kevin Willmorth, Visa Lighting has always offered functional, performance-driven products with an esthetic core. At Lightfair, the Milwaukee firm introduced fixtures that renewed both performance and esthetic criteria with an entire line designed exclusively for compact-fluorescent sources such as the 36/39W Biax and 2-D. (There are few if any incandescent lamping options.) The new luminaires are linear, square edged, less rounded, and in general more International than midwestern in feeling. Parts are made of cast metal, a capital-intensive technique requiring a high level of investment for tooling dies. But casting is cost effective, as one cast part can incorporate a high level of design detail and multiple functions. Individual luminaires include European materials such as FRP and polycarbonate, cast glass, and zinc. These new fixtures are intended to be part of the architecture, scaled for large and medium commercial applications without intruding on the space.

1. An ADA-compliant version of the Colonnade-style sconce has color or metal-finish banding on cast bracket; opal-acrylic diffuser 13 1/2-in. high. 2. Lance comes as a pendant, and in both horizontally and vertically oriented brackets, for biaxial-fluorescent lamping. 3. Shown in one of two sconce versions, Saber direct/indirect design also comes as a 36-in.-high pendant. For biaxial lamping, fixture has a perforated-aluminum diffuser. 4. Made of extruded and cast aluminum, Riverside bollard has an Arts and Crafts effect. Base is covered in unfinished cedar. 5. Flight uplight comes as sconce, pendant, and standing lamp. Materials include extruded aluminum, polished chrome, FRP, and clear glass; light-gray enamel finish is standard. For biaxial lamping, flight lists for $325. 6. Easel is also ADA-compliant, offering custom bracket details within a standard-component range. Light from an "invisible" 28W 2D fluorescent is diffused through front and back panels of glass, perforated metal, and acrylic. 7. Approved for wet locations, Context offers two diffuser options and three trim designs (a cast-aluminum grille is shown). Units can be ordered for 26W CFL, 100W incandescent, or 50/70W metal-halide lamping. 800/788-VISA. Visa Lighting, Milwaukee, Wis.


1


2


5

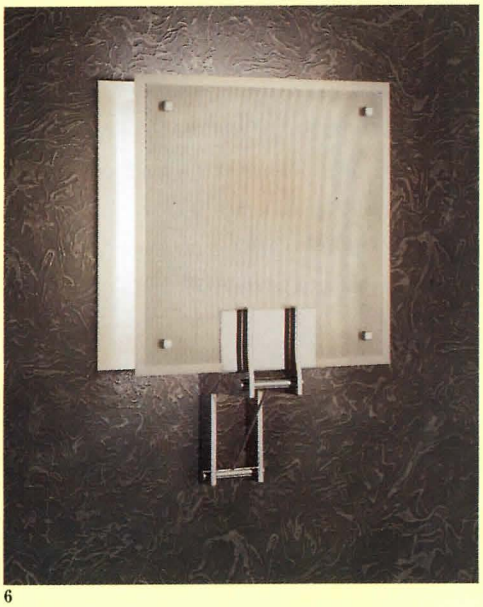
Yankee Ingenuity

3

4

345. Low-voltage lighting
A Connecticut firm puts its own "really quiet" toroidal (doughnut-shaped) transformers into unique, inexpensive low-voltage fixtures. A display or accent light, the Exotrac (1) uses clothespin-like clamps to hold bi-pin lamps in contact with each side of thin metal conductor strips. Adjustable brackets fasten the rigid-yet-flexible track to ceilings or walls. Hockey Poc lamps (2) put the transformer in the base; a gooseneck aims a 20W reflector lamp. Units can sit on a desk or hang on a wall. 203/367-5188. Tortran, Inc., Bridgeport.

1



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7

2

BEAM OF WHITE.

Crisp, white illumination and a color index equal to true daylight makes halogen the best solution for today's most challenging lighting applications. Pure white halogen light renders colors perfectly because it contains every color in the spectrum. So, whether you're illuminating a work of art, a retail setting, or an interior, you want to use the OSRAM SYLVANIA line of energy-saving halogens. We make one for every halogen fixture.

For the efficient, high-performance line-voltage arena, we've improved on our pioneering capsylite technology, removing the diode and the flicker. They're available in a wide variety of wattages, diameters, and beam patterns. We also offer the broadest selection of double ended (RSC) halogens in the industry.

In the low-voltage category we feature our versatile TRU-AIM® MR-16 line, which combines consistently superior color rendition and high output, with low temperature and long life. We make them in a full range of wattages and beam spreads and even in our exclusive bi-color format. We also have the industry's best selection of high quality bi-pins.

Best of all, every one of our innovative products is backed by the dependability and service commitment that has made OSRAM SYLVANIA the leader in the field of light. Call 1-800-LIGHT-BULB and let us help bring your designs into the light of day.

OSRAM
SYLVANIA

Circle 74 on inquiry card

The Nostradamus of Lighting: How Did Her Predictions Fare?

Recently Jules Horton, of Horton • Lees Lighting Design, faxed me a page of predictions he'd unearthed from a musty cardboard file-storage box, and claimed they were made by "a palmist and advisor" some 15 years ago. Naturally, this predates "Diana Ross's Psychic Hotline," so I can only assume these visions were conjured up by one of Jules's clients, who either couldn't pay for his lighting services after buying beaded curtains, or wouldn't pay because she saw the future of her palmistry parlor, and it was full of fizzled electronic ballasts. Amazingly, however, some of them have nearly come true:

• "Lighting designers will become an educated lot, since most major universities will have a four-to-five-year degree program." Not quite, but at least a few universities now have such programs.

• "The practice of lighting design by electricians, plumbers, fixture salesmen, rental agents, and other sundry professionals will be considered a misdemeanor." Not quite, again, but at least a group called the National Council for the Qualification of Lighting Professionals did take a crack at establishing some minimum education and examination standards. Unfortunately, only the NCQLP board members have done time so far.

• "CRT screens will replace Xerox machines, and office lighting will become fully task-oriented." This is truly an amazing prediction, considering that the personal computer had hardly been invented in 1980. Task-oriented was what people were supposed to be, not lighting fixtures.

• "Disco systems will have to be approved by ophthalmologists and otolaryngologists." Disco? What is disco?

