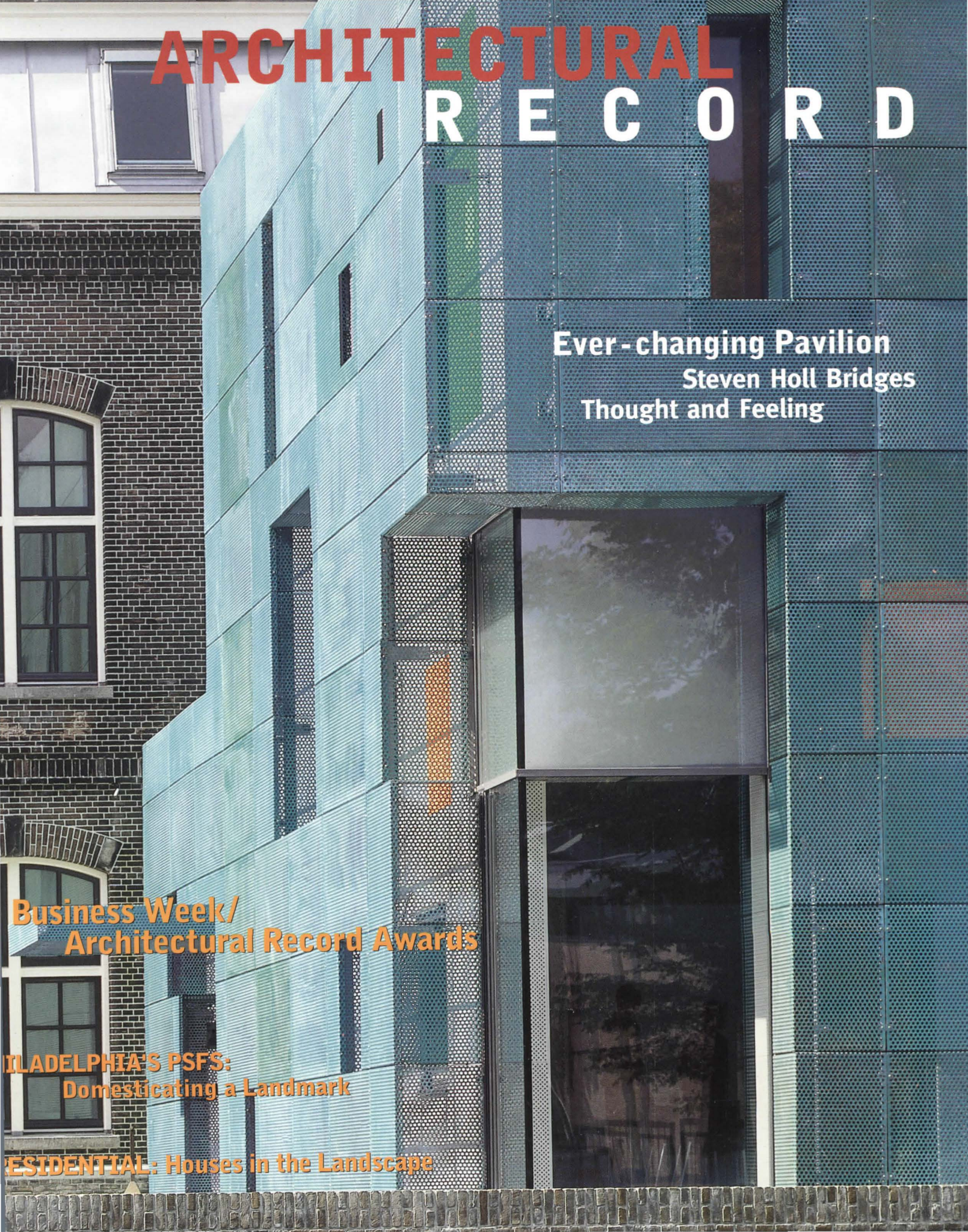

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Business Week/ Architectural Record Awards

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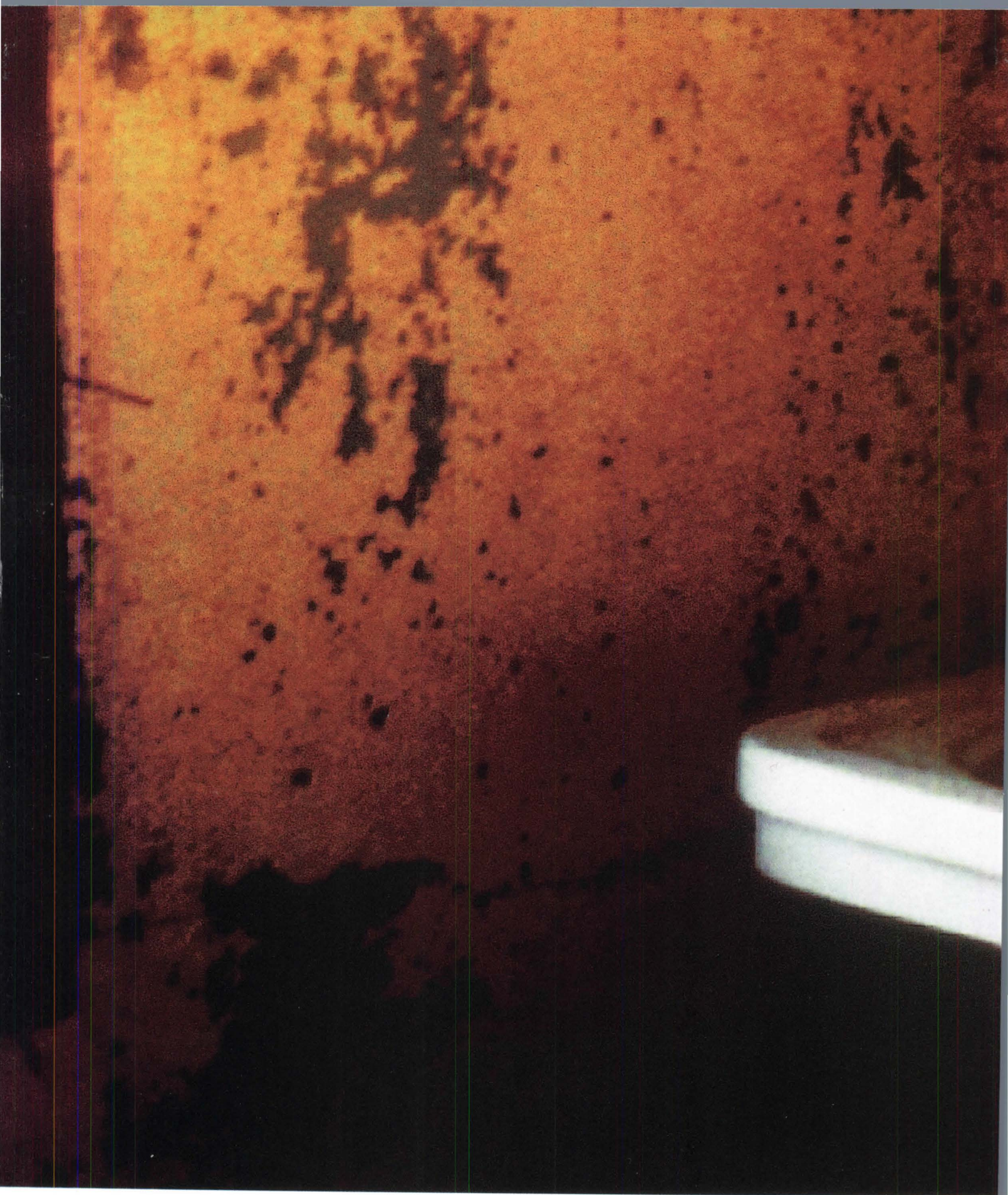

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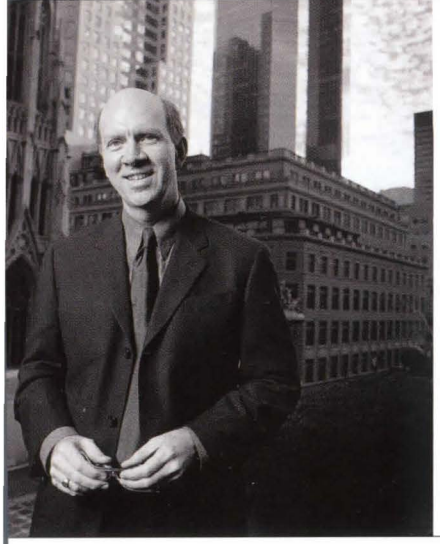


Keep off the grass

Editorial

By Robert Ivy, FAIA

The Mall speaks. Day after day, workers and tourists in Washington, D.C., are drawn out from the offices and great museums to hear its silent language. Its voice is broad, of superb scale and timbre, a shaft of light and air, grass and gravel and trees at the core of the nation's consciousness, stretching on axis from the Capitol to the country like a balanced vector, a place to luxuriate in the American idea, to gather and celebrate or protest. In a flash, when the National Capital Planning Commission approved the World War II Memorial on September 21, The Mall shrank.

It's too late, you argue: the memorial is proceeding toward a November 11 groundbreaking, and throughout its tortuous progression, a roster of leading architects, critics, and other citizens have reviewed and approved the plans devised by Rhode Island architect Friedrich St. Florian. The GSA followed the rules, evaluating over 400 preliminary designs and employing a respected competition adviser; the Fine Arts Commission, headed by J. Carter Brown, approved the plans, as did the Interior Secretary. Yet the location and the design continue to stir heated debate by critics and veterans alike, including many architects. At least two groups threaten to go to court to overturn the approval process.

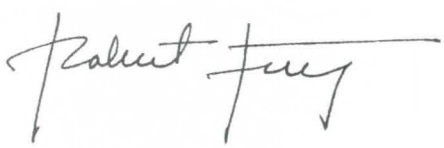
Most critics decry the memorial's location, despite the argument that World War II deserves such axial prominence: George Washington's pylon represents the 18th century; Lincoln's memorial, the 19th. Where else should any artifact suggestive of epic struggle, arguably the seminal event of the 20th century, go? Despite the sum of all the good reasons to place this memorial at the Rainbow Pool, however, nothing alters this poignant fact—the Mall will suffer from it.

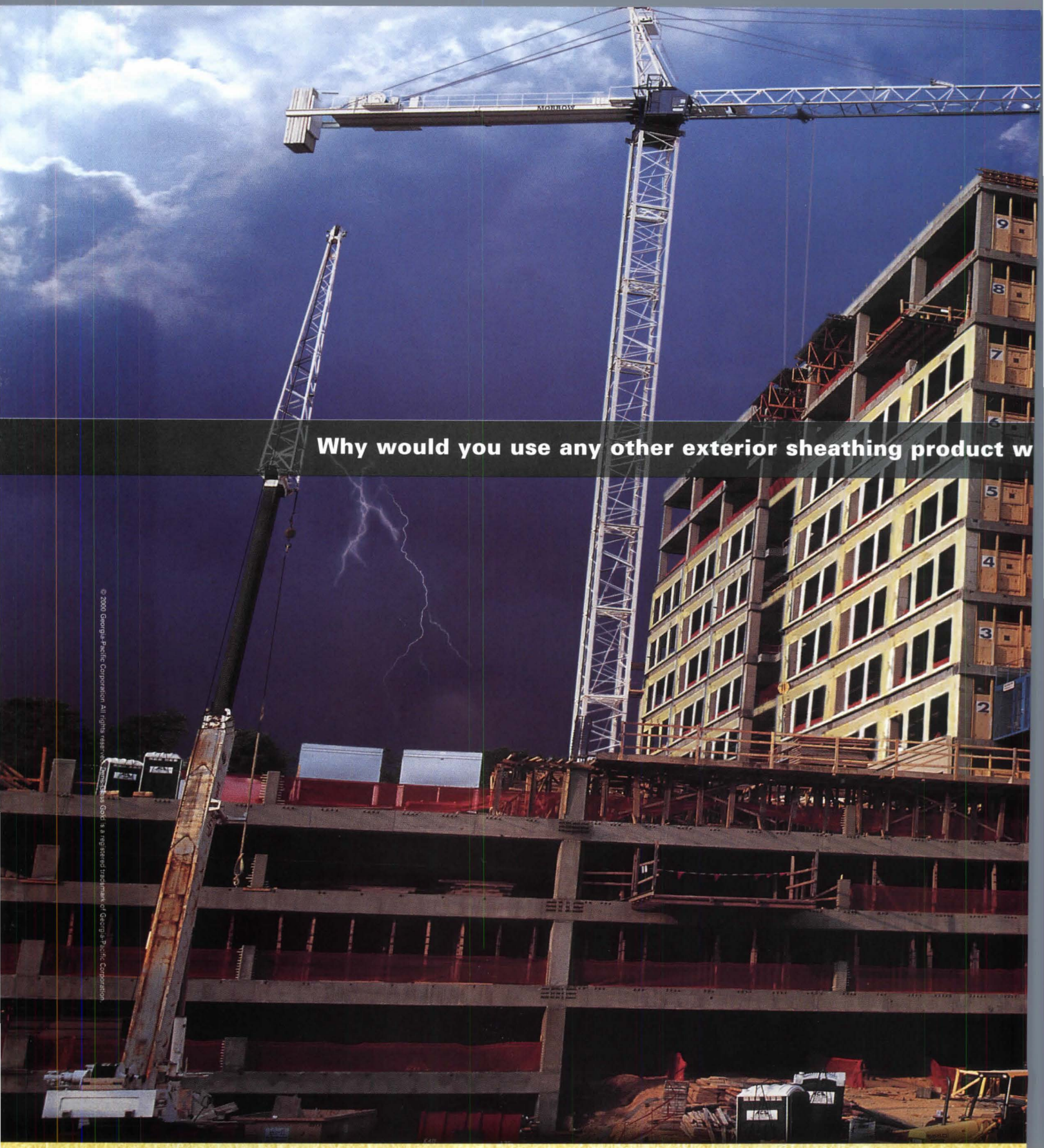
Part of the genius of L'Enfant's plan, and the McMillan Commission's subsequent elaboration, rests in open parkland proceeding out toward the Potomac from the legislative chambers, but not in human intervention. This tapis vert is a place for ideas to soar, not lodge. Unless the memorial rises to a heroic level, it will only detract from the ensemble of earth and sky.

Sadly, it does not. Despite the fact that an earlier St. Florian design faced a judgmental firestorm and was subsequently modified, the final resolution lies somewhere east of classicism and short of poetry. Fifty-six pillars bearing wreaths, representing the states and territories, and two arched pavilions, representing the Atlantic and Pacific theaters, bracket the Pool. A wall carries 4,000 gold stars, emblematic of 400,000 Americans who gave their lives.

Hieratic, elliptical, polite, this unimaginative display will not draw tears or stir the human heart. It seems devoid of that allusive power we have witnessed at successful sites—Maya Lin's Vietnam Memorial, James Ingo Freed's Holocaust Museum, or Stanley Saitowitz's Holocaust Memorial in Boston. Instead, it looks timid and vacuous to 21st-century eyes and strangely out of joint with the times. World War II deserves both more power and art and less politesse. The courageous sacrifice of an entire generation demands transcendent architecture, work that will stir the imagination and move future generations to ponder the legacy they enjoy. Instead of committee-rigged, neoclassical order, they deserve arresting imagery, a blinding light, or a cavern with the power to force them to stop and wonder.

It may be too late to change this politically charged plan. The money has been raised and every formal hurdle has been cleared, save for the Interior Secretary's building permit. Until the concrete is poured and the stones are dressed, however, this argument stands, more powerfully than any single memorial. It is the voice of the Mall itself, repeating and redefining the entreaty of an earlier generation of patriots: Don't Tread on Me.





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Mondays: *Architectural Record* ARCHives

Oct. 2 - October 1949 - a look back at the original PSFS Building project

Oct. 9 - June 1923 - the intriguing essay and images about architect Henry Bacon's, Lincoln Memorial

Oct. 16 - Flash back to December 1916 - architect and engineer, Robert Mills' Baltimore Washington Monument

Wednesdays: New 'Green' features in Green Architect

Oct. 4 - LA Utilities is offering a credit for the use of photovoltaic power

Oct. 11 - DOE is beginning a program dedicated to improving 'greenness' of commercial buildings

Fridays: Architectural Book & Media Reviews

Oct. 6 - Book Review: *Louis I. Kahn: Unbuilt Masterworks*

Oct. 13 - TV Review: ABC's *Madigan Men*, starring Gabriel Byrne as a New York architect

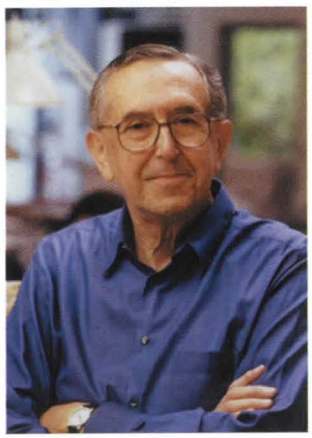
Daily News

Get the latest scoops from the world of architecture.

From The Field

Tune in regularly for the latest buzz from *Record* editors.

Interviews



Exclusive interview with Cesar Pelli on sky-scapers and building in Hong Kong. A stimulating, new interview with **Brendan MacFarlane,** architect for Georges Restaurant, plus others.

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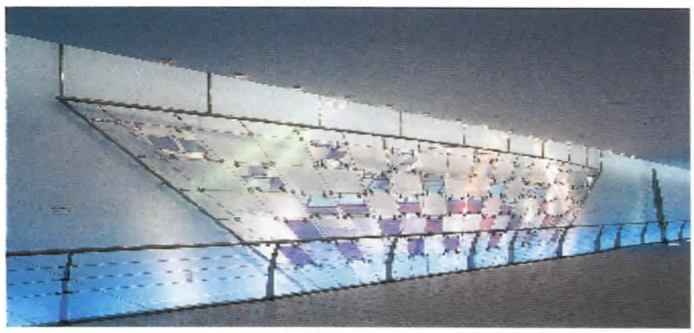
2000 Business Week Architectural Record Awards



Who were the runners-up in addition to the winners? The annual Business Week Architectural Record Awards honor achievement of owners' objectives through design and collaboration with architects. See photos and details of both the winners and finalists.

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Projects

Find links to people and products involved in October projects: Library BTS, Residential, Project Portfolio, renovation of PSFS Building into Loews Hotel.

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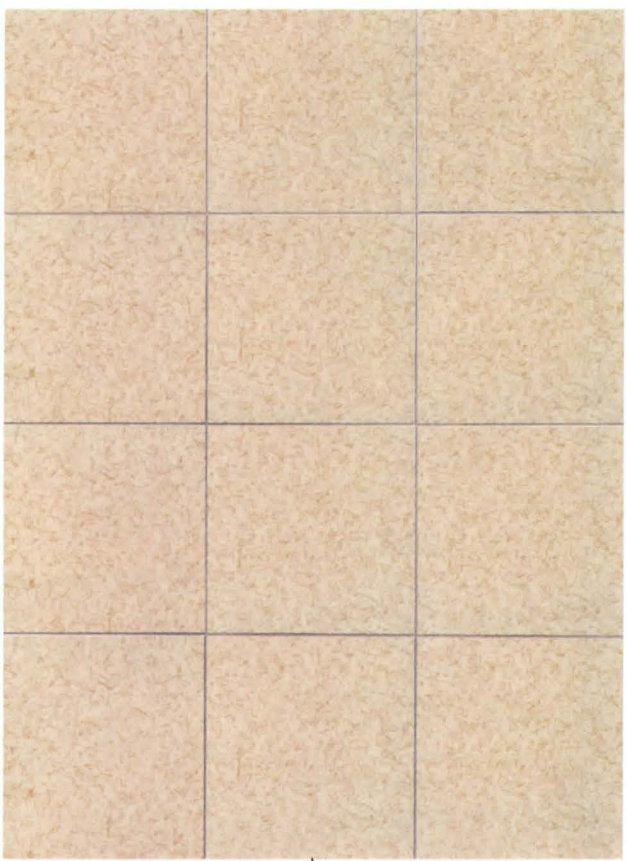
Natural instincts



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your power - Ken Rhyne

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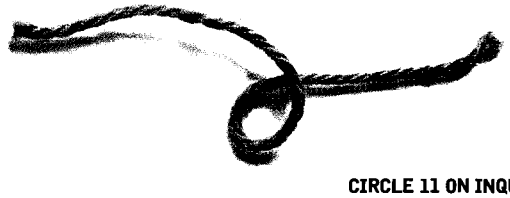

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Letters

Memories of two great men
I was saddened to learn of the death of John Hejduk [News, AUGUST 2000, page 32] and felt compelled to write about my personal experience with him.

While attending the University of Houston in the 1970s, I was in a program that exposed me to well-known architects, most of whom were educators. John Hejduk was one of those architects. My classmates and I had the extreme pleasure of getting to know Mr. Hejduk personally. We experienced the power of his personality, charm, and great talent as an educator and communicator.

For an intense week, we worked night and day on a project, which Mr. Hejduk had previously sent program requirements for. He was in our studio a good portion of that time and gave us his undivided attention. Over 20 years later, I still have the results of that project.

Although we are saddened by his passing, we should also be glad, and thankful, for John Hejduk's gift to all of us.
—Harry Harris
Franklin, Tenn.

The shocking news of Enric Miralles' death reached us in India through the August issue [News, page 32]. Aged a mere 45, he had only just begun to make his indelible mark on us all.

Miralles proved through his short span of creativity that architecture is a curious craft. He showed how a structure may follow all of the laws of design yet be worthless, while still another may break all of the principles and be profound. Miralles proved that a building may be bad without doing anything bad, while again another work may have to sin against art to reach perfection.

Enric Miralles, we will miss you; your generosity, your energy, and most of all your inspiration.
—Christopher Benninger, AIA
Pune, India

The middle of somewhere
The article about St. John Vianney Catholic Church in Baton Rouge, La. [AUGUST 2000, page 112] could use a few lessons in both civility and history.

The article begins with describing the location of the church as "a world o' Wal Marts, McDonald's, and strip malls . . . an unlikely location for high architectural drama." Obviously, the context of a building is an important influence on any building's design, and some idea of the location of the building is in order. However, there is no reason to be so snidely insulting about a location that is home to a community of people who care enough to contribute the huge amounts of time and money to create any community building, much less such a beautiful church. Perhaps the suburban context is not as architecturally refined as it could be—but change will never be achieved with insults.

Also, anyone familiar with Catholic Church architecture since 1967 would be surprised NOT to find a new church that was octagonal, round, square, elliptical, or in some other form that implies or abstracts the concept of a gathering around a table. Very few long, narrow, "traditional" churches have been built since the Church's Vatican II council in 1967. In fact, these "liturgical reforms of the 1960s" are even mentioned in the article.

The building itself is fantastic, and I hope that it helps the parishioners of St. John Vianney, or the residents of "nowhere," as the article would have it, to strengthen and grow in their relationship with God—which is the whole point.
—Jim Grafton
Everett, Wash.

Of a certain age
Although I was impressed by the St. Jean Vianney Catholic Church by Trahan Architects in your August issue, the article was spoiled by Mr. Trahan's tasteless remark about hiring only new graduates. His reason was "To avoid the disenchantment that seemed inevitable with middle age." He further says that new graduates "make up in enthusiasm what they lack in experience, and they're more design-oriented." ARCHITECTURAL RECORD's decision to include discriminatory comments is inappropriate in a high-profile magazine.
—Sanford Bender, AIA
Philadelphia

Not just plain Manila
I was both delighted and surprised that you spoke of Manila as an example of 21st-century Asia [Editorial, APRIL 2000, page 17].

The Philippines truly has so much potential, if only we could stop the "corruption that taints the air like overripe fruit." Imagine the exposé made by a local TV station about a subdivision development in a Manila suburb half owned by President Estrada and his family. There is no building permit, no environmental clearance certificate, no license to sell from the Housing and Land Use Regulatory Board, and construction is halfway done. It is almost certain that nobody else will get in his way.

The government maintains that our country didn't really crash in the Asian crisis. True, because of so much corruption, we never even took off the runway. Manila does work hard, and I believe we deserve better!
—Jaime W. Hermogenes
Sampaloc, Manila, Philippines

Thoughtful remarks
Some thoughts on the articles on Gehry's EMP and Polshek's portfolio [AUGUST, pages 126 and 88].

One of the particularly enjoyable aspects of media coverage in relation to art and architecture is, of course, the degree to which disparate stylistic and ideological approaches are brought together under one cover.

Certainly Gehry's and Polshek's work could not be more different. Yet what is most telling about the nature of media coverage and the state of the architectural profession today are the similarities in how these projects get produced.

First of all, to paraphrase Mr. Polshek, a Saturn rocket is designed and developed by thousands of technicians, while with architecture there remains "a single maker."

I have been practicing architecture myself for some 20 years now. I firmly believe, even in an office as "artistic" as Frank Gehry's, that there is no single maker to any built work of architecture. Herein is the link between Polshek's and Gehry's respective practices.

Frank Gehry's highly "baroque" (meaning "highly whimsical or grotesque"—*Oxford English Dictionary*) designs are built with the aid of dozens of young, talented, technically capable students of architecture, guided by more experienced architects, engineers, and computer technicians.

James Stuart Polshek's more conservative, and considerably less expensive, designs (though on the high end of architectural square-footage costs) are undeniably produced the same way.

More often than not, great ideas in architecture come from the young people employed by firms such as these. Most of the work is also produced by these younger people. The "old guys," as it were, are certainly the guides and the editors of these young designers, but it is outrageous to claim a single author for any architectural work.

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Letters

What of the hundreds of contractors needed to build these creations?

I would argue that novels, paintings, even some sculptures, remain in the realm of the "solitary genius." Architecture never has been, nor will it ever be, the result of single vision.

—David Kesler
Via E-mail

Housing for all

Reading "In Holland, the Shock of the New," [JULY 2000, page 128], I was very affected to learn that this nation, where "almost everyone lives in well-designed dwellings with good light," is "in the midst of an enormous government-sponsored . . . effort to build a million new units of housing by 2010." As a New York architect who passes homeless people every day, I feel deeply angry and ashamed that our country—which has such vast wealth and resources, including so many architects capable of designing well-built, beautiful homes for all Americans—is doing so little to remedy this shameful, totally unnecessary situation.

I learned from Aesthetic Realism, the education founded by the great philosopher and critic Eli Siegel, that the one reason homelessness exists is because a person's need for a home is seen as a means for someone else to make a profit. This is contempt, which he defined as "the addition to self through the lessening of something else." In a series of lectures beginning in 1970, Mr. Siegel showed that economics based on contempt is so inefficient, it can no longer work. Today, despite all the fakery about how "booming" it is, an economy that cannot provide decent housing for all our citizens is an utter failure.

The housing crisis will end and we, as architects, will feel truly useful and proud when we, when government leaders—when all Americans—ask and honestly answer this kind, crucial question first asked by Mr. Siegel: "What does a person deserve by being alive?" This question was the basis of an important continuing-education seminar I was proud to moderate at this year's national AIA convention in Philadelphia, "Housing: A Basic Right, an Urgent Need, an Architectural Priority," now on the convention Web site, www.aiaconvention2000.com

—Dale Laurin, AIA
New York City

Corrections

The article on Lutèce restaurant [SEPTEMBER 2000, page 150] did not include the following credits: Lighting designer, Patrick Quigley & Assoc.; kitchen consultants, Vincent Longarbardi/Bob Finkelstein Assoc.; ADA code consultants, Pentacore. The August lighting section [page 199] incorrectly referred to the Ewing Marion Kauffman Foundation, whose mission is "to research and identify the unfulfilled needs of society and to develop, implement and/or fund breakthrough solutions that have a lasting impact and offer a choice and hope for the future." Find out more at www.emkf.org. Also in August [Seattle Library, page 120], engineer credits should have been as follows: Structural engineer, Skilling Ward Magnusson Barkshire; MEP engineer, Ove Arup; overall engineer, Ove Arup/Skilling Ward Magnusson Barkshire. In the August story on EMP [page 130], the "Waterproofing/Insulation" heading should have been followed by "Spray-on Foam Insulation." Waterproofing for EMP was supplied by American Hydrotech, Inc. In August's BTS story about the Science Center, credit for interior design should have gone to Carmen Nordsten Ingonda Design. The story on the Smith Campus Center [page 142] should have listed Wolff Lang Christopher Architects as associate architect. August products [page 224] should have listed the phone number for Barfly Beer Fridges as 416/364–8260.

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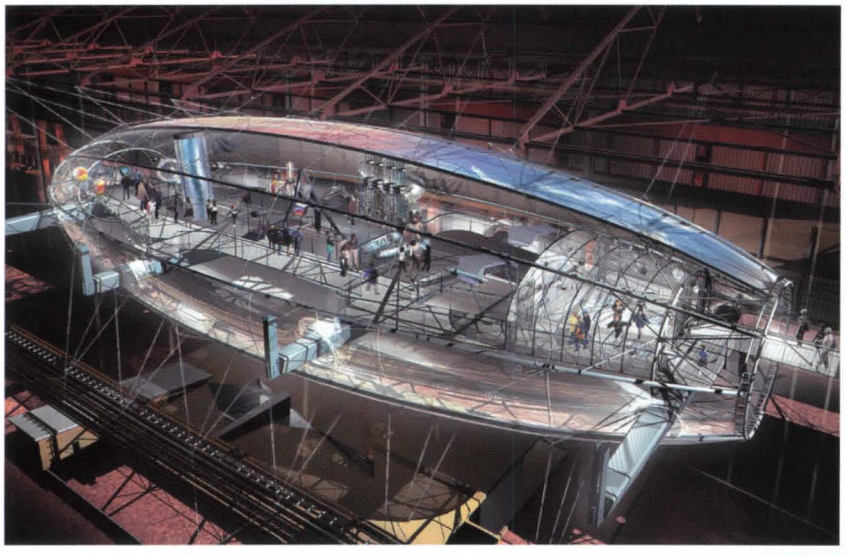
Record News

Highlights: Gore v. Bush p. 34
Saving Snyderman from demolition p. 38
NEA funds public works competitions p. 42
Four finalists for *NY Times* tower p. 44

Smelting never looked this good: A steel plant transformed



Steel smelting has never been this exciting, or eye-catching. The first major cultural project by the British firm Wilkinson Eyre Architects, the conversion of the former Magna steelworks in Rotherham, U.K., into an entertainment and educational center, will add verve to learning about the smelting process.

As the name Magna (Latin for great or large) implies, the project is vast in scale. It will transform what was one of Europe's longest smelting shops into a series of exhibition pavilions and spaces themed around the steel-production process. An exercise in refinement, the project will retain the power of the original volumes without creating a sense of void.

Rotherham, home of the $52.5 million Magna project, is a town of 250,000 in northern England's coal district. Magna has procured a $28 million Millennium Commission grant funded by the United Kingdom's National Lottery. Like many projects receiving such support, Magna is intended to bolster the identity of an economically depressed region. This approach to regeneration has been criticized by those who believe it will turn Britain into one big Heritage Trail.

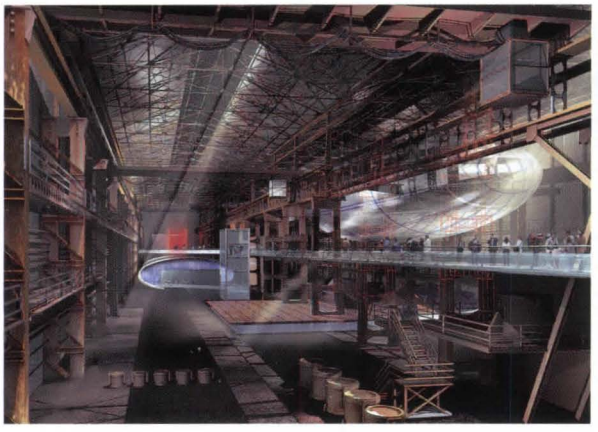
Another concern is that the increasing number of tourist attractions will fail to draw the crowds necessary to make them viable. Architecturally, though, Magna's design is promising.

Wilkinson Eyre has created four pavilions within the two seven-story-tall, 385-yard-long main bays of the steelworks building. Each pavilion explores one of basic elements in steel forging: earth, air, fire, and water. Poetically, the pavilions are connected with one another and with the reused transformer building through walkways and bridges.

The most unusual of the four pavilions is the one devoted to air and housed in an airshiplike structure that hovers well above the ground level. The Air Pavilion attaches firmly to the transformer building with steel platforms that pierce translucent foil pillows.

Wilkinson Eyre has recently gained attention for several transportation and infrastructure projects in London, including the new Stratford Jubilee Line Station, Stratford Market Depot (a maintenance facility for London Underground's new Jubilee Line), and the South Quay Footbridge. *Laura Iloniemi*

Inside Magna is the Air Pavilion (right), an airshiplike structure skewered by steel platforms.



HEADING FAR SOUTH

The AIA Firm Survey 2000–2002 reveals a sharp increase in U.S. firms doing projects in the Caribbean and Central and South America. The survey, sent to 4,500 AIA member-owned firms, was conducted in January and February 2000. The study was funded and conducted jointly by the AIA and the McGraw-Hill Companies Construction Information Group.

Percents of total international billings calculated by project location (*Multiple responses permitted*)

	1996	2000
Central America/ South America/ Caribbean	14%	28%
Asia/Pacific Rim	32%	26%
Western Europe	22%	19%
Canada	5%	15%
Eastern Europe	19%	13%
Middle East	11%	9%
Mexico	10%	7%
Africa	6%	2%
Subcontinent Asia	3%	2%

Source: AIA Firm Survey 2000–2002

Record News

OFF THE RECORD

Condé Nast employees are disparaging their Frank Gehry–designed cafeteria [JUNE 2000, page 116] at 4 Times Square. Not because of the design, mind you, but because it tempts the waiflike fashion editors with too many culinary delights. As an anonymous employee wrote to Inside.com, "While I first regarded the cafeteria with awe and affection, I now look upon it with something more akin to terror."

SHoP/Sharples Holden Pasquarelli has been awarded the commission to renovate and expand Prentis Hall at Columbia University into a new school for the arts. The job entails renovating 50,000 square feet of space and adding an additional 50,000 square feet. The new facility will consolidate a program that currently occupies space in 11 different buildings on campus.

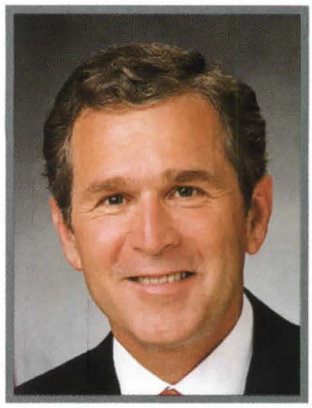
Brad Cloepfil of Portland, Ore., Zaha Hadid of London, Morphosis of Santa Monica, Calif., and Ben van Berkel and Caroline Bos of Amsterdam have made the short list for a renovation and expansion of the Wadsworth Atheneum in Hartford, Conn. An architect will be chosen by mid-October.

NCARB has left the AIA building. As of September 25, NCARB has taken up new digs on K Street NW in Washington, D.C., and is now the only collateral organization outside the AIA building.

The distinctive, but empty, National Centre for Popular Music by Branson Coates in Sheffield, U.K., closed 16 months after opening. The $21 million museum attracted few visitors.

Taking a stand on the built environment

Election day, November 7, is less than a month away. Here's the low-down on where the presidential frontrunners stand on select issues of the built environment. *Jane Kolleeny and John E. Czarnecki, Assoc. AIA*



Where they stand:	Democrat Al Gore	Republican George W. Bush
School Construction 	Supports an expanded federal role in education, including school construction. Favors School Modernization and Qualified Zone Academy Bonds to help public school districts build and renovate more than 6,000 educational facilities in two years. Would use federal funds to triple the number of charter schools to 5,100 by 2010. Proposes grants for districts planning to build small high schools of fewer than 600 students.	Views school construction as a state and local responsibility but allows that "the federal government can play a role in providing schools innovative options to build and repair." Would offer $3 billion in loan guarantees to 2,000 charter schools in the next two years. For children of military and Native American families, proposes $310 million and $928 million, respectively, for school repair and construction.
Housing 	Would increase the Low-Income Housing Tax Credit, providing incentives for an additional 180,000 units of affordable housing in the next five years. Supports HUD's Home Investment Partnership and Community Development Block Grant programs. Supports the New Markets Initiative, which encourages private investment in traditionally underserved communities.	Encourages a larger role for state and local governments in controlling federally assisted housing in their jurisdictions. The Renewing the Dream investor-based tax credit would help fund the construction or renovation of more than 100,000 single-family housing units in distressed communities. Would permit the use of Section 8 vouchers to subsidize monthly mortgage payments.
Brownfields 	Would make more funds available to private companies and let state and local governments float bonds for cleanup. Supports making permanent the 1997 temporary tax incentive to write off cleanup costs. Better America Bonds, generating more than $9.5 billion over five years, would be used, in part, for brownfield cleanup.	Also would make permanent the brownfield cleanup tax incentive. Would establish high standards for brownfield cleanup, providing more flexibility than Superfund standards. Would protect developers from federal Superfund liability at brownfields cleaned up under state programs. Would reform the Brownfield Cleanup Revolving Loan Fund.
Land Use/Sprawl 	Through his Livable Communities Initiative and Better America Bonds, would use $1 billion in federal funds to promote "smart growth" policies. Calls for $2 billion in tax incentives to protect wilderness areas from development.	Supports increased state control over environmental policies and opposes federal action to curb sprawl, although Texas leads the U.S. in loss of prime and unique farmland to sprawl. Would encourage land conservation with tax credits.

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CIRCLE 18 ON INQUIRY CARD

Record News

OFF THE RECORD

A joint venture of Morphosis and Einhorn Yafee Prescott was selected for the $51 million National Oceanic and Atmospheric Administration Building in Suitland, Md., to be completed in 2003.

Prince Charles has established a scholarship for a young black person to study architecture in the U.K. The fund is in memory of a black teenager, Stephen Lawrence, an aspiring architect who was stabbed to death seven years ago.

The Collateral Internship Task Force met in August and refined its resolutions to improve the transition from education to licensure. The resolutions, presented to each of the collateral organizations, will be made public in upcoming months.

A selection was expected weeks ago, but at press time no decision had been made for the $304 million Metropolitan Kansas City Performing Arts Centre project. Short-listed firms are Pei Partnership Architects with Charles T. Young, AIA, Cesar Pelli & Associates, David M. Schwarz/Architectural Services, and Moshe Safdie & Associates.

A competency-based Intern Development Program (IDP) is being developed by the AIA in conjunction with NCARB. The pilot will be initiated in Virginia, Illinois, and California, beginning in late 2001.

The Federal Reserve Bank of Dallas commissioned a team of Michael Graves & Associates and Pierce Goodwin Alexander & Linville (PGAL) to design its new Houston branch.

Women's Museum enlivens a coliseum

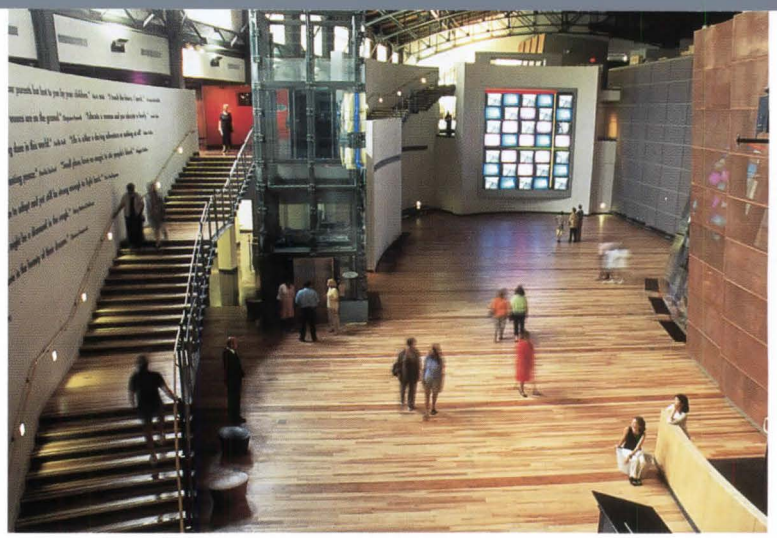
The Women's Museum: An Institute for the Future opened September 29 in Dallas. It is the first comprehensive center for women's history in the country.

The $23 million project, designed by New York architect Wendy Evans Joseph, AIA, with F&S Partners of Dallas, features more than two dozen exhibits—all thematic and many interactive—on topics including the women's movement; women in the arts, sports, and adventure; and female comedians. The interior showpiece is an electronic quilt, 30 feet tall, consisting of photographs, quotations, and video images highlighting the achievements of women.

Set in Dallas' Fair Park, the museum occupies the 1909 coliseum, which was originally used for everything from livestock auctions to grand opera and later as an office building, warehouse, and workshop. Joseph meticulously restored the exterior, including Raoul Josset's sublimely kitschy statue of Venus rising from a cactus, and then created a crisp contemporary structure within. "I didn't want a complete break between inside and outside," she explains. "I wanted a dialogue and a feeling of continuity between old and new, like Paris' Musée d'Orsay."

The strengths of the existing building are its tall arched windows, steel roof trusses, and dramatic three-story core that resembles a turn-of-the-century train shed. Joseph's design celebrates these elements while giving the interior a modern openness and fluidity. From a shallow Art Deco lobby, a vestige of a 1930s renovation, visitors move directly into the soaring central space, from which they can see the entire museum at a glance. This room, called "The Gathering," is divided by a three-story diagonal wall, with administrative and storage spaces on one side and an auditorium, cafe, and museum shop on the other. A wall of perforated copper panels wraps around the shop on the first level, while an equally stunning cantilevered staircase rises to the exhibits on the second and third. A steel bridge, with a subtle springiness, connects the exhibition floors on the south end of "The Gathering."

The Women's Museum, the first institution of its kind in the country, should energize Dallas' spectacular but perpetually struggling Fair Park. Built in the 1930s and still fully intact, the park is largely moribund except during the annual state fair and summer rock concerts. The Women's Museum will give residents and visitors another, more substantive, reason to go there. *David Dillon*



The Women's Museum: An Institute for the Future, inside a 1909 coliseum (above left), was designed by Wendy Evans Joseph. The interiors features an electronic quilt (top), and a great room called "The Gathering" (above right).

NYC Museum of Women narrows shortlist

While the Women's Museum: An Institute for the Future has opened in Dallas, a shortlist of seven architectural firms has been named for the Museum of Women: The Leadership Center, to be built in Manhattan's Battery Park City. The New York museum will present the history of women in North America chronologically, while the Dallas museum is organized thematically. Selected firms will complete schematic designs for the 125,000-square-foot museum within the next three months. A winning firm will be chosen in early 2001.

The seven firms are: a team of Marilyn Taylor, FAIA (of SOM), Laurinda Speer, FAIA (of Arquitectonica) and Frances Halsband, FAIA (of R.M. Kliment Frances Halsband); Gae Aulenti and Hellmuth, Obata + Kassabaum; Susanna Torre and Fox & Fowle; Weiss/Manfredi Architects; Audrey Matlock Architect; Smith-Miller + Hawkinson Architects; and Pei Cobb Freed & Partners. ***JEC***

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CIRCLE 19 ON INQUIRY CARD

Architect raising $$$ to keep developer from burying Graves

Indiana architect Matt Kelty, AIA, is on a crusade. He hopes to raise $595,000 by the end of November to purchase and save the Snyderman House, an early project by Michael Graves, FAIA, from demolition.