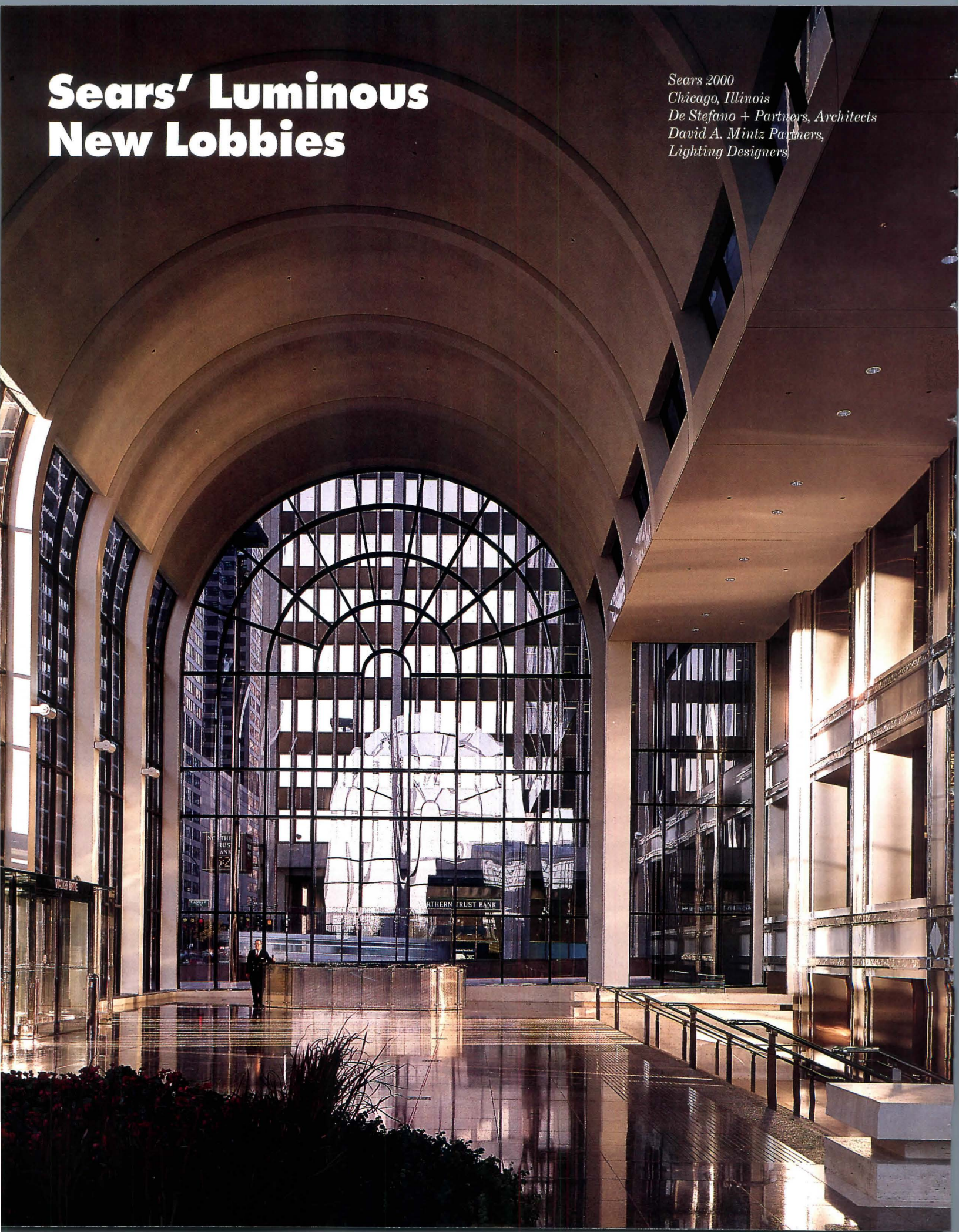
The number of innovations not mentioned by the Nostradamus of Lighting is truly amazing; for a look at some that have worked, and some that still need work, see James R. Benya's column, "Lighting on the Bleeding Edge," in this issue.

By the way, I think in the years ahead we can count on more predictions via Jules Horton. I hear he now has his own *personal crystal ball.* And, task lighting for it. *Charles Linn*

Manufacturers' Sources listed on page 40

Sears' Luminous New Lobbies

Sears 2000
Chicago, Illinois
De Stefano + Partners, Architects
David A. Mintz Partners,
Lighting Designers



When Sears, Roebuck and Co. decided to abandon the world's tallest building for the suburbs, it was clear the 1970s-vintage tower—meant in the beginning to serve Sears and few other tenants—would have to undergo a transformation to work as a spec-office building. Public access, the lobby spaces, and circulation were poorly set up for multi-tenant use, and after nearly 20 years, the original lobby finishes were worn out. The original lighting was mostly inefficient incandescent, and in need of an overhaul as well.

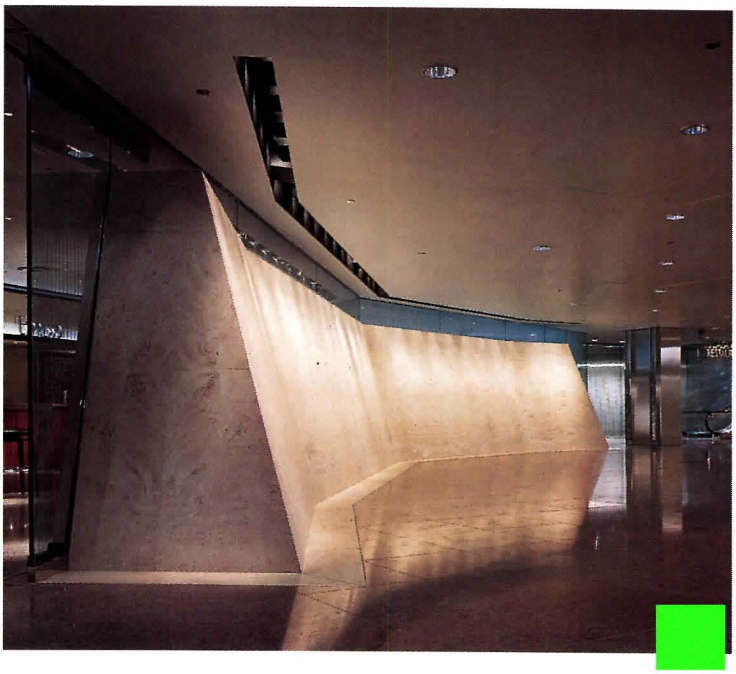
David Mintz Partners and De Stefano+Partners worked together to affect the transformation, starting with improving access to the building. On the east side, off Franklin Street, an existing plaza was opened up to reveal the east entry, and covered by a monumental canopy (right), lit at night by metal-halide downlights. On the west side, off Wacker Drive , where a vaulted pavilion had already been added in front of the building after completion (opposite), Mintz reworked blue-glass filtered, high-pressure sodium uplights so they would accommodate metal halide, and added compact fluorescent downlights in the new soffit over the stairs.

The main feature of the redevelopment was the creation of two, three-story lobbies on Franklin and Wacker Drives (following pages). "For these, the architect imagined a massive hanging grid—somewhere between a hanging grid and a gigantic chandelier," says Mintz. Statistics for the hanging grids are impressive. The Franklin Street lobby chandelier is approximately 55 feet by 48 feet, weighs about 20,000 pounds (not including the glass panels), and is suspended from over 800 stems, some that carry weight, some that carry power, and some that are dummy stems to fill out the pattern established by the others (the size of the Wacker Drive lobby chandelier is similar). "The grid is made of stainless-steel-clad aluminum extrusions and conceals 3-ft fluorescent lamps—over 360 of them in the Franklin Street lobby—which uplight the white ceramic-tile ceiling."

Laminated-glass panels, 3-ft square, clear at the borders and stippled in the middle, are suspended beneath every other intersection of the grid members. Over each glass panel is a 150W G40 long-life lamp on a dimming circuit. Downlighting comes from 100W metal-halide PAR38 lamps in cans which are at alternate intersections with the hanging glass panels (detail next page). "The entire chandelier was manufactured in sections and assembled at the manufacturer's plant prior to being shipped and reassembled at the lobby. It's big," says Mintz.

Spaces in each corner of the lobby were a single-story in height. Here, the lighting designers replaced existing incandescent downlights with compact-fluorescent fixtures, and incandescent troughs were added to wash the sloping travertine walls that separate retail areas in each corner of the building from the lobby (bottom right). The color of the CFLs had a side benefit. Besides brightening the space and saving energy, they also grayed out a rose-colored tone in the existing stone flooring that the architects weren't happy with and had no budget to replace. "We were able to change a material without having to replace it," according to Mintz. In contrast to the CFL, incandescent wall-washers recessed in troughs were used to illuminate the interior corridors between elevators, brightening bands of new travertine flooring that abut the walls. These are controlled by a programmable dimming system to extend lamp life and save energy.
Charles Linn

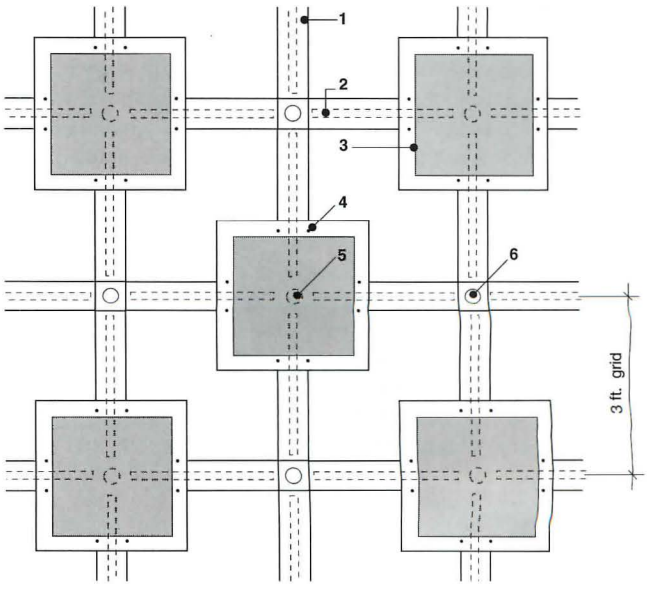
© Nick Merrick/Hedrich Blessing photos



Sometimes a little change in the lighting can contribute a great deal. In the Sears Tower's entry pavilion (opposite), existing uplights that had been lamped with blue-filtered, high-pressure sodium lamps—which yielded a garish color—were switched to more pleasing metal halide. Metal-halide can lights also illuminates the Sears Tower's new entry canopy (top), while incandescent trough lights brighten the lobby's sloping travertine walls (above).

Mega-scale chandeliers cover the ceilings in the newly created three-story lobbies for Franklin Street and Wacker Drive (above and opposite). The grid of stainless-steel wrapped-aluminum extrusions, suspended from white ceramic-tile ceilings, conceals fluorescent uplighting (detail right), as well as providing anchor points for PAR38 metal-halide downlights and G40 incandescent lamps. The incandescent lamps are mounted above 3-ft-square laminated-glass panels. The aluminum grid in the Franklin Street lobby weighs 20,000 pounds, not counting the glass panels.

1. *Aluminum extrusion with stainless-steel veneer*
2. *Three-foot fluorescent strip uplight*
3. *Laminated glass panel, clear border with stippled field*
4. *Glass panel hanging rods, eight per panel*
5. *150W G40 incandescent lamp over glass panel*
6. *100W metal halide PAR38 lamp*



New incandescent wall washers were placed in the corridors within the elevator cores (left) to brighten travertine walls and pick up a band of travertine flooring at the base.

Credits
Sears 2000
Chicago, Illinois
Redeveloper: *The John Buck Company*
Architect: *De Stefano+Partners*
Lighting Designer: *David Mintz Partners*
Consultants: *Environmental Systems Design (mechanical/electrical); Skidmore, Owings, & Merrill (structural)*

Landscape of Light

Bally's Plaza
Bally's Resort and Casino
Las Vegas, Nevada
Freidmutter & Associates, Architect
John Levy, Lighting Design

An old parking lot outside Bally's Resort and Casino in Las Vegas has been transformed into a light and sound extravaganza that attracts crowds of awed spectators every evening. "We were quite determined to create a radically different entry experience," says lighting designer John Levy. Within weeks of being retained as the lighting designer, Levy and his team created a detailed model of the proposed design along with an animated concept video of the seven-minute light and sound show to convince the client to create this surreal landscape of light.

A colonnade of 28 illuminated vertical pylons alternating with huge Canary Palms dominate the landscape. Ranging in height from 18 feet to 38 feet, the glowing pylons flank a neon-lit, spiral walkway that leads to the casino. Constructed of perforated metal backed by an opal acrylic sheet, the pylons house 15-mm neon tubes running top to bottom and spaced six inches apart. The tubes are red, blue, and green, so that cross-fading between them creates a wide range of colors. These pylons run a continuous, slow color change, except during the seven-minute shows, when they change according to the beat of the music. Also, a top cap in the pylons contains four 1000W PAR lamps, two strobes, and a gold-scan moving light which is also choreographed to the music.

The architectural design, by Las Vegas architect Freidmutter & Associates, incorporates four people-movers linked to escalators which pass 20 feet above the hotel's ground-level main entrance, delivering eager guests directly into the casino. A spiral "slinky" outlined in three-color neon appears to circle the people-mover, adding another whimsical element to the landscape. The slinky supports a translucent sun screen that also houses a six-inch-diameter continuous fluorescent light tube. The custom tube incorporates a suspended speaker every eight feet, which pipes out the music of the show as well as advertisements and announcements from the casino. At night the translucent screen is lit from above using the PARs on the pylons so that the guests pass under a continually changing ceiling linked to the music. Around the pylons and under the people-mover, a series of fountains and waterways recalls a sort of space-age version of ancient gardens, lit by underwater lights with custom color lenses.

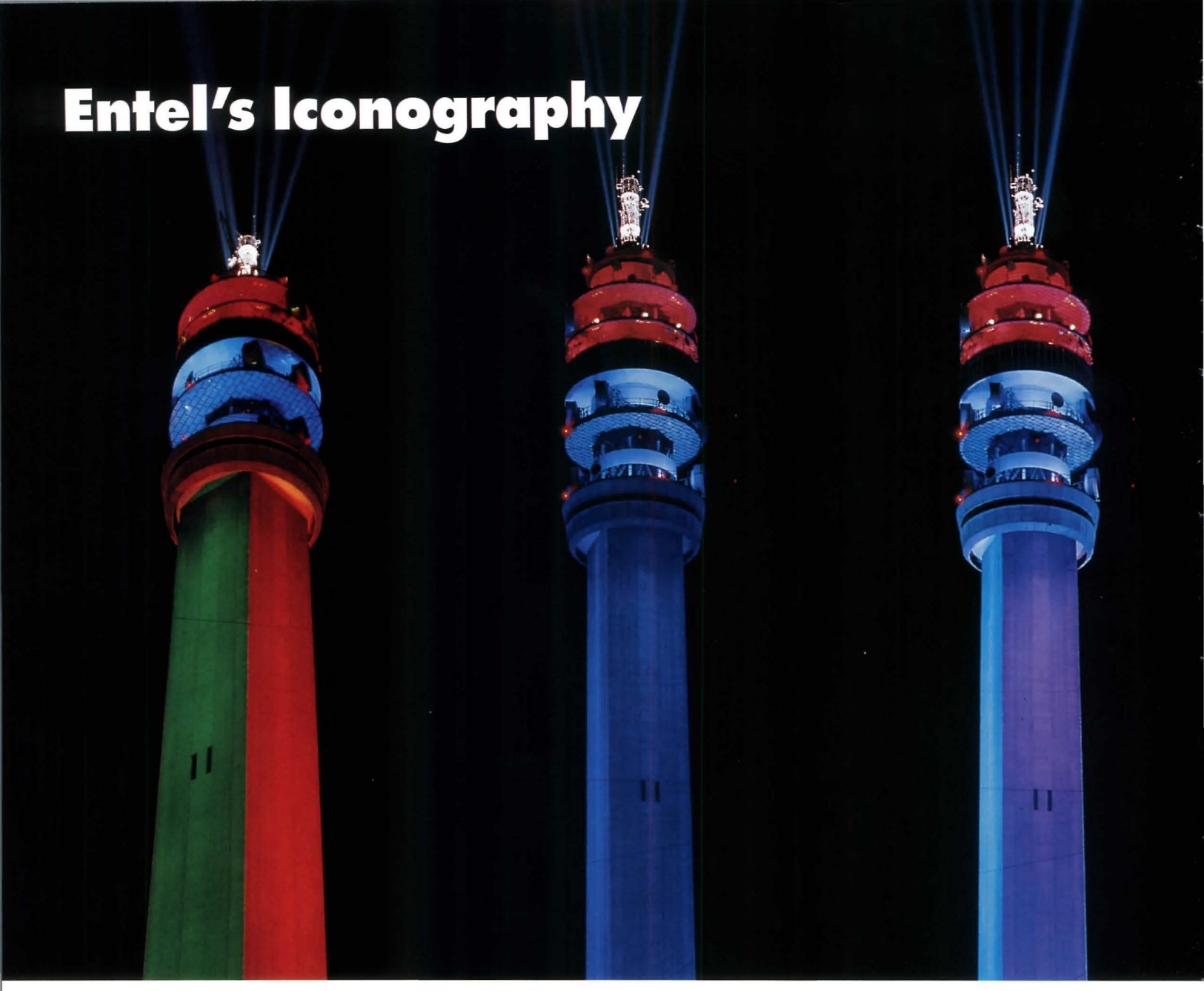
Levy's team worked with the neon manufacturer to create custom pastel shades for the "slinky" that would be in harmony with the colors of the pylons. These are also choreographed to change along with the pylon lights. An original musical score, written by Levy's production arm, "Really Big Time Productions," has been used to choreograph the seven-minute light and sound show that occurs three times an hour. The spectacular show, which incorporates not only the lighting within the pylons but also the landscape and underwater lights and fountain jets, is a theatrical event, unique even by the colorful standards of Las Vegas. *Nayana Currimbhoy*