The 1972 Snyderman House, near Fort Wayne, Ind., is perhaps the best example of the Modernist work of Graves' early career. The developer that owns the property is planning to raze the house and develop a residential subdivision on the 40 surrounding acres. Kelty, a partner of Fort Wayne's Kelty Taylor Design Inc., is spearheading an effort to purchase the building and renovate it.

The home's original owners, Sanford and Joy Snyderman, parents of Nancy Snyderman, medical correspondent of ABC's *Good Morning America* and *20/20,* left the house in 1998 and sold it in December 1999 to developers Joseph Sullivan and William Swift. Sullivan and Swift have agreed to sell the home and 17.3 of their 40 acres of land to Kelty if he raises $595,000 by the end of November. The developer plans to build approximately 40 to 45 homes on the 17.3 acres.

Kelty has a way to go to raise the necessary funds. He has established a nonprofit organization named Eleventh Commission, Inc., because the house was Graves' eleventh commission. As of early September, Kelty had secured less than $25,000 and was actively seeking support from several charitable foundations. "A year from now, it may be in a landfill if we don't find the money to buy the house," Kelty says.

Graves, although busy, has been supportive, according to Kelty, and has put the Indiana architect in touch with potential donors. Graves was not informed when the Snydermans sold to a developer. "It was a big surprise," Graves says. "I don't have any projects that I want to see destroyed."

Asked what he thought of Kelty's endeavor, Graves says, "I think it's amazing."

If Kelty secures the house, he will allow a nonprofit organization to use the lower level and open the rest of the house to tours and educational programs. Although Sullivan and Swift will not make as much profit on the property if Kelty completes the purchase, Sullivan said he did have "a little compassion" for Kelty's efforts and was willing to sell if Kelty raised the funds.

"Our efforts are to preserve the house for cultural reasons," Kelty says. "I think it'll provide a measurable community service."

Kelty would also undertake a major rehabilitation project. The roof has leaked for years, and since the Snydermans left, hardwood flooring and plumbing fixtures have been removed by vandals, according to Sullivan. Kelty says Nancy Snyderman had a circular steel staircase removed.

The Snydermans donated a 7-by-22-foot wall mural from the house to the Indianapolis Art Center. Kelty says the mural would be returned to the house if the purchase is completed. *JEC*

PHOTOGRAPHY: © CLINT KELLER, FORT WAYNE JOURNAL GAZETTE

John Taylor, Jeff Tapp, Assoc. AIA, and Matt Kelty, AIA, (above, left to right) inside the Snyderman House, where flooring has been removed. Taylor, Tapp, and Kelty are board members of Eleventh Commission, Inc., a nonprofit organization founded by Kelty to raise funds to purchase the Graves house (left), which developers plan to raze.

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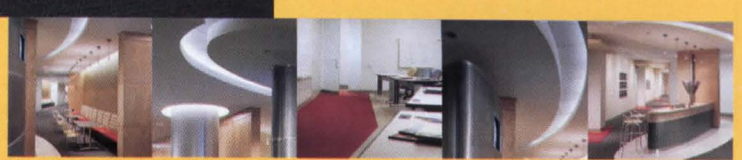

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CIRCLE 20 ON INQUIRY CARD

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Record News

ROMA Design Group wins MLK Memorial competition

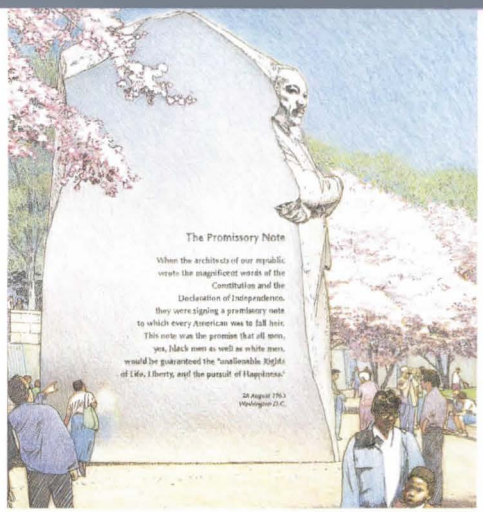
A design by ROMA Design Group of San Francisco won the competition for the Martin Luther King Jr. National Memorial in Washington, D.C.—the first memorial on the Mall commemorating an African American and the first dedicated to a person who was not a U.S. President.

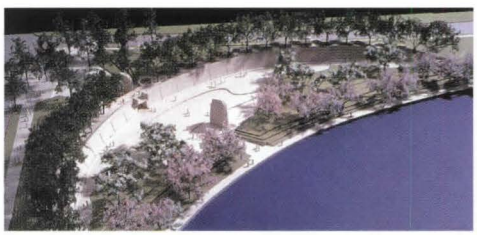
"Our design for the memorial is not intended to be a eulogy. The memorial is about life and the promise of positive social change and the pursuit of higher levels of achievement related to human rights and civil liberties," said Boris Dramov, FAIA, a ROMA partner, in his remarks on September 13 at the announcement of the winning design.

The selection was made from a field of more than 850 entries from 34 countries. The memorial is planned for a site, approved in 1999, at the northern rim of the Tidal Basin, near the Franklin D. Roosevelt memorial. The design must be approved by several commissions before construction can begin, likely in 2003.

"It's a very exciting endeavor. Martin Luther King was an American hero of our generation," says Dramov, who credited the teamwork of his partners, Jim Adams, AIA, Bonnie Fisher ASLA, Burton Miller, AIA, and Joel Tomei, AIA, in undertaking the competition.

Key elements of stone, water, and trees are prominent in the memorial, which is a curved plaza along the Tidal Basin. King's words are inscribed in stone, water recurs as a symbol of justice, and trees reinforce the spatial integrity of the memorial. Natural landscape features help convey themes of democracy, justice, and hope.





ROMA Design Group partners include (from left) Jim Adams, AIA, Bonnie Fisher, ASLA, and Boris Dramov, FAIA. The memorial (middle) includes a Stone of Hope (top) with Dr. King's words inscribed.

A monolithic single stone, the "Stone of Hope," incorporates a representation of Dr. King on one side facing the Jefferson Memorial. Dr. King is pointing a pencil in one hand to the words he wrote in "The Promissory Note."

"The design embodies the spirit of this truly great leader, and the memorial will serve as a place of peace, reflection, and inspiration," says Adrian Wallace, director and president of the Martin Luther King Jr. National Memorial Project Foundation.

ROMA Design Group's notable projects include Santa Monica's Third Street Promenade, the Mid-Embarcadero Open Space and Transportation Project in San Francisco, and a plan for areas of San Jose. *JEC*

ARE Pass Rates Rise

Candidates' pass rates improved in seven of nine divisions of the Architect Registration Examination (ARE) from 1998 through the first half of 2000.

ARE Pass Rates by Division

	1998	1999	2000*
Multiple Choice Divisions			
Pre-Design	63%	69%	72%
General Structures	71	74	76
Lateral Forces	81	86	87
Mechanical & Electrical Systems	80	85	79
Materials & Methods	88	89	91
Construction Documents & Services	82	84	85
Graphic Divisions			
Site Planning	71	72	75
Building Planning	70	69	66
Building Technology	72	75	79

Source: NCARB *Through June 2000

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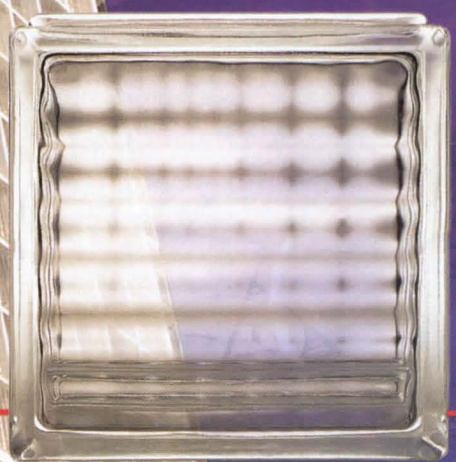

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CIRCLE 22 ON INQUIRY CARD

Record News

Growth on French housing

Plants will grow on these walls of volcanic rock.

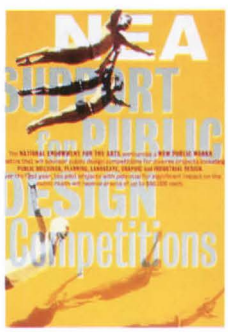
A recently inaugurated experiment in green architecture in the south of France has aroused considerable interest. Completed in May, Edouard François' block of 64 flats on the banks of the River Lez, Montpellier, will eventually support a cloak of hearty plants.

Prefabricated gabions, or slablike cages that comprise contain crushed volcanic rock, pig manure, cacti, fig seeds, and an irrigation system within a stainless-steel grille. François has also designed a dozen wooden cabins on gold-colored pilotis from which tenants can enjoy exterior views of the living facade. The open-topped summer houses project through foliage of surrounding trees, overlook the River Lez, and connect with the main structure via bridges.

The French Ministry of Culture provided $3 million toward construction. As a result, the private-sector project is included in the millennium celebratory program, organized by the French government body Mission 2000. Local authorities, however, played hardball with the Paris-based architect, who had to seek special authorization. "[They said] it looks so crazy and curious," François says. Nevertheless, François received the go-ahead, but not before proving that there would be "no maintenance for 50 years," in lieu of the usual 10. *Robert Such*

New Public Works competitions to invigorate civic realm

An innovative National Endowment for the Arts (NEA) grant program will fund architectural competitions to enhance the public realm. Ten recipients were announced in August for the first round of New Public Works, a new NEA design initiative. Recipients each receive approximately $50,000 to conduct design competitions within the next year for public buildings and spaces.



The competition poster

Recipients include a Chicago Public Housing Authority competition for multiple public-housing units to be used as prototypes. Another recipient, the Seattle Art Museum will launch a competition for the Olympic Sculpture Park on the downtown Seattle waterfront.

"We're very pleased to have a full spectrum of projects. It's a good cross-section," says Mark Robbins, the NEA's director of design. "In initiating the competitions, we hope a design dialogue begins in each of these cities."

New Public Works recipients are the Black History Museum and Cultural Center, Richmond; Booker T. Washington High School for the Performing and Visual Arts, Dallas; Business and Professional People for the Public Interest, Chicago; Chicago Housing Authority; Flemington Jewish Community Center, Flemington, N.J.; LINC Housing Corporation, Long Beach, Calif.; Municipal Art Society, New York; Pittsburgh Children's Museum; Seattle Art Museum; and Tucson-Pima Arts Council.

One recipient, the Business and Professional People for the Public Interest, a Chicago-based law and policy center, will conduct the "Big Shoulders, Small Schools" competition to design two new universally accessible elementary schools for Chicago public schools. This hybrid open and invited competition has open registration due December 1. Invited firms are Ross Barney + Jankowski of Chicago, Koning Eizenberg Architecture of Santa Monica, Calif., Merrill Elam Architects of Atlanta, and Smith-Miller + Hawkinson Architects of New York. Eight finalists will be announced in January, and two winners, one per school, will be chosen in March.

This was the first of what Robbins hopes will be an annual New Public Works program. Letters of interest for the next round of New Public Works grants are due January 11, 2001, for competitions to commence between September 1 and November 1, 2001. In this round, the NEA will focus on competitions for landscape projects, but entries are open to architecture, urban planning, graphic design, and industrial design as well. *JEC*

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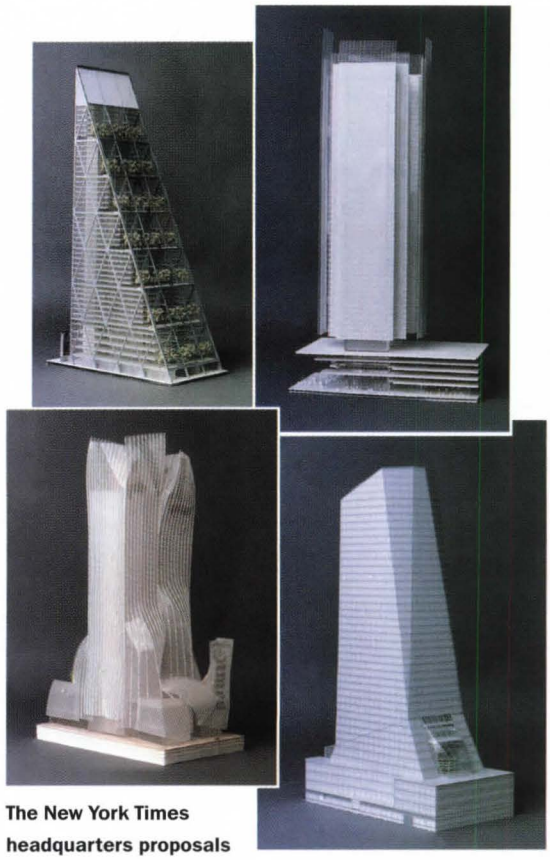
Record News

Four vie for coveted NY Times tower project



The New York Times headquarters proposals (clockwise from top left) by Foster & Partners, Renzo Piano, Cesar Pelli, and Frank Gehry with SOM.

Architectural models by four finalist teams were unveiled in mid-September for a new *New York Times* headquarters tower. The four teams are: Renzo Piano Building Workshop; Foster & Partners; Frank O. Gehry & Associates with Skidmore, Owings & Merrill; and Cesar Pelli & Associates. The New York Times Company was expected to choose an architect by the end of September.

The tower will be built on Eighth Avenue between 40th and 41st Streets, across from the Port Authority Bus Terminal. The New York Times Company, with its development partner, Forst City Ratner Companies, plans 1.3 million square feet of space in a 650-foot-tall tower. *The Times* would occupy at least half of the building, including most of the base, and the remainder would be leased to commercial and retail tenants.

Foster proposes a triangular tower, with a high point on Eighth Avenue and an angled facade to the east, with verdant terraces at every seventh floor. Gehry and SOM designed an undulating facade, with the letters "N" and "Y" at the top of the building in Times typeface. Pelli proposes an angular, tapered tower with large tree-filled atria where the tower meets the base. Layered, sheer glass screens surround Piano's rectangular tower, which has a five-story atrium.

In a memo to *Times* employees, cited in a September 14 *New York Times* article, Michael Golden, vice chair and senior vice president of the New York Times Company, wrote, "The models represent the architects' design concepts at this time. The architect who is chosen will then embark upon a yearlong, detailed, and complex process to design the building that we will ultimately occupy."

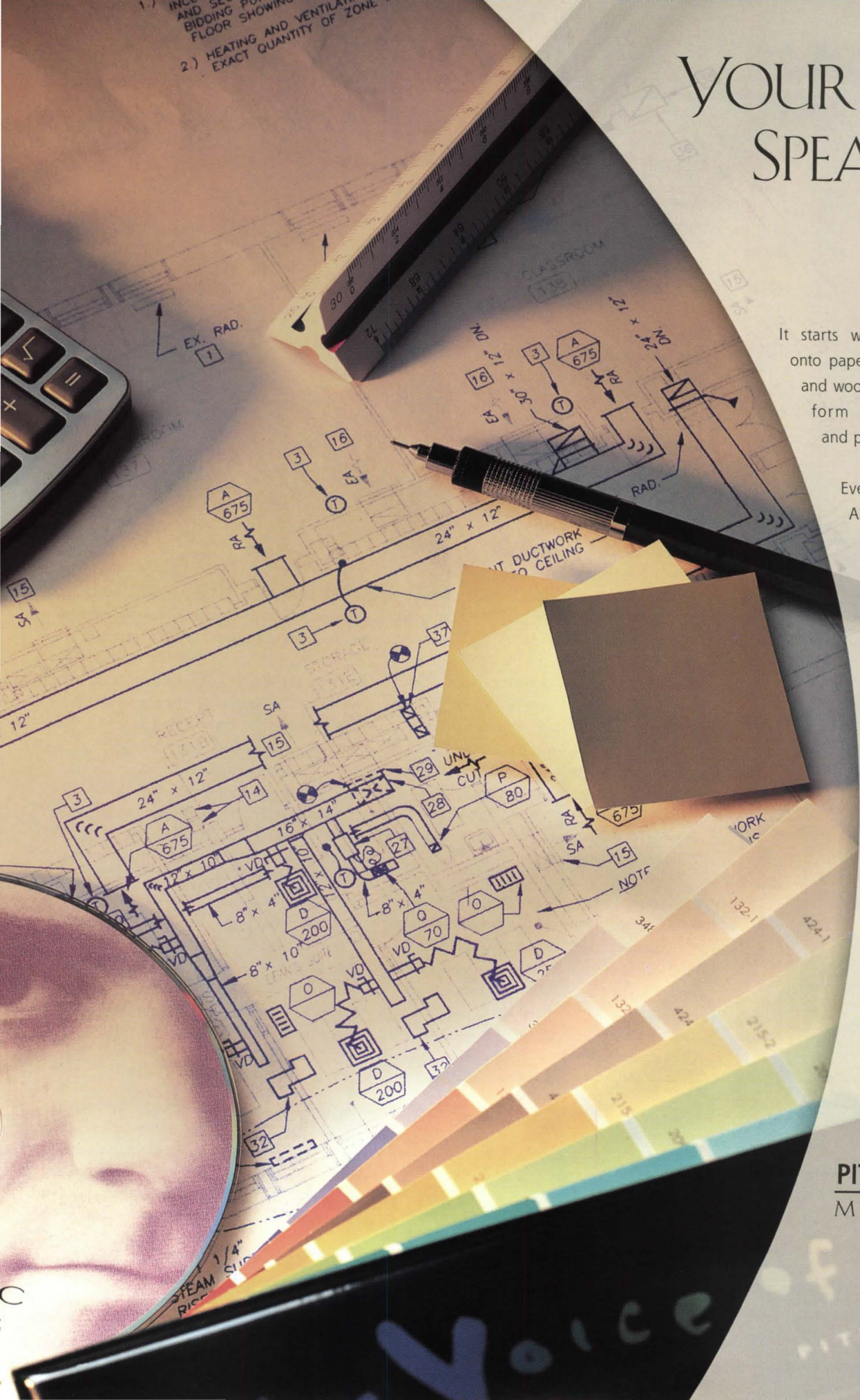
The Times has been at its current headquarters at 43rd and Broadway, a few blocks from the new site, since 1913.

"We want a building that is an icon, that speaks to our heritage and also speaks to our future," Golden told the *New York Times*. *JEC*

Gehry, Lapidus, Hejduk honored as national treasures

Architects Frank O. Gehry, FAIA, Morris Lapidus, and the late John Hejduk were honored with the first National Design Awards by the Smithsonian's Cooper-Hewitt National Design Museum. The awards, presented on September 18 at the White House, recognize excellence, innovation, and public impact. Gehry, 71, won the lifetime-achievement award, and Apple Computer won a corporate achievement award. Lapidus and Hejduk (posthumously) were honored with "American Originals" awards. Lapidus, 97, is the legendary Miami hotel and retail architect. Hejduk died in July at age 71, after serving for 25 years as dean of the Irwin S. Chanin School of Architecture at the Cooper Union in New York City.

Three more National Design Awards for environment (including architecture, interiors, and landscape), product design, and graphics will be bestowed at a formal gala at the Cooper-Hewitt on November 15. Finalists in the environment category are: landscape designer Lawrence Halprin and architects Will Bruder, Steven Holl, AIA, Thom Mayne, AIA, and Samuel Mockbee, FAIA. ***JEC***



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CIRCLE 26 ON INQUIRY CARD

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Preserving Wright's and Richardson's Chicago-area icons

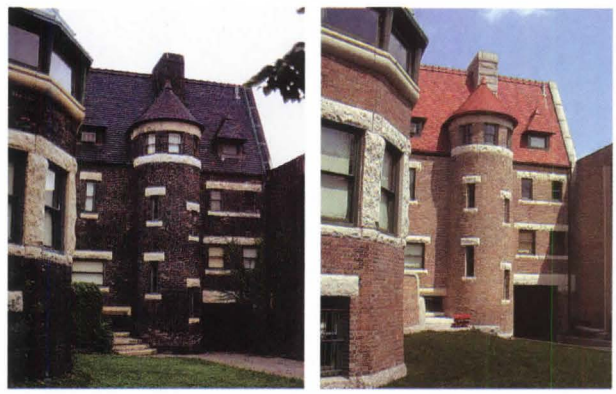
Three important Chicago-area buildings by Frank Lloyd Wright and H. H. Richardson are getting the comprehensive preservation they deserve. Exterior restoration has been completed at Richardson's Glessner House, and work is beginning on Wright's Unity Temple and Robie House.

This summer, at the 1886 Glessner House, a year-long $850,000 courtyard, roof, and window restoration reached completion. A kitchen porch, removed 20 years ago, was re-created, and a decrepit central porch rebuilt.

Funded in part by the Getty Grant Program and the City of Chicago, the Glessner work has made a remarkable difference in public perception of the fortresslike structure. The granite street facade was cleaned in 1984. Not addressed were the salmon-colored, brick-faced courtyard, which had turned black with soot and grime, and the deterioration of the terra-cotta roof. Project manager Anne T. Sullivan, of Chicago's Johnson-Lasky Architects, says, "The things we did were rather straightforward—masonry cleaning, tuckpointing—but seeing all these warm tones underneath, we learned much about Richardson's design intent."

Two of Wright's important projects have also required attention. His Unity Temple, the first large-scale reinforced-concrete structure in the United States, needs reinforcement. The 1908 Oak Park, Ill., landmark was named this spring by the Landmarks Preservation Council of Illinois (LPCI) as one of the 10 most endangered structures in Illinois. A $5 million restoration effort has begun, led by Construction Technology Laboratories of Skokie, Ill. and including $1 million concrete stabilization and roof repairs, to be completed in 2002.

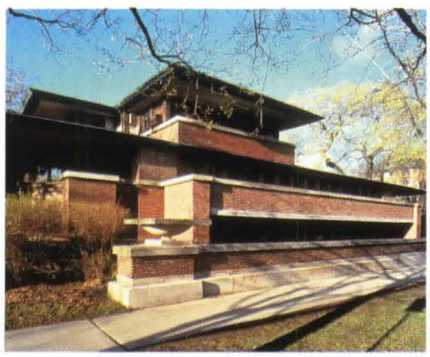
The almost entirely blackened exterior concrete has hastened deterioration of the building's steel, threatening overall structural integrity. A complete roof replacement will follow the other repairs. The goal for all restoration work is 2009. In April, Unity Temple was identified in the National Trust for Historic Preservation's "Save America's Treasures" program, qualifying it for multiple funding sources.



Work on H.H. Richardson's Glessner House included masonry cleaning on the courtyard and a restored terra-cotta roof.

Robie House, owned by the University of Chicago and managed by the Frank Lloyd Wright Preservation Trust, is in the midst of a 10-year, $7 million restoration program. Asbestos removal was completed last fall, and restoration of the home's 174 art glass windows is under way. Efforts to restore the 1909 exterior, including a new clay-tile replica roof, start in spring 2001. The existing 1960s roof is not historically accurate, and water has been leaking into the house. Robie House will remain open to visitors throughout the project, scheduled for completion in 2007.

JEC and Tom Connors



Wright's Robie House (far left) is in the third year of a 10-year, $7 million restoration. Unity Temple (left) was named by the Landmarks Preservation Council of Illinois as one of the 10 most endangered structures in Illinois.

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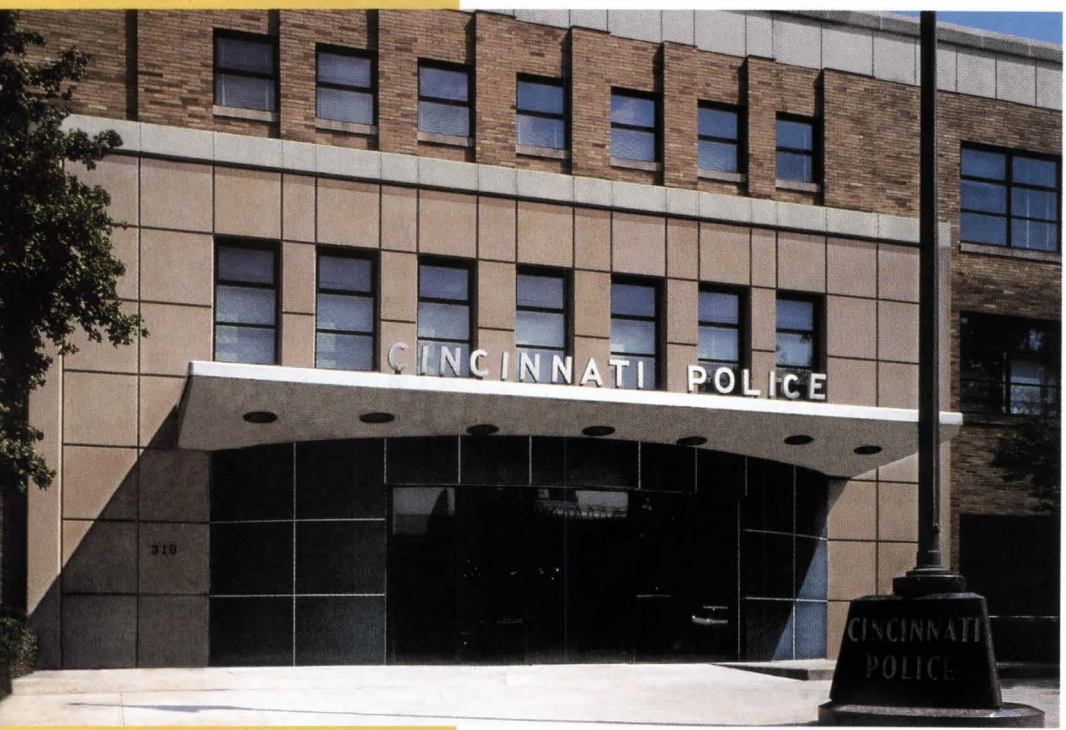

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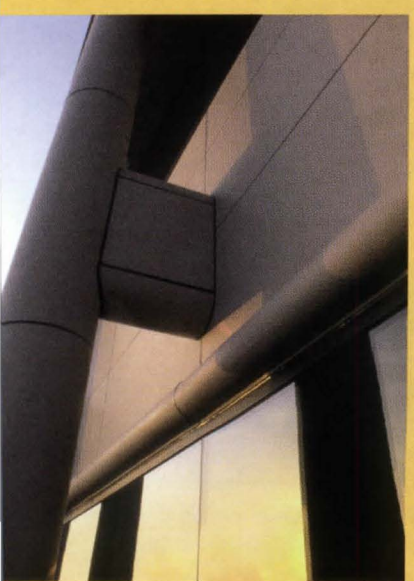

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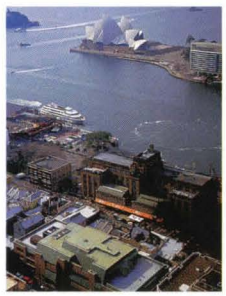

Sydney's Museum of Contemporary Art (left) is on a prominent site near the Opera House (far left).

Selection for Sydney's MCA questioned

Sydney's Lord Mayor, Councillor Frank Sartor, describes the commission to redevelop that city's Museum of Contemporary Art (MCA) as "the most prominent architectural commission for a cultural venue in Sydney since the Opera House." The architect-selection process, however, has been riddled with questions. Four firms are currently developing proposals to present to a jury chaired by Renzo Piano in November, but Japanese architect Kazuyo Sejima believes the commission should be hers.

Three years ago, Sejima won a commission to design a $14.3 million cinematheque that would be adjacent to the existing building. When excavation began, historic findings halted the process. Funding dried up, and it was not until the Sydney City Council recently took over MCA that the project seemed viable again. A council spokesman said Sejima had been invited to submit "under the same conditions as the others," for what is now a different, bigger project with a much larger budget. "She's a very good architect, but we couldn't agree on the terms, so we had to withdraw the offer. There is baggage from the previous job."

Sejima, who had a 1997 contract with the museum, wrote to the MCA seeking an explanation: "We are quite confused, as we were duly appointed as an architect for the [MCA] Stage II development."

The Sydney City Council invited the following architects to submit design concepts for the $33.8 million project, which will expand the existing MCA, a historic sandstone building, from 86,000 to 205,000 square feet: Rafael Moneo of Spain, Francesco Venezia of Italy, Matthias Sauerbruch and Louisa Hutton of Germany, and Richard Francis Jones and Nonda Katsalidis of Australia. An adjacent site will be home to a new moving-images center.

Located at West Circular Quay, opposite the Opera House and in view of the famous Harbour Bridge, the MCA is the city's most visible, sensitive, and prestigious commission since the renowned Opera House. The museum has had a troubled administrative and financial history and has been subject to much political intrigue.

Interviews and finalist presentations will take place in November, and an architect will be selected before the year's end. *Anne Susskind*

Jencks spirals in Long Island

Wondering what Charles Jencks, who is credited with labeling Postmodern as an architectural style in the 1970s, is doing lately? Head to Cold Spring Harbor Laboratory (CSHL), to see *Spirals Time—Time Spirals,* a monumental sculpture designed by the architect/author. The sculpture was installed in September at CSHL, the world-renowned biomedical research institution on Long Island, N.Y.

For Jencks, who labeled Postmodern in his 1977 book, *The Language of Post-Modern Architecture*, *Spirals* is an offshoot of his recent Garden of Cosmic Speculation, a science-themed landscape in Scotland. Jencks sees in his role as architect/artist an opportunity to "visualize and spatially redesign scientific metaphors about the Universe." *Spirals,* 15 feet tall and 6 feet wide, is a winding stair that forms a literal (perhaps Postmodern) double helix in sandblasted aluminum.

The sculpture was commissioned by the director of CSHL, Nobel laureate Dr. James Watson, who discovered the DNA double-helix structure in 1953 with colleague Francis Crick. Long interested in the relationship between art, architecture, and science, Watson has led an ambitious expansion of CSHL's campus and its public art collection, which includes works by David Hockney, Dale Chihuly, and Michael Malpass. Jencks' permanent installation highlights an outdoor art show at CSHL, *Sculpture by the Sea,* running through October 31. *Susanna Sirefman*

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News Briefs

Ferrell floats Seattle aquarium design A preliminary design for the Pacific Northwest Aquarium in Seattle, by British architect Terry Ferrell with Seattle firm Mithun, was unveiled in July. Although funds for the $206 million aquarium have not been raised and a specific site has not been chosen, Ferrell's preliminary design offers a glimpse of a bowl-like waterfront structure that is built completely offshore. The transparent and translucent bowl would open to Puget Sound. A water garden on the roof would include tidal pools, walking paths, and shell and rock gardens.

"Within the shell is a complete world of natural habitat. The exhibits kind of tumble into Puget Sound," said Doug Streeter, project architect for Terry Ferrell & Partners, in a statement to the *Seattle Times*. A number of waterfront sites are being considered, and Seattle City Council must approve the location. The aquarium would open in 2007, at the earliest.

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Regulatory program for interior designers vetoed in California California Governor Gray Davis vetoed Assembly Bill 1096, which would have created a new regulatory program for interior designers. In a statement on the September 10 veto, Davis said, "Government intervention in a marketplace should be reserved for cases where there is consumer harm."

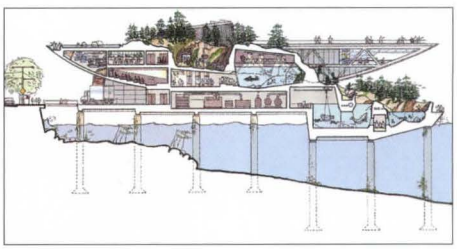
Sasaki

Landscape pioneer Sasaki dead at 80 Hideo Sasaki, founder of the firm Sasaki Associates, died of cancer September 6 at age 80 in Walnut Creek, Calif.

Sasaki, a native of California, taught at Harvard Graduate School of Design, where he was chair of the landscape department from 1958 to 1968. In 1953 he founded the firm Sasaki Associates, which today has offices in Watertown, Mass., and San Francisco. Among Sasaki's many well-known landscape and urban-design projects are the First Church of Christ, Scientist in Boston, and corporate projects for IBM, Bell Laboratories, Deere & Co., and the University of Arizona.

Elizabeth Gordon dies at 94, former House Beautiful editor Elizabeth Gordon, who called her office at *House Beautiful* "an extension of Taliesin," died September 3 in Adamstown, Md. A close friend of Frank Lloyd Wright, Gordon was editor of *House Beautiful* from 1939 to 1964. In the magazine she railed against the International Style, devoting two issues to Wright, who referred to himself as her godfather.

Terry Ferrell's design for Seattle's Pacific Northwest Aquarium is completely offshore.



News Briefs

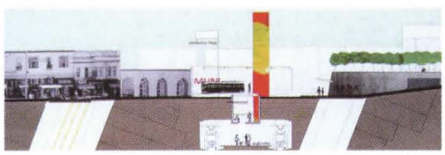
Cyber City in Shenzhen, China

Pei's Cyber City planned for Shenzhen, China Pei Partnership, with Sherman Kung & Partners of Hong Kong, has completed a master plan and is developing schematic design for all buildings in Cyber City, a 100-acre high-tech office park in Shenzhen, China. The office park will be home to software-technology and related companies, some of which are based in China. Microsoft, Motorola, and Oracle have already expressed interest. Pei Partnership will be design architect for nearly all of the 23 buildings, totaling 4–4.5 million square feet. Construction will begin in 2001, with completion in 2004.

Winners chosen for Harvey Milk Memorial Harvey Milk, San Francisco's first openly gay supervisor, and Mayor George Moscone were assassinated in 1978. Affectionately known as "The Mayor of Castro Street," Milk will be remembered with a memorial plaza in that city's Castro District.

Two winners, both German transplants to San Francisco, were recognized September 13 for the San Francisco Prize 2000: Harvey Milk Plaza International Design Competition. One of the winning schemes is by landscape designer Christian Werthmann of Oakland, Calif., with LOMA Architects. The other winner is by Heidi Sokolowsky of John Winder Architects, San Francisco, with Sabine Engelhardt of Oxford, U.K. Both teams received a $3,500 prize. Three teams received Special Recognition and $1,000 each. The competition drew 112 entrants from around the world.

Sokolowsky's plaza design with "vision tower"



Werthmann's design incorporates fog-making installations that would create multicolored clouds over the site, at the intersection of Market, Castro, and 17th Streets. Sokolowsky's design includes a 60-foot-tall "vision tower" that would display electronic moving images in the intersection.

Hariri & Hariri's showroom, with glass staircase (top)

A final design will incorporate various aspects of the winning plaza plans, which the public will review in a November community meeting.

Hariri & Hariri design showroom for Tui Pranich The New York firm Hariri & Hariri has completed a home-furnishing showroom for Tui Pranich in the Miami Design District. The 5,000-square-foot space will open this winter. The interior includes a 50-foot-long wall of concrete and wood, incorporating the reception desk, a display area, and a narrow pool of water. Shallow pools of water will metaphorically transform the showroom into an island. A striking glass staircase leads to second-floor showroom space.

The work of Iranian-born sisters Gisue and Mojgan Hariri is on display at MoMA's *Un-Private House* exhibit.

News Briefs

Toronto condos wall off lake Owing to outdated planning principles that allowed tall condominium buildings to wall off Toronto's waterfront, a complex will fill one of the last gaps in that wall with three towers, two of which are 37 and 21 stories each. Construction begins this month on Waterclub, a $155 million, 1,081-suite complex.

Toronto's Waterclub

Kirkor Architects & Planners of Toronto and Vancouver designed the aluminum-and-glass towers, which will rise from a three-story podium with 15,000 square feet of retail, a day-care center, indoor/outdoor pool, health spa, and fitness center. Clifford Korman, a partner at Kirkor Architects, says, "Virtually every suite has a view of the water because of the towers' curvilinear forms, although the design doesn't turn its back on the city."

Paul Bedford, Toronto's chief planner, says Waterclub is "a vast improvement over some of the earlier condo projects nearby. The developer is entitled to build to those heights because unused development densities were transferred from the south side of the road to the north side." However, he says, Waterclub is the "result of old thinking, old planning, and not something we would [plan] today because of the heights."

The city could not object to the project, Bedford says, because the developer met all of the city's zoning requirements. In the meantime, units are selling briskly and should be sold out by this fall. *Al Warson*

Architect runs for Congress Architect Jane Frederick, AIA, a Democrat, is running for Congress. This is Frederick's second attempt to oust Republican incumbent Floyd Davidson Spence, who has represented South Carolina's Second District since 1970. Frederick, who lost to Spence in 1998, is a partner in the firm Frederick and Frederick Architects, Beaufort, S.C., with her husband, Michael. Land use and the environment are key issues in her campaign.

Frederick

Good business The Business Week/Architectural Record Award winners [page 84] will be highlighted in a half-day conference, *Good Design Is Good Business, Design Strategies for the New Economy,* Friday, November 17, at the National Building Museum in Washington, D.C. Presented by *Business Week,* ARCHITECTURAL RECORD, and the National Building Museum in association with the American Institute of Architects, the conference will include discussions on successful architect-client collaborations to achieve business goals. The award winners will be honored, and a reception will follow for the opening of the museum's exhibit, *On the Job: Design and the American Office.*

Speakers include architects Arthur Gensler, FAIA, Herbert McLaughlin, AIA, and Richard Fernau, FAIA, as well as Kit Laybourne, head of Oxygen Media's animation group, and Steve Eisner, president and CEO of Eisner Communications.

For registration information, visit www.architecturalrecord.com.

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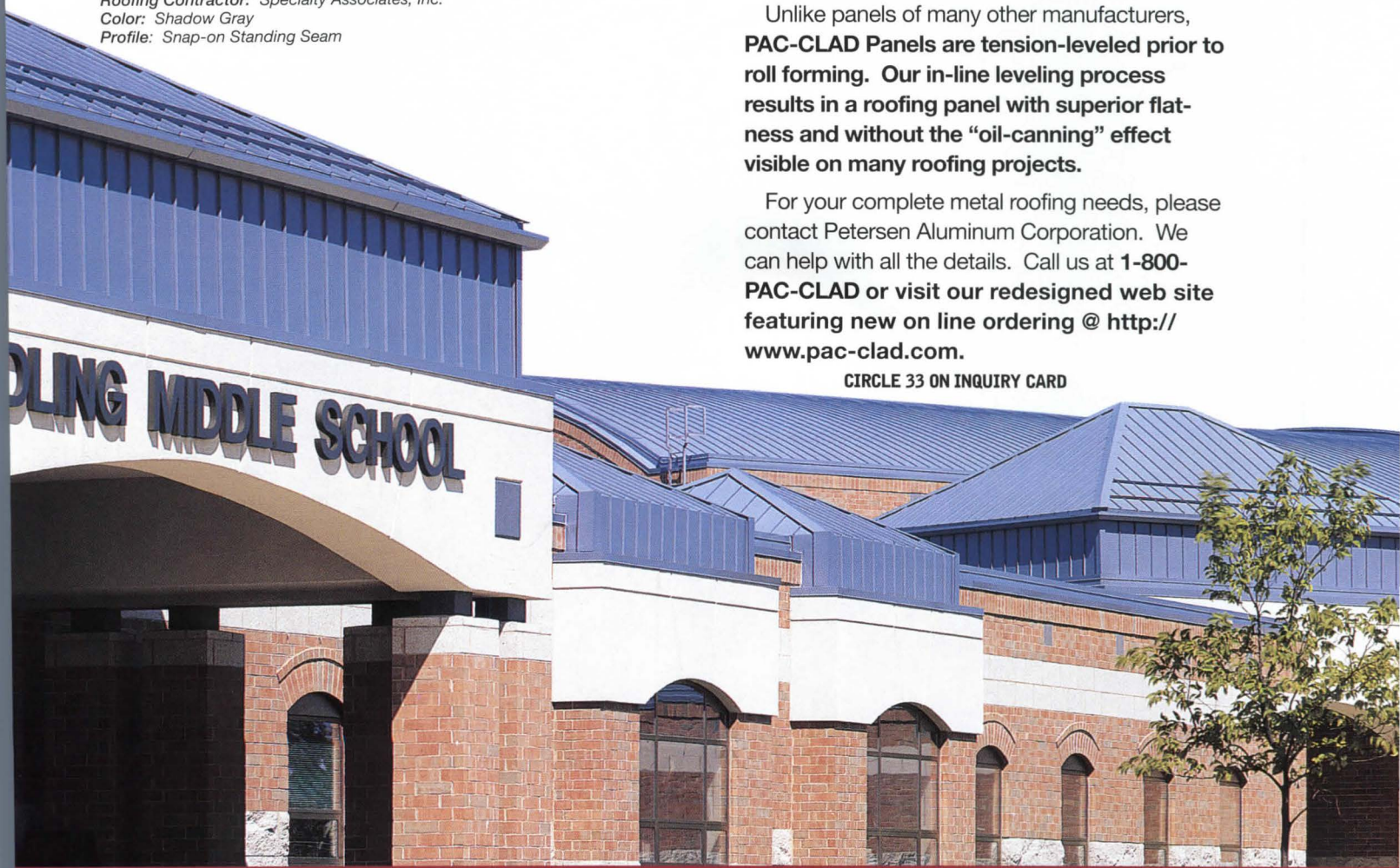

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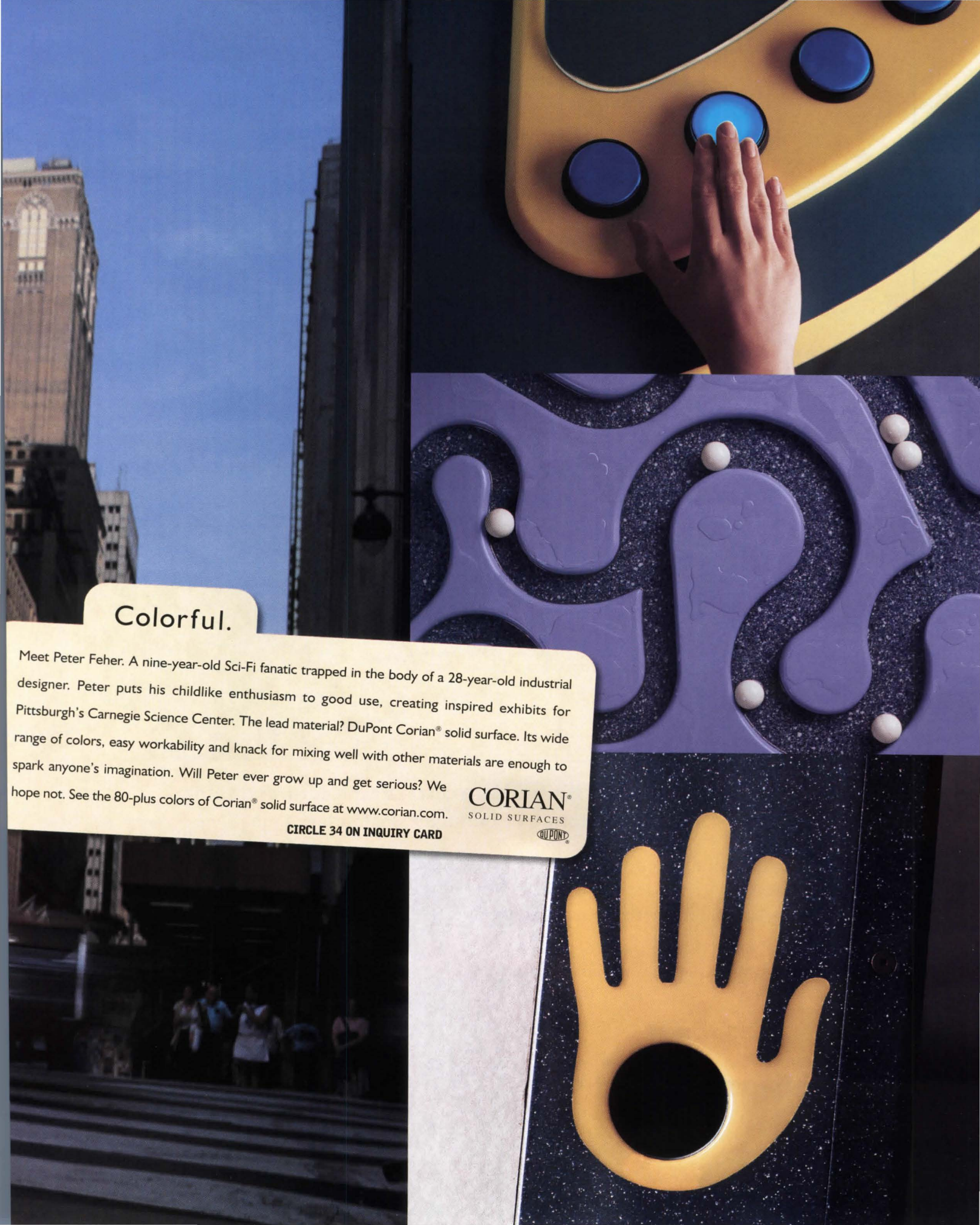

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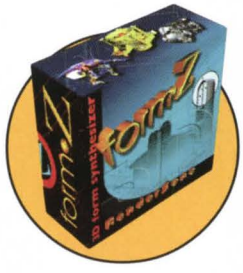

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CIRCLE 35 ON INQUIRY CARD

Cranbrook's soul intact with help from Moneo, Holl, Williams and Tsien

Correspondent's File

By John Gallagher

Making over an architectural masterpiece poses tricky problems. How much new thinking can an architect apply to what's already in place? Can one be reverential without being intimidated by the past?

At Cranbrook Educational Community north of Detroit, a number of architects have been working out the answers to those questions in nearly a decade of creative building. A private family of schools spanning grades pre-kindergarten through 12 with three divisions on four adjoining campuses, as well as a graduate art school, Cranbrook focuses on teaching critical, creative, and independent thinking skills to approximately 1,500 students through grade 12, and 150 graduate students. With high standards in place for the campus architecture as well as curriculum, Cranbrook's leaders have recently broken new ground, literally, adding a building here, a gatehouse there, a new road, new sculpture, and an array of new light fixtures. They've opened up vistas on Cranbrook's wooded, rolling 315-acre campus. With the final addition now under construction, it's time to reassess how well Cranbrook's current stewards have updated the landmark campus.

The answer, in short, is that Cranbrook has succeeded admirably—but within the rather tight confines it set for itself. So restrained is some of the new work that it's hard to imagine another campus in which so much building has produced so little change in the overall character of the place.

While much of the new work succeeds brilliantly, it is ironic that such modest architecture has been built for an institution whose educational mission emphasizes boldness, creativity, and experimentation in the arts and sciences.

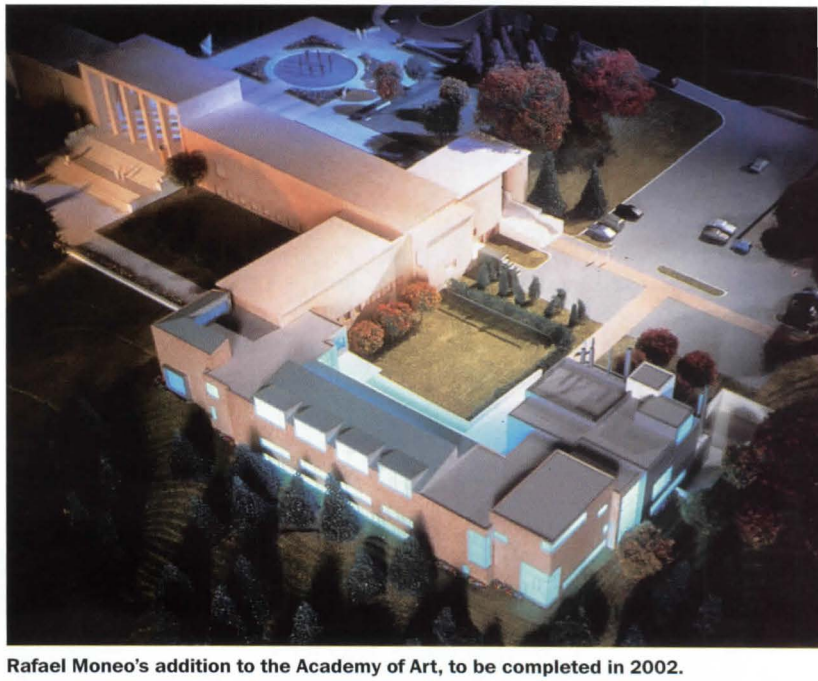
From the day in the 1940s when Eliel Saarinen finished his final project, Cranbrook Educational Community has stood as a world-class assemblage of buildings. Saarinen insisted that every act of creation, from the simplest doorknobs and bricks to the largest buildings and landscape features, contribute to an overall spirit of beauty. He gave Cranbrook not only a visual but a tactile character, choosing materials and forms that were woven, carved, hammered, or otherwise shaped by human hands.

Nothing new for 40 years

After the death of Saarinen and his patrons, founders George and Ellen Booth, Cranbrook stopped growing architecturally. Nothing new of any significance was built from the 1950s through the 1980s—partially for financial reasons and partially out of reverence for Saarinen's designs, a restraint that did little to plug leaky roofs or provide more studio space. By the mid-1980s, everyone knew something had to be done.

What to do and how to do it became subjects of fierce disagreement among faculty, trustees, donors, and architects. It was a mark of how contentious these debates became that those who revered Saarinen's work suggested that anything new be built underground. By the early 1990s, then-President Lillian Bauder, working with campus architect Dan Hoffman, had mapped out a plan to engage a select group of architects to tackle the major building projects. They agreed that no big signature projects should vie with Saarinen's landmarks, nor would his Arts and Crafts tradition be abandoned.

They went to great pains to find the right designers, bypassing both overexposed star architects and large corporate firms with hundreds of architects. They finally chose emerging talents with small but elite practices that could work within Cranbrook's Arts and Crafts heritage. Rafael Moneo of Madrid, who was selected to design the addition to the Academy of Art, went on to win the 1996 Pritzker Architecture Prize, and the rest of the architects involved have enhanced their reputations with several notable projects. The roster sent a clear signal that Cranbrook would meet the future with its soul intact.

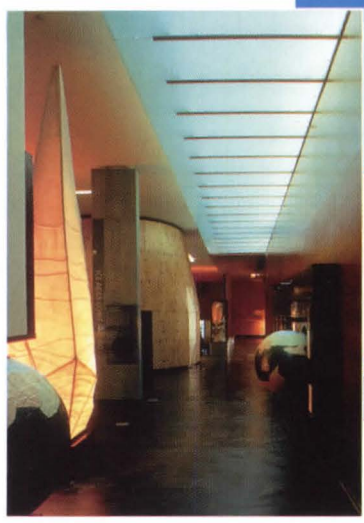


Rafael Moneo's addition to the Academy of Art, to be completed in 2002.

Hoffman, now concurrently a professor at Arizona State University, has been Cranbrook's architectural conscience for more than a decade. He and his students designed and produced many of Cranbrook's everyday features themselves—lighting fixtures, footbridges, and bits of sculpture that dot the campus. So it was not surprising that Hoffman

John Gallagher writes about architecture for the Detroit Free Press. *He is also writing a new edition of the* AIA Guide to Detroit, *forthcoming in 2001.*

would also craft the first big new addition, a Y-shaped, winged entrance for Cranbrook, completed in 1994, that some have likened to a bird in flight or even (not so strange for Detroit) a gas station. Perhaps too minimalist at first glance, the entry gives Cranbrook a small if necessary jolt of modernity. Next came an addition to Brookside, the elementary school, in 1996. To this rambling collection of country-cottage-style buildings Peter Rose of Montreal joined a lively if traditional two-story tiled-roof building with a facade of mottled concrete blocks in varying shades. Across campus, Steven Holl, FAIA, designed an addition to the Institute of Science, the most public of Cranbrook's buildings and the one that draws legions of elementary school students and other visitors. Tod Williams, FAIA, and Billie Tsien, AIA, designed the recently completed natatorium. Work is just now getting under way on Moneo's addition to the Academy of Art, which will house studios and exhibition space.



Steven Holl's addition to Eliel Saarinen's 1938 Institute of Science includes a 42-foot-tall entrance tower (above) and space for natural history and science exhibits (left). The Institute of Science draws 250,000 visitors annually.

Subtle additions

Anyone who revisits Cranbrook for the first time in a decade or so will be surprised at how subtly all these additions fit into Saarinen's framework. No one produced the elaborate, signature designs that Bauder and Hoffman clearly did not want.

Holl's expansion to Saarinen's 1938 Institute of Science fits snugly behind the original building and down a sloping hillside. Approached from the parking area, Saarinen's building remains dominant in view. Only the 42-foot-tall entrance tower of Holl's massive addition is visible, standing to the rear and off to one side. While admirably modest, Holl's solution also makes one wonder whether he and Cranbrook held back a little here. Would it not have been possible to let the addition wrap around the older building or in some other way stake its own claim to our attention? Not offending the ghost of Saarinen—or Cranbrook's current and potential donors—seems to have been a major aesthetic concern.

Two overhead oculi provide natural light in the Williams and Tsien natatorium.

Then, too, the new natatorium subtly completes the vista from the Booths' home, the Albert Kahn–designed Cranbrook House, down past Saarinen's signature peristyle, an open-air, columned pavilion, to the previously vacant west end of the campus. Yet like Holl, Williams (a 1961 Cranbrook graduate) and Tsien weren't interested in making brash statements. The mostly unadorned face of the $10 million natatorium, a plum-colored brick with a running panel of blue and green bricks set in, captures the visual energy of the long vista but gives no clues to the nature of the interior.

HOLL'S SOLUTION MAKES ONE WONDER WHETHER HE AND CRANBROOK HELD BACK A LITTLE HERE.

Moneo's design, just entering construction, seems to go the furthest in updating Cranbrook's personality. Even Moneo, while using materials somewhat at odds with Cranbrook's signature brick in various warm hues, expands Saarinen's vision without violating it. Moneo's studio spaces will include a three-story glass curtain wall, and the industrial-looking work space on the tail of the building will be clad in a zinc/titanium alloy skin, giving it a burnished pewter color.

The L-shaped Moneo addition will be built slightly lower than the peristyle and set back into Cranbrook's woods. It's an evolution, not a revolution.

Cranbrook's caretakers say they're delighted with the balance struck by their architects. "We are building on the Booth-Saarinen tradition of employing the finest architect and breaking new ground and serving new areas," says Dr. Robert Gavin, Bauder's successor and the current president. That may be so, but the new designs may represent the practical limits on what Cranbrook could have done given the expectations of donors, trustees, alumni, and the public.

If not set apart as big, showy signature statements, the interiors of the new buildings distinguish themselves through quiet excellence. Williams and Tsien's natatorium is the most remarkable of the new works. Two startling features were designed to help cool and ventilate it: a series of vertical baffles on the walls open to let breezes in, and two oversized oculi open to the sky. The light pattern on the ceiling has been left deliberately random to mimic a starry night. The pool surface flanks a glass curtain wall. Swimmers doing laps can thus

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Hoffman's entrance canopy of mesh and steel serves as a beacon.

measure their progress by watching the trees go by outside.

Clearly the smallest of the new projects, Hoffman's entrance has had the greatest visual impact on Cranbrook. Today, suburban sprawl has pushed well beyond Cranbrook, and the old entrance off a seldom-traveled byway called Lone Pine Road became too busy for comfort. So Cranbrook envisioned a new entrance off Woodward Avenue, the ceremonial main street of metropolitan Detroit, which runs along Cranbrook's eastern border. Hoffman's creation, a slim center cabin topped by uplifted wings, is too minimalist to redefine Cranbrook in any major way. But it does give the campus what it lacked—a clearly defined entry.

"In the end, every building is different, which is what we wanted," Hoffman says. "And every building in its own way interprets the architectural tradition of Cranbrook, which is also what we wanted."

The challenges won't end when Moneo's building is completed in 2002. Most important, perhaps, is the role of landscape architecture. Cranbrook has evolved into a much more public place, in part because of the success of the Institute of Science, which now draws hundreds of thousands of visitors a year. All the architectural challenges of making a private school more public involve landscape. Debate is under way now on parking, hydrology, drainage, and other factors that go into developing a sustainable landscape. "That's going to consume Cranbrook for the next 10 years," Hoffman says.

THE SMALLEST OF THE NEW PROJECTS, HOFFMAN'S ENTRANCE HAS HAD THE GREATEST VISUAL IMPACT ON CRANBROOK.

Today, Cranbrook remains the place that Saarinen created with the Booths' money and inspiration. That was no easy trick, and programmatically all the new additions work well. Cranbrook is a livelier place today, more in tune with the new century, and with a more supple identity thanks to the new additions.

One can wish in vain that Cranbrook had let at least one of its architects try for a big, redefining statement, the I.M. Pei pyramid to the traditional Louvre. Setting up a vision rivaling its founding spirit is the one thing that Cranbrook would not or could not do. ■

PSFS adaptive reuse illustrates preservation tax credits at work

Practice Matters

By Charles Linn, AIA

Although the U.S. Department of the Interior's Federal Historic Tax Incentives are not as generous as they once were, they can still play a key role in financing the kinds of extensive preservation efforts required of buildings, such as the Philadelphia Savings Fund Society (PSFS) [see page 136]. The credit, which equals 20 percent of the money spent on the certified rehabilitation of a certified historic structure, can equal millions of dollars when applied to a large building. The expenditures covered by the credit include construction costs, architectural and engineering fees, legal and development fees, and other construction-related expenses. It is worth noting that tax credits differ from tax deductions. A tax deduction lowers the building owner's taxable income; a tax credit is applied directly to the amount of income tax owed. For example, one dollar of tax credit reduces the amount of income tax owed by one dollar. The tax credits do not include new work; for example, in the case of PSFS, the tax credit did not apply to a new four-story addition.

The first step toward making any building eligible for the tax credit is listing it on the National Register of Historic Places. Arthur Jones, AIA, of Bower Lewis Thrower Architects, interior designer Karen Daroff of Daroff Design, and historic preservation consultant Robert Powers were in for a pleasant surprise when, in the course of doing research on PSFS, they learned that it was already on the register. "Apparently the Society put the building on the register years ago in order to take advantage of the tax credits when they were making repairs to the sign," says Jones, referring to the famous 27-foot-tall PSFS letters on top of the building, which have marked the Philadelphia skyline since 1932. This being the case, the designers were actually applying for a second round of credits, this time, to do rehabilitation work while converting the building from an office to a hotel. Buildings that are not on the register but are located within historic districts may be eligible for a tax credit, provided the historic significance of the building can be proved.

The second part of the certification process involves approval of plans for the rehabilitation, first by the State Historic Preservation Officer (SHPO) serving the state where the project is located, then by the National Park Service, which administers the program for the U.S. Department of the Interior.

In this phase, the architects and SHPO begin by establishing which areas and components of the building will be renovated and restored, supported by a complex application that includes photographs and drawings of the proposed work. Using these plans, officials can verify that the most important spaces in a building will be preserved and rehabilitated and that the proposed work will follow the Department of the Interior's Standards for Rehabilitation.

At PSFS, the most crucial spaces included the stair and escalator lobby at the building's Market Street entrance, which once led to the banking hall; the banking hall itself; and the elevator lobby off 12th Street, which formerly led to the office tower. Also included were the elevator lobbies on each of the former office floors, which are now guest-room floors, and the 33rd floor, which was once home to PSFS's boardroom and meeting rooms.

A new canopy was one of the alterations allowed by the National Park Service so that the PSFS building could function as a hotel.

Changing the entire program of a building isn't easy. "The key was fitting the needs of the hotel around a building that used to be a bank and office building. And there were many spaces that had such a high degree of original historic integrity that we felt we had to preserve them," says Powell. Fortunately, the Park Service is realistic about this issue: if they don't permit certain alterations to the building fabric, a project might not proceed at all. For example, the stainless-steel canopy on Market Street is a new addition to the facade. Jones feels that it was allowed by the SHPO and Park Service because it was essential to the operation of the hotel. "They knew that a radical change of occupancy like this could not be made without some changes, and I think they respected that we were taking a responsible attitude toward the project and doing an elaborate restoration."

Another example of a significant alteration approved by the SHPO and Park Service for a space that had been deemed worthy of preservation was the lowering of the ceiling in the 12th Street elevator lobby. Originally, elevators did not stop on the second floor, where the banking hall was located. However, in transforming the building from bank to hotel, it was necessary to provide direct access from the guest rooms to the second-floor banking hall, which Daroff Design was changing into a ballroom.

To provide this access, the original ceiling of the elevator lobby had to be removed so a new floor could be installed there. The original coved ceiling was re-created in every detail beneath this new floor. Karen Daroff explains the importance of the Park Service's decision to allow this alternation: "If they had refused to permit us to do it, it would have killed the project.

I don't know any way we could have worked it out."

But there are some issues the Park Service is particularly concerned about. For example, windows in historic structures often need to be replaced, and the Park Service is particularly concerned that the replacements look exactly like the originals.

"The Park Service established years ago that inappropriate windows are the biggest bad actor in low-quality preservation work because of the temptation to use a standard window that doesn't match," notes Jones. In fact, he says the strictness of the Park Service's requirements often helps resolve pressure from the project developers to do the work on the cheap. All of the curtain wall at PSFS is made from custom-run, clear-anodized extruded aluminum. Most people remember the original window frames as being black; however, the non-anodized frames had actually oxidized over time. The banking hall windows were refitted in stainless steel, and although the storefront windows are now an aluminum system, stainless-steel snap-on covers were used to match what was once there. Even window glass, which was changed from single to double glazing, still appears as it did in period photographs.

PRESERVATION TAX CREDITS DO NOT PROTECT BUILDINGS PERMANENTLY. AFTER FIVE YEARS, ALTERATIONS CAN BE MADE.

The third and final phase of the tax-credit certification process occurs after construction is completed. The designers document that they have done everything described in the original application, and the Park Service inspects the building. If the plans have been followed, it is unlikely that the building would be rejected for tax-credit status at this point.

Next, the Park Service issues the owner a certificate of completed work, which is filed with the owner's income-tax return in the same year that the building is placed in service. To collect the tax credit, an owner files a copy of the certificate with his tax return. In accepting the tax credit, the owner must hold the building for five years or repay the tax credit. The certificate can also be revoked if the Park Service or state historic preservation officer inspects the building and finds that unauthorized alterations have been made to the rehabilitated areas.

Unfortunately, the tax-credit program does not provide permanent protection for historic buildings. After five years, owners are free to make any alternations they wish.

The Internal Revenue Service has a number of other rules that may affect whether an application for the historic preservation tax credit should even be attempted. For example, if a building cannot be depreciated, that is, if it cannot be used for the production of income, it would not be eligible. Other rules address whether a building will be altered in phases, as well as whether the amount of money invested in the building exceeds either $5,000 or the adjusted basis of the building.

This may sound complicated, but Department of the Interior guidelines, which are available at www2.cr.nps.gov/tps/tax/brochure2.htm, explain the requirements in a clear, straightforward manner. A good accountant and preservation consultant will help make looking at the options even easier. ■

In Europe, competitions help elevate young practices

Critique

By David Cohn

Despite their drawbacks, design competitions deservedly play a vital role in architecture around the world. Competitions bring new architects into the limelight and consolidate the prestige of rising figures. The professional press is studded with spectacular competition-winning projects, from the Reichstag in Berlin to London's Tate Modern to the Alexandria Library in Egypt. In Europe design competitions have become the standard method for awarding public commissions, and their use is growing in the private sector as well. France, Germany, and Spain have laws requiring competitions for all public projects. In France alone, there are over 2,000 competitions annually, according to François Barré, head of France's Department of Architecture and Patrimony.

Outside the norm in U.S.

While the competition process has been adopted in Europe and elsewhere with little debate, it remains outside the norm in the United States, although some significant projects, such as the Nelson-Atkins Museum in Kansas City, have been awarded through competitions. To examine the competition system in the U.S. and abroad, I talked to several architects with extensive competition experience from both sides of the Atlantic.

Spanish architect Juan Navarro Baldeweg, designer of the Mahón Courthouse in Minorca [MAY 1999, page 196] and the Princeton Music Library, favors competitions as a way of promoting design excellence. He says clients sponsor them because "they identify with the idea of an architecture of quality." He also believes competitions bring out the best in a designer. "Nature has given us a competitive spirit," he says. "The tension of competing seems to produce bolder, more risk-taking ideas. You work harder, with greater inspiration. You take the plunge."

Lee Polisano, FAIA, director of the London office of Kohn Pedersen Fox (KPF), agrees. When KPF opened its British office, it had little work, no client base, and no practice specialty. KPF used competitions to help build its London practice and create relationships in Europe, especially with local authorities. Polisano says his firm uses competitions to test new ideas and train staff. "It's a good discipline," he says. "For young firms, the historic route to success in Europe is through competitions."

Lack of client interaction

In the opposing camp is Larry Oltmanns, AIA, design director of Skidmore, Owings & Merrill's London office. "The basic issue," he maintains, "is that the competition format precludes a client-architect relationship and interaction from the start of the project, which is key to good design. It's important to work with sponsors and users—the people close to the project's aspirations."

Oltmanns' most damaging point regarding competitions is that they place clients in a subservient role. "Clients don't determine the outcome," he points out. "As a result, clients very often try to undermine the process or go around it." The users and sponsor, Oltmanns contends, are forced to live with a scheme that is cast in stone, and the winning architect, sensing his approach validated by the jury, is less inclined to adapt his scheme to the client's needs.

Oltmanns' argument underlines basic differences between the service-oriented approach of America's large corporate firms and the more artistic or craftsmanlike approach of most European architects. He describes the American architect's role as opening up a world of possibilities to clients and helping them choose the best way to go. "The key to great architecture is how a scheme develops and evolves," he points out. "It's unrealistic to expect that to occur in a competition."

For Juan Navarro Baldeweg, on the other hand, the creative process is a solitary mediation, not a team effort. "Great ideas need time. They are developed in solitude. Then you adapt them to the circumstances." Navarro also points out that public projects in Europe often lack an obvious client with whom to interact. "Clients change. Frequently there is no program."

Paul Andreu's competition-winning design for the National Theater in Beijing.

In response to the problems Oltmanns cites, some recent competitions have sought to encourage a dialogue between winners and clients rather than seeking a finished building proposal. In the 1998 Scottish Parliament competition, Polisano recalls, the first phase was idea- and process-based: "How would you work with them? How you would proceed?" The winner, the late Spanish architect Enric Miralles, told me at the time, "We based our strategy on learning from the client conversations we had. We offered a dialogue more than a

David Cohn is RECORD's Madrid-based correspondent and the author of Young Spanish Architects.

solution. This helped them feel more comfortable working with us."

Competition standards vary. The International Union of Architects (UIA) administers UNESCO standards for international competitions, and their sponsorship assures that certain basic fairness practices are followed, such as the appointment of an UIA-approved jury with a majority of foreign-based architects (*see* www.uia-architectes.org). The European Union and individual countries have their own rules for competitions.

Standards not universal

But standards are not universally applied. Oltmanns maintains that fairness standards are not always a guarantee. In Germany, he contends, juries are almost always made up of German architects. "The fraternity is very tight—it is not a level playing field."

One recent controversy concerns the competition for the National Theater in Beijing, won by French architect Paul Andreu. The process, and Andreu's design, have caused a fierce debate among Chinese architects. Beijing-based P. K. Alfred Peng, for one, charges that the French government applied political pressure to influence the outcome.

Arthur Erickson, chair of the jury for the National Theater, says, "No competition in China is carried out to architectural standards in my experience. The government projects I am familiar with demand that three finalists are proposed to the government. Therefore, there is ample opportunity for politics to intervene. I am appalled to see the final French entry and agree with the outcry it has caused. But since it was among the three chosen by the jury, it is legal, though painful!"

Eileen Quinn, the UIA's spokesperson in Paris, said the UIA encourages large, open international competitions, because they attract international attention and prestige to a project and offer opportunities for younger architects. However, none of the architects I spoke with are in favor of this type of competition. As Oswald Grube wrote in a letter in RECORD [JULY 2000, page 20], "The vast field of entrants does not allow for a qualified selection process by the jury, and the best firms most often don't bother to participate."

Young practices flourish

Navarro sees a role for open competitions in projects with "generic but well-defined programs, where it is more difficult to make mistakes." He cites the EUROPAN competitions, which are sponsored by the European Community and which award public-housing projects to beginning architects. These and similar events have allowed young practices to flourish and have helped revitalize the European design scene. "But in projects with complex and important issues at stake, a limited competition is better," says Navarro. He is also against competitions run in two stages, which are favored by the UIA. "A good jury can see the most promising project in the first phase. And that's when you take the biggest risks. In the second stage, you're more conservative, because you think you are close to the prize."

Competitions are, of course, risky and expensive. Though all the architects I spoke with participate only in invited and paid events, "The stipend never covers our expenses," Polisano explains.

Navarro warns of the decline in the quality of competitions when, as in Spain, they are rigidly applied to every public project. "The law becomes an obstacle, giving rise to corruption and illegal procedures." He also notes a decline in the quality of juries. In the past, a jury's architects set the criteria. "Now people who know nothing about architecture often determine the outcome," says Navarro. ■

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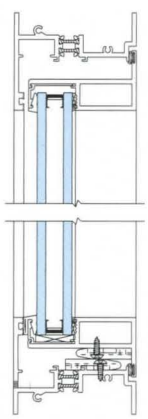

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The powers of ten: Hanging out with the hot young things of the design scene

Books

By Clifford A. Pearson

10 x 10: 10 Curators/Critics, 100 Architects. *London/New York: Phaidon Press, 2000, 468 pages, $60.*

If you're wondering who's part of this year's "in" crowd, look no further than *10 x 10.* This big striking book presents a hundred hot young architects from around the world who have made it onto a VIP party list compiled by 10 different architectural opinion makers.

The emphasis here is on emerging voices. So you won't find any of those British architects with "lord" attached to their names or anyone who has won a Pritzker Prize. As Vivian Constantinopoulos explains in her short preface, *10 x 10* is "an overview of work by architects among whom are those setting the pace for the future . . . architects whose work is only now gaining recognition on an international platform."

A few of the players are hardly debutants—Will Bruder, Denton Corker Marshall, Hodgetts + Fung, and Enrique Norten, for example, have been extensively published for years—but most are indeed fresh blood. Firms such as Abalos + Herreros from Spain, Atelier Hitoshi Abe in Japan, Christian de Groote in Chile, and Sanaksenaho Architects in Finland are not yet household names.

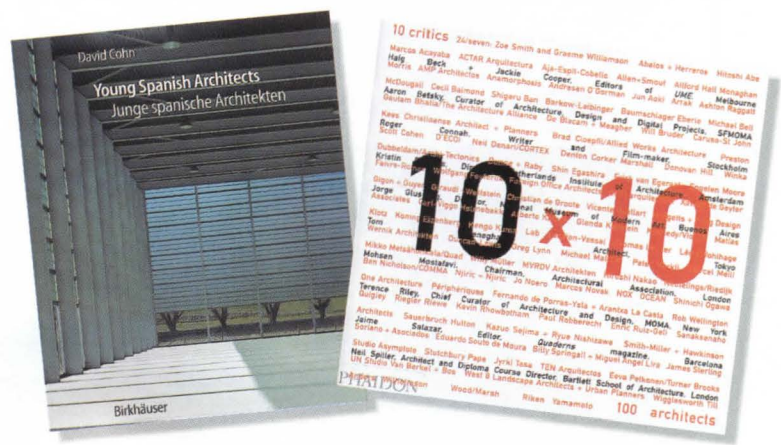
Such a focus on up-and-comers is both a strength and a weakness. Discovering new talent is always exciting, and there's a lot to appreciate in this book. Firms such as Stutchbury Pape and Wood/Marsh of Australia, Souto Moura of Portugal, and AMP Arquitectos of Spain will probably be pleasant surprises to most American readers, although they are well established in their own countries. But other firms come across as not-ready-for-prime-time talent. Some of these may in fact become important architects in the next decade or so; others will probably fade as quickly as last season's hemline.

Each firm gets exactly four pages to strut its stuff, and most of them present two or three projects. A short text written by one of the 10 critics accompanies the work of each firm. Images are packed tightly on each spread and the reader gets the feeling of moving through the crowd at a very popular party. It's not always comfortable, but would you really want to spend much time at an event that isn't packed?

The critics—Haig Beck + Jackie Cooper from Australia, Aaron Betsky and Terence Riley from the U.S., Roger Connah from Sweden, Kristin Feireiss from Holland, Jorge Glusberg from Argentina, Tokyo-based Tom Heneghan, Mohsen Mostafavi and Neil Spiller from the U.K., and Jaime Salazar from Spain—selected architects from around the world. The result is a relatively balanced geographic mix of featured designers. South Asia and southeast Asia get short shrift, though, with only one firm from India and none from Malaysia, Singapore, Indonesia, or Thailand, where architects such as Jimmy Lim, Ken Yeang, and Chan Soo Khian are doing interesting work.

Each critic also offers a short essay in the back of the book to explain his or her selection process and a list of 10 references, such as books, films, themes, and cultural figures. The references turn out to be more interesting than the sometimes muddled selection criteria used by the critics. It's intriguing to see literary figures such as Gabriel García Márquez, Marcel Proust, David Mamet, and Octavio Paz appear on the same lists as the F14 jet fighter, Issey Miyake, Daniel Libeskind, and AWN Pugin. Some of the name-dropping gets a bit incestuous, with one critic citing *UME* magazine, which happens to be published by two of the other critics, and with Greg Lynn making an appearance as both a featured architect and a reference. But that's part of the fun of these sorts of affairs.

One of the book's best examples of design is the book itself. As designed by Julia Hasting, *10 x 10* is a 12x12-inch volume that uses blocks of contrasting colors (orange, black, yellow, and white) and blocks of texts to create bold compositions that delight the eye while organizing the material into instantly understandable pieces. The effect is anything but square. And its translucent white cover, with layers of black and orange type that emerge and recede depending on the position of the reader's eye, is one of the sharpest to hit bookstores in years.



Young Spanish Architects, *by David Cohn. Basel: Birkhäuser, 2000, 144 pages, $50.*

Following the explosion of architectural talent that caught international attention at the 1992 Barcelona Olympics and Seville World's Fair, a new generation of Spanish architects is beginning to exercise its muscles. Lean, taut, and unadorned, the work of Spanish architects under the age of 40 tends to embody a modernism with little or no fat. Fourteen of these firms are featured in *Young Spanish*

Books

Architects, part of a series that includes books on young German, Italian, Swiss, and French architects.

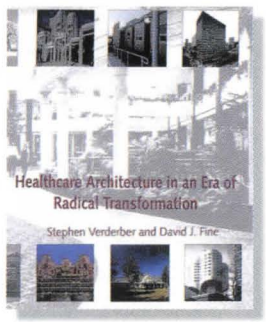
David Cohn, who is RECORD's Madrid-based correspondent and a contributor to several European publications, provides an excellent overview of the architectural landscape in Spain today. His opening essay places the latest generation of architects within the context of design in the post-Franco (after 1975) era. He explains how firms such as Mansilla + Tuñón, María Fraile & Javier Revillo, and Rafael Aranda, Carme Pigem & Ramón Vilalta differ from one another and from their immediate predecessors, such as Rafael Moneo, Esteve Bonnell, and Juan Navarro. Cohn then presents a few projects from each firm.

The book includes both color and black-and-white photographs and a good selection of drawings.

Healthcare Architecture in an Era of Radical Transformation, *by Stephen Verderber and David J. Fine. New Haven: Yale University Press, 2000, 416 pages, $55.*

Healthcare was one of the dominant social and political issues of the 1990s and is once again in the news as candidates discuss Medicaid reform and prescription drug benefits. But healthcare design is seldom discussed in general architectural discourse. The paucity of coverage perhaps reflects the often dreary image that hospitals have acquired since World War II. When the Getty Center opened, for instance, critic Robert Campbell's most stinging criticism was that it looked like a hospital.

This situation is partially due to the enormous expense and technical complexity of most hospital projects. But, as Stephen Verderber and David Fine report in *Healthcare Architecture in an Era of Radical Transformation,* the hospital itself may be receding as the center of American healthcare. To judge from their examples, however, this may not be a bad thing. The book, a self-styled sequel to John Thompson and Grace Goldin's 1975 classic, *The Hospital: A Social and Architectural History,* offers a sweeping and thorough overview of "health architecture" since 1960. Verderber and Fine start with the modern "mega-hospital" and go on to discuss the smaller, more community-based clinics and retirement communities that have emerged around it.



Generously illustrated with drawings and photographs, the book places these developments in a comprehensive historical framework, surveying changes in both the healthcare industry and architectural practice. The authors wisely examine projects from around the world, providing perspective to a practice area that sometimes seems a world unto itself. And like everything published today, the book includes a brief discussion of the impact of the Internet revolution. Some scholars may consider Verderber and Fine's interpretation of recent architectural history simplistic at times, but their attempt at reaching an audience of hospital administrators and designers alike pays off in a lucid and nuanced narrative. And with a topic encompassing both architecture and healthcare, anything that lowers the academic jargon quotient is welcome. *Reviewed by Eric Fang*

Eric Fang is an architect and urban designer at Beyer Blinder Belle in New York City.

Finding the roots of Modernism and multicultural cities in central Europe

Exhibitions

By Clifford A. Pearson

Shaping the Great City: Modern Architecture in Central Europe, 1890–1937. *Curated by Eve Blau, Dieter Bogner, and Monika Platzer. At the Canadian Centre for Architecture, Montreal (until October 15), the J. Paul Getty Museum, Los Angeles (February 20, 2000–May 13, 2001), and the Kunstforum Wien, Vienna (June 6–August 28, 2001).*

Competing forces of centralization and fragmentation pull the cities of central Europe in two directions simultaneously. While beacons of shared ideals still shine, a resurgent nationalism excites some of the region's most powerful players. An empire collapses. Sound like current events? Actually, it's history.

Around the turn of the last century, right before and after the Austro-Hungarian Empire dissolved in the ashes of World War I, architects and planners laid the foundations for the modern city in such places as Vienna, Budapest, Prague, Krakow, and Zagreb. Today, in the wake of the Soviet empire's disintegration, these same cities are once again trying (and in some cases, failing) to balance the opposing forces of globalism and ethnic identity.

Shaping the Great City, which debuted at the Municipal House in Prague at the end of last year, tackles these big issues and sprawls across a great swath of geography. It's the kind of ambitious, intellectually challenging exhibition that few museums attempt to mount these days. It took eight years to research, required the cooperation of scholars and politicians in nearly a dozen countries, and pulled together some 400 architectural drawings and models, photographs, posters, books, and archival film clips. It's a lot to digest, probably too much.

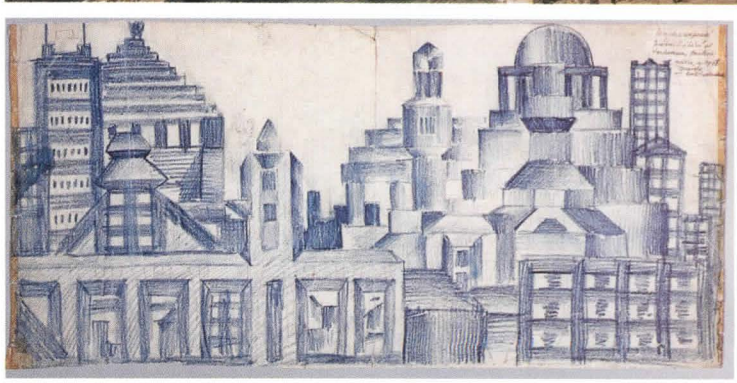
But if you're willing to dig in, this show has some rich rewards. By focusing on central European cities just as they were entering critical stages of industrial growth and cultural ferment, the exhibition recaptures a particularly dynamic time. And it offers windows on urban places ranging from the regional powerhouse, Vienna, to such national capitals as Budapest and Prague, to smaller but still vibrant provincial cities, including Brno and Zlín, in what is now the Czech Republic, L'viv in the Ukraine, and Ljubljana in Slovenia.

Arenas of public culture

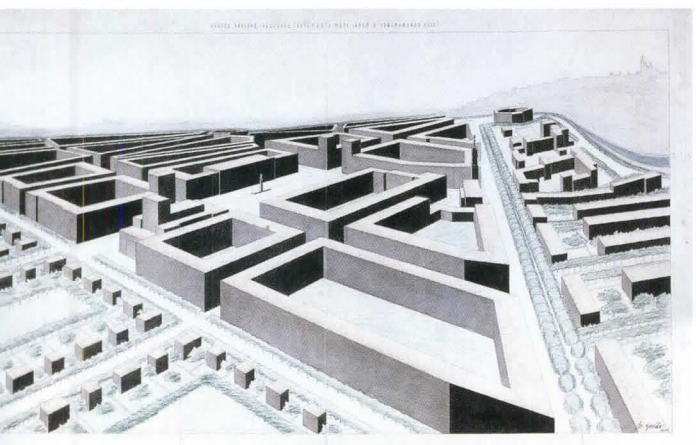
The exhibition "invites considerations of questions that are as crucial to our time and place as they were to central Europe a century ago," states Eve Blau, one of the curators. "How does architecture generate public meanings within a society of cultural differences and competing political agendas? How do cities, as arenas of public culture, shape the evolution of architecture? These questions continue to resonate today, as the world's great cities develop in our age of globalization," says Blau.

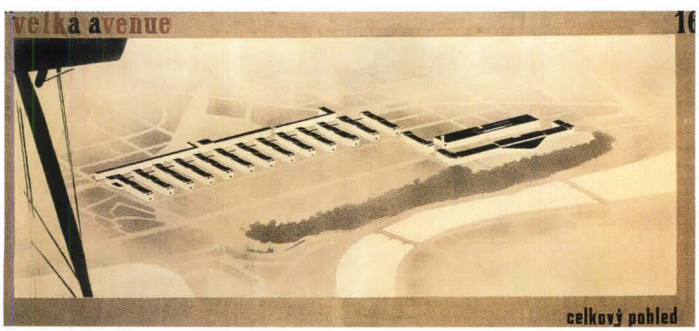
Some visitors might wonder what an exhibition on central European urbanism is doing in Montreal. But the CCA's trove of Mies van der Rohe drawings and its connections to the German-speaking academy make the venue a logical one. Most important, the CCA is a bilingual institution committed to exploring the meaning of modernism in a multicultural world.

The show is organized into two main sections: "The City as Form and Idea," and "Modernity and Place." The first examines the patterns of city building in the Habsburg empire at the turn of the 20th century. Starting with Otto Wagner's unexecuted 1892–93 plan for Vienna, this portion of the exhibition shows how architects,



In an 1897 drawing of the Aspernplatz in Vienna (top), Otto Wagner depicted his idea of the city as a place of diverse neighborhoods. A 1921 set design by Vlastislav Hofman (above) brought an urban sensibility to the stage.





Three images of Czech Modernism: a 1929 poster by Ladislav Sutnar (top), a development plan from 1925–28 for the town of Hradec Králové by Josef Gocár (middle), and a new governmental district on the Letná Plain in Prague (1928) by Jaromir Krejcar (bottom).

engineers, and politicians brought different approaches to the challenges of urban growth and transformation.

While engineers saw the city as a two-dimensional grid that could be extended indefinitely, architects such as Wagner and Camillo Sitte envisioned it as a more complex, three-dimensional mechanism with mixed-use neighborhoods forming pieces of an integrated whole. In 1911 Wagner published his city-planning ideas in Europe under the title *Die Groszstadt* (the metropolis). His article "The Development of a Great City," which appeared in ARCHITECTURAL RECORD in May 1912, introduced his urban concepts to an American audience.

After World War I, planners in central Europe reacted against the capitalist underpinnings of Wagner's and Sitte's work and drew inspiration instead from Le Corbusier and Ludwig Hilberseimer. Such results included Farkas Molnar's KURI (Constructive, Utilitarian, Rational, International) City and socialist efforts from 1923 to 1934 to build a "Red Vienna."

The second section of the show looks at a range of cities throughout the region, focusing on the particulars of time and place, rather than the commonalities of ideas and approaches. Here we see how architects in Budapest, for example, looked to Hungarian folk traditions in connecting the modern with the indigenous, while in Prague architects carved out a modern identity by borrowing the forms of Cubism.

The show's drawings, many of which became available only after the fall of Communism, are often remarkable. A perspective by Maks Fabiani for a monumental square in Ljubljana (1899), for example, is a lyrical Art Nouveau–tinged drawing, while an aerial view of a governmental district for Prague (1928) by Jaromír Krejcar captures the Constructivist spirit of the day. Newsreel clips of street scenes play on television monitors in various parts of the exhibit, adding an evocative layer of documentation.