Large, brightly lit pylons, palm trees, and colorful fountains (opposite and above) flank the walkway of Bally's Casino in Las Vegas, resembling a space-age version of the rows of pillars that led to ancient temples and palaces.

Created from an old parking lot, the lighted landscape of fountains, spirals, and columns attracts large crowds of onlookers. Constructed of perforated metal and backed by an opal acrylic sheet, the pylons, which range in height from 18 to 38 feet, contain 15-mm neon tubes running from top to bottom. Defined by a neon-lit giant spiral "slinky" (opposite) the walkway to the casino is also flanked by flowing water that is illuminated by underwater lights.

Credits
Bally's Plaza
Bally's Resort & Casino
Las Vegas, Nevada
Architect: *Freidmutter & Associates*
Lighting Designer: *John Levy*
Show Designer: *Really Big Time Productions—John Levy, producer; Stig Edgeson, musical director; Jeff Calderon, lighting director*
Waterscape Design: *J. Harlen Glenn & Associates*
Landscape Design: *Campbell & Campbell*
Graphic Design:
Communication Arts

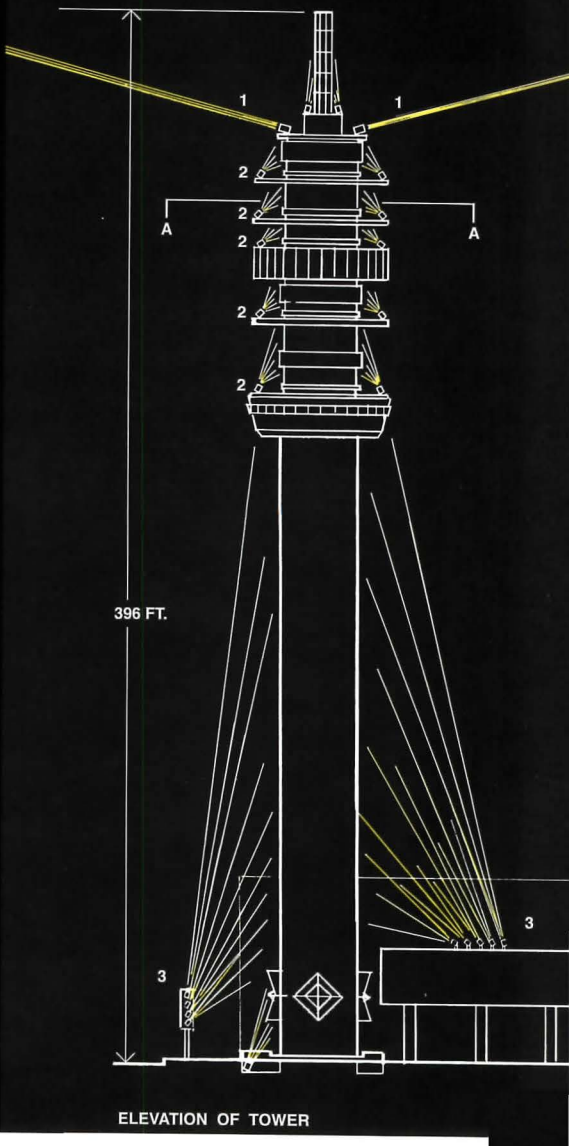
Entel's Iconography



When Chile's long-distance telecommunications industry was deregulated, Entel, the government-operated carrier, suddenly found itself in need of a corporate identity. Alex González, Entel's design consultant, hit upon the idea of using Entel's microwave tower in downtown Santiago. It is a symbol no one would mistake for anything else; it towers 40 stories over a city where most buildings are barely more than a story in height. And "he proposed they light it up," says lighting designer Paul Gregory. "They called Alejandro Siña, a Chilean light artist, and Alejandro called us."

New York City-based Gregory, who has designed lighting for towers and exteriors the world over, presented his clients with a wide variety of choices that related to variables such as weather and time. "But what they really wanted was just a beautiful display of color that was exciting and interesting and that would reflect well on the company." Gregory and his associates came up with slides of 100 possible schemes using different blends of colored light, and budgets for equipment, installation, and labor for relamping and maintenance. One of the schemes was to use filters that would be changed manually by crews each time colors were changed. But it would take two workers at least a day to change the fixtures' filters. Gregory's second scheme, which was adopted, uses dimmable lamps with dichroic color filters attached, as well as equipment fitted with motorized filters of blue, green, and red whose combinations are altered by computer to make color changes in seconds.

Eighty of the computer-controlled fixtures, known as Vari-Lites, are used at the base of the tower, either mounted on poles or the roofs of nearby buildings. The optics of the 700W metal-halide fixtures allow the luminaires to be aimed in tight formation up the side of the tower, making possible spectacular gradations of color (tower elevation opposite). At the five upper platforms of the tower (section opposite), 250 400W metal-halide luminaires were used. These also have red green, and blue filters installed on them, but are dimmed in different combinations to alter color. Just to extend it a bit farther into the night sky, the Entel tower is crowned by six motorized 7kW xenon searchlights, whose beams can to move to 0-, 45-, or 90-degree angles to the tower. The entire fixture layout is controlled by a programmable dimming system and color schemes are changed frequently, as easily as inserting a disk into a personal computer.

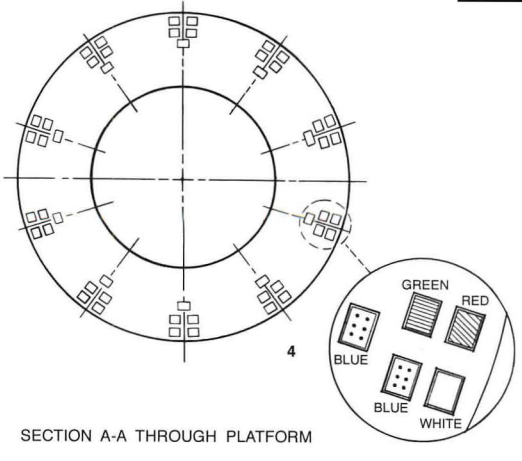


ELEVATION OF TOWER

Gregory conducted many mockup tests on filters and equipment at Riverside Church, a prominent edifice in New York City, that can be viewed from several miles away, across the Hudson River. But the testing didn't end there. In Chile, Entel engineers worked with Gregory to assure the lighting equipment wouldn't interfere with the telecommunications equipment. "This was a dream job," says Gregory. "We had the complete support of the client, as well as their technical support and crews. And we did the job from start to finish in 11 months." Was lighting an ingenious way to establish the tower as Entel's icon? "You can't miss it." *Charles Linn*