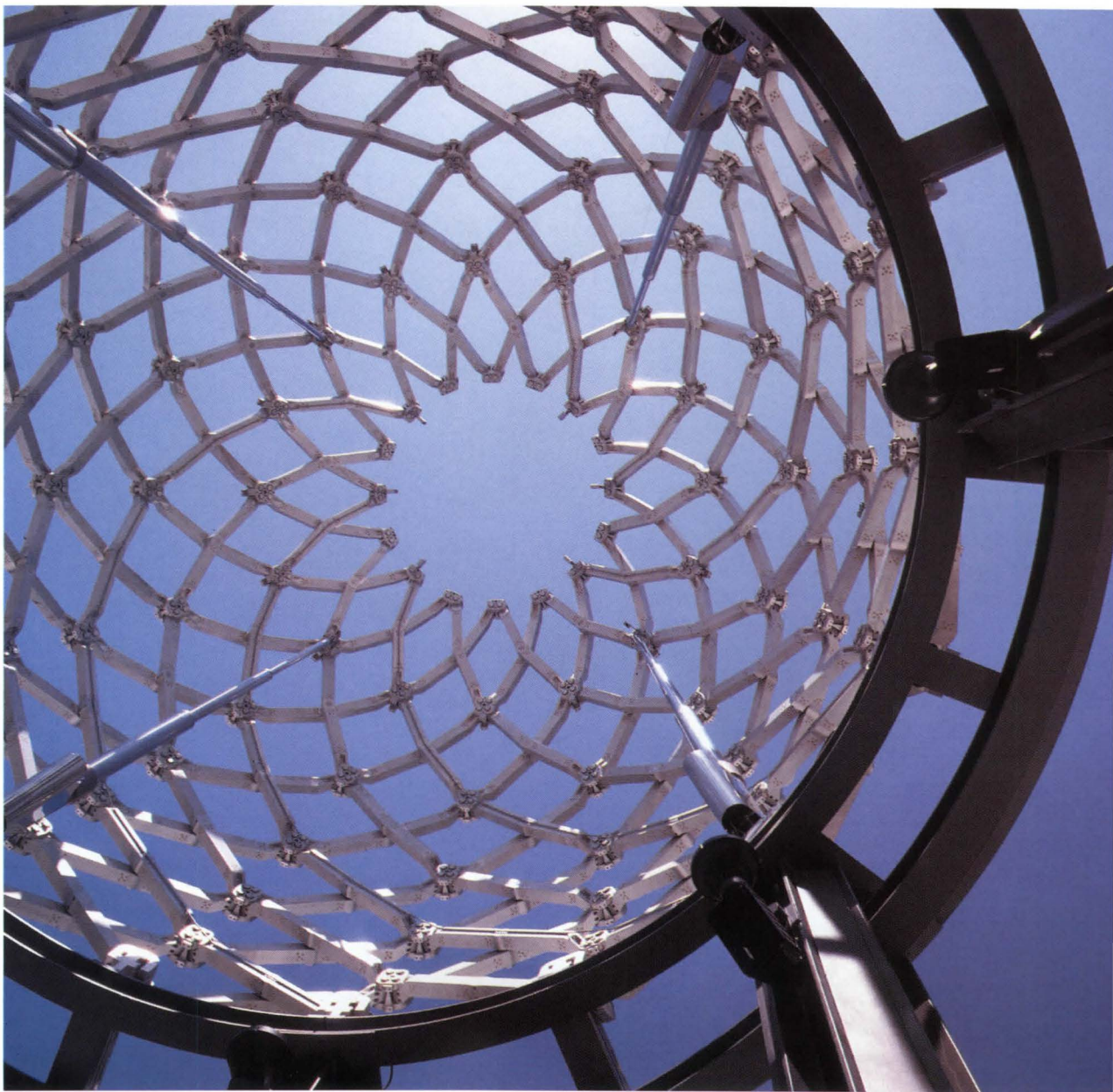
A third section of the exhibition, "Ideas for a New World," shows schemes from countries that rose from the collapse of Habsburg rule. Installed in the CCA's octagonal gallery, this piece feels disconnected from the rest of the show, almost an afterthought.

The exhibition was designed by Coop Himmelb(l)au, which created a kind of late-20th-century metal scaffolding in each room. While some drawings hang on the walls, others, along with accompanying text, photographs, and TV monitors, are attached to the scaffolding. The metal framework, with transparent panels holding drawings and images, allows visitors to look through one piece of the show to another, creating some interesting juxtapositions and vistas. The idea was to recall the busy streets of eastern European cities, but the installation makes the galleries feel cramped and narrow.

With its hyperkinetic architecture, the Austrian firm of Coop Himmelb(l)au is an intriguing choice to design the exhibition. Some of the firm's best work makes radical connections between staid old Vienna and a new era of technological leaps. Coop Himmelb(l)au's Wolf Prix, Helmut Swiczinsky, and Frank Stepper, however, seem reserved in the tight spaces at the CCA. Perhaps their design had more room to breathe in Prague.

Shaping the Great City is not a blockbuster show. It requires visitors to read, look, learn some history, and think about vowel-deprived places like Brno and Zlín. But by shedding light on how multicultural cities developed at a critical time and place, it helps us understand some of the opportunities and dangers for our own cities today. It also reminds us of the valuable role that institutions such as the CCA play in a museum world too often dominated by the need to attract bigger and bigger crowds. ■

Snapshot



By Ingrid Whitehead

Steel mesh and engineering wizardry unfold into a dome

A giant, pulsating metal-mesh doily, the Retractable Dome at the German Pavilion at Expo 2000 in Hannover, Germany, is a mechanical masterpiece. Conceived by physicist Werner Lorke and designed by inventor and mechanical engineer Charles Hoberman, the dome is part of an exhibit celebrating the reconstruction of the legendary Frauenkirche Cathedral, which was destroyed during World War II. The structural members are made of a high-quality aluminum alloy used for aircraft, with connecting pins of stainless steel. When fully extended, the dome has a diameter of 20 feet and a height of 15 feet, and it sits atop a circle of eight 15-foot-high columns.

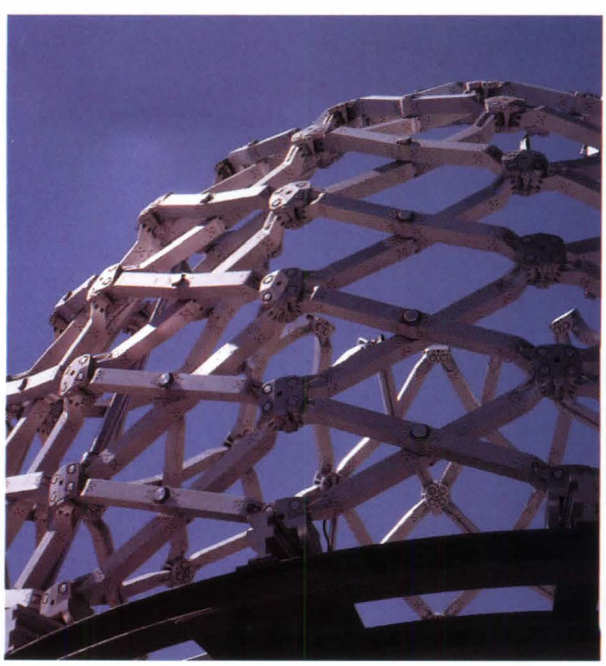
With more than 11,400 machined pieces, the retractable dome is an "unfolding structure"—an object that changes size and shape. Its motion resembles a three-dimensional aperture; for 18 hours a day, it smoothly expands up and contracts down, powered by four computer-controlled hydraulic cylinders. A sound-and-light

installation accompanies the movement, and visitors standing beneath the dome can view a scale model of the Frauenkirche reconstruction, which is scheduled for completion by the end of 2006.

Lorke proposed a collaboration between his exhibit creation firm, iO (Interdisciplinary Objects), and Hoberman's design company, Hoberman Associates, with the goal of creating a bridge between the advanced technology of the retractable dome and the historic reconstruction of the cathedral, which the dome resembles in profile. Hoberman has made an impact on both design and toy enthusiasts with his clever structures, including the iconic Hoberman Sphere at the Liberty Science Center in New Jersey and the Hoberman Mini Sphere, which grows in diameter from 5.5 to 12 inches.

Inspired by the geometries found in nature, Hoberman says he wants to use his structures for practical and functional purposes as well as to delight. "I see this dome as a kinetic architectural element," he says. "Such elements can make spaces that change from indoors to outdoors, allow walls and roofs to 'disappear' when not needed, and create portable shelters that may be quickly unfolded."

The exhibit in Hannover was sponsored by Dresdner Bank, Germany's second-largest bank. According to Hoberman, the dome will have a life after the fair and will go on a tour of Europe when the World's Fair shuts down at the end of October. Its final destination will be the cathedral itself, where it will become part of the reconstructed site. ■



When fully extended, the dome has a height of 15 feet (above). Powered by four digitally controlled hydraulic cylinders, the dome smoothly rises and falls for 18 hours a day.

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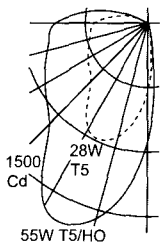

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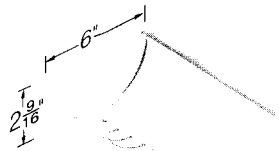

one way*

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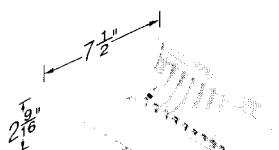

two way*

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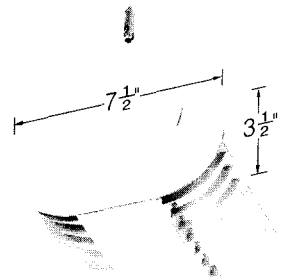

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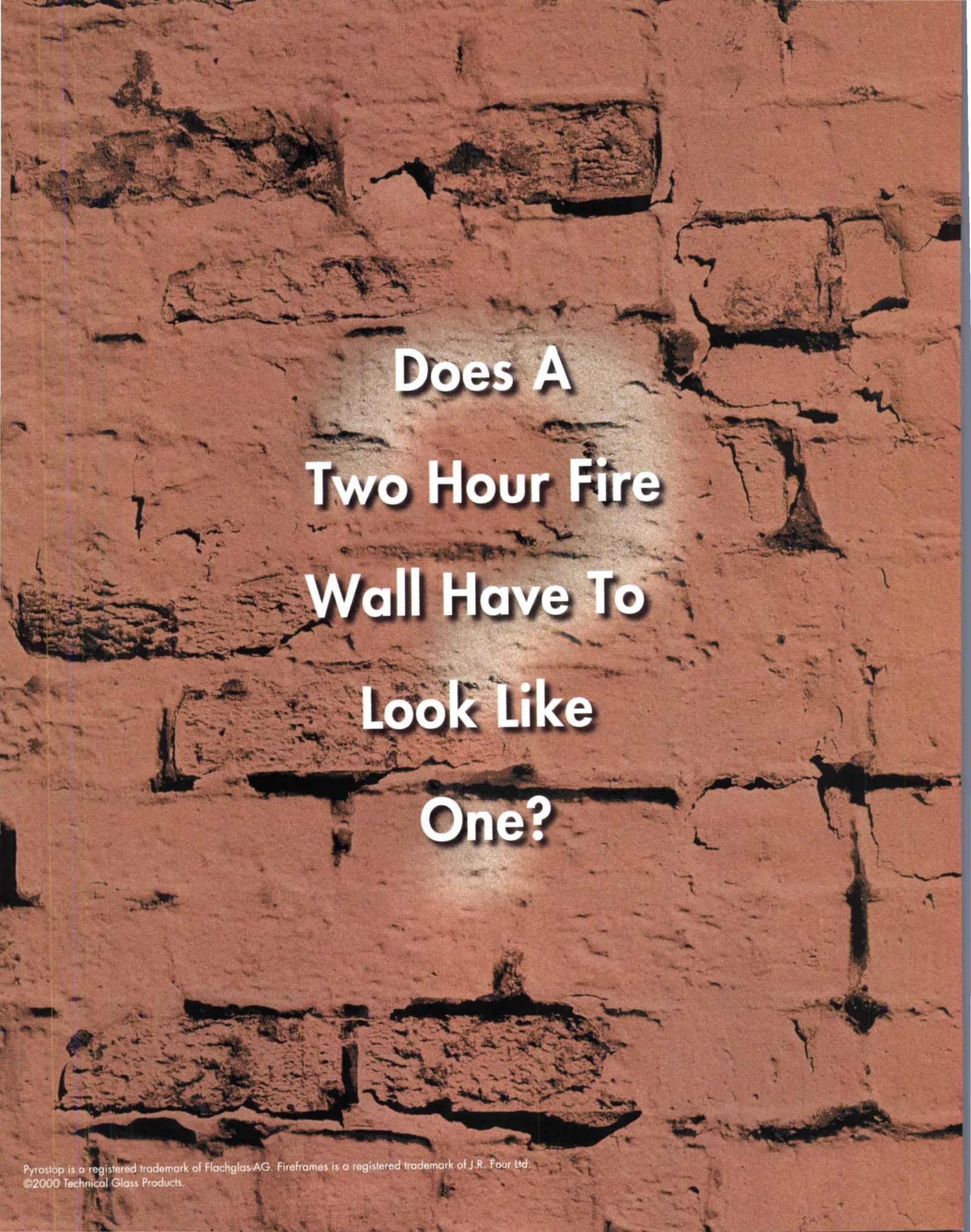
CIRCLE 51 ON INQUIRY CARD



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CIRCLE 52 ON INQUIRY CARD

Making Good Design Pay Off

By Clifford A. Pearson

Good business is not just for businesses anymore. What works for a corporation when it builds a new headquarters or puts up a new factory can also work for a school, a city government, or a museum. That's one of the messages from this year's Business Week/Architectural Record Awards, in which 5 of the 10 winners are (at least partially) institutional projects. Such an expanded definition of business reflects the degree to which dollars-and-cents accountability and microeconomic management have suffused our culture in general. It also shows how business leaders today understand the powerful impact that education, learning, and the public realm have on corporate success. A better educated, more engaged public is essential to economic health.

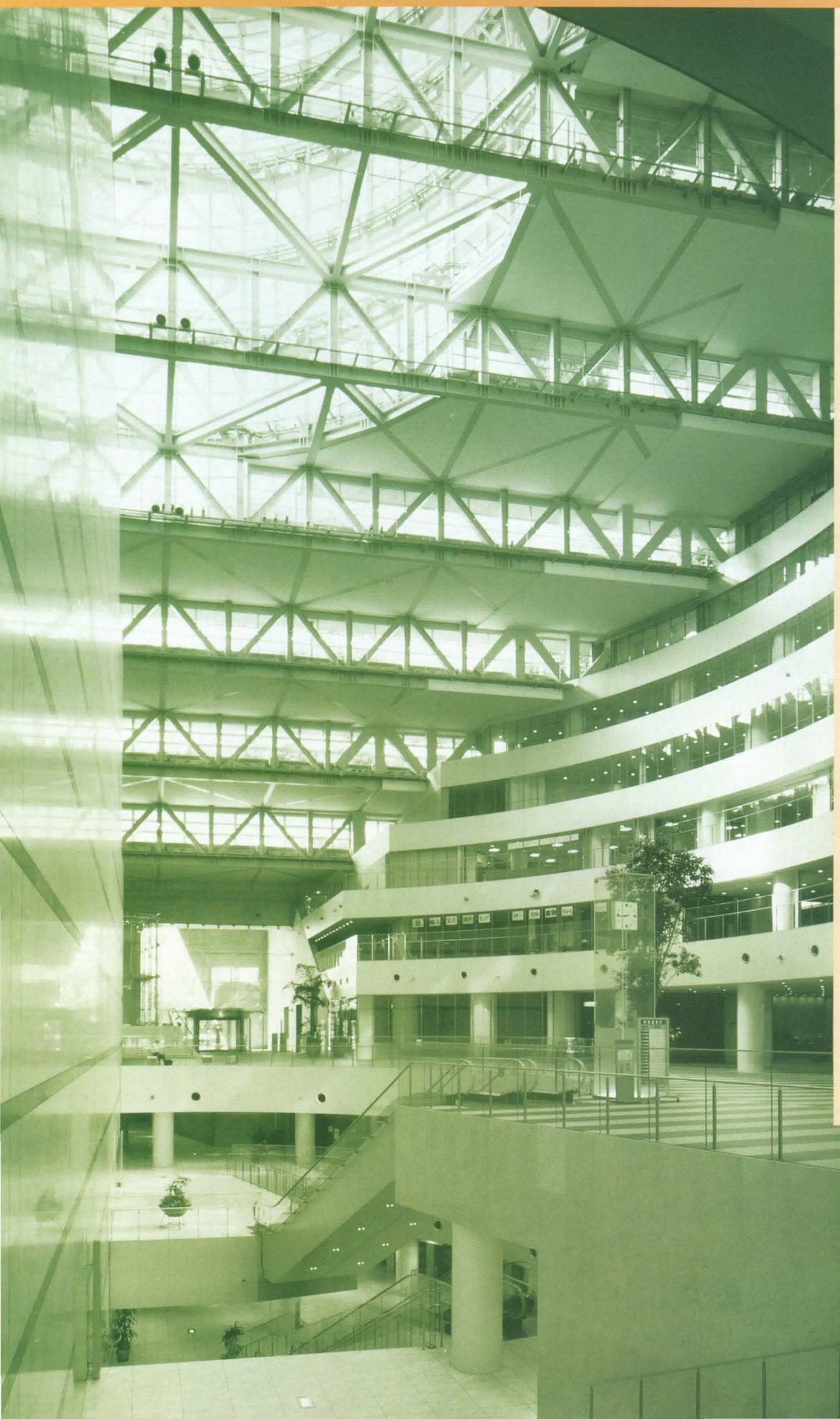
What's also clear from this year's winners is that architecture has an important role to play in all kinds of buildings—from offices for hip advertising executives to distribution centers for truck drivers and union workers. Good design is not just about image, either. It's about architects, clients, consultants, and contractors working together to solve problems—such as eliminating bottlenecks at a high-traffic shipping facility, or creating an office environment that will attract and retain the best workers, or building an institution that makes astrophysics a big hit with the general public. And size doesn't matter. Whether it's a remodeling of an underground passageway between a department store and a transit station or a $400 million mixed-use project that brings together public and private partners, good design can be the difference between success and failure. In the case of the subterranean passage, a new design resulted in a 12.4 percent increase in visitors—a major boon for a retailer struggling in a difficult economic climate. As for the mixed-use complex, the client won the right to build the project on public land even though it offered the city $13 million less in rent each year than the highest bidder. The difference? An innovative design that captured the public's imagination by transforming an entire facade of the building into a giant, stepped garden open to everyone.

4th Annual Business Week/Architectural Record Awards

Unique among design awards programs, the Business Week/Architectural Record Awards judge entries on both their architectural excellence and the degree to which they advance the clients' business goals. Entries must include detailed information on the results realized by each project. The jury is selected by Business Week, Architectural Record, *and the American Institute of Architects (the awards program's sponsor) and includes practicing architects and business leaders. After the jury narrows the field of entries to about 20 finalists, at least one juror visits each project. For more coverage of the awards see the November 6 issue of* Business Week *or go to www.architecturalrecord.com.*

WWW To read about the finalists, find out more information about the winners, and learn how to enter next year's awards program, go to architecturalrecord.com

AT RIGHT: FUKUOKA PREFECTURE AND INTERNATIONAL HALL, FUKUOKA, JAPAN, © HIROMI WATANABE



BUSINESS WEEK/ARCHITECTURAL RECORD AWARDS JURY

- **William T. Agnello**
  Vice president, workplace resources, Sun Microsystems, Inc.
- **Edward L. Ciffone**
  Senior vice president and director of facilities, Morgan Stanley Dean Witter
- **Henry N. Cobb, FAIA**
  Founding partner, Pei Cobb Freed & Partners
- **Robin M. Ellerthorpe, FAIA**
  Senior associate director, facilities consulting, O'Donnell Wicklund Pigozzi & Peterson Architects
- **Julie Eizenberg**
  President, Koning Eizenberg Architecture.
- **James O. Jonassen, FAIA**
  Managing partner, NBBJ
- **Tom Peters**
  Chairman, The Tom Peters Group
- **Wilson F. Pollock, FAIA**
  Founder and president, ADD, Inc.
- **Carol Ross Barney, FAIA**
  Founder and president, Ross Barney & Jankowski, Inc.
- **Jane Weinzapfel, FAIA**
  Principal, Leers Weinzapfel Associates

Jury Designates:

- **Julie Anixter**
  Managing director of new media and R&D, The Tom Peters Group
- **Eric Richert**
  Vice president of workplace operations and research, Sun Microsystems
- **Yvonne Szeto, AIA**
  Partner, Pei Cobb Freed & Partners

Left to right: Ground Zero's Kirk Souder, creative partner; Jim Smith, chairman and CEO; Andrew Gledhill, president; Court Crandall, creative partner

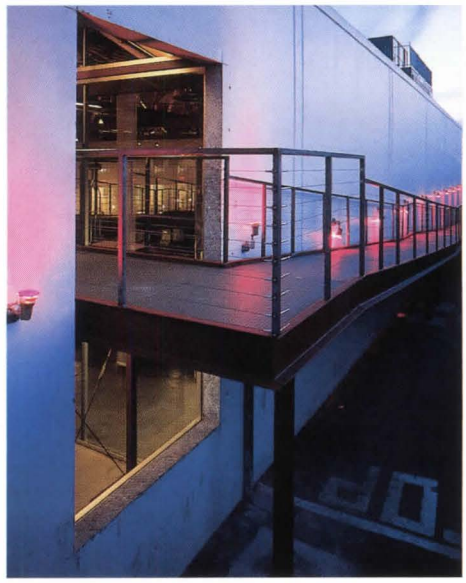
THEATRICAL ARCHITECTURE NOURISHES AD AGENCY IDEAS

Project: Ground Zero, Marina Del Rey, Calif.
Architect: Shubin + Donaldson Architects
Client: Ground Zero
The Challenge: This young advertising agency had rapidly grown to 70 staff members, billing $75 million per year. It expected to keep growing and so needed a facility that would accommodate new staff, while continuing to nurture the creative excitement that had been key to its success. The firm had become known for providing clients with easy access to its staff and resources, rather than shunting them from department to department, so its partners asked for an open space with few partitions and no private offices. They envisioned a "creative campus" of 25,000 square feet that would help attract and keep clients as well as talented staff.
The Solution: Ground Zero describes its new offices as "a place where dreams show up hungry, naked, and shivering and leave nourished, clothed, and understood." This lurid imagery is fully realized in the facility's movie-set look and feel.

The agency selected the architects in part because their working methods were similar to their own. To convey how their design would embody the agency's creative spirit, the architect made films, starting at the programming stage. These proved to be a means to exchange ideas that both architects and clients could understand.

To implement their vision, the architects punched skylights into the roof of a windowless, tilt-up concrete warehouse, bathing the large open space in light filtered by bowstring trusses. Most of the space has been left open, with an unhierarchical arrangement of curving metal workstations designed by the architects. For visitors, the monumentally ramped space offers a theatrical procession through the creative process. For staff, the clear spaces make it easy to catch up on the activities of other teams.
The Benefits: The new design immediately acquaints prospective clients with the agency's uniquely open, dynamic, and accessible creative culture. It offers spectacle on a tight budget, a message that appeals to clients. As built, the project has improved work flow not only through its openness, but by the generous provision of areas apart from the atelierlike main volume for strategic collaborative thinking, concentrated group and individual work, as well as tasks that require privacy, such as focus-group meetings.

Key Players: *Architect: Russell Shubin, AIA; Robin Donaldson, AIA; Austin Kelly; structural engineer: Raffi Abkarian; mechanical engineer: MB & A: electrical engineer: V&M; client: Kirk Souder, Jim Smith, Andrew Gledhill, Court Crandall*



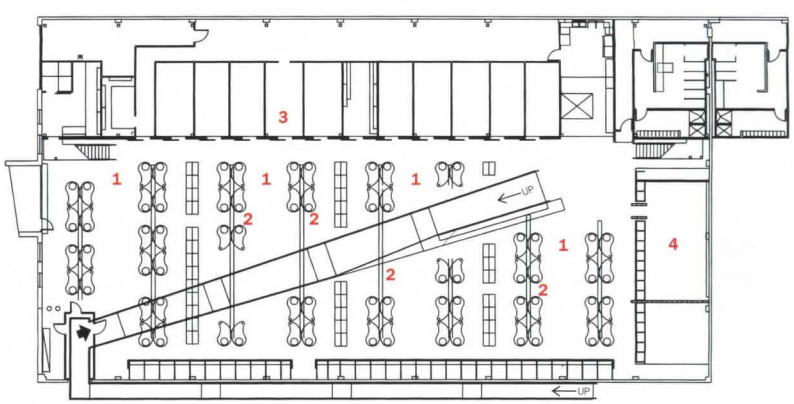
PHOTOGRAPHY: © TOM BONNER

Opposite top: Spilling from a raised entrance (opposite top left), a metal-framed ramp drops more than nine feet as it extends nearly the full length of the space (left). The architects arranged 10 "war rooms"—spaces intended for intense collaborative effort—along one long wall (opposite middle left), cladding them in metal-stud-framed translucent-plastic and corrugated-metal panels (bottom left). Scrims slice the space, creating surfaces on which the agency can project its creative work (above).

"On the site visit we realized this was a close parallel to how advertising works—create the environment and control the user's perspective until the message is conveyed."
—Robin M. Ellerthorpe

"The 'industrial set design' reflects the raw, spontaneous, cutting-edge image that the client was seeking."
—Yvonne Szeto

"In the rapidly changing world of advertising, these architects have created a dynamic space, and the client has hit a home run."
—Jane Weinzapfel



GROUND FLOOR

0 50 FT.
15 M.

1. *Open work area*
2. *Scrim divider*
3. *"War room"*
4. *Conference room*

A MACHINED ELEGANCE ENGINEERS MULTI-DISCIPLINE TEAMWORK

Project: Valeo Technical Center, Auburn Hills, Mich.
Architect: Davis Brody Bond Architects
Client: Valeo Thermal Systems
The Challenge: Based in Paris, Valeo is a supplier of new and replacement automotive equipment, with facilities worldwide. As part of a six-year expansion and consolidation of North American facilities, Valeo integrated its Engine Cooling and Climate Control divisions into a single Thermal Systems division. The company asked the architects to design a building that would support collaborative work in cross-functional teams of designers, manufacturing engineers, and testing staff. Though the building had to incorporate technically demanding laboratories, a modest $120 per-square-foot cost was deemed as much as the company could spend.
The Solution: There's a deceptive simplicity to the design, a glass-clad rectangle with a couple of bites taken out. Inside, about half the building is devoted to two layers of offices; the rest is a high-bay lab facility. Though the structure is austerely finished, an underlying richness of detail realizes complex business ambitions.

The key innovation in the design was the subtle intertwining of the offices with the lab and testing areas. A soundproof glass partition divides the two levels of engineering workstations from the high-bay laboratory zone, offering constant visual interaction. Though the budget did not permit the public areas to be either generously scaled or finished, skylights punctuate the key hallways and stairs. The cafeteria is flooded with light from floor-to-ceiling windows and opens onto an outdoor eating area.
The Benefits: The layout of the facility has encouraged greater interaction among design and production teams, and as a result, both quality assurance and adherence to schedule have improved, according to Valeo. Dropped lighting armatures incorporate data and power supplies, allowing easy reconfiguration. This permits Valeo to adjust the size and mix of teams to the tasks at hand. Juror Henry Cobb described the design as "an elegantly purposeful structure, thrilling in its celebration of transparency." Juror Wilson Pollock noted, "It exudes efficiency and beauty." Its elegance has aided both sales and recruitment, says Valeo, raising the profile of the company within this auto-manufacturing capital.

Valeo's Jacques Tillement, Group Property Director

There are many small, high-quality touches, from cable-suspended sunshades on the south elevation (opposite top), to the finely wrought cable-and-rod skylight bracing in the lobby (right). The cafeteria opens onto an outdoor space shaded by airfoil-like louvers (opposite bottom). Lab and office areas share meeting rooms (below).

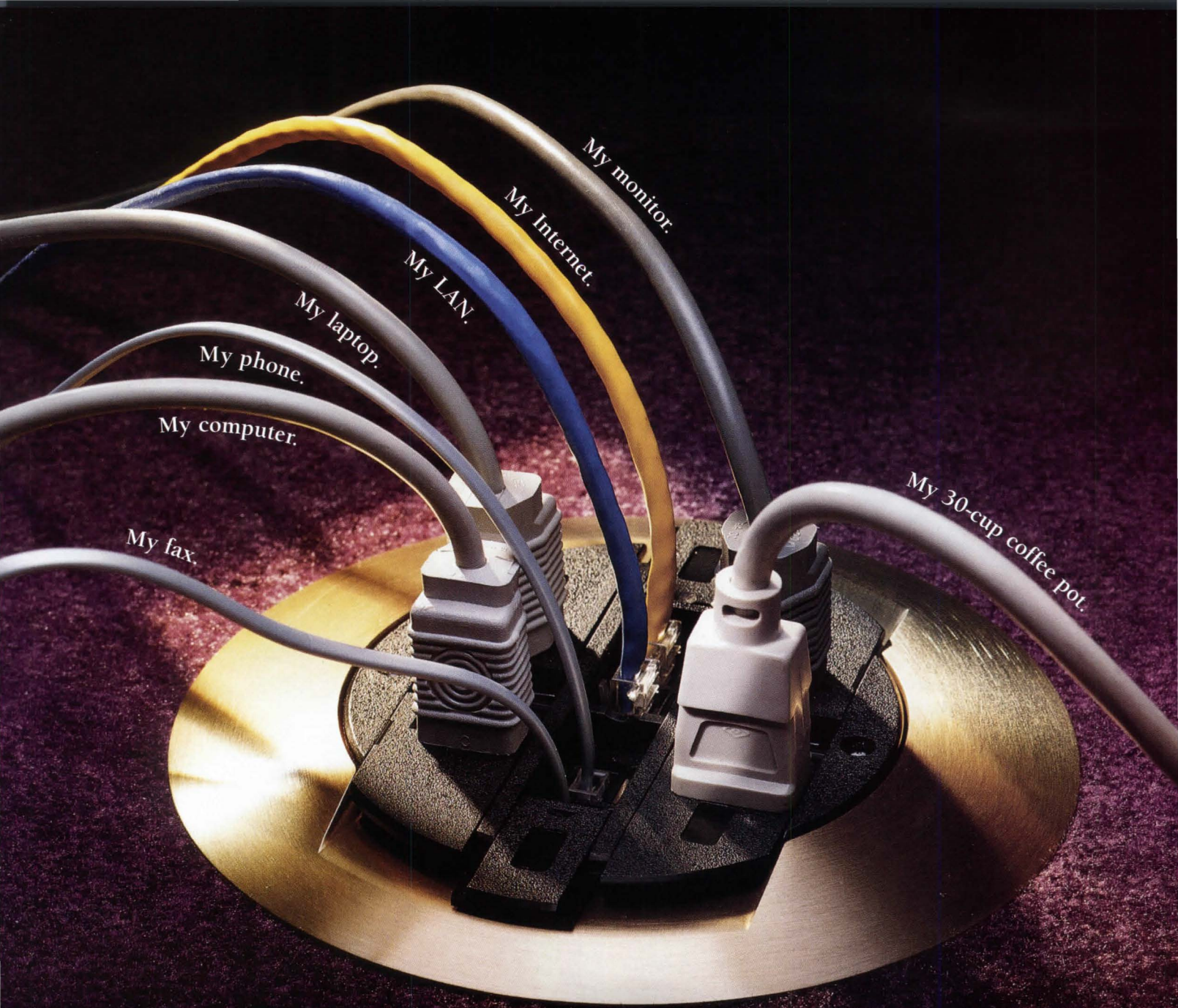
Key Players: *Architect: Steven M. Davis, FAIA, Frank V. Michielli, AIA, Anthony Louvis, AIA, Carl F. Krebs, AIA, David Manty, AIA; structural engineer: Weidlinger Associates; mechanical engineer: Cosentini Associates; landscape architect: Weintraub Landscape Architects; client: Jacques Tillement*

Glass-clad elements (left and plan) project from the office areas (above) into the high-bay space. These contain a variety of meeting rooms, bringing lab technicians in contact with designers, sales staff, and administrative workers.

"The design was starkly clean and crafted with a palette of enduring materials that fell within significant budget constraints."—Robin M. Ellerthorpe

"This project clearly aligns the environment with the mission and values of the company. It successfully provides visual integration of a wide range of activities."—James O. Jonassen

1. *Engineering team offices*
2. *Test laboratories*
3. *Lobby*
4. *Conference room*
5. *Cafeteria*
6. *Conference "tower"*
7. *Covered outdoor court*



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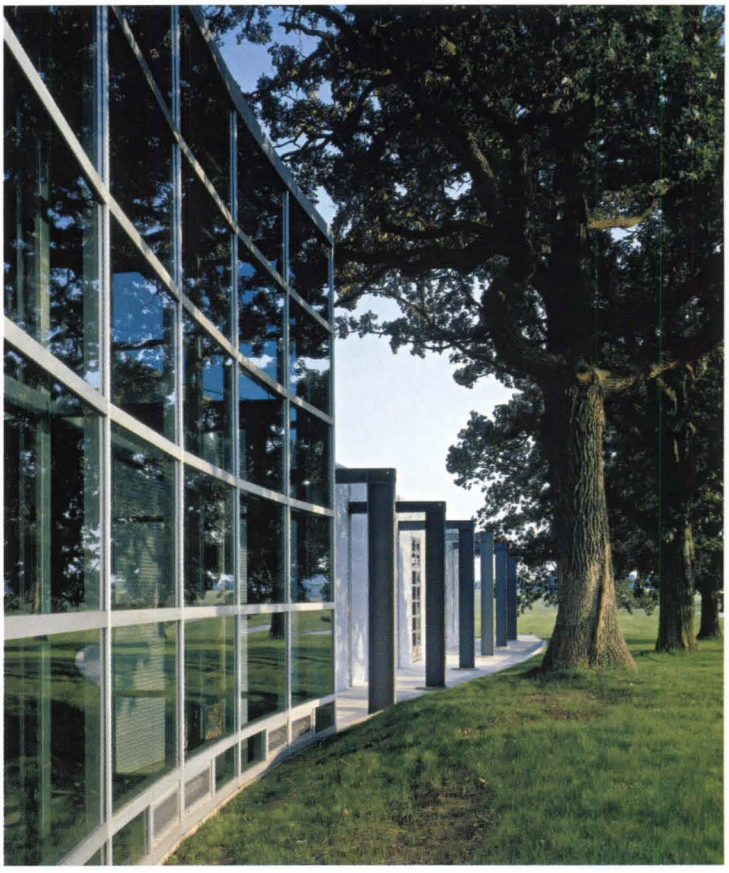
CIRCLE 53 ON INQUIRY CARD

Sticks' Jim Leuders and Sarah Grant-Hutchison, both artists/owners



POETRY COMBINES WITH PRODUCTIVITY IN AN ARTS AND CRAFTS STUDIO

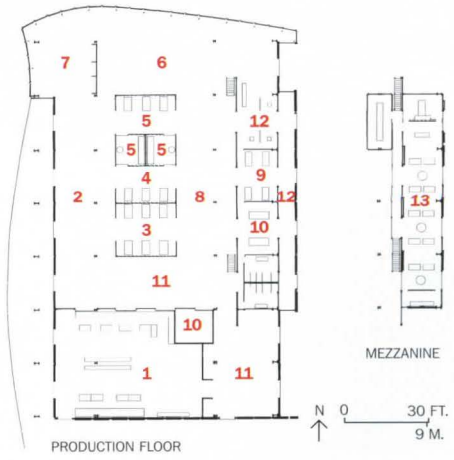
Project: Sticks, Inc., Des Moines
Architect: Herbert Lewis Kruse Blunck Architecture
Client: Sticks, Inc.
The Challenge: Sticks is a rapidly growing artists' studio specializing in the design and production of contemporary art objects made from fallen timber. The company wanted a work environment that was not only more efficient but that could motivate employees with spatial freedom and the enjoyment of nature. By reorganizing the work flow and workspaces, the client hoped to reduce the time needed for manufacturing, handling, and transporting its products.
The Solution: Prior to construction, the artists, architects, and owners spent one year redefining the production processes; this resulted in a design that merged utility with art, nature, and craft. The facility displays its products and the production process, integrating the design and artist studios with the manufacturing and shipping departments. The new building is framed by the surrounding woods and sited for dramatic views. Most interior locations get considerable natural light. All this has paid off by boosting morale and worker productivity.
The Benefits: Four months after the facility opened, the company enjoyed a 20 percent increase in output and a reduction in the time required for handling and transporting products. The savings went to enhance employee benefits, recruitment, and retention programs. Because of these efficiencies, the company was able to get its products to the market faster, while maintaining and improving product quality and workmanship.

Key Players: *Architect: Kirk V. Blunck, FAIA, Peter Goch, AIA, Erin Olson-Douglas, Stephen Knowles, AIA, Dan Vercruysse, Richard Seely, AIA; structural engineer: Charles Saul Engineering; client: Jim Leuders and Sarah Grant-Hutchison*

Carefully nestled in a grove of mature trees, this manufacturing facility is noted for its innovative use of premanufactured building forms, hand-painted doors, and light-filled workspaces.

"A wonderful embodiment of the blend of art, craft and nature, the essence of the business it enables. Artists must find its spatial character and integration with the surrounding woods to be both a creative and productive stimulus."
—James O. Jonassen

"The design has the same one of a kind feeling that their product has. Unique product. Unique building."
—Carol Ross Barney



1. *Millwork shop*
2. *Drawing*
3. *Etching*
4. *Drying*
5. *Finishing*
6. *Painting*
7. *Lounge/kitchen*
8. *Hardware*
9. *Fabrics*
10. *Installation design*
11. *Shipping*
12. *Galleries*
13. *Offices*

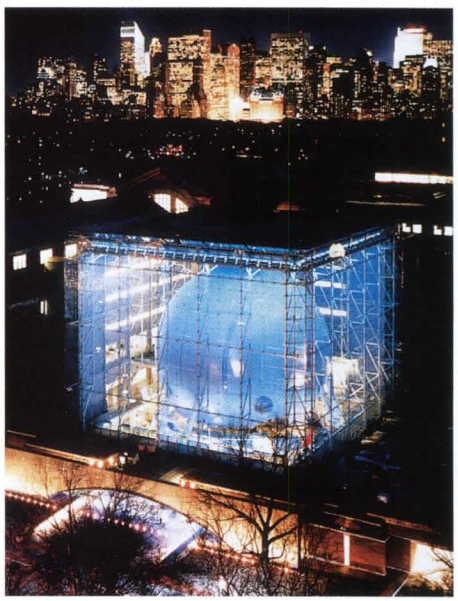
See our coverage of Sticks on page 130 of our June 2000 issue.

MAKING SCIENCE A SMASH HIT, WHILE GIVING AN OLD MUSEUM A NEW FACE

Project: Frederick Phineas and Sandra Priest Rose Center for Earth and Space, New York City
Architect: Polshek Partnership
Client: American Museum of Natural History
The Challenge: The museum hoped to expand its public profile and educational mission by adding an earth-and-space science center. The new facility had to convey complex scientific information to the general public in an exciting way, while making clear the connections between what goes on in space and life's diversity on earth. The building also had to improve the museum's physical and cultural relationship with its mostly residential neighbors.
The Solution: The architects underscored the museum's public-outreach mission by housing the new center within a clear glass cube 120 feet on each side. Inside the cube is a metal sphere 87 feet in diameter that houses a high-tech planetarium. The simple geometric forms, combined with sophisticated, modern materials, give the Rose Center a timeless identity with the power of an icon. The scope of the project also includes a new public terrace, dining facilities, and an entry pavilion for the museum on the west side of the site.
The Benefits: The Rose Center was an immediate hit, generating a wave of publicity and bringing new visitors to the museum. In the first eight weeks, visitation increased by 58 percent, group reservations by 200 percent, and membership applications by 200 percent. Most important, the 131-year-old museum was seen as one of the most dynamic in the city of New York.

Key Players: *Architects: James Stewart Polshek, AIA, Todd Schliemann, AIA, Joseph L. Fleischer, FAIA, Tyler Donaldson, AIA, David Wallance, AIA, Kala Somvanshi, AIA, Judi Bauer, John Jordan, John Lowery, AIA, Craig McIlhenny, AIA, V. Guy Maxwell; clients: Ellen Futter, Neil deGrasse Tyson; structural engineers: Weidlinger Associates; exhibit design: Ralph Appelbaum; construction manager: Morse Diesel*

Ellen Futter, president, American Museum of Natural History



"The people involved with this project have made what I'm sure will be a new icon for the institution."
—Carol Ross Barney

"The project transforms the function, the institution, and the neighborhood in a dramatic and satisfying way."
—Wilson Pollock

Low iron content makes the cube's curtain-wall glass very clear (left), allowing the building to act as a beacon at night (top) and be visually accessible to its neighbors during the day. Exhibits and graphics, designed by Ralph Appelbaum Associates, work with the Rose Center's architecture to explain such important concepts as scale and time in the universe (above).

See our coverage of the Rose Center for Earth and Space on page 98 of our August 2000 issue.

Tomijirou Morito, president, Daiichi Mutual Life

A large semicircular atrium, 160 feet high, is carved out of the interior of the terraced structure. A park entrance, amphitheater, plus skylight protrude from the growth of vines; stairs lead up to a belvedere.

PLANTED TERRACES MELD A MIXED-USE CITY BUILDING INTO AN URBAN PARK

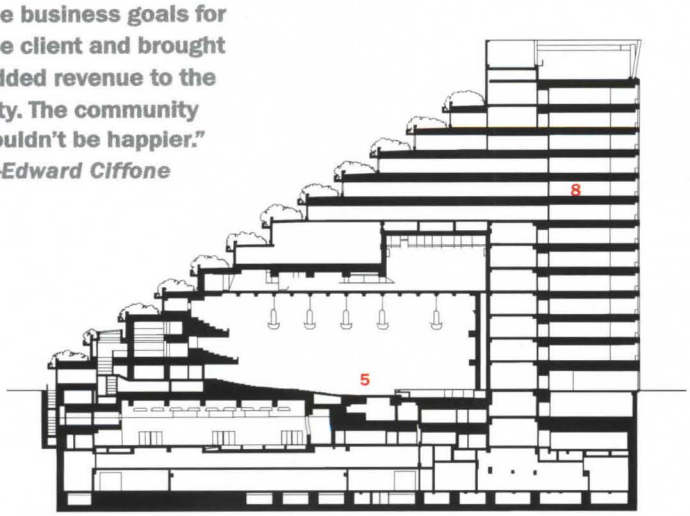
Project: Fukuoka Prefectural and International Hall, Fukuoka, Japan
Architect: Emilio Ambasz and Associates with Nihon Sekkei and the Takenaka Corp.
Client: Daiichi Mutual Life Insurance Co., Mitsui Real Estate, and Fukuoka Prefecture
The Challenge: The city of Fukuoka decided to appropriate half of the five-acre Tenjin Central Park for a building that would be devoted to governmental and commercial office space. It asked seven insurance companies to assemble teams of architects and builders and submit development schemes for the public/commercial structure. The citizens of Fukuoka were not thrilled about losing so much open space, and during the decision-making process, the final choices were somehow leaked to the press. The public rallied behind the literally greener, terraced design conceived by Emilio Ambasz.
The Solution: Ambasz's scheme, a 1-million-square-foot concrete-and-steel-frame structure, is 15 stories high, with terraces spilling down the south face to the park. The lushly planted terraces are accessible to the occupants of the building. Interior spaces include an exhibition hall, a 2,000-seat concert hall, conference facilities, shops, and parking.
The Benefits: The clients report that heating and cooling costs are some 20 percent lower than their original estimate because of the landscaping. Since the terraces are laced with stairs that can double as fire exits, the owners could use the designated interior space for leasable square footage. In addition, Daiichi believes it saved $780 million by winning the 60-year land-lease contract with a lower bid ($7 million a year), compared to a competitor who offered $20 million.