Credits
Project: *Entel Tower*
Santiago, Chile
Client: *Entel Chile*
Lighting Design: *Focus Lighting—Paul Gregory, principal; Douglas Cox, associate designer*
Light Artists: *A+M Siña—Alejandro Siña, Moira Siña*
Design Consultants: *Diseñadores Asociados—Alex González, Michele Labarth*

1. *Six 7kW xenon searchlights*
2. *Nine groups of five 400W fixtures per platform*
3. *Groups of 700W fixtures, building and pole-mounted.*
4. *Typical layout of color filters at platforms*



SECTION A-A THROUGH PLATFORM

Lighting Up Charlotte's Heart

In downtown Charlotte, North Carolina, zoning laws dictate that if you close a store front, you must create some architectural or artistic effect for the edification of passing pedestrians. For the restaurant Si! Piazza, Jay Haverson's solution was to design a wall of light. Taking his cue from the geometry of the building mullions, Haverson, a principal of the Connecticut-based Haverson Architecture and Design, created a colorful geometric stained-glass facade that, when backlit at night, works as a spectacular, glowing street sculpture.

Encased in 10 bays that wrap around three sides of the downtown office building, the wall is backlit with warm fluorescent 20-watt strips at the top and bottom. Placed in a trough with reflectors, the fluorescents create an even wash of light that filters through the bright colors of the translucent wall to create a warm glow. A solid drywall partition 18 inches behind the wall allows access to the light troughs.

The light wall effectively blocks daylight from the interior of the restaurant. "We wanted to create a separate world within," says Haverson. The restaurant is located adjacent to an eight-story atrium, which, with its sculpture and art displays, serves as a public museum space. The entrance to the restaurant, through the atrium, is announced by brightly colored canopies highlighted with PAR38 lamps. Conceived, according to Haverson, as a "reminiscence of a piazza, or Italian town center," the 6,000 square-foot restaurant is designed with the palette of the Florentine landscape: travertine, ochre, and vine-leaf green. Stucco walls are accented with plaster-finish columns, and a terrazzo floor with touches of green and teal.

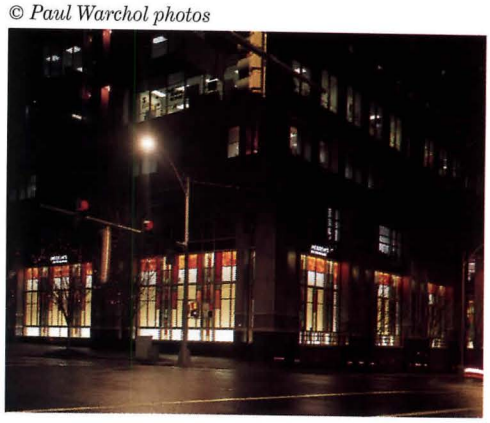
The lighting has been divided into three areas. Cable-suspended 50W MR16s with wide-spread lenses are angled to light the bar, tables, columns and the "moon." Made of an aluminum frame draped with brass mesh, the lunar crescent acquires a three-dimensional quality when spotted with the MR16s. The ceiling, painted dark purple and lit, again, with the cable spots, becomes a metaphor for a starry night.

In the mezzanine, MR16 spots have been randomly spaced to light tables, walls, and other areas of interest. A private special-events room on the upper level is lit by simple 75W downlighting. The large kitchen, which also serves as a bakery and a catering space, is brightly lit with a fluorescent pendant.

Throughout the space, all walls are angled. The planes have been distorted in order to create a seamless ambiance in the center piazza. In contrast, the perimeter is well defined by a freestanding wall, and a wash of light from the cable fixtures. *Nayana Currimbhoy*

Nayana Currimbhoy is a freelance writer in New York City.

Si! Piazza Restaurant and Lighting Wall
Charlotte, North Carolina
Haverson Architecture and Design, Architect
Haverson Architecture and Design with Primo Lighting, Lighting Design

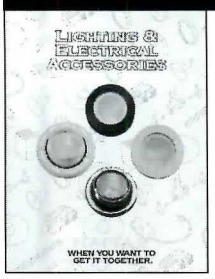


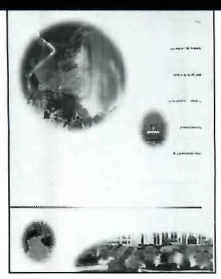
Custom opalescent glass panels, fabricated by Cocomo of Indiana (opposite and top) and designed by Haverson Architecture and Design, consist of a 10-color pallet. Taking their cue from the patterning of the building's mullions, the architects then backlit the wall with warm fluorescents set in reflector troughs. Two restaurants can be accessed through the atrium (above).

The light wall, with its accompanying drywall backing, keeps daylight from entering the restaurant. The interior is lit by MR16s suspended from cables that run through a deep purple nighttime sky, accompanied by a large moon made of aluminum and brass wire mesh and lit by MR16 spots. A mezzanine (right) allows additional seating and is lit by randomly located MR16 pinpoints.

Credits
Lighting Wall and Si! Piazza Restaurant
Charlotte, North Carolina
Architect: *Haverson Architecture and Design*
Lighting Designers: *Haverson Architecture and Design; Primo Lighting—John Tremaine*
Design Team: *Palmer Ramsted, Ken Anderson, William Shepard-Lupo, Christopher Ruehl*
Electrical Engineer: *Optima Engineering*
General Contractor: *Price-Davis Construction, Inc.; Skeeter Davis*

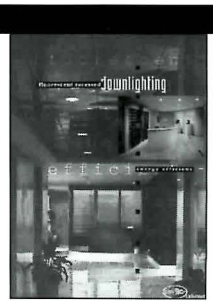
Product Literature/Lighting





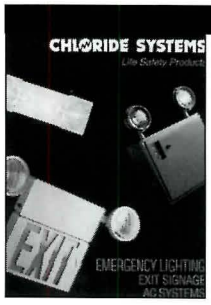
412. Furniture-mounted lighting
An 18-page color catalog illustrates a full range of low-voltage halogen and fluorescent lighting for furniture and cabinetry. Includes mounting options and information on miniature fixtures for task, accent, and display, especially for over-counter kitchen lighting. Haefele American Co., Archdale, N.C.

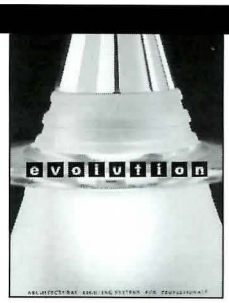
413. Fiber-optic lighting
Brochure highlights recently completed custom-designed applications of Lumenyte fiber-optic systems, including cool display-case lighting and decorative exterior installations. Text explains how solid-core, monofilament fiber puts out more light than an equivalent diameter of bundled fibers. Lumenyte International Corp., Costa Mesa, Calif.



414. Site luminaire
The Magnum exterior area light is one of several European-style designs that accept the new Philips QL lamp, said to have an operating life of 60,000 hours. A folder gives dimensions, lensing, and photometrics for all lamping options. Poulsen Lighting, Inc., Miami.

415. Energy-efficient downlight
An eight-page catalog introduces a new line of recessed downlights specifically designed to make best use of energy-efficient, horizontally mounted compact-fluorescent lamps. Includes trim, ballast, and dimensional data for all apertures. 708/559-5500. Conservation Technology, Ltd., Northbrook, Ill.





416. Emergency/exits
A 38-page catalog describes the safety advantages of this maker's Accu-Test self-diagnostic option available on emergency lighting and exit-sign units. Includes photos, dimensions, mounting, and graphics style choices for all life-safety fixtures. Chloride, Burgaw, N.C.

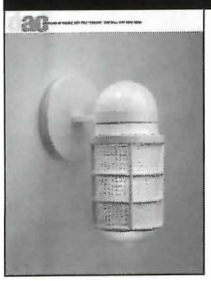
417. Imported fixtures
A 60-page catalog illustrates all Evolution designs, from pin spots to cable-hung chandeliers, giving label, trim, and color options for a complete line of low-voltage lighting intended primarily for residential use. Evolution, Inc., Pompano Beach, Fla.

For more information, circle item numbers on Reader Service Card.

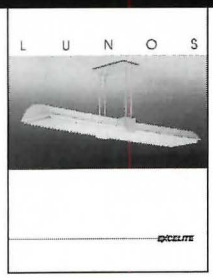
Product Literature/Lighting

418. Evacuation lighting
Lite-A-Way meets UL 924 and 1994 requirements as an aid to emergency-evacuation in conditions of poor visibility. Xenon strobe lights, mounted close to the floor on corridor corners, illuminate over 150 feet. Tri-Guards, St. Louis.

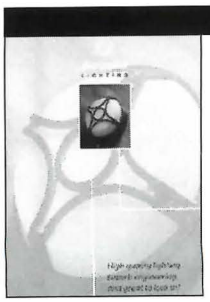
419. Lamps for the home
Signature, formerly Acme and recently purchased by Venture Lighting, Inc., makes decorative sconces and table lamps of metal, glass, leather-wrapped brass, marble, and burled metal. A color catalog illustrates all current product offerings. Signature Lighting, Cleveland.



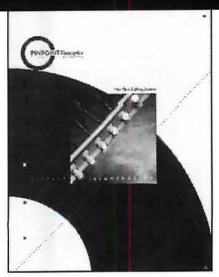
420. Decorative fixtures
A new label under the JJI banner, d'ac (decorative accent) lighting offers American-made, listed fixtures with a European flavor. Catalog shows "Soft Industrial" designs, an interpretation of factory fixtures of the 1940s. d'ac, Mamaroneck, N.Y.



421. Glowing linear
One of several direct-indirect luminaires designed for high-wattage twin-tube bulbs, Lunos in made with shades of translucent faux alabaster. Softly diffused light eliminates VDT bright spots and balances brightness between fixture and ceiling plane. Excelite, Inc., Altoona, Pa.

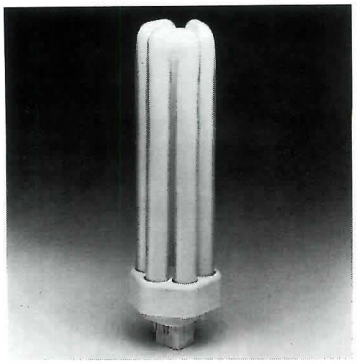


422. Abuse-resistant
A six-page folder illustrates wall and ceiling fixtures strong enough to withstand attacks with a baseball bat, but with decorative touches that add good looks. Luminaires are UL listed, many labeled for wet locations. Designplan Lighting, Inc., Frenchtown, N.J.

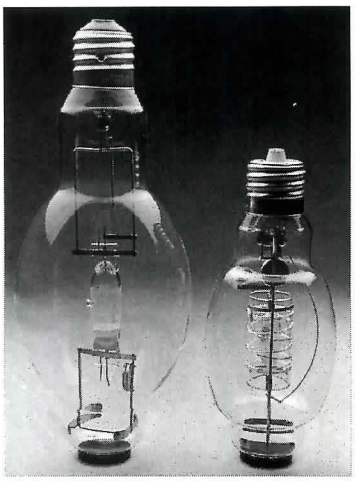


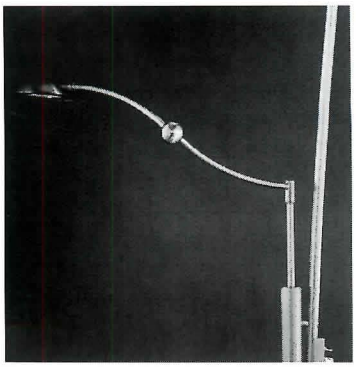
423. Cool display lighting
Museum, jewelry, and retail lighting installations demonstrate the cool sparkle produced by lensed, aimable fiber-optic spots. Gray-metal tracks may be cut to fit any display case. PinPoint Fibreoptics, Beverly Hills, Calif.
continued on page 41

For more information, circle item numbers on Reader Service Card.



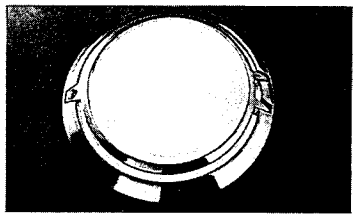
346. CFL/halogen/HID
From a wide lineup of Lightfair introductions: the 42W T/E compact-fluorescent (top) is the newest—and highest-output—Dulux bulb. It produces 3200 lumens, much more than a 150W incandescent, and plugs into a dimmable electronic ballast. New coating technology has boosted the efficiencies of Capsylite halogen lamps (top, right), popular in retail applications, recycling internal heat to generate more visible light. A new 175W metal-halide for use in open fixtures fills in the Metalarc Pro-Tech line (right); an external ignitor pulse starts the new 400W Super Metalarc, improving maintained lumens. Osram Sylvania, Danvers, Mass.

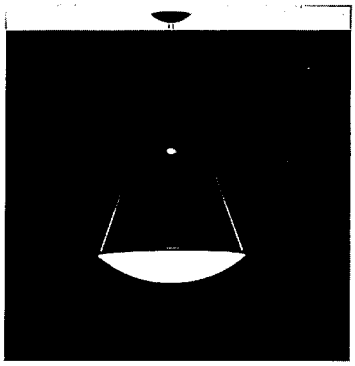


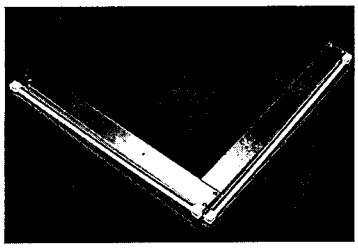


347. Combo from Catalonia
Made by Estiluz and exhibited at Lightfair, a triple-function standing lamp shows off the Spanish firm's metal-finishing expertise, with slender stems and shades in 24-carat gold plate, polished chrome, or a deep matte black. A 300W halogen set within a shallow-dish torchière gives both ambient uplighting and louver-lensed downlighting (right); an attached but functionally separate reading lamp (above) uses a high/low switched 50W halogen. Swing-arm articulates and lampholder swivels; both lamps are dimmable. ETL-listed models available. 201/641-1997. Estiluz, Inc., Little Ferry, N.J.

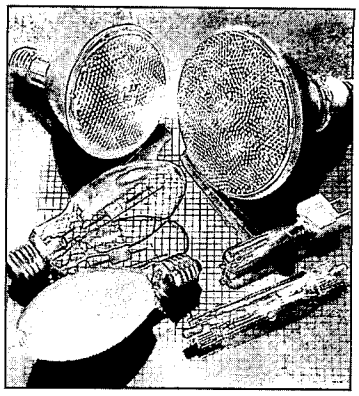
348. Italian flair
In its first Lightfair as a direct-marketing subsidiary of its Italian parent, Luceplan USA showed brand-new fixtures as well as some of its classics. Top right is Metropoli D20, designed by Alberto Meda, Paolo Rizzatto, and Riccardo Sarfatti, which won top honors—the Compasso d'Oro—from the Italian Industrial Design Association in 1994. UL-listed for wet locations, an interchangeable reflector system lets the porthole-like luminaire take either incandescent or CFL sources. Trama, designed by Balestrini and Longhi in 1986, is shown (right) in its counterweight version, which lets the polycarbonate-shade pendant go from 35-in. to 67-in. high. A colorful folder gives a snapshot of current product, including all finish and lamping options. 212/387-7961. Luceplan USA, New York City.