Key Players: *Architect: Emilio Ambasz, Nihon Sekkei, Takenaka Corp.; architect of record: Nihon Sekkei; contractor: Takenaka Corp.; engineers: Nihon Sekkei and Takenaka Corp.; landscape architect: Plantago Corp.*

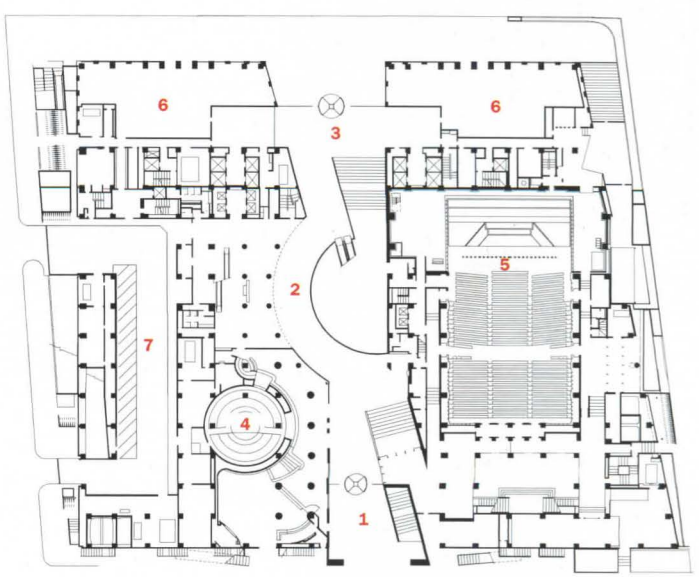
"The wall of wild hillscape is magical—an exuberant gesture. It is an icon that helps the business identity of the city. And it is well built."
—Julie Eizenberg

"Due to the excellent and exquisite design elements, the building met the business goals for the client and brought added revenue to the city. The community couldn't be happier."
—Edward Ciffone

1. *Park entrance*
2. *Lobby*
3. *Street entrance*
4. *Museum*
5. *Auditorium*
6. *Retail*
7. *Parking ramp*
8. *Offices*



SECTION THROUGH AUDITORIUM



GROUND FLOOR

Larry Bennett, terminal manager

BEAUTY AND FUNCTION JOIN IN POETIC AND WELL-SITED CONTAINER TERMINAL

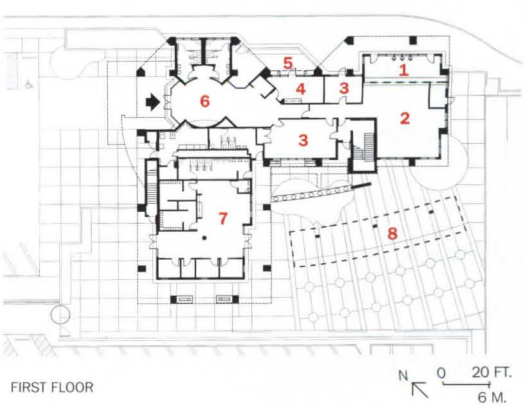
Project: Entry Gate Complex, Hanjin Container Terminal, Los Angeles
Architect: Robert Stewart Architect/Caldwell Architects
Client: Hanjin Shipping
The Challenge: Hanjin Shipping is among the world's fastest growing ocean shipping lines, with 3,400 employees in 47 countries. To meet growth projections, the company needed to move from its 59-acre terminal to a much larger one, improve productivity among its three worker groups, eliminate bottlenecks, and incorporate flexible, state-of-the-art technology.
The Solution: Diligent programming and thorough consideration of how to integrate the site, the buildings, and the workflow were constrained by cost and square footage restrictions. In addition to moving to a 175-acre site, the client teamed with the architect and operator to interview user groups and re-create from scratch a plan that matched the workflow. The architects applied a consistent design vocabulary to the gate buildings, guard booths, truck canopies, and employee terminal, thus keeping trucks moving efficiently through the complex. The design team found ways to improve the working environment, including the provision of break rooms and landscaped patios. Functioning in an industrial, typically underdesigned environment, the design team showed how thoughtful design can fulfill straightforward economic goals.
The Benefits: Hanjin now boasts the port's largest operating terminal. and its doubled target volume of one million container moves was realized after two years. The design optimizes the users' effectiveness and enhances their daily lives with amenities. With corporate staff preparing for the development of new terminals in two other U.S. ports, the research and development accomplished here will be used as a benchmark for the future.

Key Players: *Architect: Robert Stewart, AIA, Harold Ellis, Assoc. AIA; associate architect: John Caldwell, AIA, Vinceena Kelly, AIA, Dan Whalen, AIA; structural: Johnson & Nielsen; mechanical: F.T. Andrews; electrical: Moffatt & Nichol Engineers*

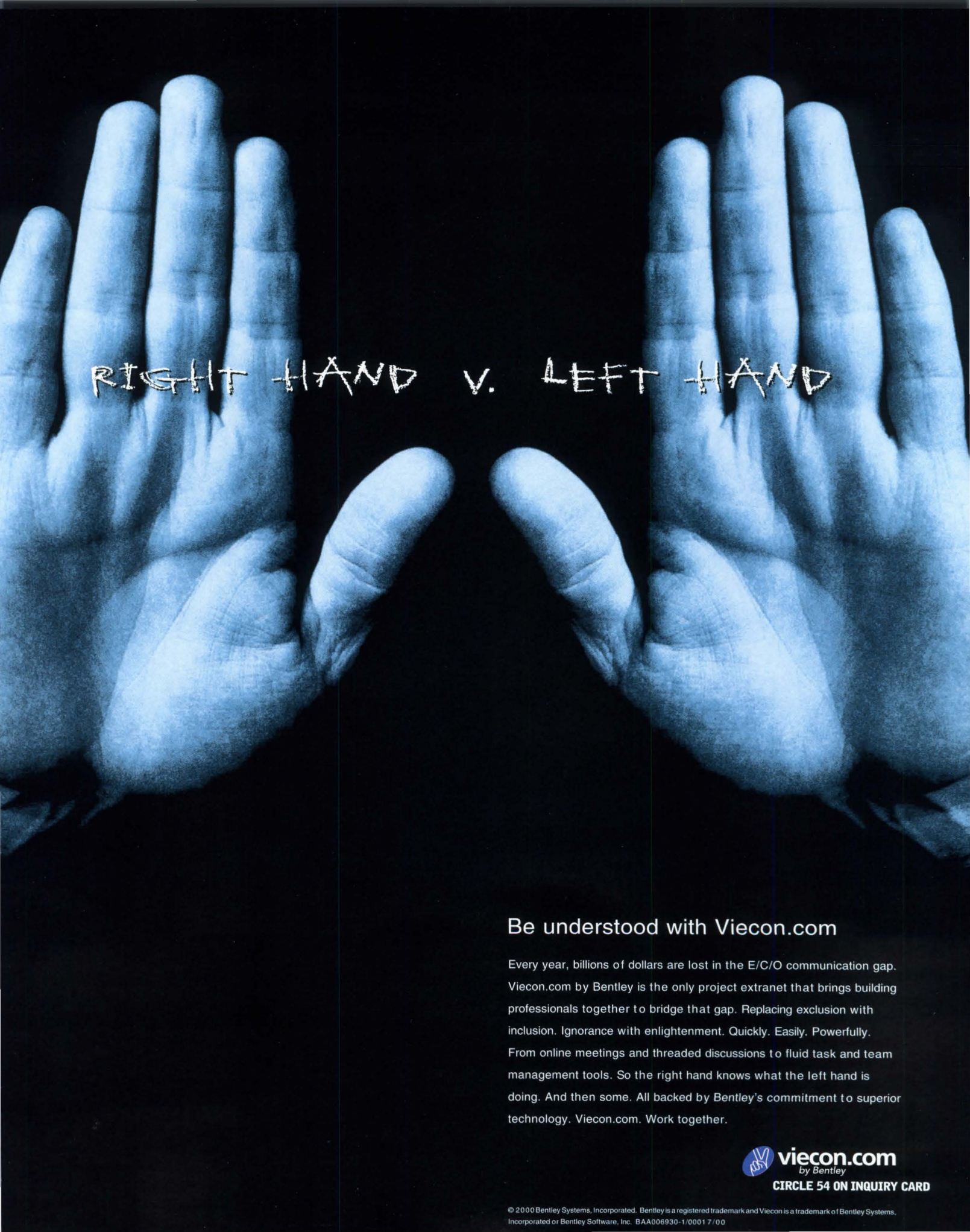
The gate complex processes inbound and outbound trucks (top left). The break area is sheltered from the truck queue by the Gate Building (top right), which houses offices and employee amenities (above).

"Their stunning success in increased efficiency is matched by the caliber of the employee-support facilities. The site plan is beautifully developed, and the architecture is thoughtful and cleanly detailed. This is a large, proud, and humane infrastructure project."
—Jane Weinzapfel

"Who says a container terminal can't have beauty, grace, impact, and wow?"
—Julie Anixter



1. *Drivers' trouble office*
2. *Clerk area*
3. *Office*
4. *Break room*
5. *Patio*
6. *Lobby*
7. *Break room*
8. *Union patio*



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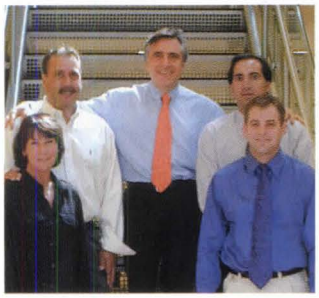
CIRCLE 54 ON INQUIRY CARD



(left to right) Angie Perrone Horvat, facilities manager; John De Santol, president; Ezra Dabah, chairman and CEO; Mario Ciampi, senior vice president; Ryan Andersen, project manager

IMAGINATIVE HEADQUARTERS STIMULATES CREATIVITY IN WORKFORCE

Project: The Children's Place Headquarters, Secaucus, N.J.
Architect: Davis Brody Bond, LLP
Client: The Children's Place
The Challenge: This rapidly expanding retailer of specialty apparel and accessories for children needed a new headquarters. Counter to the prevailing corporate retail strategy of investing in stores only, the company decided investing in their offices would improve internal coordination, which would increase sales and revenue. Research conducted by a workplace strategist, the architects, and the contractor identified key parameters to be considered in the design, including the degree of interaction and autonomy among employees.
The Solution: The architects developed a design that replaced the company's workspace, which had almost no shared spaces, with a new building offering many different settings for groups to gather together and share ideas. Materials and products already being used in the retail stores were employed, which saved money and closely identified the offices with the products.

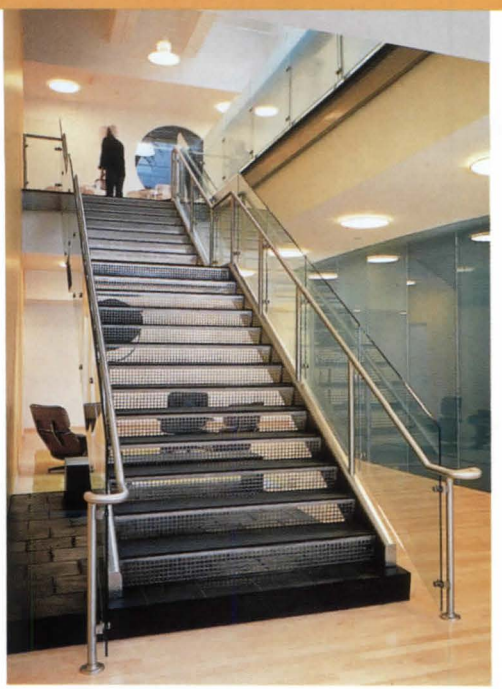
The Benefits: Results include a favorable mention in a Merrill Lynch analyst report. Employee retention is at 95 percent, and recruitment and productivity have increased. Users say the workplace supports the creative process, breeds enthusiasm and love of the job, and facilitates collaboration. Visual links between the distribution center, offices, and on-site store provide a feeling of integration and team culture while keeping the workforce in touch with the marketplace.

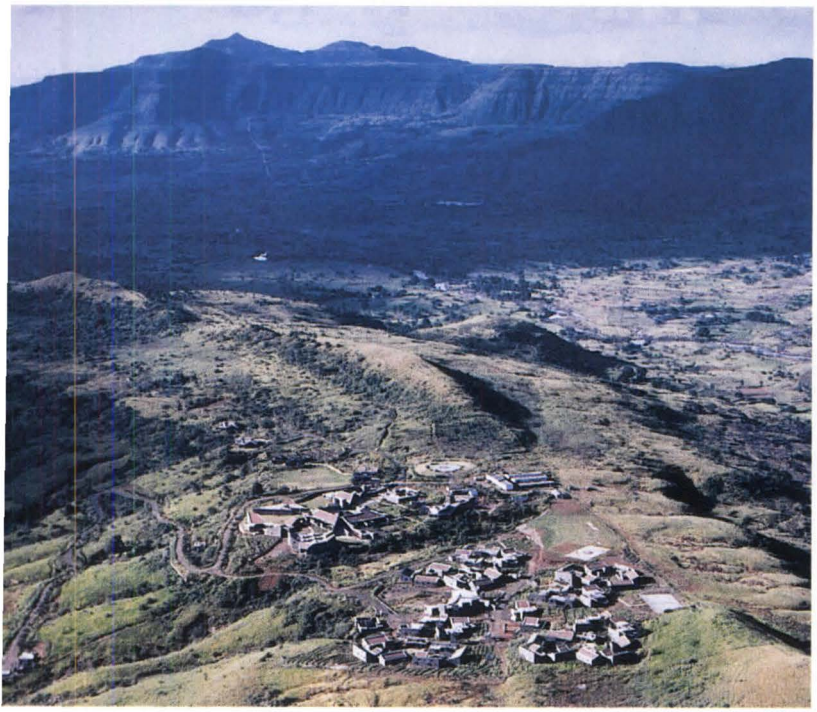
Key Players: *Carl F. Krebs, AIA, Nathan Hoyt, AIA, Jennifer Lee, Amy Chase; associate firm: DEGW North America, LLC; workplace strategy consultant: Andrew M. Laing; structural engineer: Leslie E. Robertson Associates; MEP engineer: Ambrosino DePinto & Schmeider Consulting*

The program included a full-scale retail store as an on-premises working laboratory to test and refine merchandising and design concepts (opposite right). Every element in the new headquarters is carefully articulated, which sends a message to employees that their efforts are valued.

"Forget 'location, location, location.' When it comes to 'getting it' about what *talent* needs and wants, the Children's Place is imagination, imagination, imagination."
—*Julie Anixter*

"This exceptionally comfortable, bright, and lovingly detailed workplace resulted from unusual care and collaboration. It is effective and productive, inspiring employees and charming visitors."
—*Wilson Pollock*

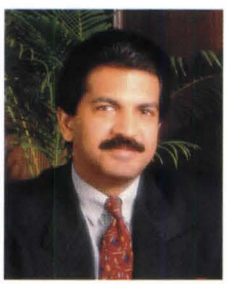




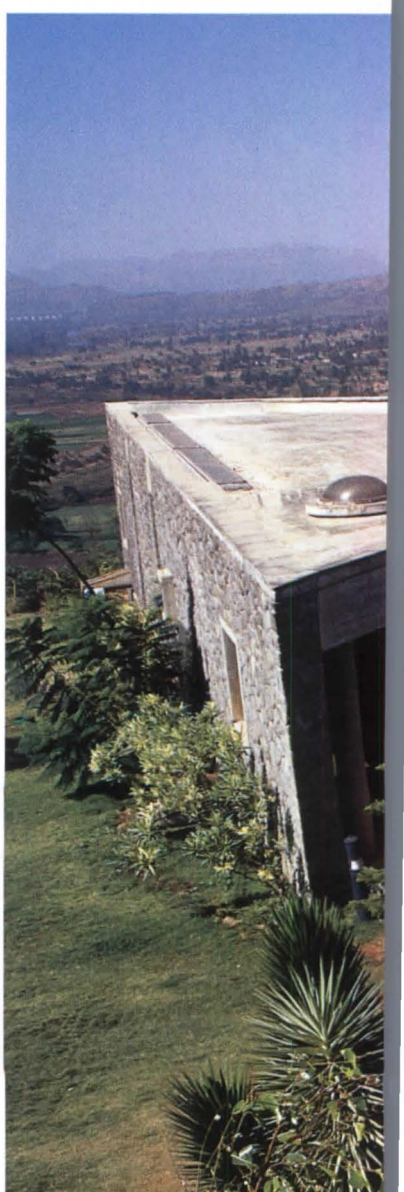
BLENDING THE GLOBAL WITH THE LOCAL, A NEW SCHOOL IS A BIG HIT

Project: Mahindra United World College of India, Pune, India
Architect: Christopher Charles Benninger & Associates and Peter Charles Wilson & Associates
Client: Mahindra United World College of India
The Challenge: To design and build an entire campus for a new college-preparatory school in just 14 months. Funded by an international industrial conglomerate, the school needed to be a top-tier educational institution that could attract an international community of 200 students, 30 faculty members, and 40 support staff.
The Solution: Combining modern architecture with local materials and traditional elements, such as sitting platforms and Indian *kund* steps, the architects created an institution that is both progressive in its design mission and rooted in its local context. The buildings hug the rolling hills of the Sahayadri Mountains while turning to capture views of the landscape. Clusters of buildings help establish a sense of community and define a variety of outdoor spaces, from quadrangles to yards to walled courts. The architects incorporated local beliefs in their master plan, so the entrance gate, or *mahadwara,* aligns with the auspicious north-south axis, and the academic quadrangle opens onto all four cardinal directions.
The Benefits: The school's impressive campus and architecture helped to attract students from 45 countries in its first year and more than 60 in its second. Within two years, the rate of applications jumped from 5 per available seat to 28 for each seat. While the school trust needed to subsidize 59 percent of the institution's operating costs in the first year, the school is expected to break even in the 2000–2001 fiscal year and to generate a surplus starting in 2002. The school has won architectural awards and garnered attention in the Asian press.

Key Players: *Architect: Christopher C. Benninger, Madhav Joshi, Peter Wilson; interior designer: Hemant Khire; structural engineer: C. E. Godse; engineer: Rahul Sathe; landscape architect: Varsha and Ravi Govande; client: Anand Mahinda, M.M. Raiji*



Anand Mahindra, managing director of Mahindra and Mahindra, India



PHOTOGRAPHY: © AMIT OBEROI, A. RAMPRASAD NAIDU, COL. V. MUNDKUR (AERIAL PHOTOS)

"An example of innovation without extravagance. [The school] is a jewel-like educational community that adventurously interprets cultural heritage."
—Julie Anixter

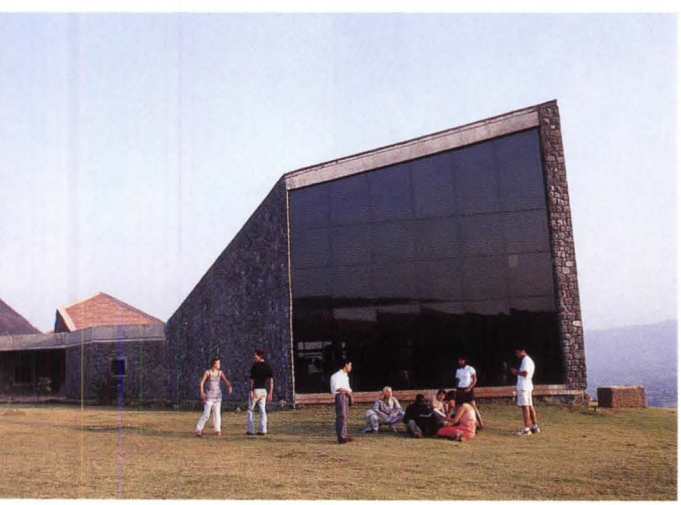
"This project creates a community spirit that is an important part of learning."
—Eric Richert

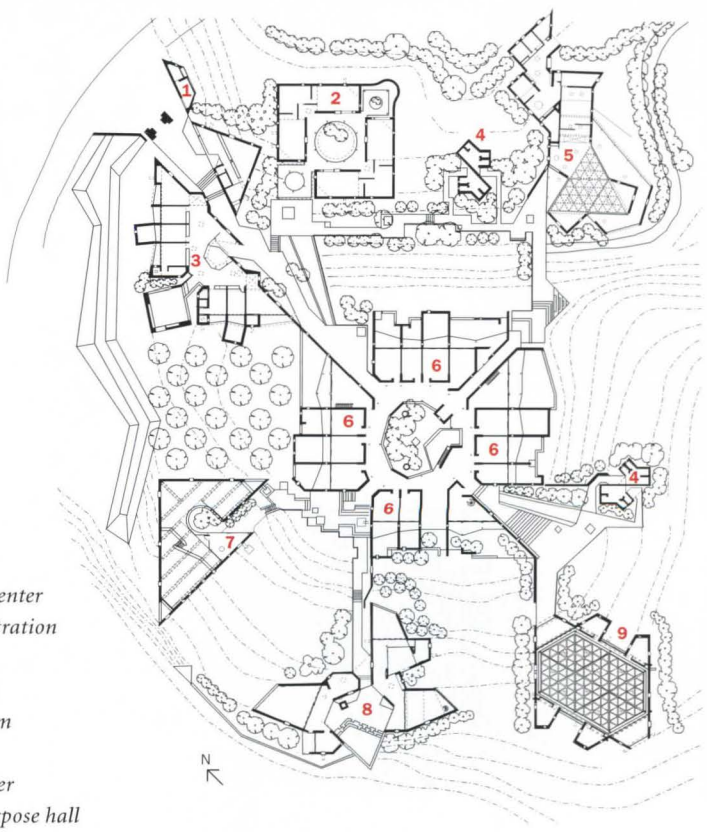
"There is a rich mosaic of forms set in the landscape, along with well-scaled spaces."
—Yvonne Szeto

The 150-acre campus in Maharashtra province southeast of Mumbai (Bombay) encompasses a group of academic buildings and a series of residential clusters (opposite, left and right). The library (left) wraps around a small court. Broad steps provide access and places to relax (above).

Local materials, such as stones and clay roof tiles, work with cast and poured concrete to create a rich palette of textures and colors (left). The art center (bottom) includes three studios with large walls of glass. The campus was designed so the buildings and spaces between the buildings capture views of hills, distant lakes, and the river valley below.

"There is a strong village/campus expression that seems very much at home in its landscape. [The school] unites cultural insight with the educational experience."
—*Jim Jonassen*





1. *Security*
2. *Science center*
3. *Administration*
4. *Toilets*
5. *Catering*
6. *Classroom*
7. *Library*
8. *Arts center*
9. *Multipurpose hall*

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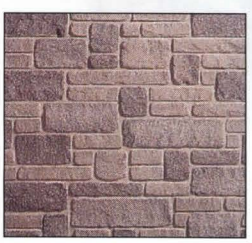
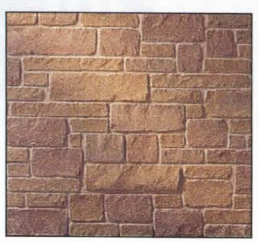
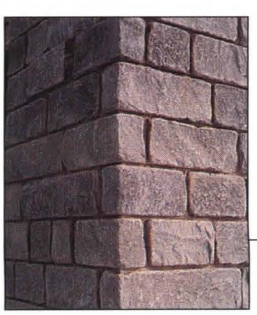


Gray Blend



Tan Blend



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CIRCLE 55 ON INQUIRY CARD

Diane Couture, general director (left), Raymonde Rivard, president (right)

TRADE SCHOOL SETS A HIGH BAR FOR STUDENTS THROUGH BOLD, DIRECT DESIGN

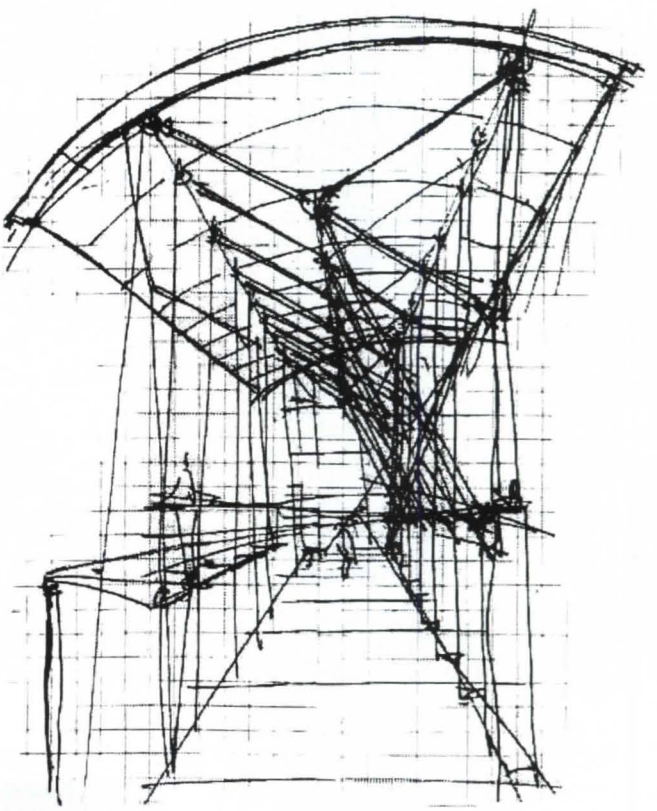
Project: Saint-Hyacinthe School of Trades and Technologies, Quebec
Architect: ABCP Architecture-Urbanisme
Client: Commission Scolaire Saint-Hyacinthe
The Challenge: The client's mission was to build a 95,000-square-foot state-of-the-art trade school for students aged 17–45, part of a larger effort to attract more students to trade training. The architects were asked to develop a flexible program that could meet the needs of an evolving academic curriculum. The environment was to enhance students' social development and pride of workmanship, provide spaces for interprofessional exchanges, and offer a place of dignity that says through its design that the students are important.
The Solution: The school succeeds in combining all trade programs into one cohesive unit. Building on the original concept of student interaction, the architects created two lounge areas: the Rock Cafe, a student lounge along the main circulation route; and the *préau*, which refers to the elegant metal canopy that supports a curved roof and serves as a large gathering place for dining, lounge, and study. The *préau* blends the public, circulation, and social areas into one volume, and the Rock Cafe provides a game and relaxation area. The importance of detail and natural light are illustrated in the design, and the building itself is a teaching tool for construction-related studies.
The Benefits: Programmatic results included a growth in skill programs, from 9 programs for 600 students in 1993 to 27 programs for more than 1,500 students today. Energy efficiencies reduced costs by 25 percent annually, and the school has become enmeshed in the social fabric of the community, a recognized icon of achievement.

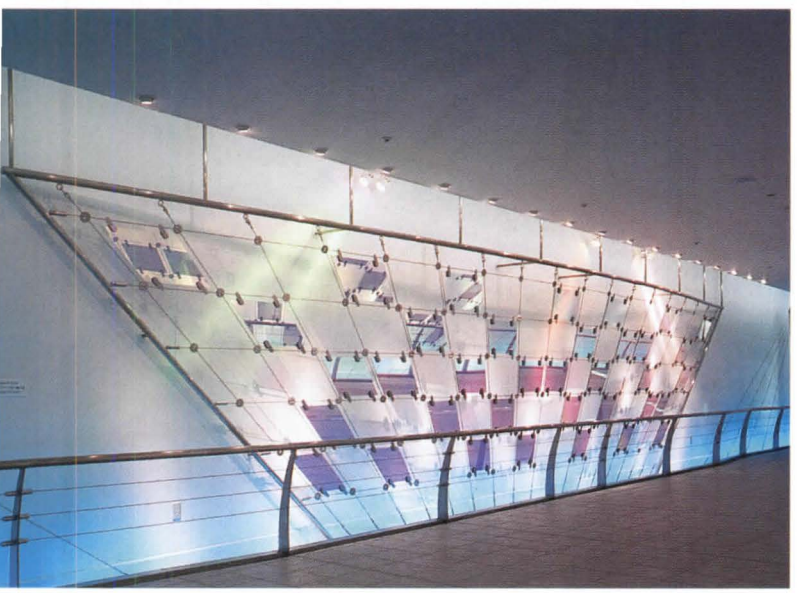
Key Players: *Architect: Sylvain Allaire, Alain Bergeron, Guy Courchesne, Serge Perras; structural and electrical engineer: Le Groupe René Guilmaine; mechanical engineer: Le Groupe HBA; client: Raymonde Rivard, Diane Couture, Jean-François Soumis*

"A building that celebrates the value of good workmanship with dignity and panache."
—Henry Cobb

"This trade school employs expressive forms and materials and a rigorous plan to create a welcoming public building that is understandable in the whole and parts to students and businesspeople alike. It is a very successful landmark in its community."
—Jane Weinzapfel

Exterior images show the metal canopy and glass face of the *préau*—the main gathering area for students (opposite); variations in the interior wood, metal, glass, and masonry detailing distinguish teaching, circulation, and public areas (this page).





"This is a clever and elegant 'bridge over water' concept, used to offset the negative connotations of a pedestrian tunnel. The bridges are suspended, shimmering sculptures of steel, cable, and glass. The addition of the sounds of water and human voices makes for a multisensory experience."
—*Yvonne Szeto*

"Elegant, imaginative, captivating."
—*Henry Cobb*

Bridgelike elements introduce rhythm and cadence along the path (top); framed dichroic glass panels line the central "bridge" (above); the passageway gracefully spills into the department store, reflecting the store's elegant, contemporary style (bottom).

Kenichi Nakamuta, president of Iwataya

ARTFUL TUNNEL ENLIVENS BUSINESS WHILE PROVIDING TRANQUIL PASSAGE

Project: Tenjin Kiramekidori Passage, Fukuoka, Japan
Architect: Walker Group/CNI, New York City
Client: Iwataya Department Store, the NT&T Kyushu Development Co., Ltd., and the City of Fukuoka
The Challenge: The city of Fukuoka, known as the "Venice of Japan," has such heavy rainfall that an underground network of pedestrian tunnels was created to connect office and retail buildings to transportation hubs. The Iwataya department store initiated this project because it was losing customers to shops located in the subway station. The goal of the project was to create an underground passage that would allow customers access to the store regardless of weather and to increase traffic to basement floors, which historically were less profitable.
The Solution: A 400-foot passageway, the first phase of a long-term development plan, was built. Because stores were not allowed in the tunnel, the architects generated interest in an otherwise plain space with a water theme and a series of three pedestrian bridges, inspired by a network of bridges that span the city's old canals. Constructed of steel, cables, and suspended glass, these bridges punctuate the passage at its beginning, middle, and end. An interactive sound program and soft lighting animate the design, creating a multisensory experience that makes the thoroughfare an escape from the urban realm.
The Benefits: Results include a 9.6 percent increase in visitors on weekdays and a 2.2 percent increase on weekends. In 1999, 20.5 percent of shoppers came through the passageway, and this figure increased to 22.6 percent in 2000 so far. The passageway contributed to overall profitability of the department store, with the basement level becoming the home of fashionable merchandise previously found on street-level floors.

Key Players: *Architect: Jay Valgora, Alan F. Adamec, AIA, Michele Alfano, Steven Kitezh, Takashi Tsukahara; multimedia consultants: Art in Commerce; engineers: FTL Happold; client: Kenichi Nakamuta*

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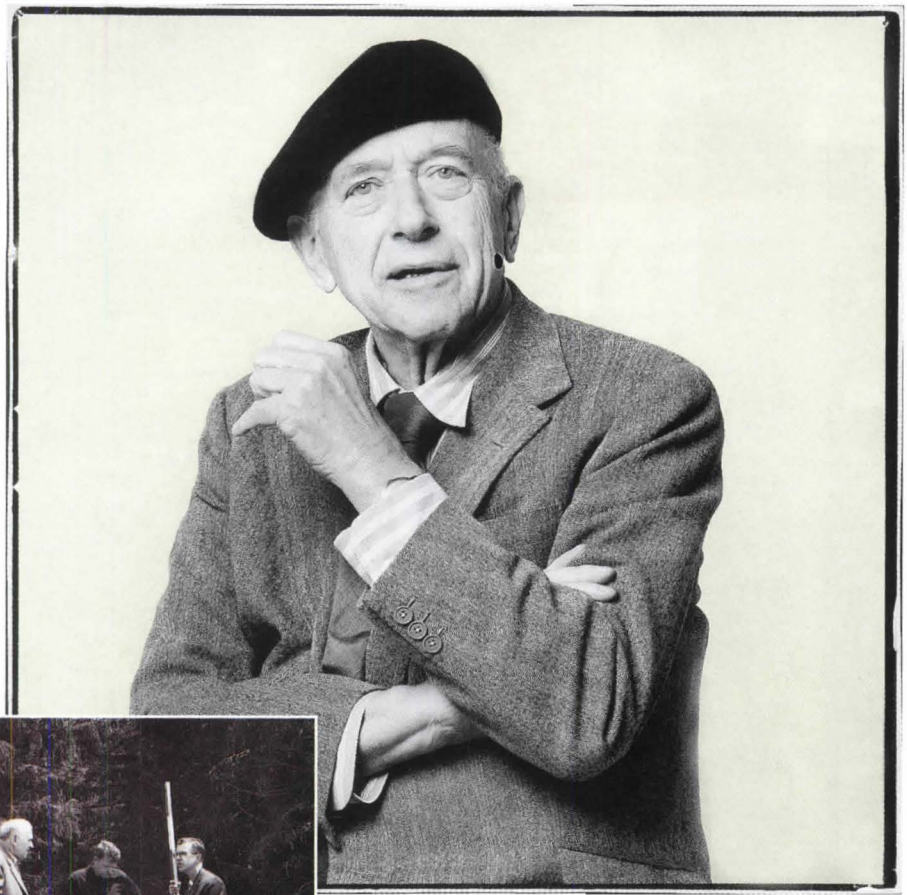

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Marcel Breuer a Memoir

A new book explores the life and tectonic craftsmanship of this modern master of materials

By Robert F. Gatje, FAIA

Hungarian-born architect Marcel Breuer made history first at the Bauhaus in the 1920s, and then later when he came to the U.S. in 1937 to teach with Gropius at Harvard. In 1953 Breuer opened an office in New York, where a host of well-known practitioners received invaluable training. Robert Gatje's memoir, just published by Monacelli Press, is a compilation of personal anecdotes and building analyses. As shown by the following excerpt, the discussion is deepened by a comparison of Breuer's architectural principles with those of the eminent 19th-century German architect and theorist Gottfried Semper.

In his recent book, *Studies in Tectonic Culture*, Kenneth Frampton investigates the 1851 writings of Gottfried Semper, the German architect whose craft-oriented theories were avidly followed by the Chicago School architects in the 1890s and recently have been the subject of much scholarly attention. As Frampton explains, Semper argued that dwellings were divided "into four basic elements: (1) the earthwork, (2) the hearth, (3) the framework/roof, and (4) the lightweight enclosing membrane." I never heard Breuer refer to Semper, although his dealings with Sigfried Giedion and his German-Swiss practice may have familiarized him with Semper's theories. Nevertheless, Breuer practiced his profession in strict adherence to Semperian distinctions.

For example, Semper's "earthwork" is both the foundation that grows out of the ground and the masonry that is supported thereon and, in turn, at least appears to support itself. Stone, whether in slabs, drums, or Breuer's trademark "rubble," is clearly part of this category; brick and concrete block are other examples. The characteristic of masonry is that its strength lies in compression rather than tension: its units will support a lot of weight if pushed down upon but will fracture if pulled apart hard enough. (Poured or precast concrete is not included since it is laced with reinforcing steel that gives it strength in tension.)

Breuer on masonry

Making openings in masonry walls has always been one of architecture's greatest challenges. A slab of stone will span a relatively short distance and form a lintel over a door, window, or the space between columns, as in a Greek temple. For larger openings, the arch was invented, each element of which supports and is supported by the others (and, at its base, does its own pushing). If a designer doesn't want to see a beam or lintel over an opening in a masonry wall, it is possible to hide it—with a steel angle built into and behind the face of a brick surface, for example—but many architects are uncomfortable with this lack of "expression" in structure.

Breuer, on the other hand, avoided punching

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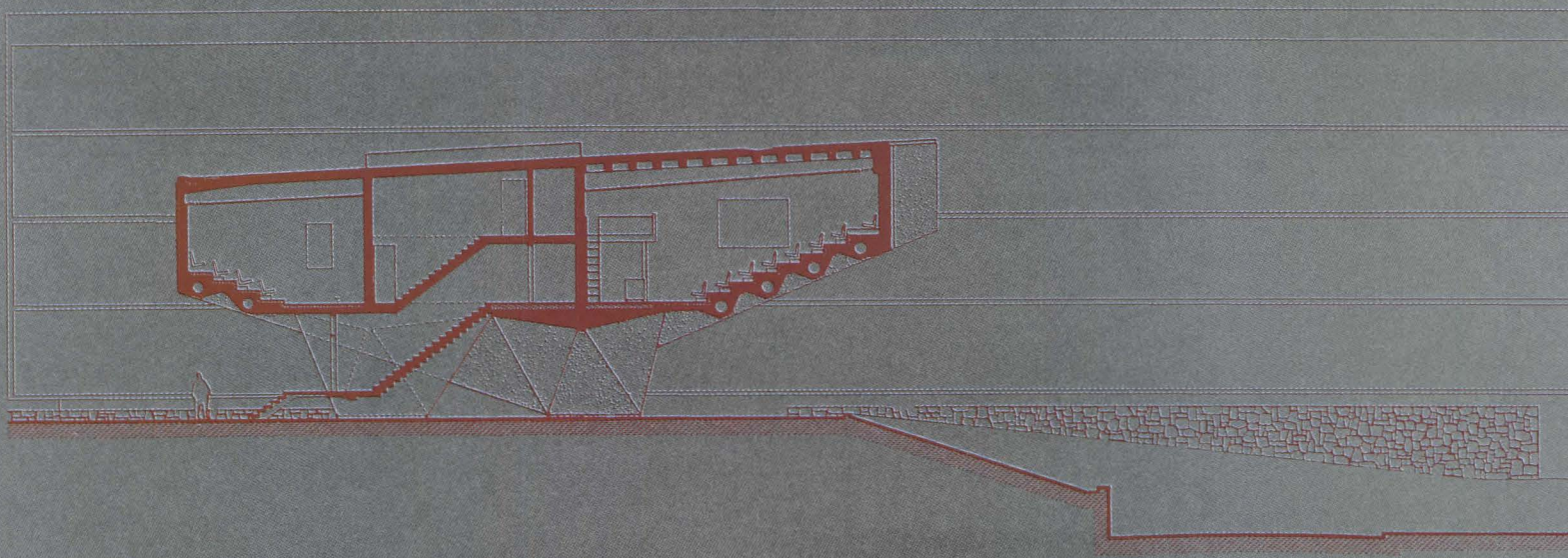
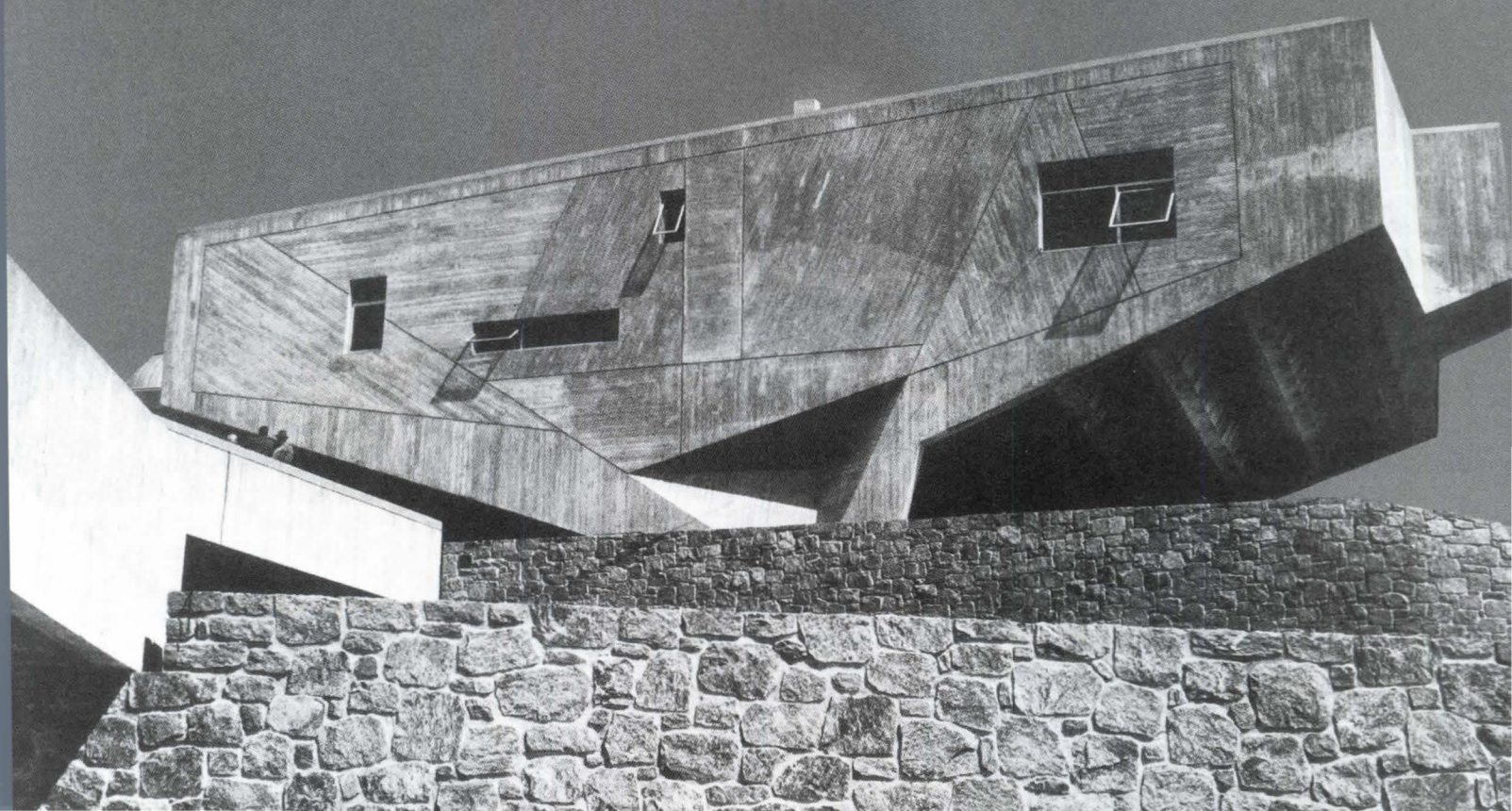
Robert F. Gatje worked with Marcel Breuer for 23 years, beginning in 1953. For 11 of those years he was a partner, active in both the New York and Paris offices.



Marcel Breuer is shown in 1979 at the age of 77, two years before his death (1). In 1963 (2) Breuer (left) visits the site of the Flaine resort in France with Andre Laurenti (middle) and Gatje. In the 1930s (3) Breuer and Alfred Roth (right) collaborated in Zurich. Breuer's 1961 lecture hall at the old NYU in the Bronx (below) demonstrates his dexterity with rubble and concrete.



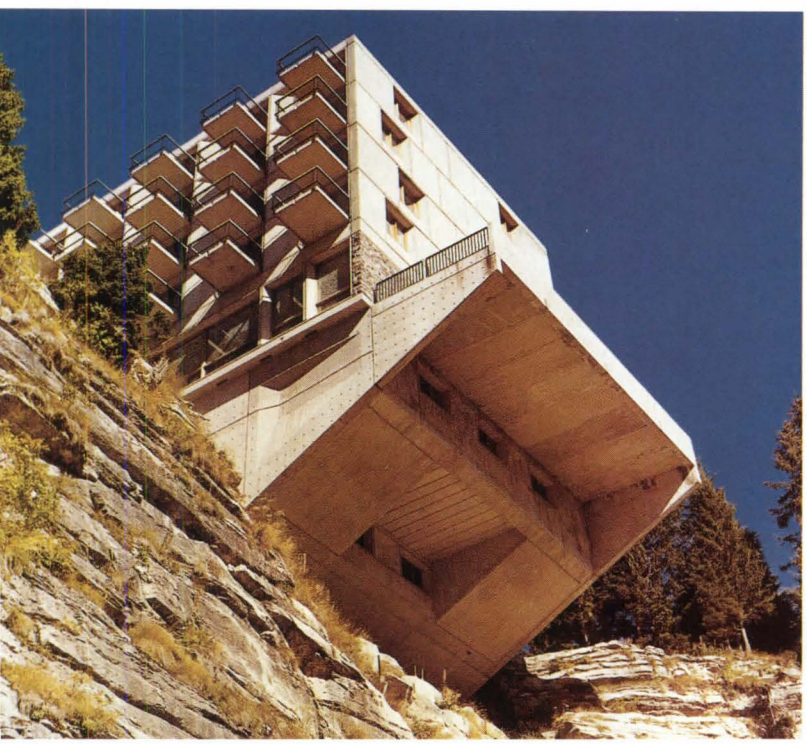
UNESCO advisers (including Gropius, Le Corbusier, and Breuer) at lunch in the early 1950s in Paris.

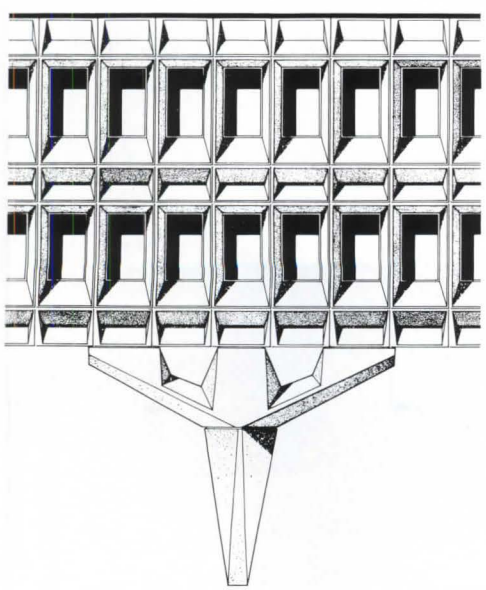
holes in masonry walls unless there was a visible lintel or roof fascia to bridge the opening and therefore, like Mies before him, tended to use stone in planes, with openings above or alongside but never below the visually unsupported units of masonry. And there are lots of steel lintels to be seen over his stone fireplace openings, where Lajkó [Breuer's nickname] instinctively pulled the lower, horizontal leg of the angles forward of the face of the stone. He said it was to keep the smoke from staining the stones above, but it gave the lintels an obvious presence.

Breuer and the craft of rubblestone

During the 1950s and 1960s, rubblestone was one of Breuer's favorite materials, both for residential work and for institutional projects such as New York University, Flaine, and Hunter College. He was very particular about the way the stone was to be laid. Each stone was to be no larger than what one person could lift (approximately 8 by 16 inches, at a maximum) and no smaller than about 4 by 4 inches (anything smaller amounted to "chinking," and Breuer preferred to see the cement joint widen rather than to fill every hole with a sliver of stone). Most stones were to be laid with their main axis horizontal; they would appear prepared to receive additional weight. A vertical stone could appear at a corner, but diagonal setting was to be discouraged, and any stone notched to form an L would be forcibly removed.

The surface was ideally cleft or flat; if the fieldstone had not been found that way, then the mason was to split it. Bulbous, rounded surfaces that protruded from the plane of the wall were to be avoided. Sharp corners were not in the nature of the fieldstones that Breuer loved; even if the stones had come from a quarry (as at NYU), the mason was expected to blunt the corners with a mallet before putting them in place. While the glory of a good rubblestone wall lies in the richness of its subtly varying colors, placing a strong reddish stone in, for instance, an otherwise tan or gray wall was not desirable. The mortar was to be slightly recessed from the face of the stones and to maintain a continuous plane that flowed around and between the stones with its width varying from no more than 2 inches to no less than a half inch. Long continuous joints, whether vertical or horizontal, were to be avoided; swooping, sinuous curves were the worst. Once a joint had passed two or three stones it was to be interrupted by a stone that would break its axis. Draftsmen and masons had to be trained, but the walls were rarely built entirely according to the Breuer rules.





The concrete cantilever of 1969 Hôtel Le Flaine (top) in Haute Savoie, France, became a trademark. Breuer's IBM La Gaude near Nice (1961–76) features a load-bearing and sun-shielding concrete facade.

Where stone meets the ground

Rubblestone is a great example of Semperian earthwork because it originates in the earth and shares its color. Breuer was perfectly content to have such a wall rise directly from the ground, since any rain-spattered dirt that might stain its surface would blend with the color of the stone. If possible, brick or dressed stone was laid on a base growing out of the concrete foundation to free it visually and literally from the dirt of the ground. If this was not possible, due to sloping ground, for instance, Breuer would call for a two-foot-wide strip of gravel at the base of the wall to absorb the rain and ease the grass-cutting. These methods of articulation between materials happened to look good, at least to our collective eye, but it's hard to say whether this was because they served a useful, practical purpose or because of their sculptural effect.

Jointing is a characteristic quality of any masonry material, and its pattern reflects its purpose and, frequently, its strength as well. If units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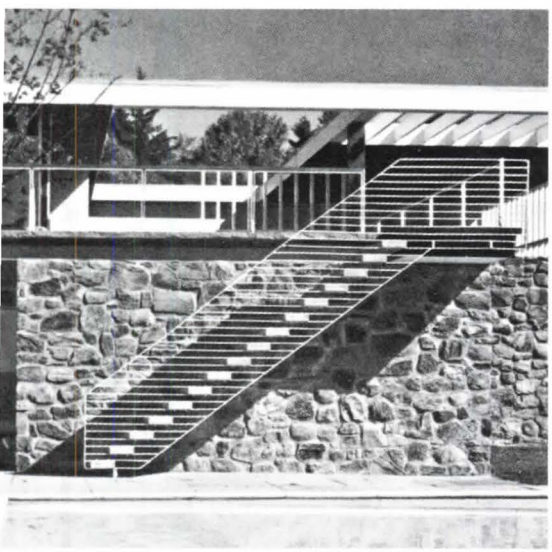

Breuer's famous exhibition house, designed for MoMA's garden in 1949, featured a rubblestone-and-brick fireplace (above). The stone in the Gagarin House in Conn. (1954) is similarly earthbound (left); the glass planes of the Van Leer headquarters in Holland (1958) show an affinity to lightweight membranes (below).

of masonry are laid with a stacked vertical joint, they don't look as if they will hold together very well, and they won't, unless they are tied back to some other structure. Brick, if used purely decoratively as a facing, often has stacked joints to emphasize that characteristic. If instead the minute vertical joints are offset in what is called a "running" bond, they appear to have greater integrity as a bearing wall, and they do. Breuer always preferred a running bond simply as pattern, and he would offset joints even in tile work, where strength was irrelevant. If we staggered the joints in a ceramic-tile wall, however, we usually let the vertical joints run through to make the decorative intent perfectly obvious.

Breuer's penchant for fireplaces

The "hearth," according to Semper, is an essential part of any dwelling, and I can't think of any of Lajkó's houses that didn't have at least one beautiful fireplace. Each was different and presented a continual challenge to his ingenuity. We made them of stone and brick, concrete and clay tile; sometimes they were part of a wall but more often they were freestanding as the sculptural symbol they certainly were. Breuer was very impressed by the "scientific" way that Americans built their fireplaces, and we were instructed to rigorously follow the proportions and dimensions listed on two pages of *Architectural Graphic Standards*. When he departed from the norm of a single, shallow opening to explore the virtues of a double-sided "see-through" version or even a totally open, round hearth—as in Hôtel A at Flaine—Breuer was insistent that we check the aerodynamics of flue and draft with a consultant.

Semper's "framework/roof" or the structural skeleton of any building becomes independently identifiable as columns and beams replace walls and slabs. Many architects feel a need to express the independent structure of a building as opposed to the earthwork on which it stands or the outer envelope that may protect it. The visible poles of a tent and the colonnades of Greek temples clearly illustrate this. There seem always to have been two warring impulses raging within the architectural world: the tendency to break apart and articulate the various parts of a building according to its purpose, and the desire to make it look all of a piece. The latter is characteristic of the great specimens of masonry construction—Egyptian pyramids, Roman arched vaults, and Romanesque churches, including the latter's revivals.

In Breuer's long career his own preferences changed. His early infatuation with lightweight metal structures was expanded to include a daring use of wood. Gradually, however, a fondness for the sculptural unity he found in masonry and particularly concrete structures took over. He loved the idea that the same concrete that was folded over the UNESCO assembly hall (1953–58) in Paris and Saint John's Abbey in Minnesota (1953–68) or warped around Saint Francis de Sales in Muskegon (1961–67) was both structure *(continued on page 116)*

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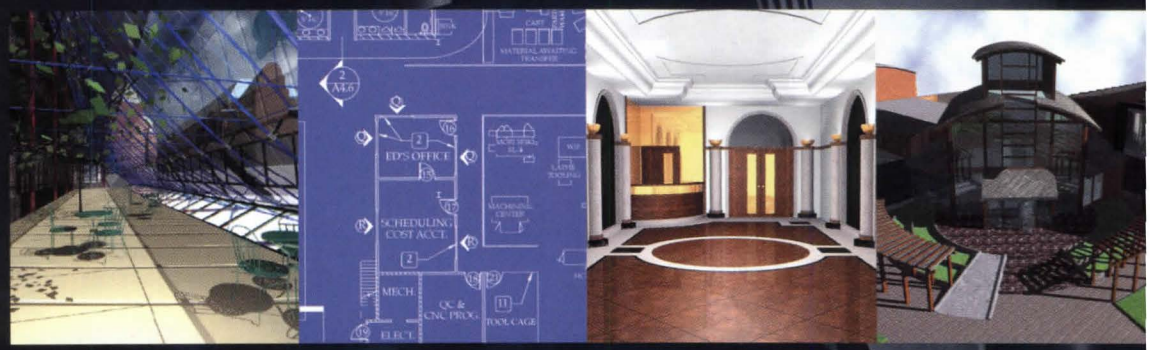

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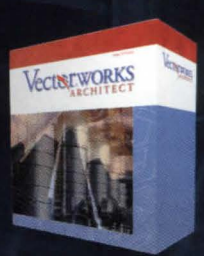

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MARCEL BREUER: A MEMOIR *continued from page 114*

and envelope. One disadvantage of moving his practice from Europe to the United States was that the relative cost of labor and materials was reversed: labor for building wooden formwork was cheap in Europe, while steel was frequently in short supply and often costly; in America, steel was plentiful but unionized construction workers were well paid. Breuer knew the economic logic, but even in America, he always preferred concrete as something he could mold and show with pride.

As for roofs, Breuer had an obvious aversion to the hips and gables of traditional architecture—he had learned the language of van Doesberg and de Stijl too early to give it up later. His houses were almost always capped with a single plane faced in one strong white band of fascia board. It might be bent or inclined in a butterfly or shed roof, but it rarely showed its graveled surface and never ended in a pediment. Breuer's larger institutional buildings end with the horizontal line of a parapet or the narrow metal edge of a gravel stop. In relying upon interior drains and even arguing for the perfectly flat roofs made possible by improved roofing membranes, Breuer was avoiding the gutters and drainpipes of his European youth, and he missed the characteristic rooflines of a romantic past not one whit.

Breuer and his wife, Connie, at their first house in New Canaan, circa 1947.

Breuer and enclosure

Semper's "lightweight enclosing membrane" has been considered one of the principal characteristics of modern architecture, although it has existed throughout history in the skins and woven fabric of even the simplest shelters. The "threads" making up the fabric of a modern curtain wall (though Breuer never used this terminology) might be the relatively heavy post and lintel of a precast-concrete window frame. Yet their pattern was always to be respected and never broken for fear that the fabric might visually tear. When Breuer designed a glass curtain wall, he tried to make the threads of its fabric as thin as possible, as in his infamous sliding windows that attempted to do away with most of the frame surrounding the slider. For him, glass was a void that contributed to lightness and transparency. He fought the use of dark-tinted glass, despite its heat-saving qualities, and never used reflective glass.

If Breuer had to pierce the fabric of one of his curtains, he made sure to reinforce the opening, as he did in passing through the hexagonal stained-glass drapery of Saint John's Abbey; otherwise the curtain was either hung from the upper structure—found at Armstrong Rubber in Westhaven, Conn. (1969), and at the HEW headquarters in Washington (1969)—or it was edged along its bottom with the hem of a heavy beam. Lajkó rarely explained what he was suggesting, and we rarely questioned it. His sympathy for Semperian principles, even if he had never encountered them, was a natural one. ■

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The 322,000-gallon deep-sea tank (this page) recreates an Atlantic Ocean habitat. The aquarium sits along the Cooper River, near the city's working waterfront (opposite).

After many delays and much controversy, the **SOUTH CAROLINA AQUARIUM** takes a contemporary stance on the Charleston waterfront

By Lynn Nesmith

Charleston is a proud city. So when a couple of local boys beat out the likes of Michael Graves, Antoine Predock, Emilio Ambasz, and Esherick, Homsey Dodge & Davis in a high-profile design competition for a new aquarium, it was encouraging news to everyone in Charleston and architectural underdogs around the country.

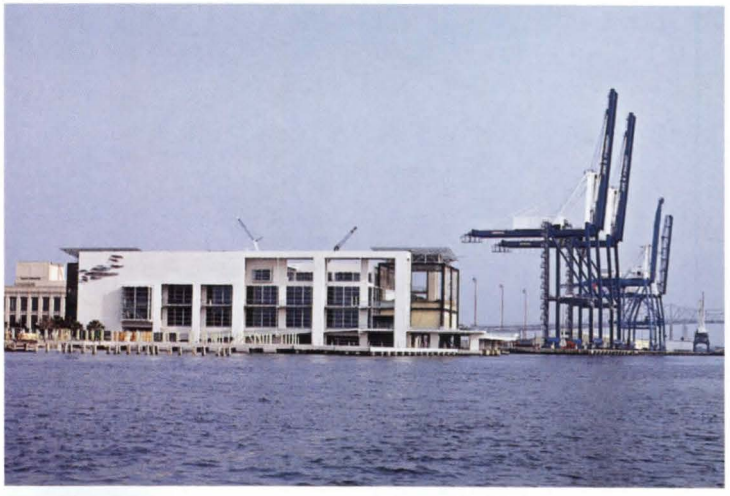
But winning isn't everything, as W. G. Clark and Charles Menefee would eventually find out. In 1985, Clark & Menefee and their New Orleans–based competition partner, Eskew Vogt Salvato & Filson Architects landed the commission for the South Carolina Aquarium. Ten years later, though, after a programming, design, and contracting process of marathon proportions, Clark & Menefee relinquished any association with the project. Its New Orleans partner (now reorganized as Eskew +) took over the project.

No one could have predicted the obstacles that would arise. There would be program changes, firm reorganizations and breakups, construction disputes, lawsuits and countersuits, toxic contamination, and ultimately the death of Calhoun, the aquarium's celebrity green sea turtle, just weeks before the aquarium was scheduled to open.

A mayor's stubborn dream

The project began in 1983 when there was no program, no budget, no site, only one politician's dream. But Joseph P. Riley, Jr., a popular mayor who was then in his second term in office, is a determined man with considerable architectural understanding and city-planning vision. With his family, he had visited the Shedd Aquarium in Chicago and thought Charleston needed a similar civic structure. A politician's idea and a little city council funding ($25,000, in this case) for a feasibility study are rarely sufficient to launch a major work of public architecture. But Mayor Riley understood the power of civic architecture and extolled the aquarium as educational and inspirational. "Its higher goal was always to enrich the people of the community, not be a mere tourist attraction," explains Riley, who is still mayor of Charleston 17 years later.

Plans focused on a midsize aquarium, approximately 30,000 square feet, to be devoted to the understanding and conservation of the state's aquatic habitats, from mountain streams and black river bogs to tidal salt marshes and the depths of the Atlantic Ocean. Located close to the city's historic center, it was to be part of a large mixed-use development and was initially budgeted at between $6 million and $9 million.



The project's first proposed location drew immediate opposition from local residents and city preservationists, a harbinger of things to come. (In Charleston, which enacted America's first municipal preservation ordinance in 1931, a little resistance can lead to long delays or death for new buildings.) Undaunted, the city studied other options, including a five-acre waterfront site a dozen blocks north of its historic core.

Finding an architect

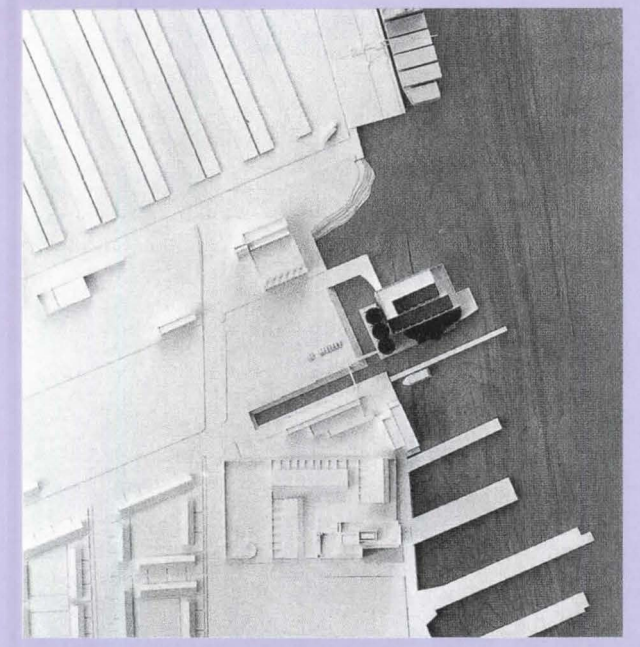
Optimistic that the city had found an appropriate location for the aquarium, Riley turned his attention in 1985 to the project's architecture. Although admired for having raised the city's collective design consciousness in terms of new projects as well as historic preservation, Riley found the aquarium to be a real test of his powers of persuasion.

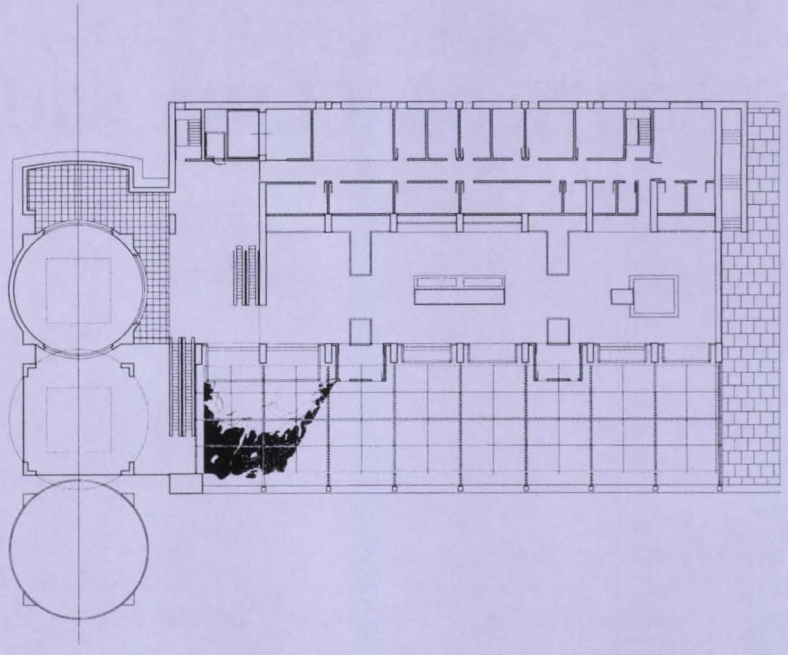
With $42,420 from the National Endowment for the Arts to hold an invited design competition, the mayor set out to get national exposure for his pet project by bringing star architects to town. The competition was structured as an intensive three-day charette in Charleston with details of the program withheld until the start of the session.

By a strong consensus, the scheme by Clark & Menefee was selected. In a bold response to the program and site, the design proposed

Lynn Nesmith is a former editor of Southern Living *and* Architecture *magazines. She is the author of* Instant Architecture *and monographs on California architects Steven Ehrlich and Rebecca Binder.*

Project: *South Carolina Aquarium Charleston, S.C.*
Architect of Record: *Eskew + (formerly Eskew Filson Architects—R. Allen Eskew, AIA, principal-in-charge; Chuck Hite, AIA, project manager; Bob Kleinpeter, Gary Hoffman, Ann Glenn, Chris Brooks, project team*
Associate Architect: *Clark & Menefee*
Engineers: *Davis and Floyd (civil); Schoolbred Engineers (structural); Morphy Makofsky (foundation); Blum Consulting Engineers (m/e/p); Enartec (animal life support)*
Consultants: *Lyons/Zaremba (exhibit design); the Larson Company (habitat design)*
General Contractor: *Ellis-Don*





An island scheme that caught the competition jury's attention

The design submitted by South Carolina–based Clark & Menefee and its New Orleans partner Eskew Vogt Salvato & Filson to the 1985 competition for the aquarium featured a building rising from an islandlike platform in the Cooper River and connected to land by a pedestrian bridge. The scheme envisioned the aquarium as a series of terraced gardens with a public park on the lowest level and screened aviaries above. Three inverted copper domes were to front the building and reflect sunlight to the public spaces below them. While much of the original scheme remains in the completed building, the aquarium sits on a pier, not an island, and the domes have been replaced by a pair of butterfly roofs above aviaries on the front and back of the building.

a structure that would project into the water as an urban island and connect to the land with a footbridge. The trapezoid-shaped building was organized as a series of terraced gardens embracing the Cooper River and its shoreline, with the lowest level a public park and terraces above serving as screened aviaries. Inverted copper domes crowned the entrance hall and reflected sunlight down into public spaces.

Raising the money

Unlike Chattanooga, Tenn., and Monterrey, Calif., which had both built aquariums, Charleston didn't have the luxury of philanthropic families or business leaders actively lobbying and raising money for its project. So Mayor Riley led the fund-raising campaign himself. Thanks to his relentless fight, the South Carolina legislature approved $9.5 million to build a state aquarium in 1988, on the condition that Charleston form a nonprofit board to run the facility. In November of that year, city voters passed a $9.5 million bond referendum for additional funding, by a margin of 3 to 1. With the National Park Service in possession of the five-acre waterfront site on Calhoun Street and with financial backing in place, it appeared that the mayor's wish was going to come true.

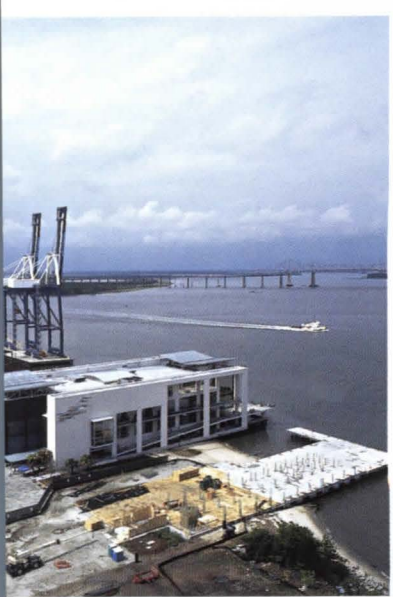
In the meantime, the city hired Rhodes/Dahl, a firm that specializes in aquarium project management, to oversee the aquarium and assess the exhibitions. From 1986 to 1989, the program expanded and the building grew to 68,250 square feet, pushing the budget to around $24 million.

Incorporating these changes, Clark & Menefee developed numerous new schematic designs, in association with Eskew Vogt Salvato & Filson. Eventually exhibition designers Lyons/Zaremba joined the team. "Now we had a real program and exhibitions with a clearly established story line of the waters of South Carolina," recalls Allen Eskew. "The designs were constantly changing during this time in response to specifics of the program, exhibitions, and expanded educational mission." The building became less of an island and acquired a more anchored footing on the waterfront, while still projecting roughly 200 feet into the river. In the fall of 1989, even Hurricane Hugo didn't put a damper on public enthusiasm and support for the aquarium. That November, county voters approved another $7 million for the aquarium.

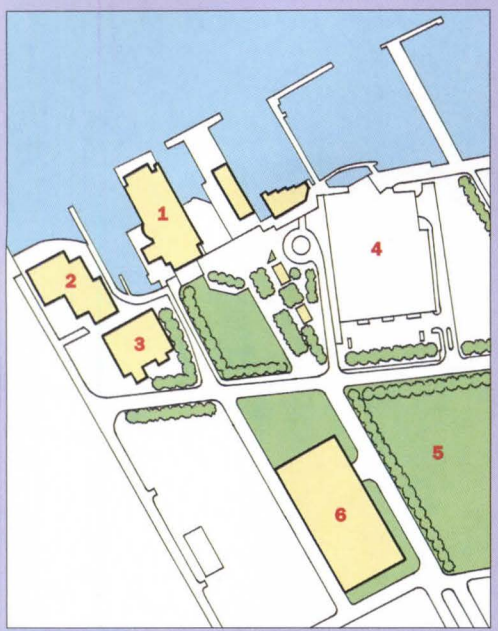
In 1990 Charleston's board of architectural review endorsed the revised scheme and the building was granted a four-foot variance allowing a 68-foot-high structure. Groundbreaking was scheduled for late 1990, until "a small amount of foul-smelling goo" was discovered on site. The ramifications of that discovery led to a quagmire of legal, environmental, and engineering tribulations. It turned out the stench came from toxic creosote left from a coal-conversion plant that had produced power used to illuminate the city's gas streetlights before the Civil War.

With the entire area a possible Environmental Protection Agency (EPA) Superfund site, intensive environmental testing was required. "The mayor was steadfast," recalls Steve Livingston, Charleston's parks director since 1976. "He acknowledged a civic duty, asking, 'Who is better able to clean up a toxic EPA site than a public agency devoted to education and conservation of the environment?'" As the scope and cost of the cleanup grew, so did the size of the aquarium (nearly 90,000 square feet) and its price tag (about $42 million).

During this period, Clark & Menefee, in association with Eskew Vogt Salvato & Filson, constantly revisited the schematics. "To keep track of all the revisions we labeled each progressive scheme with a letter," recalls project manager Chuck Hite, AIA. "The K scheme was the final design."



A glass-and-metal cube (above and right) anchors the city side of the aquarium and houses a mountain-habitat exhibit. An enclosed terrace on top of the cube is protected by a butterfly roof.



1. *Aquarium*
2. *Retail/food*
3. *Imax/food*
4. *Residential*
5. *Symphony hall (future)*
6. *Parking*

The South Carolina Aquarium is the latest in a series of projects designed to reclaim Charleston's waterfront for public use. During his 25 years in office, Mayor Joseph Riley has helped establish a string of nearly four miles of open land and parks along the city's peninsula, defined by the Ashley and Cooper Rivers.

Some of these projects are recreation facilities, such as a 6,000-seat minor-league baseball stadium nestled in a 10-acre park along the Ashley River, which opened in 1996, and a nearby 320-foot public pier for fishing, crabbing, and boat docking. Other projects offer open space for more passive pursuits. For example, the city's beloved 11-year-old Waterfront Park, a landscape of fountains, gardens, promenades, and shaded outdoor rooms with seating, has revived a section of the old commercial waterfront that was once slated for private high-rise redevelopment.

Between Waterfront Park and the aquarium, the Charleston Maritime Center is nearing completion. Designed to help preserve the city's working waterfront and seafood industry, the Maritime Center will offer docking facilities, a public pier, and markets for the city fishing fleet.

In the immediate vicinity of the aquarium is the new four-acre Liberty Park, which serves as a grand front lawn for the building. Built and managed by the National Park Service, Liberty Park is also the gateway to the new Fort Sumter tour boat docks and concessions. Shops, restaurants, and an Imax theater are also nearing completion nearby. Another long-term project, still in the idea stage, is a proposed symphony or concert hall on a large vacant parcel to the southwest of Liberty Park. *L.N.*

The aquarium is organized into a series of layers, moving from sunlit outdoor areas to progressively darker exhibit spaces. Exterior ramps, stairs, and terraces allow visitors to move back and forth from outside to inside, reducing museum fatigue.

As construction documents were being developed in the mid-1990s, firm roles, personnel, and responsibilities were undergoing an upheaval. By the time construction began, the New Orleans firm was renamed Eskew +, as Allen Eskew separated his practice from his former partner Ron Filson and took the aquarium project with him. Meanwhile, 10 years of controversy and design changes had taken a toll on Clark & Menefee, which decided to relinquish all control over and association with the project. Indeed, the firm moved to Charlottesville, Va., where W.G. Clark took a teaching position at the University of Virginia. Although obviously proud of the original scheme (which is included in a new monograph on his firm), Clark recently told RECORD he did not want to be quoted regarding the completed building or why he withdrew.

When the EPA and National Park Service approved the site in 1995, the worst seemed over. The extent of the pollution and scope of the cleanup, however, were more than the city had bargained for, and incorporating a sophisticated toxic-containment system and building the foundation to support the weight of huge fish tanks took longer than expected. More than a year after construction began, only 22 of the 349 structural foundation pilings were in place and the opening date was pushed back. Even the mayor was getting a little frustrated.

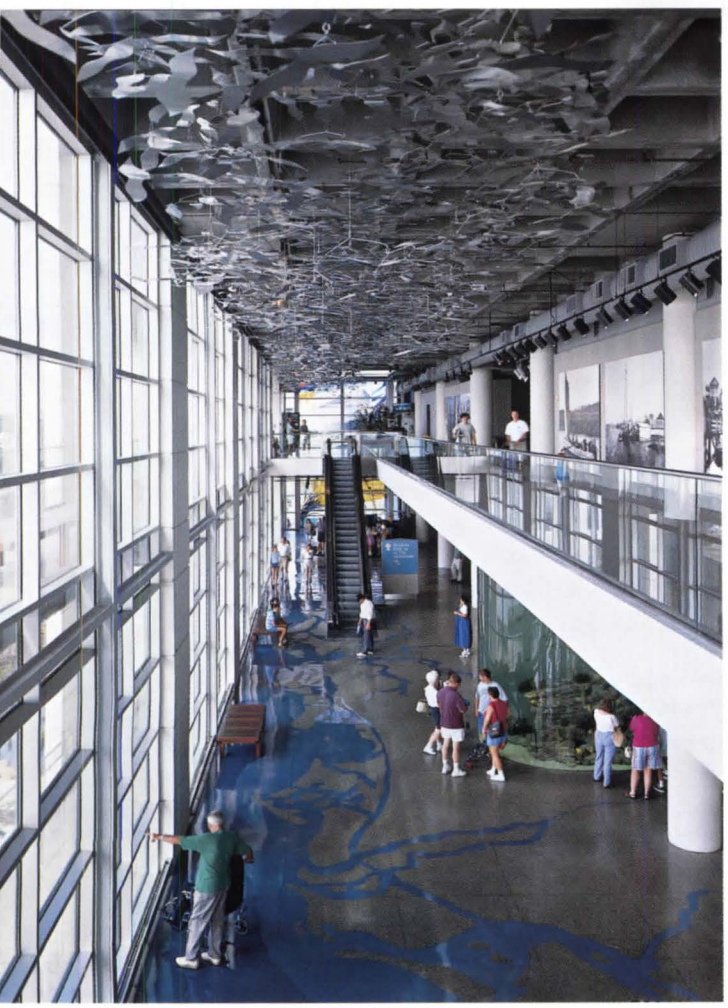
Two years into the construction phase, the city sued the general contractor, Ellis-Don, for disputed claims, and Ellis-Don countered with its own lawsuit. The grievances centered on schedules, cracks in the foundation, and earthquake standards. Although the architects were removed from the thick of the legal proceedings, a black cloud still seemed to hover over the project.

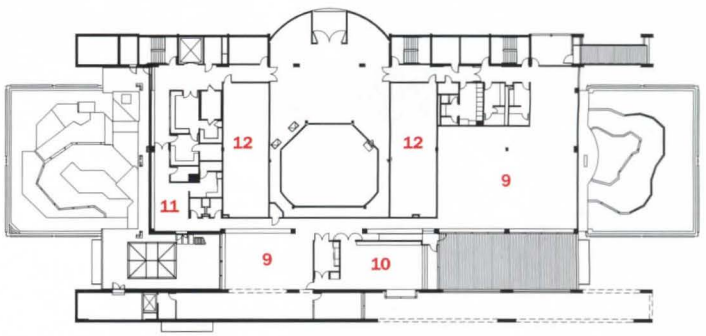
Perseverance pays off

In May 2000, the South Carolina Aquarium finally opened, presenting a contemporary design to a city that overwhelmingly favors the traditional. Unlike many modern building of recent vintage that wear their style on their sleeve, the aquarium is more discreet. But that's not to say it is modest. In a city of architecture scaled to life in the 18th century, this muscular new building more than holds it own on the waterfront. Its $47 million construction budget makes it the city's largest public project ever.

The aquarium is a poured-in-place concrete structure sitting on a concrete pier raised above the Cooper River. An outer steel skeleton supports the building's front and back "screen" porches. "The original

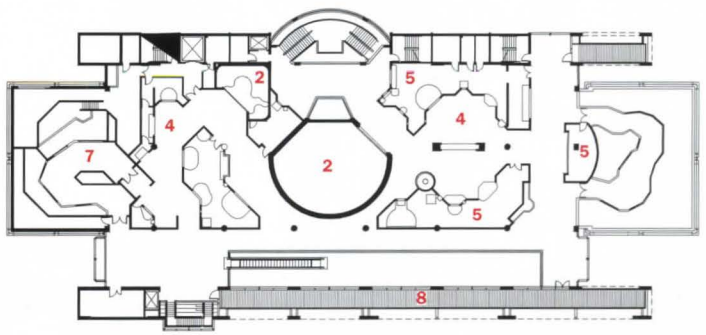
A long curtain-walled lobby (below) uses daylight to help orient visitors. The lobby floor is patterned terrazzo that recalls the state's land and water formations. The two-story stained-glass window above the entrance to the building (below right) is the work of artist Ellen Mandelbaum.



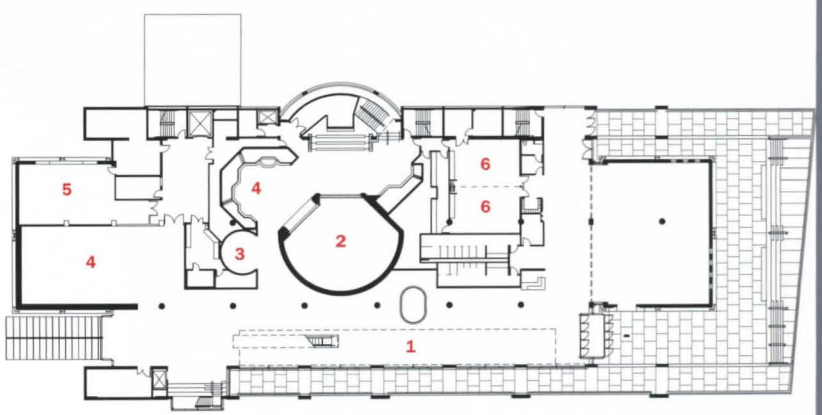


THIRD FLOOR

N 0 30 FT. 9 M.

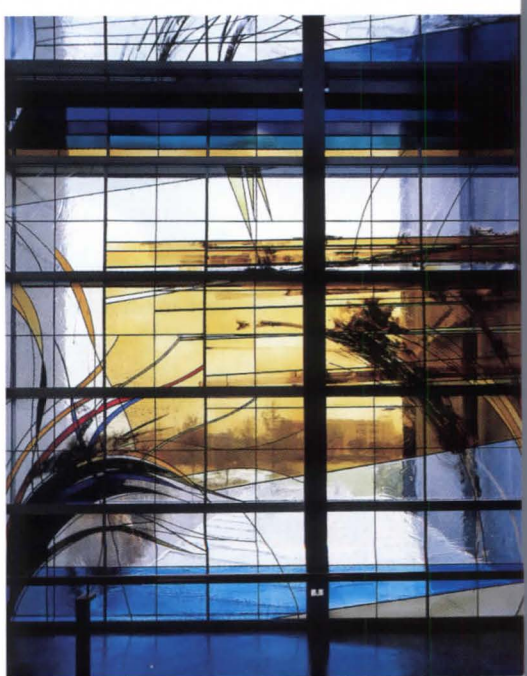


SECOND FLOOR



FIRST FLOOR

1. *Lobby*
2. *Tank*
3. *Theater*
4. *Exhibition*
5. *Service*
6. *Classroom*
7. *Aviary*
8. *Exterior balcony*
9. *Administration*
10. *Boardroom*
11. *Staff lounge*
12. *Air handling*



The 93,000-square-foot aquarium has more than 60 exhibits taking visitors through five major regions found in South Carolina: the Blue Ridge Mountains, the Piedmont, the coastal plain, the coast, and the ocean.

concept called for a structure that extends into the river," explains Eskew. "That was a key determining factor in the organization of the building and the entire site."

Although the design of the aquarium is decidedly contemporary, it makes reference to Charleston's distinctive architectural traditions. For example, the long ramp that runs along the south side of the building and serves as the grand approach recalls the city's typical "single" house, which features an entrance-hall veranda running along one side (to catch the breezes). "We viewed the ramp as the transition from land to another world," explains Eskew. The aquarium also follows the classical notion of a temple set on a pediment. And such a scheme responds to tougher codes imposed after Hurricane Hugo in 1989, which required, in this case, that the building sit at least 16 feet above sea level.

This unsentimental stance continues inside. The building is not soft or delicate. Unlike other aquariums that turn inward, this one opens up and merges on many levels with the outdoors. Although dark rooms invite visitors into an encompassing mountain cave or the deep blue of the ocean tank, the aquarium is no black box. At various points throughout the facility, visitors can take breaks from the exhibition areas and go outside. In this way, the building obliterates the distinction between indoors and outdoors and dissolves a sense of enclosure—a rare strategy for an art museum or building devoted to exhibition space. But the building treats the Cooper River as a prized part of its collection.

Breaking most rules of circulation, the building unfolds as a promenade that meanders like a slow-moving, low country river, changing from cloistered narrow passes to broad expanses of big water—not exactly the conventional strategy for moving large numbers of visitors through exhibition spaces. "We've established paths of least resistance," says Eskew. "And they work." When patrons step out of the gallery sequence into the two-story lobby, the shift doesn't disrupt the flow but encourages a more relaxed procession through the aquarium. The open verandas, promenades, and impromptu seating areas offer dramatic views of water, landmark bridges, and the city's working cargo terminal.

Since the aquarium's opening in May, the public and the press have celebrated it. Like any building in Charleston that takes even the slightest contemporary stance, the aquarium has had its detractors. But outcries over the budget, delays, traffic, and impact on the historic district have settled down and attendance in the first four months has greatly exceeded expectations.

Mayor Riley maintains that an appreciation of art is universal and integral to everyone's happiness, regardless of a person's income, education, or social background. "Great architecture lifts the human spirit," says Riley. He also believes the degree of public access to the water is a measure of a city's quality of life. "All the truly great cities of the world embrace their waters," he explains. The South Carolina Aquarium is Riley's latest effort to embrace the rivers that run through his city. ■

Sources

Curtain wall: *Kawneer*
Exterior wood decking: *Pau Lope*
Elastomeric roofing: *Siplast*
Skylights: *Supersky*
Acoustical ceilings: *Armstrong*
Custom wood work: *Charleston Woodworks*
Paints and stains: *Themec, Zolotone, ICI*
Interior ambient lighting: *Light Lab*
Tank lighting: *Tames, Sterner, Hydrel, USI-Columbia*
Lighting controls: *Lithonia*
Elevators/escalators: *Schindler*

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

Light is again Steven **Holl's** chosen medium, wielded to change the way we perceive architecture in a pavilion for **HET OOSTEN**

Added to a restored warehouse and facing the Singel canal, the perforated-metal exterior of Holl's pavilion reveals an ever changing nature.

By James S. Russell, AIA

Common to the work of a number of architects today is a desire to liberate architecture from the stasis of conventional construction. They want to dissolve its substance, to allow it to react in some way to a world that is understood by people in a different, less material-bound way. They seek contemporary architectural metaphors that speak to the more virtual and less place-based ways in which the fundamental transactions of life are now occurring.

Steven Holl thinks of his headquarters for Het Oosten as offering "a phenomenological experience of space," one intended to change the way the viewer perceives architecture. Like other contemporary architects (Daniel Libeskind comes to mind), Holl has looked at mathematical and artistic systems that can be applied to make, as he puts it, "a thought-to-feeling" bridge via architecture. The medium he uses in these explorations is one common to the visual arts and architecture: light.

Even in early studies (above), Holl looked at the pavilion's ability to pick up and refract light, and he considered the reflective potential of the Singel canal. The pavilion's ambivalent materiality contrasts with the sober solidity of the adjoining warehouse (opposite).

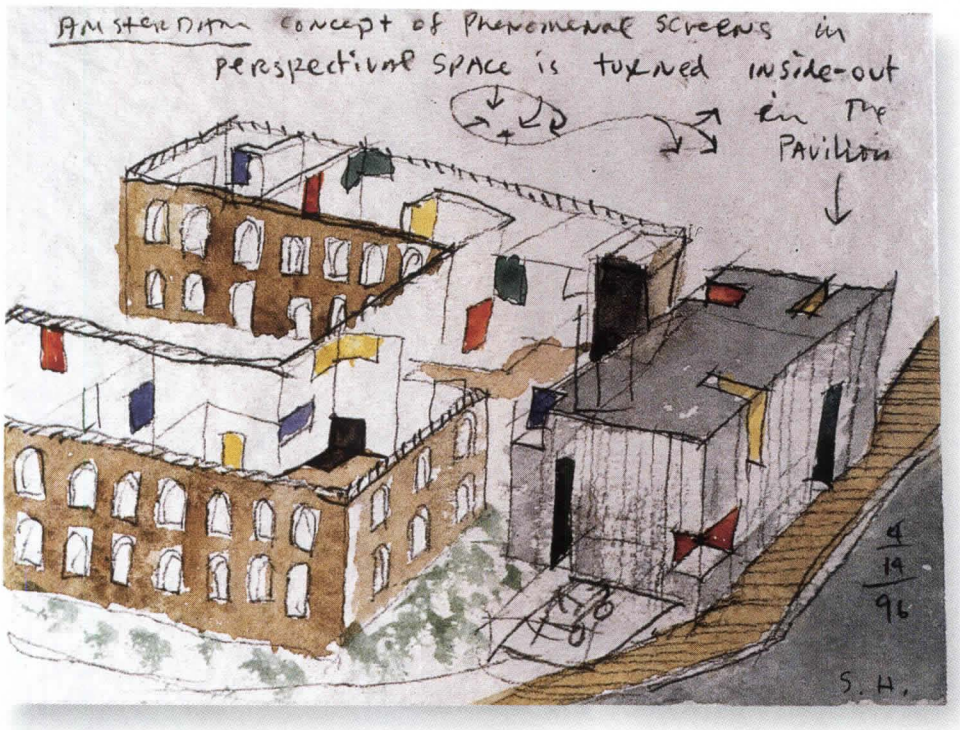
To use light in architecture is old news, but its most gifted masters have orchestrated its effects—carving what we see out of the contrast of light and shadow, evoking a sense of mystery.