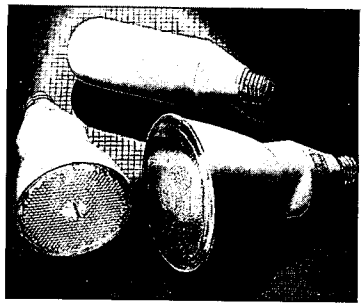




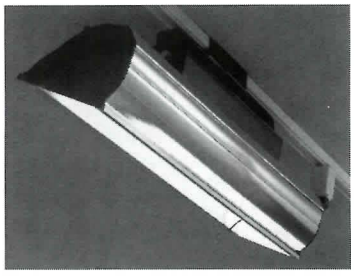


349. Articulating coves
The T-2 Micro Flex (left) is another of this firm's ingenious, field-curvable lights for cove and other hidden-source applications. The integrally ballasted design uses the new, very skinny but punchy T-2 lamp, and can be conformed to bends, angles, and wide radii. 908/493-2666. Norbert Belfer Lighting, Ocean, N.J.





350. Swirl CFLs and more
A truly unique shape, the Heliax (bottom left) is even shorter than the A-lamp it can directly replace, with optics that are said to make it even more efficient than comparable-wattage CFLs. Heliax is to be available in 1996. New metal halides (top left) promise better color performance and increased color-rendering and lumen output, achieved by replacing the quartz arc tube with ceramic material. GE extended its line of CFL reflectors by adding two lensed Triple Biax versions, a 15W R30 and a 20W R40, designed to fit in fixtures originally for incandescent sources. Also new: the Bullet Bulb, an electronically ballasted, covered 20W triple Biax (above), for applications requiring softer-toned lighting. General Electric Co., Cleveland.



351. Enlarging the family
At Lightfair, Philips showed new products in several major lamp lines, such as EarthLight CFLs (top left), longlasting sources designed for specific residential, commercial, and industrial fixtures. New bulbs include a Decor Globe for exposed use, and flood lamps for recessed and track-lighting luminaires. New sizes in the Mastercolor white-light metal-halide lamp line, said to offer consistent color values lamp-to-lamp, include a compact 35W PAR 20 for track and down-lighting systems, and 70W and 150W double-ended lamps for large-scale interiors such as airports and shopping malls. Of environmental note, the company announced that a new capsule-injection dosing system produces "landfill-able" fluorescents that meet the EPA's stringent hazardous-waste standards. Philips Lighting, Somerset, N.J.

352. On the right track
4X luminaires put two biaxial lamps within an asymmetric reflector, said to effectively focus all lamp output on the target surface, combining the punch and control of incandescent sources with the operating efficiencies of fluorescents. Designed for surface, track, semi-recessed, and concealed installations. 203/931-4455. Elliptipar, Inc., West Haven, Conn. ■

Manufacturer Sources

For your convenience in locating lighting fixtures and other products shown in this month's feature articles, RECORD has asked the architects and lighting designers to identify their sources.

Pages 22-25
Sears 2000, Chicago
De Stefano + Partners, Architects
David A. Mintz Partners, Lighting Designers
CFL and PAR downlights: Indy Lighting. Custom interior lighting grid: Winona Lighting. Exterior metal-halide downlights: McPhilben. Dimming system: Colortran.

Pages 26-29
Bally's Plaza, Las Vegas
Freidmutter & Associates, Architect
John Levy, Lighting Designer
Show controller: Electronic Theater Controls. Neon pylons & slinky: Young Electrical Sign Company, Las Vegas Div. Underwater lights: Kim Lighting. Bollards: Staff Lighting. Steplights: McPhilben. Entry Chandeliers: Creative Light Source. Sound & Light Tube: Ken Walker, Principal-in-charge. IKW spots: LSI.

Pages 30-31
Entel Tower, Santiago, Chile
Paul Gregory, Lighting Designer
Disenadores Asociados, Consultants
Automated luminaires: Irideon, Inc. Floodlights: Quality Lighting. Search lights: Xenotech, Inc. Control system: Electronic Theater Controls (ETC). Dichroic filters: Special F/X. Testing lab: CKC Labs.

Pages 32-35
Si! Piazza Restaurant/ Lighting Wall
Haverson Architecture and Design with Primo Lighting, Lighting Design
Interior—Low-voltage adjustable accents: Reggiani (3780-10). Lamp: Q50 MR 16. Downlight: Versalume (Incandescent NXII). Lamp: GE 150 A/W. Lighting wall—Elliptipar, Inc.

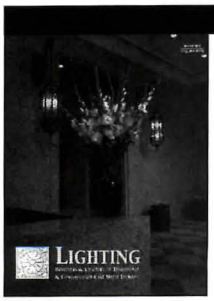
Correction
The Prudential Center Retail Arcades article [May 1995 RECORD LIGHTING] states that Communication Arts did the *initial* custom-fixture design and Ripman Lighting developed the fixtures. In fact, Communication Arts was also responsible for initial designs, study models, design-development drawings, shop-drawing review, and fabrication supervision. The Communication Arts team included Michael Doyle and Nicholas Igel, along with Henry Beer and John Ward. Ken Lewandowski was Architect of Record for Benjamin Thompson & Associates. ■

424. Semi-linear
A color brochure explains how PERFform luminaires operate at over 83 percent efficiency, directing light off the ceiling for a glare-free environment. Modular optical units have a non-linear look while economically sharing a power-distributing, extruded-aluminum spine. 604/888-6811. Ledalite Architectural Products, Inc., Langley, B.C.

425. Workstation light control
The PowerPincher combines the features of a power strip with the rapid-payback energy savings and easy-on function of an occupancy sensor. The sleek, aimable, mouse-like sensor mounts under a shelf or on the wall, turning all connected loads on (lights, computer, and printer, for example) when needed. 800/333-9939. Steelcase, Inc., Grand Rapids, Mich.

426. Industrial-look lighting
A new, 20-page Spero catalog covers interior and exterior luminaires, including many brackets and goosenecks, illustrating fixtures in typical retail and restaurant settings. Reflector styles are shown with all color and mounting options; dimensional and lamping data is given. Spero Electric Corp., Cleveland.

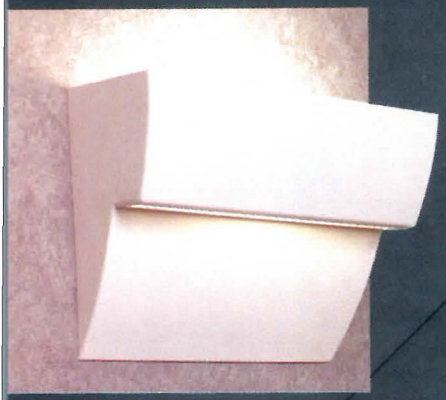
427. High-performance lights
A corporate capabilities kit contains individual data sheets on O5P Series indirect/direct and other lighting systems for office, school, and other rigorous illumination environments. Features cross-section details, photometric diagrams, ceiling plans, finish and lamping options, and suggests applications for each fixture. Metalumen Mfg. Inc., Guelph, Ont.



428. Cast-metal lighting
An architectural brochure describes how a business that began crafting ornamental metal replacement parts became a national source of custom and reproduction lighting. Major projects include restoring huge bronze chandeliers in New York's Grand Central Terminal, inserting modern light sources. 801/280-2400. Historical Arts & Casting, West Jordan, Utah.

429. Ultra-shallow troffer
A brochure explains how Concept 2 downlights get the most out of T8 lamps and electronic ballasts, while working within 2- by 2- and 2- by 4-ceiling-grid modules. Parabolics can also be installed as a visually continuous row, with no end plate interrupting fixtures. Metalux Lighting, Americus, Ga. ■

For more information, circle item numbers on Reader Service Card.