Holl first shaped architecture to give substance to light in the unlikely confines of an office interior within an anonymous New York City office building, the headquarters for D. E. Shaw [JUNE 1992, page 114]. Apertures with layered, back-painted surrounds split daylight into its constituent colors and refracted it into glowing beams. Light became even more palpable in the St. Ignatius Chapel, in Seattle [JULY 1997, page 40]. Here, metaphorical "bottles" gather light through tinted glass, which is further shaped by refracted planes of paint. Depending on the presence of sun or the time of day, they alternately spread Jello bright beams of precisely delineated color across the rough-troweled walls or appear to fill the space with a soft mist of blended tone.

To take light as the substance of architecture is, in the context of Amsterdam, to beg comparison to the masters of the medium, painters like Vermeer and Jan van Eyck, whose awe-inspiring works were reliant on the region's limpid sunlight. And yet as Holl's new pavilion comes into sight across the Singel canal, the viewer is instantly struck by its unique power. It is a simple cube, punched with what look like random openings. Subtle washes of gray-green color move across the surface, while dabs of bright orange and fluorescent green wink on and off. As one looks closer, the very borders of the cube blur. This relatively small structure, only 65 feet on its longest side, emanates an eerie power.

Project: *Headquarters for Het Oosten, Amsterdam*
Architect: *Steven Holl Architects—Steven Holl (design architect), Justin Korhammer (design and project architect), Hideaki Ariizumi, Martin Cox, Annette Goderbauer, Yoh Hanaoka, Heleen van Heel (team)*
Associate architect: *Rappange & Partners Architecten*
Engineers: *Ingenieursgroep Van Rossum (structural); Technical Management (electrical, mechanical)*
Consultants: *L'Observatoire International (lighting)*

This pavilion, along with the restored building that adjoins it, offers the client a singular architectural image at a time of fluidity in its corporate identity. This apparently paradoxical combination is exactly what the company wanted. Het Oosten builds and manages both social and private-sector housing in Holland. With state involvement rapidly waning in the once heavily protected arena of housing, the nonprofit company found it had to transform itself to survive in a fast-changing business environment. Although it had staked out a new niche building in-city housing and live/work spaces for artists, changing tastes and evolving competitive pressures made predicting the future—and predicting the way the company will be structured—an iffy proposition. Housed in an inadequate building on the outskirts of the city, the company purchased a turn-of-the-century U-shaped structure. Built as a mere warehouse for military medical supplies, the building had the nobility and detail of a neoclassical palace. It was not an obvious choice for a constantly reorganizing company. "We wanted a building that was strong architecturally," explained Leo Versteijlen, Het Oosten's head of project development, "but one in which we could move people around without having to constantly alter the building itself, as we had to in our previous headquarters."



Although altered by Holl, the pavilion (opposite) resembles the Menger sponge, an infinitely multiplying mathematical construction that begins with each side of a cube being divided into nine equal squares, the middle square of which is punched out. In an early study (above) he explored how to extend the idea into the existing structure on the site. The podium (opposite top) rises to pick up vehicles, which are then robotically conveyed to an underground car park.

Holl, with Rappange & Partners, a local firm specializing in historic preservation, cleared away dropped ceilings and layers of office partition in the old building, revealing an elegantly proportioned interior that permitted considerable flexibility for rearrangement and growth. Making the building a suitable and adaptable workplace primarily involved cleaning and restoring interior surfaces and updating the mechanical systems.

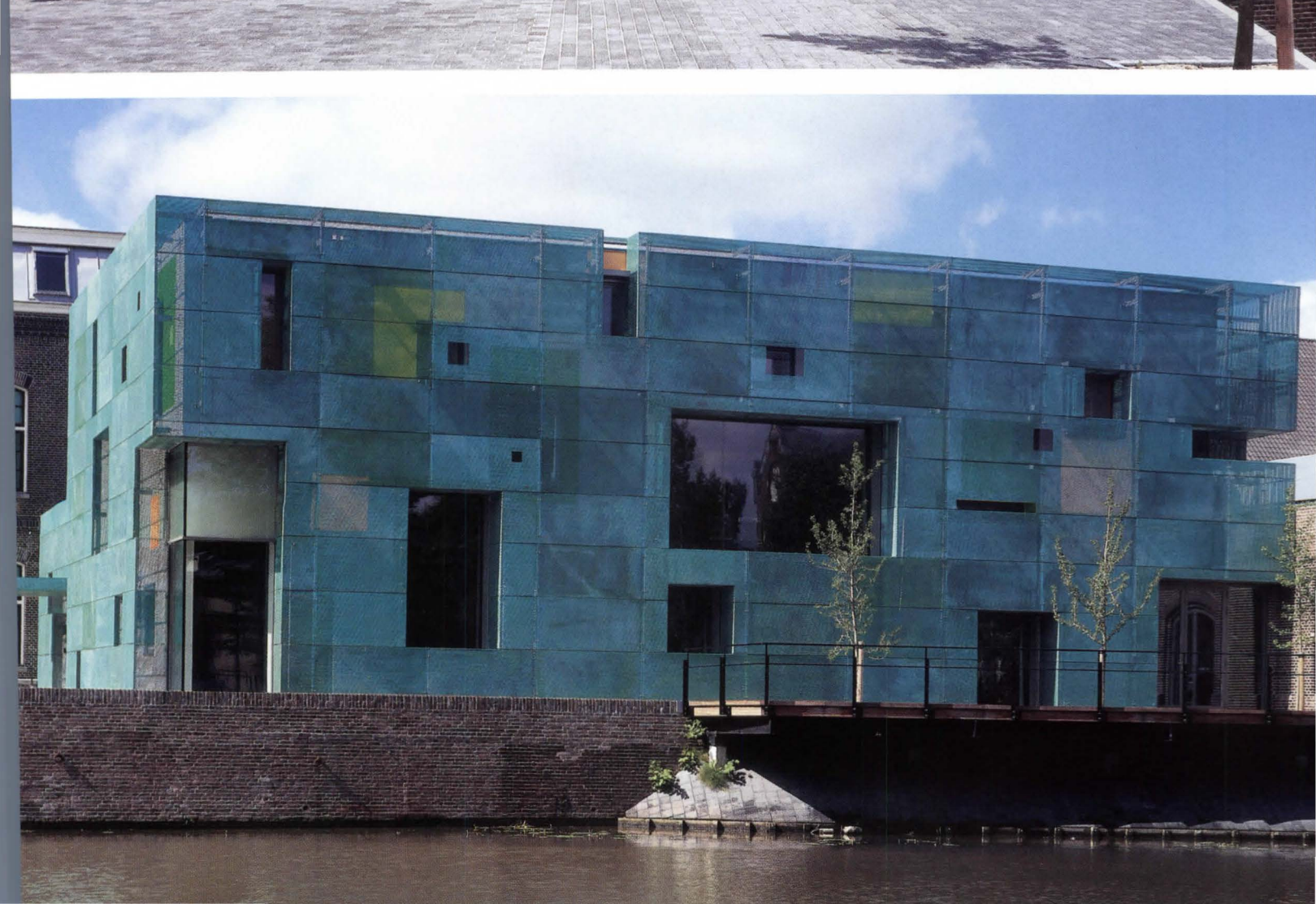
What did not fit within the old envelope was a large dining area; the company wanted such a space that could be readily converted for a variety of activities, from meetings to informal receptions to public performances. It was here that Het Oosten, with its involvement in innovative housing architecture (the WOZOCO housing, by MVRDV, being the most daring recent example, *see* JULY 2000, page 141), asked Holl to develop an addition that would give the company a unique and visible identity. "We've learned in our housing projects that buildings must speak to people emotionally to succeed," says Versteijlen. He saw

HOLL GIVES LIGHT REAL SUBSTANCE, RECKONING WITH IT AS FORM.

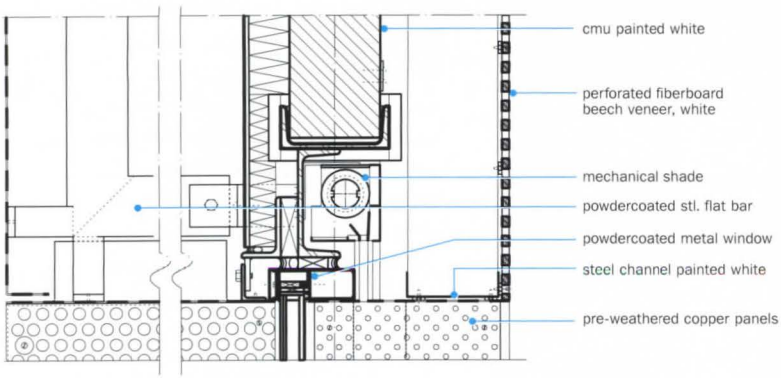
the connection in Holl's work through "beautiful handrail details and stair details. He makes an ornament out of a simple door."

Holl's working method was inspired by such mathematical constructions as the Menger sponge, which, through the systematic removal of part of its volume, had the paradoxical result of increasing its area. He also was influenced by Morton Feldman, a 1950s avant-garde composer who developed a new musical language by defining parameters within which chance would dictate the music produced.

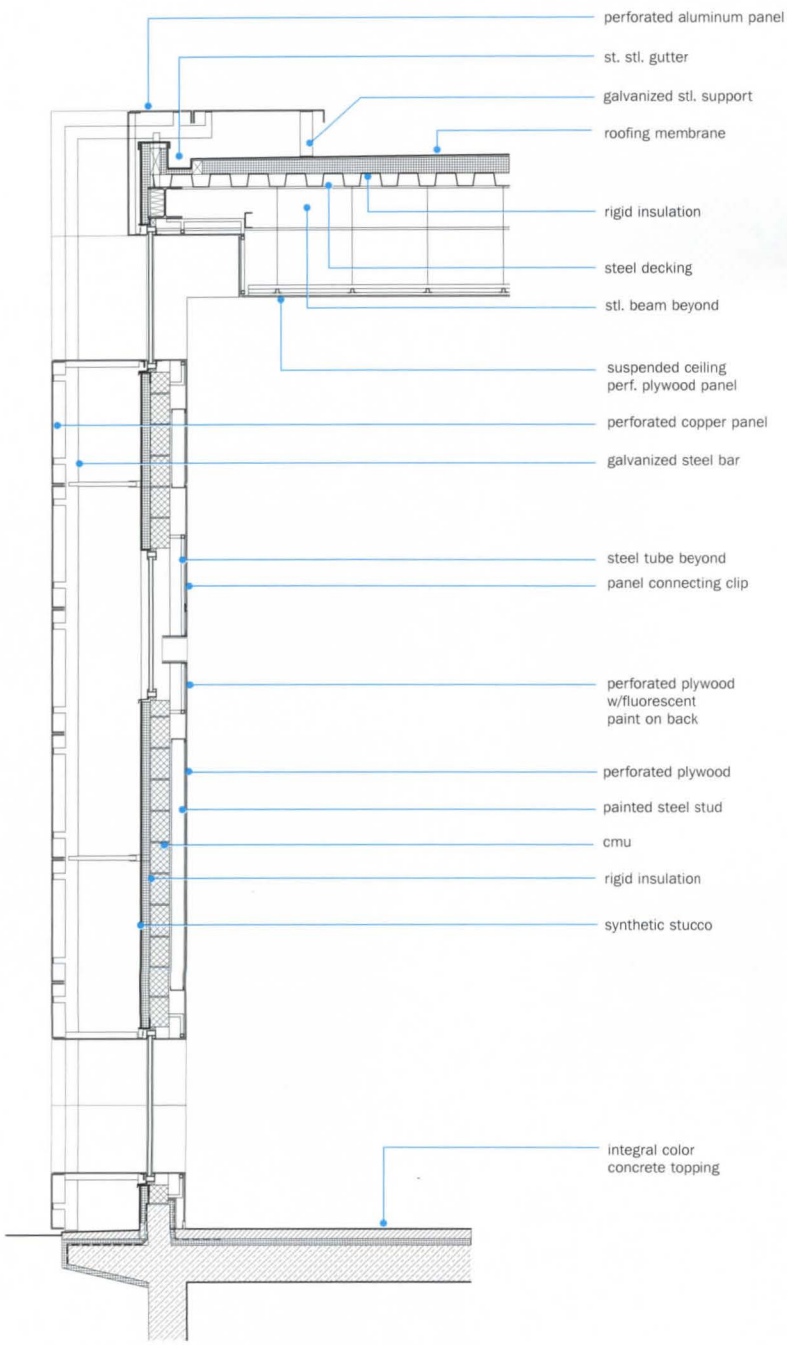
The resulting design visually resembles a Menger sponge and is in part the result of Feldman-esque chance operations. Before such a



Most of the volume of the dining/conference pavilion is held away from the bulk of the existing warehouse. A passage on the upper level overlooks a rooftop pool (figures in photo are facing it), which casts rippling patterns on interior ceilings.



WINDOW HEAD



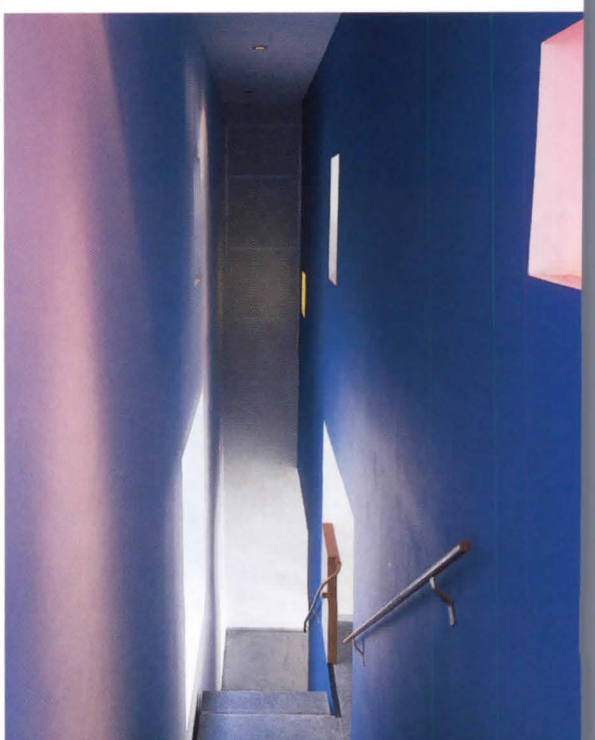
WALL SECTION

PAINTING WITH LIGHT

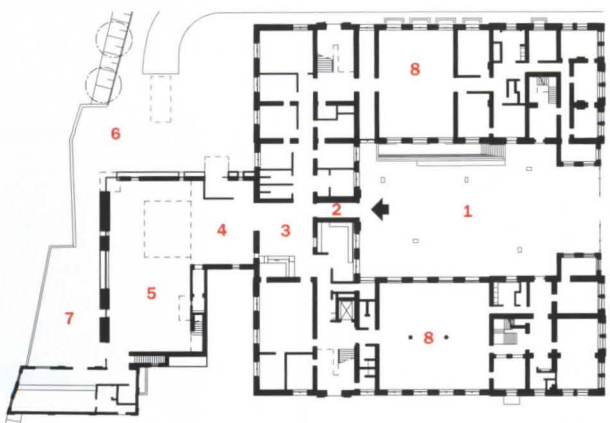
Critic Kyle Gann has described the composer Morton Feldman's overlapping and superimposed patterns, derived in part by chance, as "highly chromatic, rippling with dissonant intervals." Holl's team found a more three-dimensional inspiration in the Menger sponge, a mathematical construction that creates an infinity of surface as an infinity of volume is removed. Holl's office built models of Menger-like cubes and used throws of dice to determine the pattern of cutouts (above). The architects enriched the form by making it more ambiguous and using similar chance methods to introduce color. "We first studied two-layer glass, but the effect was too predictable," explains Korhammer.

Models and mock-ups, including a half-size one mounted on the site, were used to refine the wall section. Prepatinated, perforated copper panels (think tiny Menger-esque cutouts) filter light around the window edges and blur the onlooker's sense of the building edge. Moiré patterns appear and vanish as if the surface itself were in motion. Exterior fixtures mounted inside the panels make the entire structure glow at night. Inside, the painted, perforated plywood panels overlap some window openings, diffusing outside light into a soft, borderless glow. The interior plaster surfaces diffuse patches of fluorescent paint, applied to the back of the plywood, which add a mist of color, augmented in places by light fixtures. "We tried to create a language of color inside to outside and outside to inside," says Korhammer.

Some openings are sharply etched in the walls of the double-height dining and meeting pavilion (left), depending on the degree to which the inner surface overlaps the opening. A stair (bottom) accesses a mezzanine (center of photo, opposite), which leads to a small balcony overlooking the main lobby (below).



1. *Courtyard*
2. *Main entrance*
3. *Main lobby*
4. *Lobby/exhibition*
5. *Conference/dining*
6. *Public terrace*
7. *Outdoor seating*
8. *Offices*



GROUND FLOOR

0 30 FT.
9 M.

cerebral idea could be made real, however, Holl and Het Oosten had to convince authorities on two city design-review panels that the pavilion would be a worthy replacement for the boiler plant and smokestack that dominated the waterfront elevation of the former warehouse. (The whole building had been designated a historic landmark. Holl did not think these elements could be successfully adapted.) He designed the new pavilion with a separate access, so that it, and its waterside plaza, could be open for public use after hours. Korhammer described the sensitive design and public intention of the addition as key to the "helpful and enthusiastic" reception the project received from city officials.

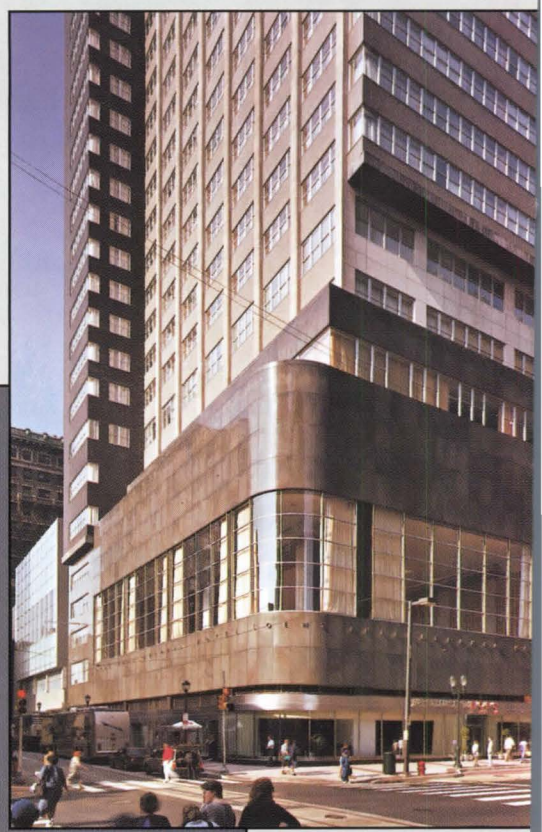
HOLL'S OPEN-ENDED ARCHITECTURAL STATEMENT REFLECTS THE CLIENT'S CHANGING PERSONALITY.

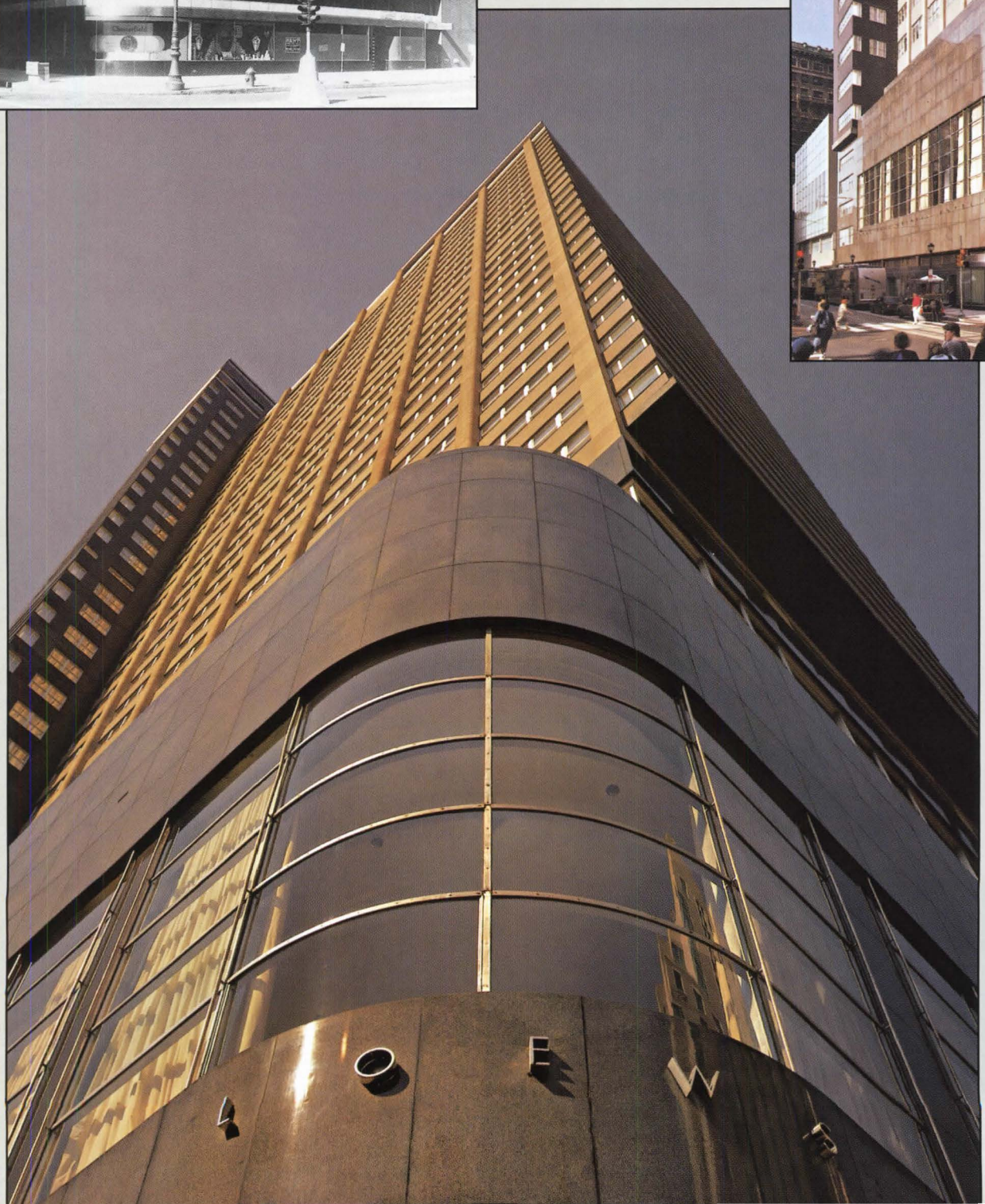
Holl constructed the pavilion by mounting a skin of prepatinated, perforated copper panels 30 inches outside the solid, stuccoed wall. Another scrim of perforated plywood panels was mounted a similar distance inboard of the interior plaster. Patches of colored, reflective paint were applied on the solid exterior surfaces and backpainted on the interior plywood. "We subjected the color to the same chance operations, and it began to develop its own nature," Korhammer explains, just as the Feldman pieces did. The variation in the green painted-on "patina" of the copper, along with the moiré patterns that appear and disappear according to the angle of the viewer, visually dissolve the surface and volume of the exterior.

Inside, with the aid of carefully placed electric fixtures, light delineates the architecture, as shadows move around the space and the penumbra of colors grows or weakens in intensity according to the seasons the weather, and the time of day. At times light bouncing from the canal and from a small lens of water maintained on an area of ground-floor roof add rippling reflections to the building's ceiling and walls.

The company says Holl's poetic use of light and his attention to detail and materials make the emotional connection for users. Versteijlen recognizes that Holl did not design a singular, complete statement, but an open-ended one.

As seemingly individualistic and willful as this project is, the use of both a mathematical and a musical system bespeaks an unease with artistic intuition. Holl is willing to give up some artistic prerogatives to see if another approach reveals a new language. The jury is out on that for now. Het Oosten, however, is undoubtedly "phenomenological," an ephemeral and ever-changing structure that mirrors our dynamic era. ■





The PSFS Building in Philadelphia was an instant landmark when it was completed by Howe & Lescaze in 1932 (above left). Its dark green granite base, along with the gray and black tower in brick and limestone, has just been restored, and the building converted to Loews Philadelphia Hotel (above right. The windows in the second-story banking hall (left) remain, and replacement windows in the tower and storefront match historic profiles.

PROJECT DIARY The landmark **PSFS** Building by **Bower Lewis Thrower Architects** and **Daroff Design** is reincarnated as a Loews hotel

By Suzanne Stephens

The thought of converting a historic icon of Modernist architecture from an office building into a convention hotel is alternately brilliant and unsettling. Especially this one. The austerely elegant Philadelphia Savings Fund Society building, designed by Howe & Lescaze 1929–32, was the first identifiable International Style high-rise in the world. The major public spaces, as well as the finishes and furnishings of the bank offices, were vivid testaments to the firm's functionalist aesthetic. Over the years the whole miraculously had stayed intact, although only its exterior was protected by landmark status. No wonder the architectural community was distraught when PSFS went bankrupt in 1992 and when the building and its contents were put up for auction in 1995.

In its present incarnation, the exterior has been preserved and restored by architects Bower Lewis Thrower, as were most of Howe & Lescaze's public interior spaces, including the monumental 30-foot-high second-floor banking hall, the 33rd-floor boardroom and dining room, the 12th Street lobby for the office tower, plus the elevator lobbies on each floor. As Arthur Jones, the principal in charge of the project, notes, "Everything had been so thought out and it all worked so well, it was intimidating."

Obviously certain changes had to be made to turn the banking tower into a hotel. The new ground-floor restaurant and cocktail lounge, which replaced a dress shop, plus the registration lobby, the guest bedrooms, and the north-south corridors leading to guest rooms, a spa, and ancillary ballrooms are not settings that Howe & Lescaze designed—or would have. And the interior designer, Karen Daroff, turned not so much to the astringent austerity of the International Style, but to its looser stepsister, Art Deco. Her inspiration came more from Hollywood movies than the Bauhaus, more from Cedric Gibbons than from Le Corbusier (whose paintings nevertheless influenced the design for the carpets).

Ironically, the splashiness of Art Deco was what Howe & Lescaze was trying to resist with its purer International Style architecture. But an office building and a hotel do have separate requirements. Loews Hotels felt that a minimalist International Style would have proved too dour. As Jonathan Tisch, president and CEO, explains, "With 583 rooms and a convention business, we can't be too out there. Loews is not a chain of boutique hotels for the young, hip crowd. We go after the 45-year-old-plus traveler who has certain expectations." If purists raise eyebrows at Daroff's theatrical injections of hotel conviviality, it can be argued that the conversion still leaves intact most of the essential features inside and out. Certainly, more people are seeing those original spaces than ever saw them before. As the story behind its current incarnation underscores, this is indeed a significant achievement.

1929–1932

In the 1920s the Philadelphia Savings Fund Society, founded in 1816, hired George Howe, of Mellor Meigs and Howe, to design its branches. He stuck to a modernized Renaissance or Beaux-Arts style for four of them but broke away for the fifth branch, at 12th Street and Market. Howe, age 43 in 1929, had already left his firm when he decided to team up with a European Modernist 10 years his junior, William Lescaze, for this job. PSFS's machinelike linear forms easily qualified it for inclusion in the landmark show of International Style architecture staged in 1932 by Henry-Russell Hitchcock and Philip Johnson at New York's Museum of Modern Art.

Located in the staid, traditionally Quaker city of Philadelphia at 12th and Market Streets, the 36-story, 491-foot-high, 557,000-square-foot tower easily loomed over everything around it, although it was still short of City Hall. Its design stood out, with its sleek granite base and limestone, brick, and glass offices jutting out from the elevator spine of the T-shaped plan. Yet it was only a branch office: most of the tower (floors 6

through 32) and, evidently, the fourth and fifth floors of the base, were leased out. Even the ground floor was turned over to a store. With the bank's own interiors, however, Howe & Lescaze was allowed to take over, designing every stick of furniture down to the wastebaskets, coat hooks, and Cartier clocks. It helped that the two architects had a receptive client in James Willcox, the PSFS president.

Howe and Lescaze didn't get everything they wanted: they conceived of a tower with continuous bands of fenestration on floor decks cantilevered from interior columns. But Willcox wanted to emphasize verticality and height, not horizontality. The compromise turned out to be limestone columns expressed on the east and west faces, with continuous fenestration on the north. There was some negative criticism at the time, based either on its severe look or on the fact that it was a skyscraper, not a low-rise building, Yet PSFS was, and is, the defining work of its age (and a partnership that ended in 1935). In the October 1949 issue of RECORD, Frederick Gutheim looked back over its 17-year history and concluded, "It still has an excitement to communicate. . . .Today what remains is not function but beauty."

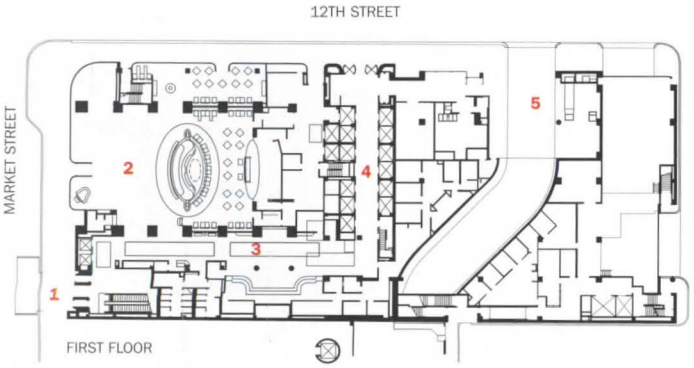
1960–1993

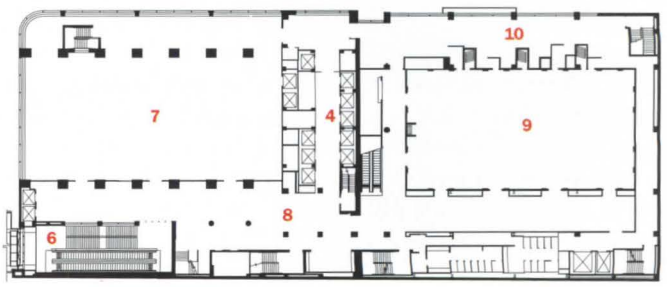
PSFS was given landmark status by the city, which meant that any change to the exterior would have to be approved by the Philadelphia Historical Commission. In 1969 the local AIA voted it the most important building in the city in the last hundred years. By 1976 it was put on the National Register of Historic Places, particularly significant if federal funding were needed for restoration.

This section of Market Street, east of City Hall, has long been dominated by retail stores (and veering to down-market dumpiness, despite galleria-type infusions). In the 1980s an office-building boom on Market Street, to the west, stole its share of tenants who wanted 20,000-square-foot floors, not PSFS's 13,000, plus adaptability for computer wiring. After the savings-and-loan crisis of the 1980s, PSFS began a serious decline. In 1992 Meritor Savings Bank, the parent of PSFS, went under. It had already sold the PSFS name to a competitor, Mellon Bank, which created a brouhaha in 1991 by turning off the PSFS red neon sign at the top of the building. Architects and preservationists screamed, and the sign went back on. By the next year federal regulators had seized the

The restored 12th Street lobby (above), with its dramatic terrazzo floors, black and gray marble walls, and Cartier clock, now serves as the guest-room elevator lobby. The ceiling was lowered for a new elevator lobby on the second floor. Sapele pommele wood wraps the concierge desk (right).

1. *Entrance*
2. *Bar and restaurant*
3. *Guest registration*
4. *Guest-room elevator lobby*
5. *Access to garage*
6. *Entrance stair and escalator hall*
7. *Millennium ballroom*
8. *Prefunction space*
9. *New ballroom*
10. *Lobby for meetings*





The guest registration area, where walls are sheathed in black and red marble, now links the main Market Street entrance with the elevator lobby off 12th Street.

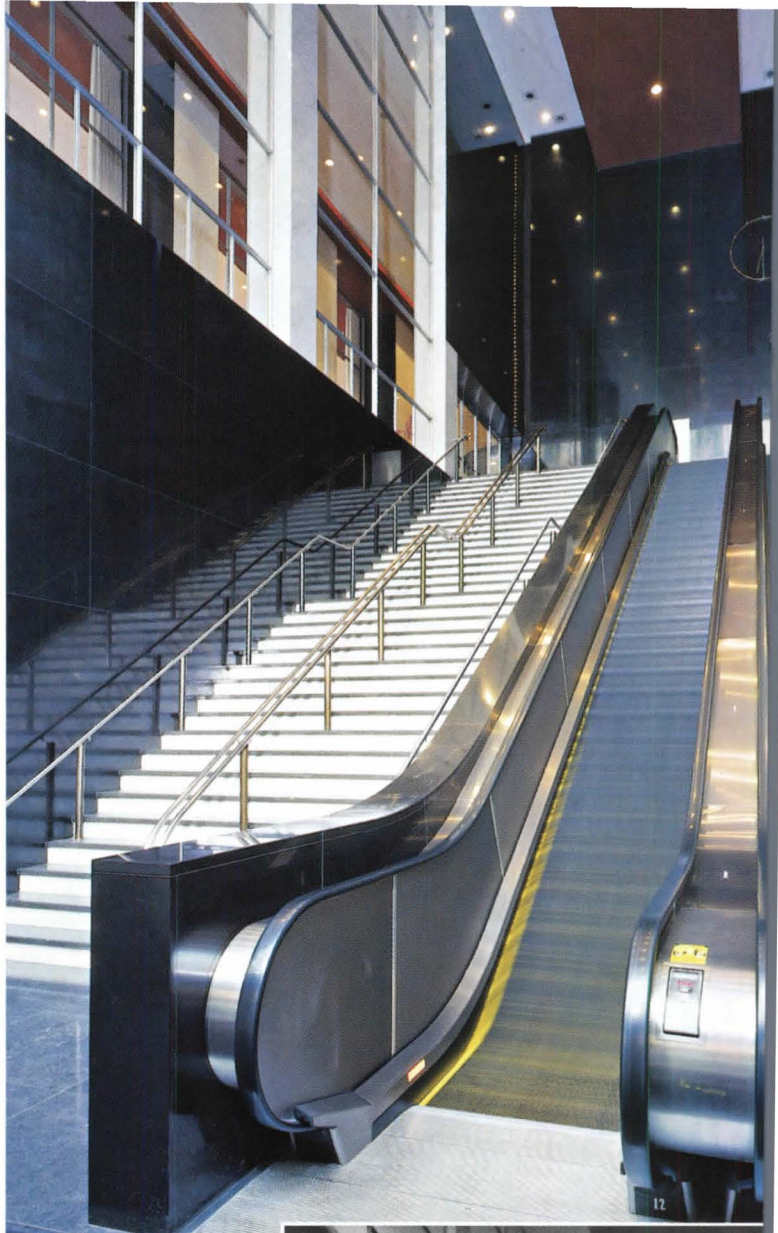
assets of PSFS, and the FDIC took over ownership interest, along with First National Bank Association of Milwaukee, a banking consortium that held a $52.4 million mortgage.

1994–95 The Pennsylvania Convention Center opened nearby on Arch Street between 10th and 12th Streets. The Postmodern corporate architecture was not breathtaking, but it was unusual in its integration into the Center City fabric. It triggered a surge in hotel construction. But with 5,800 hotel rooms, Center City still needed 3,200 rooms to attract a national political convention in 2000.

Meanwhile Bower Lewis Thrower, Philadelphia architects long involved in hotel, office, and multiuse projects, was designing the Marriott hotel next to the convention center. The firm felt PSFS also should be a hotel and talked to a developer specializing in conversions of old buildings for residential use, Carl Dranoff. He had the same idea. Dranoff allied himself with a larger-scale developer, the Rubin Organization (even joining it in early 1995). Meanwhile Ronald Rubin, its CEO, got in touch with Hyatt. A hotel conversion seemed ideal, even if the PSFS building could only generate 500–600 rooms, smaller than the 1,000 desirable for convention hotels. It had a great location near the convention center, and its T-shape plan was perfect for hotel rooms that needed light and views. But it lacked the usual 40,000 square feet of ballroom and meeting room space demanded of a 600-room hotel. The small lot in back on 12th Street, which had been owned by PSFS, now by the FDIC, would have to be acquired for this purpose.

1995 Financial problems worsened. The mortgage held by First National Bank Association NA and being paid by an assets manager, Realty Holdings of America, was in default. A sheriff sale, put off from the previous year (while Rubin and Hyatt negotiated with the bank), was rescheduled. The Rubin Organization and Hyatt offered $7 million for the purchase of PSFS from First National Bank, beating other teams (who reportedly offered the same amount). They were announced as developers for the estimated $90 million conversion, which would receive some public and private funding. The city's Philadelphia Industrial Development Corporation, a quasi-public economic development agency smoothed the deal. It borrowed money from the HUD 108 Loan Guaranty Program to lend to the developers. Furthermore, PIDC issued bonds under a local Tax Increment Financing Act in which the assessed real-estate taxes are used to repay the loan. It also agreed to buy the 18,875-square-foot parcel behind the building for $375,000 from the FDIC, then sell it to Rubin.

Meanwhile, there was the future of the Howe & Lescaze–designed furniture and objects to deal with. The building's contents were



Project: *Loews Philadelphia Hotel*
Architect: *Bower Lewis Thrower—Arthur Jones, AIA, Peter Miller, AIA, Malcolm Quinion, RIBA, project managers; Sheldon Bell, Stephen Freret, Dan Kayser, David Lewis, Allison Towers, AIA, Maurice Van Eijs, Karen Wohlert, team*
Interior designer: *Daroff Design, Inc.; Karen Daroff, principal-in-charge; Martin Komitzky, director of design; Alina Jakubski, project manager; Michael Resnic & Ulises Navarrete, project architects; Barry Corson, job captain; Phil Stinson, senior designer; Karen Pelzer and Suzanne Nelson, designers; Christine Neilon, specifications*
Engineers: *Cagley Harman Associates, MEP-PHY. (structural)*
Consultants: *Boles Smyth Associates (civil engineers); Powers & Company, (historic); Shen Milsom & Wilke, Inc. (acoustical); Peter Corsell Associates, Inc. (exterior wall); Liebowitz Gould Design, Inc. (graphics); Becker & Frondorf (project directors)*
General contractor: *L.F. Driscol*

Bower Lewis Thrower restored the main escalator/stair hall that opens off the main entrance on Market Street (left). Only downlights and an extra stainless-steel rail have been added to the almost-50-foot-high space sheathed in black Belgian marble walls, with Bianco Chiaro marble risers. Upstairs (right), the jaune-ombre-sienna marble mezzanine balconies have been restored, now separated from the ballroom by a glass curtain wall installed between the black-and-white marble-clad columns.

to be auctioned off as used office goods along with ordinary furniture from the leased spaces. The Philadelphia Museum of Art, with a grant from Preservation Pennsylvania, bid on Howe & Lescaze's designs and became the "caretaker" for 126 items, including the famous Board Room table and chairs. The museum's intent was to collect and preserve the furniture, with the hope it would be put back in the building. The museum did keep about 13 representative pieces deemed too fragile to hold up under continued hotel use.

1996–1997 A slight setback occurred when Hyatt removed itself from the picture owing to some partnership differences. Rubin ultimately got in touch with Laurence Tisch and Preston Robert Tisch in New York, cochairmen of Loews, a holding company. The two brothers had begun their careers developing hotels for their father in New Jersey in the late 1940s, but entered another league after they had Morris Lapidus design the souped-up modern Americana Bal Harbour hotel in Miami in 1956.

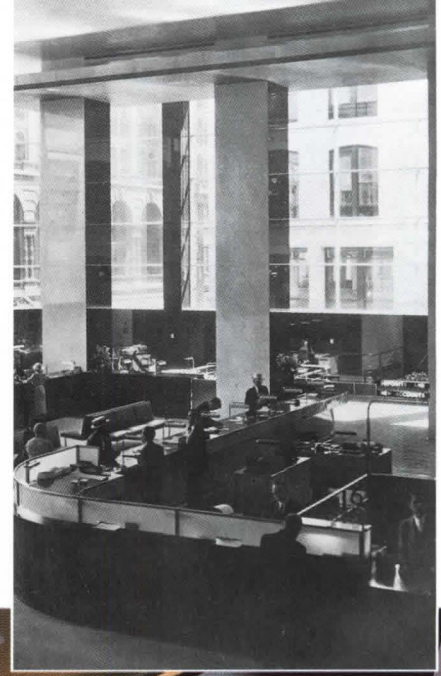
In April 1997 the deal between Loews Hotels and the city was announced. Overseeing the project would be Jonathan Tisch, son of Preston Robert Tisch and a co-president of Loews, as well as head of the hotel division. By now, the cost was estimated at $105.4 million, and it was agreed that Rubin would be a turnkey developer—that is, develop the hotel for a fee and turn it over to Loews. Although Bower Lewis Thrower had done the feasibility studies, it still had to be interviewed by Loews to get the job. As for Karen Daroff, Tisch already was keen on the dynamo founder of the 27-year-old firm, Daroff Design. While Daroff had first made her reputation doing very tailored corporate offices, her subsequent turn toward pizzazzy, themed entertainment environments catapulted her to the top echelon of a new market. This background, however, was not reassuring to Howe & Lescaze aficionados.

Loews' plans called for 23 guest rooms per floor, each about 400 square feet in size, plus three concierge floors, three ballrooms, and numerous meeting rooms. The PSFS was to be renamed Loews Philadelphia Hotel, but the PSFS sign would stay atop the building.

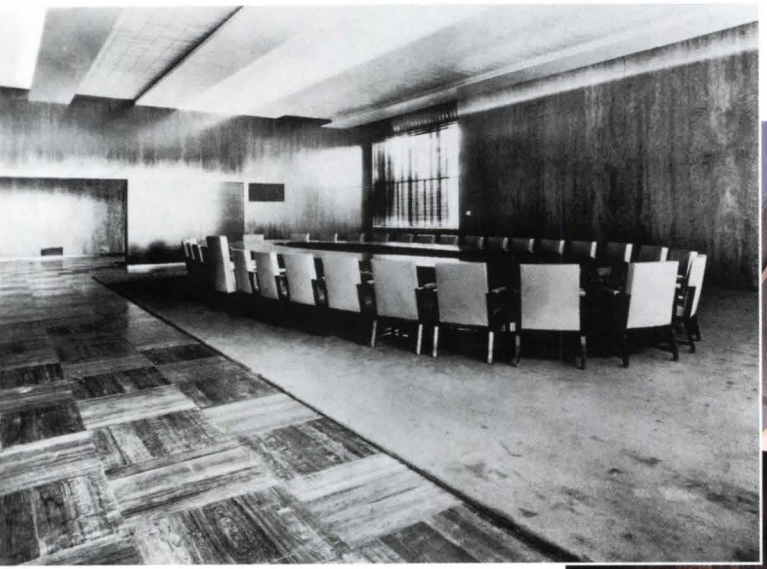
Because Philadelphia does not landmark interior spaces (as New York does), there would have been more concern had not Loews been interested in the federal tax credit program. This program, monitored by the National Park Service and open only to buildings that have been named a National Historic Landmark, meant the major interior spaces would be saved and restored. To be sure, it helped that the tax credit program was equal to 20 percent of the cost of rehabilitation (see page 63 for details). The downside to the legislation is that it only lasts five years: after that, Loews can make changes. Or if Loews sells the hotel, the new owner can make serious alterations.