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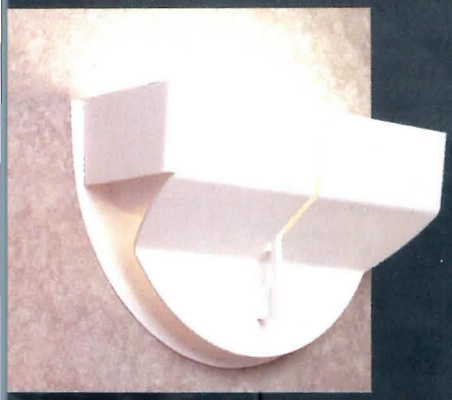
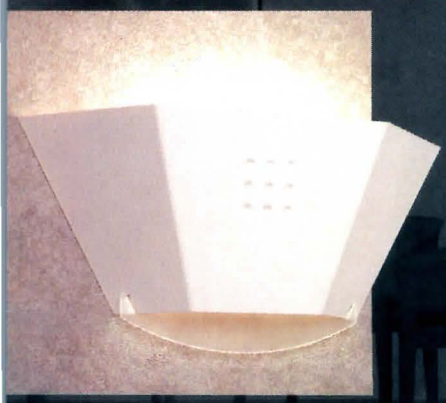


Wall sconce lighting transformed. An indirect alternative to illuminating applications with low ceiling or narrow space limitations. The advantage - ADA compliance.

Designs incorporating graceful curves, compound arcs, angled planes and defined lines created from a palette of materials, finishes and accents.



The innovative, dual-chambered reflector system incorporates HID, fluorescent and halogen lamping options for maximum efficiency and output. Establishing an aesthetic presence with superior optical performance.

The new phaces of indirect lighting - naturally from SPI.

SPI

SPI Lighting Inc.
10400 North Enterprise Dr.
Mequon, WI 53092

414 242 1420
414 242 6414 FAX

owner: Trammel Crow *architects:* Nadel Partnership in conjunction with Sussman Prejza *lighting design:* Grenald Associates

9000 NIGHTWASH

Wide, even light finds new shapes in the night time landscape

Hydrel's 9000 Series in-grade up lights illuminate the walls at the new Citadel retail and office complex in Los Angeles. These new hi-tech in-grade fixtures were chosen especially for their high performance and low installation cost.

Chip Israel of Grenald talks about the project:

"The lighting on the front had to unify the whole project, as well as provide a soft inviting feeling."

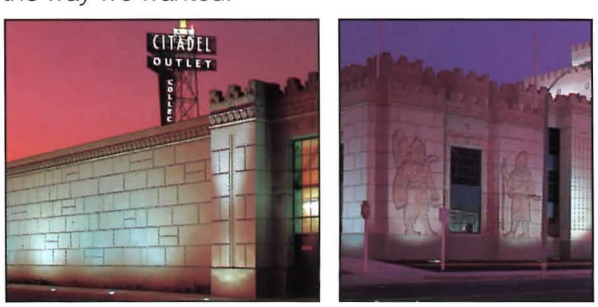
"The solution included 175 watt metal halide 9000 Series from Hydrel, set back six feet from 30 to 40 foot walls as a wash."

"We ended up further back and with a softer approach... we wanted the building to have a friendly feel, not to eerie."

"The lighting was also aimed up and outward from the entrance along the walls to accentuate architectural detail and shadows and to prevent the lighting from becoming to flat."

"These lights have the benefits of being concealed in-grade fixtures which reduce both aesthetic objections and installation costs, as well as new high performance E-17 lamps."

"We were fortunate to be able to work very well with some manufacturers such as Hydrel and Western Lighting Industries...They were able to supply us with some great and efficient lighting at a price that enabled the job to get done in the way we wanted."

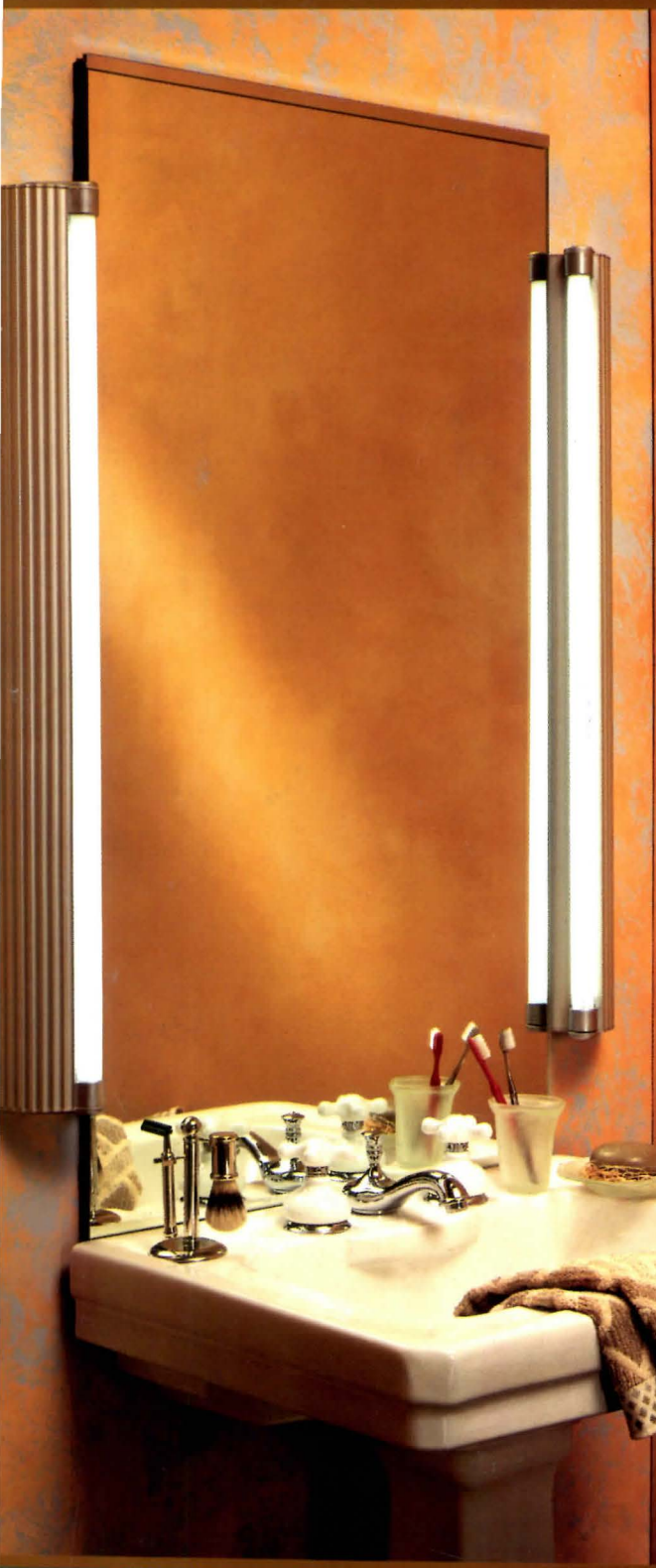


Hydrel's 9000 Series in grade fixtures provide wide uniform performance for wall wash and sign lighting applications.

HYDREL 12881 BRADLEY AVENUE • SYLMAR • CALIFORNIA 91342 • TEL 818/362-9465

Circle 97 on inquiry card

Ron Rezek makes you look great



Ron Rezek has designed and developed a group of fixtures for bath mirrors based on the energy saving T-8 fluorescent lamp. The new 3000k high-color-rendering of the T-8 lamp delivers a color balance and softness which is desirable in the bathroom. Clean, minimal design — classic to modern — in aluminum, brass, or chrome with a range of lengths and wattages.

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