Fortunately, Daroff and Tisch were sympathetic to repatriating the bank furniture. In 1997 the Philadelphia Museum returned the furniture to Loews with the written agreement that if and when the hotel no longer wished to house the pieces, the museum would be notified, so it could determine what was to be done with them.

1998–2000 Meanwhile, a handful of other hotels were also getting PIDC financing. But not everyone was ecstatic. In November 1998 James Russell, editor-at-large for RECORD, criticized the PSFS conversion plan in the *Philadelphia Inquirer*, wondering "who would want to turn such a building into a hotel with fluffy pillows, plush furniture, oversize flower arrangements and crystal chandeliers?" By July 1999 the cost had inched up: Now the project was budgeted at $115 million, with $24 million in low-interest financing (including HUD's $20.7 million), $16 million from tax-increment financ-



The original 30-foot-high banking hall (left) on the second floor is now the Millennium Hall ballroom; some tellers' stations were recycled for the registration and bell captain's desks in the lobby. In the ballroom Daroff Design added custom glass and aluminum torcheres, a carpet, and draperies. A stainless-steel door from the original vault screens a new exit stair.



The 33rd-floor boardroom (above left and right), with its restored Macassar ebony and rotary-cut walnut veneer walls, is used for special functions. The Howe & Lescaze furniture is in the ware-house. The oriental walnut-, rosewood-, and laurel-paneled dining room has been restored as well, along with the vestibule and hall (left), where Le Corbusier chairs are added, and the glazed solarium (below), where columns are clad in stainless steel.

ing, $30 million from Loews, and the rest from Bankers Trust and Westdeutsche Landesbank. Incidentally, Tisch informed the press that the rooms were plain, with "no fussy flower prints."

PSFS opened in time for the AIA convention in May 2000 and was the home of the Florida delegation of the Republican national convention in August. Word of mouth has been very good, and the occupancy rate has averaged a respectable 65 percent. Loews kept the main entrance to the hotel on the Market Street side, where the original one had been, with a new canopy designed by Bower Lewis Thrower. This was the only major change to the existing exterior, an improvement over another hotel's proposal to move the main entrance to 12th Street, with a interior car drop-off in the former store space. On 12th Street, guests may enter a garage under the BLT-designed four-story addition; this concrete-frame, glass-and-aluminum structure is not as refined in its exterior detailing as its neighbor, but it skillfully assimilates into its immediate context.

THE PRESENT

Naturally changes had to be made to turn the PSFS bank building into a hotel. The most obvious one concerns the banking hall on the second floor. It would have made a dynamite lobby. So why not put the lobby, bar, and restaurant on the second floor, especially because the front entrance opens directly onto an almost-50-foot-high monumental stair/escalator hall directly leading up to this dramatic space? Tisch felt a ballroom would work better in the banking hall since the hotel needed such spaces for its convention functions. And the ballroom also is a good source of revenue. Now guests enter into the restored escalator/stair hall, then make a sharp left to go to the lobby registration area on the ground floor. While this may be disorienting at first, they seem to get used to it quickly. Daroff's design for the registration lobby is the closest of her interiors to the feeling of Howe & Lescaze's architecture. The presence of original Belgian black, Bardiglio gray, and reddish Numidian Sanguine marbles, plus the addition of exotic wood paneling evocative of that in the boardroom, along with installation of old tellers' counters from the main banking hall for the registration desk and bell captain's desks, all do their part. The rug, based on paintings by Le Corbusier, and the four Lescaze chairs (two replicated) contribute to the aura.

To connect the new narrow hotel lobby to the restored 12th Street guest-room elevator lobby, the architects needed only to punch through a rear wall. The 12th Street lobby was originally two stories high (27 feet to the ceiling), with the elevator skipping to the third floor. However, to create a new elevator lobby for the ballroom on the second floor, Bower Lewis Thrower had to lower the ceiling of the first floor to 17 feet. The remaining guest-room elevator lobbies above in the cross bar of the T-plan have been kept in their original state. Even today they are almost shocking in their austerity and authentically sepulchral gloom, with black marble wainscoting (and the addition of a telltale contemporary peach color atop certain walls, which were originally light yellow). In the leg of the T-plan leading to the guest rooms Daroff introduced a vinyl peach wallcovering in place of the black marble (much of which had disappeared with tenant renovations). A jazzy zipper-patterned runner incorporating, according to Daroff, original colors in the building, covers the black terrazzo floor.

The second-floor banking hall, now the Millennium Ballroom, was not changed drastically, except for the insertion of a glass curtain wall to separate the ballroom from the mezzanine (now lobby and prefunction) area. The tellers' counters were removed, and in the corner the architects installed another exit stair (in the minimal style of Howe & Lescaze), which is now screened by the striking bronze-and-stainless-steel door taken from the former vault. The Daroff-designed brightly

The new Daroff-designed restaurant features a vivid glass mosaic mural, Sapele Pommele wood, and a elliptical glass ceiling event. The Presidential Suite (below) recalls 1930s Hollywood films.

The elevator lobbies for the guest rooms are located in the cross bar of the T-shaped tower (above and right). The Belgian black marble on the long walls, Bardiglio Costaccio marble on the end walls and the terrazzo flooring have been restored. The lighting fixtures are original, with new light sources installed. A peach tint on the upper walls was added by Daroff Design.

1. *Guest-room elevator lobby*
2. *Guest-room corridor*
3. *Guest room*

TYPICAL GUESTROOM FLOOR

patterned carpet and peach draperies obviously add another note, but not one that is dissonant with the overall look. As ballrooms go, the huge windows with views of the city by night (that is, if the curtains are not drawn) and the spaciousness and elegance of the materials make it an extremely sophisticated space for parties. Although the amber yellow marble balconies overlooking the banking space are now separated by a glass wall, they are still striking.

Where Daroff really could unleash herself was in the festive restaurant and bar on the ground floor and in the three fancy "concierge" floors just below the boardroom floor. The lounge and restaurant in the former Lerners space comes on strong: the feverishly colored mosaic mural looks more like Lapidus than Lescaze. Nevertheless, the location on the street injects more of a sense of activity than did the Lerners shop. On the concierge floors, large and lavish residential suites evocative of Mae West films make you think of having someone peel you a grape while you unpack. Elsewhere in the tower's base Daroff inserted meeting rooms (full floors three and four), plus a health spa on five, where a lap pool necessitated reworking part of the structure. As Robert Powers, the historical consultant, noted, the fourth and fifth floors, apparently designed to lease out as rental space, had been subjected to renovations over the years, so that nothing of consequence was left to preserve. (The bank offices had been primarily on the third floor.)

In the new four-story annex, Daroff's two floors of ballrooms and "breakout" spaces are also meant to provide 1930s Hollywood class. Though the ballrooms suffer from looking too fabricated in their Decoid wall and ceiling treatments, they do benefit by opening onto graciously expansive lobbies with floor-to-ceiling glass walls facing Twelfth Street.

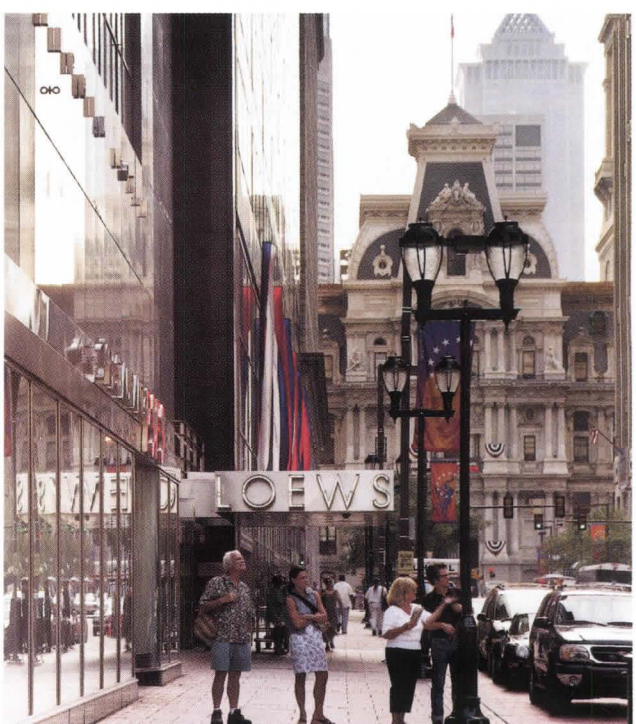
Some elements did not survive. For example, a portion of the third-floor mezzanine (where the transfer trusses for the banking hall are located) was originally the location for the major vault, the coupon desks, and the safe-deposit boxes. This area was turned *(continued on page 265)*

Sources

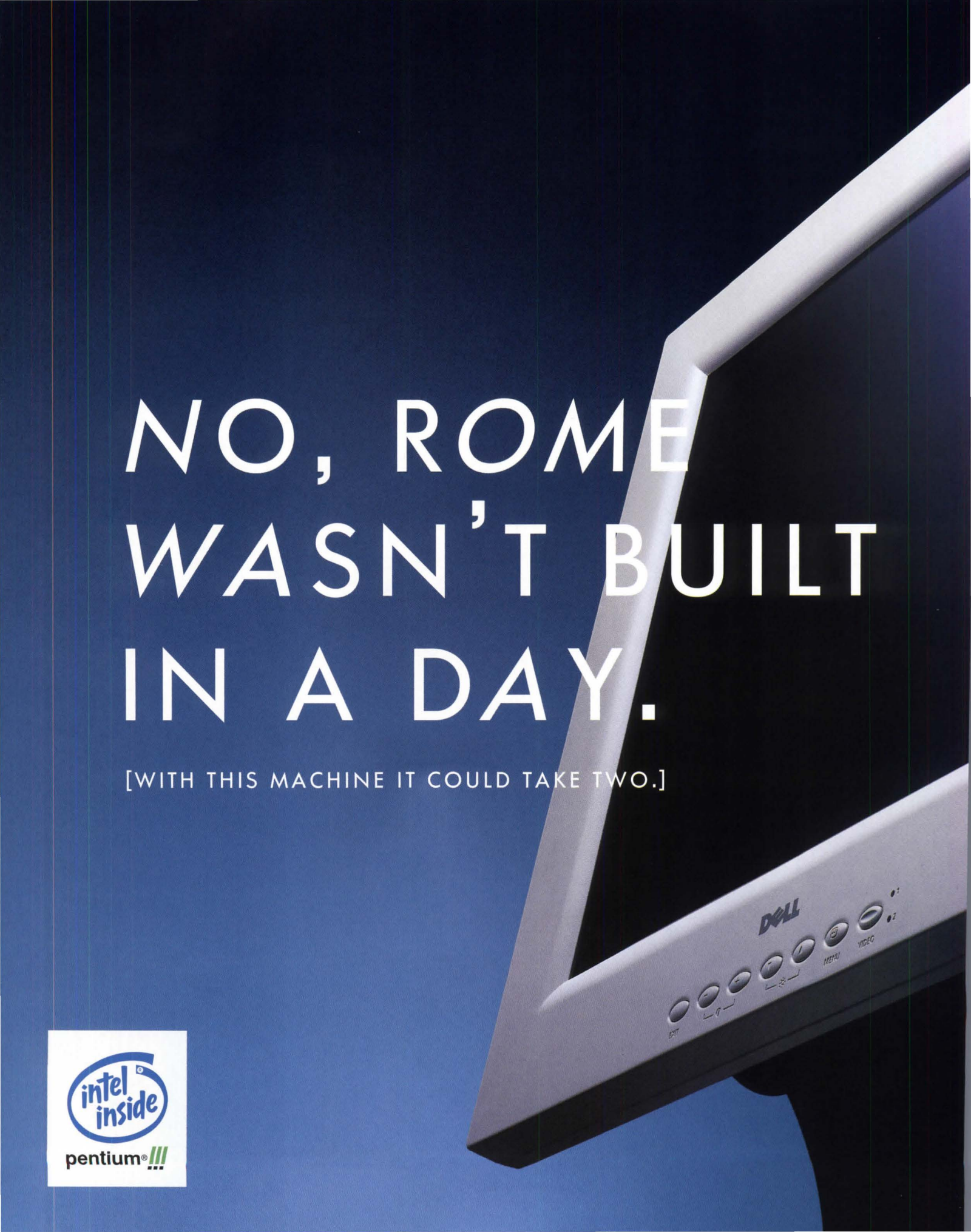
Structural steel frame: *New Build*
Masonry: *Houston Clay Products*
Glass curtain wall: *National Glass*
Metal panel system: *Centria*
Built-up roofing: *GAF Roofing, Kemper*
Aluminum tower windows: *Traco*
Storefront windows: *National Glass*
Glass and glass entrance doors: *Berkowitz*
Metal doors: *Curries*
Wood doors: *Graham*
Acoustical ceilings and suspension grid: *Armstrong*
Cabinet work, custom woodwork and paneling manufacturer: *Parisi*
Wallcoverings: *Carnegie, J.M. Lynne, Rigo Contract, MDC Wallcoverings, Maharam, American Contract*
Plastic laminate: *Formica Corp., Nevamar Corp., Wilson Art*
Stone vanities and countertops: *Baumgardner*
Floor and wall tile: *Dal-Tile; Mohawk Tile & Marble (health club); Lincoln Tile (Guest bathroom floors); Mohawk Tile & Marble (Guest bathroom walls) Marte-Granitogres (public rest rooms' floors and walls).*
Resilient flooring: *Tarkett, Mannington*
Carpet: *Hughmacky (custom carpets); Carousel (Presidential Suites); Pacific Carpet Mills (area rugs).*
Restaurant banquettes: *New York Contract Seating*
Paints and stains: *MAB*
Lighting: *Cole, Unilight, American Glass Light, USA Illumination, Prescolight*
Paneling: *Kemlight (FRP)*
Special surfacing: *Stonhard*

WWW *Read the article about the original PSFS building as it appeared in the October 1949 issue of* ARCHITECTURAL RECORD *in the* **Projects** *section at:* **www.architecturalrecord.com**

Loews kept the hotel entrance on Market Street, down the block from City Hall (left). The only major exterior change is the stainless-steel canopy designed by Bower Lewis Thrower. The firm was also responsible for a new 77,000-square-foot, four-story annex on 12th Street (right), which provides an entrance to an underground garage.



The"truss" mullions of the glass curtain wall in the annex are designed to echo those designed by Howe & Lescaze next door. They are also made of stainless steel, but with a larger profile.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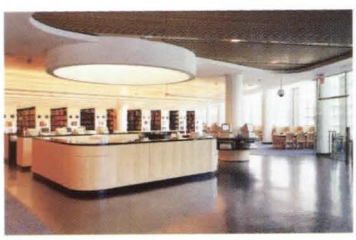


1.

Flushing, N.Y.

A new branch library by Polshek Partnership Architects serves a community with high-volume user traffic.

2.

Hanover, N.H.

Venturi, Scott Brown and Associates redesigns a hall at Dartmouth College to house a collection of rare books.

3.

Belfair, Wash.

A regional library by Carlson Architects features exposed wood trusses inspired by the nearby forest.

4.

San Jose, Calif.

The Biblioteca Latinoamericana, designed by Steven Ehrlich with executive architect Garcia Teague, acts as a multipurpose community center.

By Abigail A. Van Slyck

Not so long ago, the library was a building type that appeared on the brink of extinction. The computer revolution seemed to threaten the very existence of the printed book, in turn calling into question the place of the library in a technologically advanced society. With more American households rushing to join the online community (80 percent by 2003, according to some estimates), the day appeared close at hand when most information needs would be met by private vendors delivering services—and collecting fees—exclusively via the Internet. While this privatization of information has chilled the hearts of librarians, whose professional ethos was built upon the notion of public libraries as "arsenals of a democratic culture," architects specializing in library design also have watched nervously lest brick-and-mortar book repositories disappear entirely from view in the digital age.

A new chapter has begun, however. Architects in communities everywhere now find themselves in the midst of a library building boom. As last July's frenzied launch of the latest Harry Potter book signaled, the printed word—which one can hold in hand rather than handle via laptop—is alive and well. And while privatization of information resources remains a much debated cultural issue, public support for libraries is steadfast. Indeed, far from disappearing quietly from the scene, libraries are experiencing an expansion phase comparable to the proliferation fueled by the largess of philanthropist Andrew Carnegie in the early 20th century. Paralleling that historic cycle, the new upturn in library construction has generated impressive figures; according to *Library Journal*, 675 new U.S. libraries were completed between July 1992 and June 1999, while the same period saw another 863 remodeled, renovated, or expanded, to the tune of $4 billion. And F.W. Dodge, a division of the McGraw-Hill Companies, forecasts 2000 to tally 6.5 million square feet of library construction, at a value approaching $1.1 billion. As in the Carnegie era, this flurry of activity has spurred new ideas about the library as an institution. In short, the type is not simply enjoying a renaissance but undergoing a radical transformation.

Rethinking the computer's impact

The new library model has everything to do with the growth of the Internet, albeit in ways not fully appreciated a decade ago. Far from forcing civic facilities into obsolescence, the computer actually has increased library usage. This is due in large part to the role libraries have assumed in providing public access to the Internet free of charge. By 1998, 84 percent of suburban libraries and 64 percent of rural ones provided public Web access. Perhaps more surprising is the dawning realization that increased

Schwartz/Silver Architects designed a glass-box addition to Clark & Russell's circa 1899 Hyde Park Library in Boston (left) that respects the dominance of the original portico. A new Youth Wing at the Brooklyn Public Library (below) by Pasanella+Klein Stolzman+Berg placed a technology loft above the children's reading area.

electronic activity in the library stimulates use of print material. No longer perceived as a rival to the book, the computer has lost its stigma as library interloper and now is found in every part of the building. In the $2 million renovation of the Youth Services Wing of the Brooklyn Public Library, Pasanella + Klein Stolzman + Berg have treated books and computers as two sides of the same coin; a new freestanding "technology loft" is equipped with 41 new child-friendly computer stations while creating an intimate canopy over reading alcoves below.

Providing the infrastructure for this full integration of the computer is a primary challenge of contemporary library design. Where once the strategy might have been to hide such technical services, architects are opting to reveal high-tech library systems, whether in the "powerbellies" that hug the ceilings of the Central Phoenix Library (bruderDWL architects), or the raised floors at each level of the Vancouver Central Public Library (Moshe Safdie and Associates) that announce their presence through a glazed wall of the library's entrance atrium.

The Internet may also share some responsibility for intensifying awareness of how patrons interact with information media. Certainly, there is a renewed appreciation for the simple act of reading a book, as well as a sharp realization that modular libraries of the postwar era failed to enhance that act. In theory, midcentury modular planning enlivened libraries by uniting books and readers. In practice, however, large rectangular footprints, uniform eight-foot-high ceilings, and harsh fluorescent lighting rarely made these buildings exciting or even pleasant places to be.

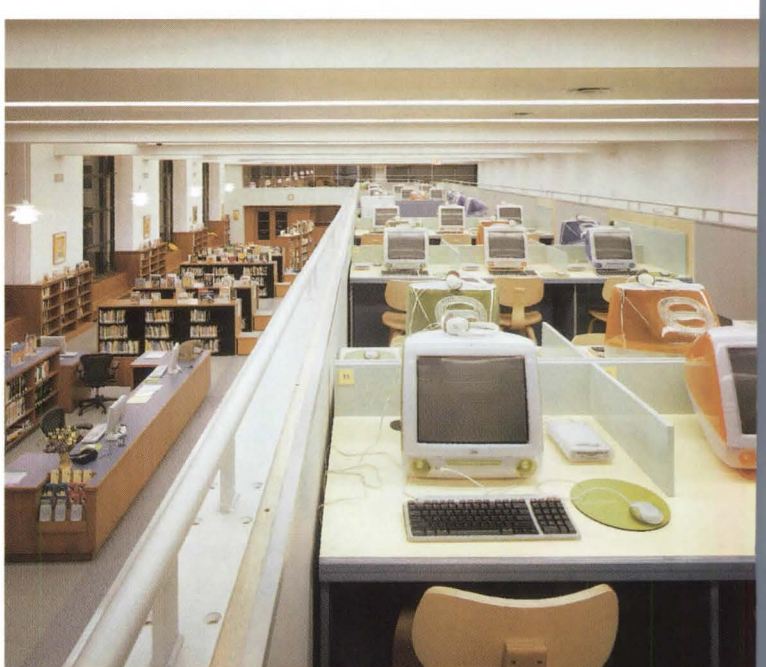
Appreciating prewar models

The recent reaction to the modular model has been strong indeed, prompting a new respect for prewar library buildings that extends well beyond their historic facades. No longer does it seem prudent to gut an older building in the name of technological progress. The recent refurbishment of the Boston Public Library by Shepley Bulfinch Richardson and Abbott, for example, has restored the building's extended entry sequence, taking readers on a climb to enlightenment as they move from low to lofty spaces, from dark to light, from the limited palette of ground-floor mosaics to the vibrant colors of allegorical murals above. And the decision of the New York Public Library to devote $15 million to the restoration of the Rose Reading Room confirms that trustees no longer consider cold circulation statistics the best gauge of a library's success.

Library additions now show more respect for the functional logic of an original building, although the specific means of relating old and new vary. Clad in cubic blocks of Georgia marble, an addition to Savannah's Bull Street Library by Hardy Holzman Pfeiffer Associates seeks compatibility with the 1916 Carnegie-financed building. In contrast, Schwartz/Silver Architects' addition to Boston's 1899 Hyde Park Library is a glass box scaled to maintain the dominance of the original entrance portico. In both projects, the architects took great care to retain the original entrances while making them fully accessible to the physically challenged.

Architects have also sidestepped the monotony of modular libraries by using windows, skylights, clerestories, glass curtain walls, and top-lit atria to bring natural lighting back into reading areas. Spaces now are designed especially for different modes of reading, from cozy corners with comfortable chairs to monumental reading rooms that elevate the act of reading by situating readers at long rows of tables within a community of intellectual engagement.

Architecturally savvy observers might also recognize the ancient precedents of such grand reading rooms, stretching back through Bates Hall at the Boston Public Library, Henri Labrouste's Bibliothèque Ste.-Geneviève, Michelangelo's Laurentian Library, and medieval monastic libraries. The most compelling of these new monumental reading spaces, however, rely less on historical quotation than the reinterpretation of the type in light of other architectural and technological developments. At the great fifth-floor



reading room of the Phoenix Central Library, for instance, 30-foot concrete columns support a tensile roof structure, while the location of the room on the top floor allows the monumental space to coexist with standard-height spaces on floors below.

The return of the monumental reading space is part of the growing acknowledgment that the library is as much about social interaction and intellectual exchange as the storage of books and the delivery of discrete packages of information into the hands of an individual reader. In fact, this is not a new idea; the stereotype of the library as a storage house for books ignores the longer history of the building type. In the early 19th century, subscription libraries were often called athenaea to evoke the range of cultural activities—lectures, art exhibitions, scientific demonstrations—that took place there. Although Victorian-era libraries abandoned the lofty term in an attempt to reach a wider audience, they nevertheless continued many of the athenaeum's cultural activities and often expanded them in new directions. (H. H. Richardson's Winn Memorial Library is a well-known example; its hexagonal museum room once housed natural-history specimens, while paintings graced the walls of the gallery next door.) Reinterpreting the multipurpose form for today requires a delicate balance between book and nonbook functions. For instance, adjoining San Jose's Biblioteca Latinoamericana (page 166), a youth center is 2,000 square feet larger than the library itself, while a courtyard between the two structures serves as a focus of community life.

This trend to enliven urban neighborhoods with libraries also is rooted in the past, in the City Beautiful movement of the early 20th century. But where City Beautiful civic centers sought to isolate cultural institutions from commercial downtowns, many recent projects break down the distinction between commerce and culture, entertainment and enlightenment. Moshe Safdie's designs for libraries in Vancouver and Salt Lake City make this change particularly clear; in each project a commercial arcade is part of the library building itself and shares its glass entrance atrium. The proximity attracts shoppers to the library but also heightens the contrast between the lively spaces of the shop and quiet spaces of the library.

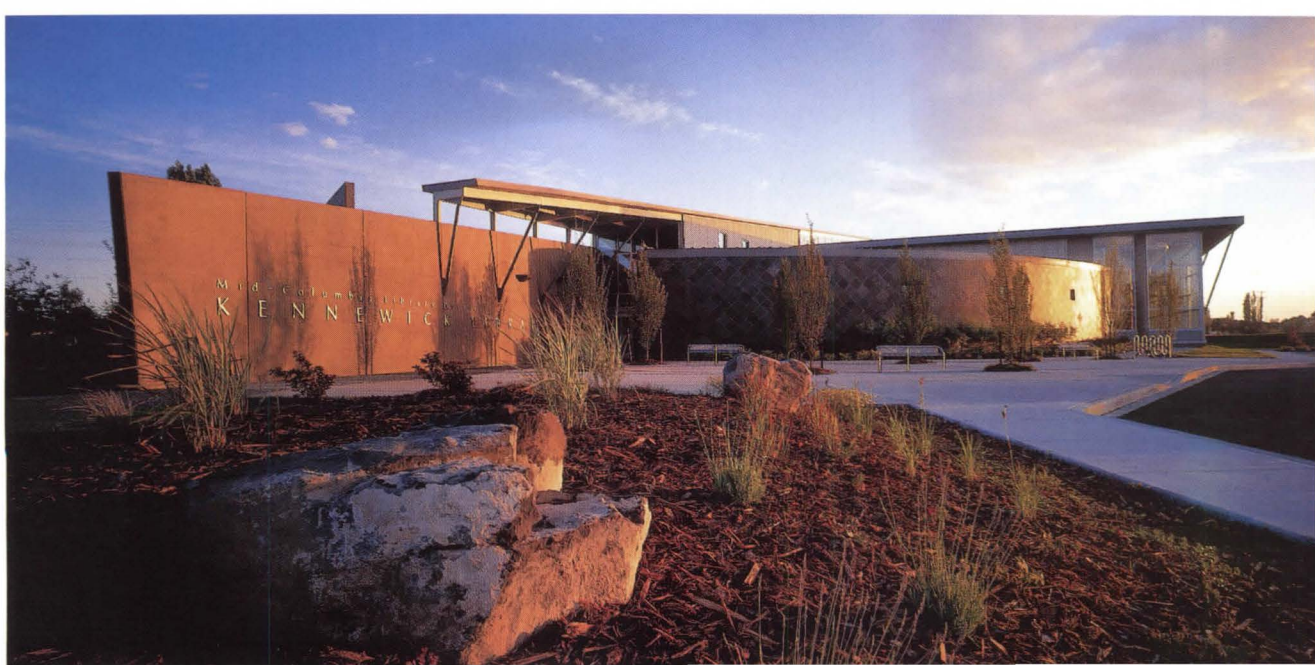
Making the library legible

The library's expanding range of functions and its place within the community raise issues of architectural legibility. How will this transformed building type announce its presence within the urban landscape? Many of the conventional means of signifying "library" seem out of step with contemporary culture. The palazzo form used by Labrouste and others derived its impact in part from the novelty of providing public access to cultural amenities once available only to the rich. The more modest domed and temple-fronted libraries of the Carnegie era conveyed their metaphors of enlightenment in a classical language that no longer seems universally comprehensible.

A number of recent projects, including the Queens Borough Public Library by Polshek Partnership Architects (page 154), have adopted transparency as a means of allowing passersby to see for themselves what a library has to offer. And at the Biblioteca Latinoamericana, a large glass-and-stainless-steel showcase juts out onto the sidewalk, an element the architects characterize as a "jewel box."

This showcase in San Jose—which critic Alan Hess likens to the display window at a car dealership—suggests that neighborhood libraries are increasingly speaking a new language altogether. Forms and materials may evoke agricultural warehouses, industrial processing plants, or buildings from the commercial strip, but such references to the postwar vernacular no longer smack of sacrilege, nor are they offered as ironic commentary on the sad state of public literacy. Instead, firms are employing local vernaculars to communicate metaphorically. Rooms flooded with natural light accent the library's role as a center for enlightenment, while the contrast of monumental spaces and mundane materials highlights its alchemic qualities: not only do patrons assemble small bytes of information into bigger ideas, but they themselves are transformed and their horizons expanded. A virtual world is already accessible via computers nestled in our palms, but brick-and-mortar libraries will continue to thrive, allowing us to experience our real connections and responsibilities to a larger community. ■

Abigail A. Van Slyck is the Dayton Associate Professor of Architectural History and Director of the Architectural Studies Program at Connecticut College. She is the author of Free to All: Carnegie Libraries and American Culture, 1890–1920 *(Chicago, 1995).*



Frye Gillan Molinaro Architects created a cathedral-like reading room (above) at the Sun Prairie (Wis.) Public Library. In Kennewick, Wash., a library by Buffalo Design (right) anchors a new 21-acre park. Concrete walls, metal roofs, and exposed structural-steel members evoke local agri-warehouses.

Queens Borough Library
Flushing, N.Y.

1 **POLSHEK PARTNERSHIP BUILDS AN EFFICIENT LIBRARY FOR THE FUTURE AT A SITE THAT HAS BEEN HOME TO A HIGH-TRAFFIC BRANCH SINCE 1891.**

By William Weathersby, Jr.

Architect: *Polshek Partnership Architects—James Stewart Polshek, FAIA, Todd Schliemann, AIA, principals; Joseph Fleischer, FAIA, partner-in-charge; Joanne Sliker, AIA, Steven Peppas, Paul Golden, Jihyon Kim, James Slade, Kyle Yang, Charles Brainerd, Lisa Odyniec, project team*
Interior design: *Polshek Partnership Architects, Hertzfeld Design*
Client: *City of New York Department of Design and Construction*
Consultants: *Professional Library Consultants (planning); the Cantor Seinuk Group (structural/civil engineer); Jaros Baum & Bolles (mechanical, electrical, and plumbing engineer); A. Billie Cohen, Leonard Strandberg & Associates (landscape); Hayden McKay Lighting Design; Shen Milsom & Wilke (acoustical); Tishman Construction Corp. (construction manager)*

Size: *76,000 gross square feet*
Cost: *$21 million (construction)*
Completion date: *June 1998*

Sources
Masonry: *New England Stone Industries*
Curtain wall: *Sota Glazing, JJ Priest*
Windows: *Sota Glazing*
Glazing: *Prelco, Copper Sales*

WWW *For more information on the people and products involved in this project, go to* **Projects** *at* **www.architecturalrecord.com**

Program

Beginning in 1891 with a one-room wood structure, a library has anchored a busy crossroads in Flushing, N.Y., a densely populated community of greater New York City. In 1902, philanthropist Andrew Carnegie endowed the construction of a larger building. Recently a handsome library designed by Polshek Partnership Architects replaced an outmoded facility built in 1957. Offering Internet access, language laboratories, meeting spaces, a fully outfitted auditorium, and a collection of more than 1.5 million items, the ambitious 76,000-square-foot, four-floor facility is poised to steer the Queens Borough Public Library into the new century.

The branch is the largest in the borough's 63-location network, which has the largest circulation of any public library system in the U.S. Queens residents collectively speak more than 100 languages, and the library circulates material in more than 40 of them, from Arabic to Zulu. "Our library is often one of the primary public venues local immigrants turn to as a resource when assimilating into American culture and as a means of staying connected with their homelands," says branch library manager Ruth Herzberg. "We wanted the library to be accessible to this diverse group in terms of its architectural form and operational layout."

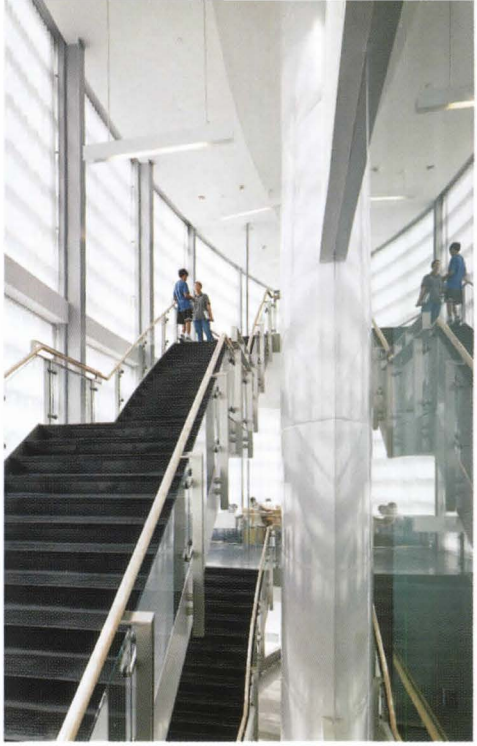
RECORD contributing editor William Weathersby, Jr., writes about architecture from Westport, Conn.

Solutions/Intentions

"The building's importance within the community was emphasized by making its collections and functional organization visually accessible from the street," says Polshek principal architect Todd Schliemann, AIA. The curving curtain-wall facade allows passersby to view activity within and invites them inside. The building also bridges the quirks of its triangular site, which is formed by the intersection of Main Street and Kissena Boulevard, and drops in grade 7.5 feet across its width. The asymmetry of the crossroads is emphasized by the contrast between the glass facade fronting the commercial artery of Main and the somber stone facade greeting the more residential boulevard. The relative opacity of the stone cladding along the side street affords privacy for both neighborhood residents and library office staff, while accommodating bookstack placement along the northern and eastern perimeters of the building. To create a welcoming front porch of sorts, the entry was pulled forward at the apex of the triangle, where a landscaped plaza is bordered by shallow stone steps.

The curtain wall features a 50 percent horizontal fritting, while an interior shading system adjusts light levels within. "From the street, the

The transparency of a glass curtain wall along the Main Street facade engages the attention of passersby. The adjacent facade (above) fronts a side street with stone cladding.

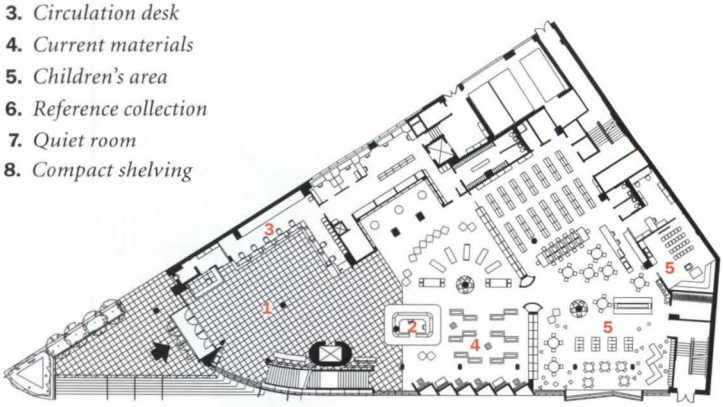


The second-floor service desk (above) is a pivot point between stacks, reading areas, and PC workstations.

Stairs and reading areas are lit by daylight (above right and opposite). An auditorium (below) seats 150.

SECOND FLOOR

1. *Lobby*
2. *Information/service*
3. *Circulation desk*
4. *Current materials*
5. *Children's area*
6. *Reference collection*
7. *Quiet room*
8. *Compact shelving*



FIRST FLOOR

N ← 0 50 FT. 15 M.

arrangement of the reading and adjacent stack areas can be understood at a glance," Schliemann says. The centralized, open-plan layout is repeated on each of the three main floors, which are connected by a stair and elevator core just inside the exterior glass wall.

A floor below grade houses the 227-seat auditorium, exhibition areas, adult-learning center with language labs, and multipurpose conference room seating 150. Enhanced by a flexible area for presenting art and community-related exhibitions, the international resource center on the top floor provides information and referrals to patrons who wish to learn more about the people, cultures, and languages of the world.

Commentary

Cued by contemporary American culture, the library displays details that could be footnotes in a handbook for the millennium. Multiple copies of popular new books are displayed in quick-access bins that evoke the look of a commercial bookstore, while slick signage denotes literary genres and likewise embodies an aura of marketing savvy. Floor slabs incorporate two-foot-wide wiring-access trenchways for future upgrades, while "Teen Net Mentors" assist students surfing 15 computer terminals in the children's area. With most seats at carrels and tables often filled throughout the day, however, reading areas isolated along the glass curtain wall on three floors have a somewhat hemmed-in feeling; librarians have already noted the popularity of the single enclosed quiet room, a rare alternative space for contemplative study. Still, residents have embraced every sleek sector of the library, underscoring its success in tailoring design to the changing community. ■

Rauner Special Collections
Dartmouth College, Hanover, N.H.

2 **VENTURI, SCOTT BROWN AND ASSOCIATES INSERTS A MODERNIST CUBE TO HOUSE RARE BOOKS WHEN ADAPTING AN AUDITORIUM AS A LIBRARY.**

By Suzanne Stephens

Architect: *Venturi, Scott Brown and Associates—Robert Venturi FAIA, principal-in-charge; project architect; Daniel McCoubrey, AIA, senior associate-in-charge; James Kolker, AIA, project manager and associate-in-charge; Jeff Hirsch, project architect; Denise Scott Brown, Hidenao Abe, Nathalie Peeters, Tom Purdy, Matthew Seltzer, Nancy Rogo Trainer, AIA, project team*
Client: *Dartmouth College*
Consultants: *Keast & Hood (structural engineer); Bard, Rao + Athanas (HVAC, electrical, plumbing, and fire protection); T and M Associates (civil engineers); Towers/Golde (landscape); Donald F. Nardy and Associates (lighting); Lawrence G. Copley, (acoustical); Glicksman Associates (security); Jackson Construction (general contractor)*

Size: *37,000 gross square feet*
Cost: *$7.5 million*
Completion date: *April 1999*

Sources
Standing seam copper roofing: *Rodd Roofing*
Aluminum interior curtain wall: *Kawneer*
Cabinetwork, custom woodwork: *Polybois*

WWW *For more information on the people and products involved in this project, go to* ***Projects*** *at* ***www.architecturalrecord.com***

Program

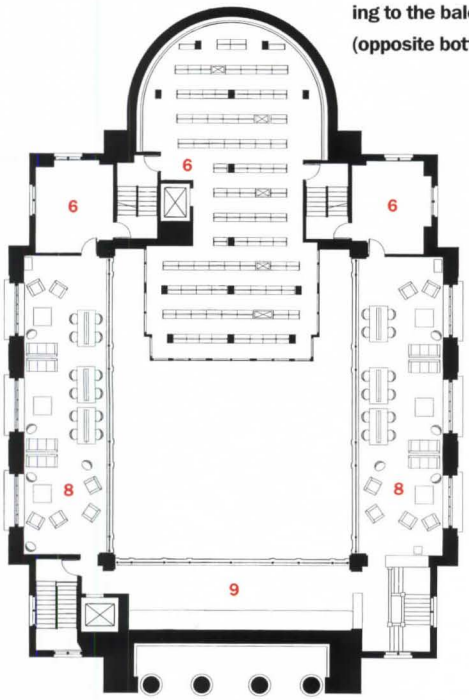
Where once the name of Venturi, Scott Brown mainly brought to mind iconoclastic architecture and theories, the firm's sophisticated master planning for a number of campuses (Penn, University of Michigan, Dartmouth) gradually has been adding another dimension to its image. At Dartmouth, the Philadelphia-based architects are reconfiguring the campus to link the northern medical complex with the liberal arts buildings organized around the campus green. Central to the plan is the creation of a library cluster on the green's north side. Here the firm recently converted Webster Hall, an auditorium, to house the Rauner Special Collections Library. Next door, Baker Library soon will be renovated, and the firm has just finished Berry Hall, an addition on Baker's north side.

In the foreground of this ensemble, Webster Hall is a commanding, classical brick structure designed in 1901–07 by Dartmouth alumnus Charles Alonzo Rich. The architect did well by his alma mater: his New York firm, Lamb and Rich, built most of the facilities at Dartmouth, including Baker Hall in 1927. For its new life Webster Hall needed to house 30,000 linear feet of books and manuscripts, plus reading areas and staff offices. Dartmouth wanted to retain the architectural sense of the original, even in the interior, where a stage,

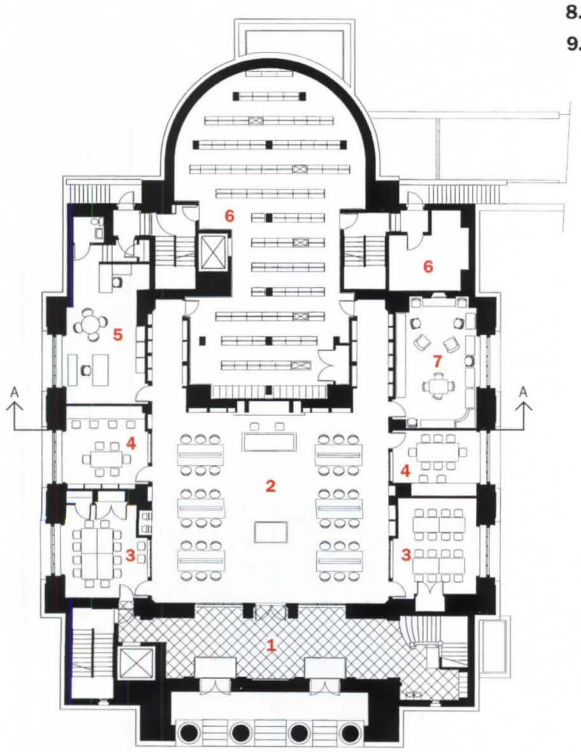
SECTION A-A

Webster Hall, an auditorium named for Daniel Webster and designed in 1907 by Charles Alonzo Rich, now occupies the foreground of a library complex.

In the former stage and auditorium space Venturi, Scott Brown inserted a glass cage for books (right and opposite top). A new fire stair and elevator occupy the southwest corner across from the open stair leading to the balconies (opposite bottom).



BALCONY LEVEL



FIRST FLOOR

N 0 20 FT. 6 M.

1. *Lobby*
2. *Reading room*
3. *Seminar room*
4. *Study room*
5. *Office*
6. *Stacks/collections*
7. *Historic room*
8. *Reading/study*
9. *Portrait gallery*

defined by a large semicircular apse, overlooked an auditorium edged with balconies.

Solutions/Intentions

Inspired by the glazed stacks of Beinecke Library at Yale, the architects placed the books in a glass cage projecting from the semicircular apse into the former auditorium, now the reading room. The stacks are treated like a building within a building, replete with new and separate HVAC for humidity and temperature control. The east and west balconies, which originally had sloped floors for raked seating, were flattened with the lowest (front) section of the balconies becoming the floor plane for the new reading mezzanines. Seminar rooms were inserted underneath the balconies, along with the George Ticknor Room, the re-created study of the historian and alumnus of Dartmouth (1807). Most of the support staff is housed in a partially submerged level and has access to additional book storage under the lawn, behind the apse.

Aluminum and glass walls enclose the stacks, whose concrete columns and floors allow an efficient floor-to-ceiling height of about eight feet. Because the balconies originally braced the exterior wall, the new mezzanine required additional steel cross beams. New insulated glass units were installed in the oversize exterior windows.

While the stacks are lighted with baffled fluorescents, running halogen fixtures in the reading room are teamed with fiber-optic lights, which replaced incandescents in the coffered ceiling.

Commentary

The spatial drama of walking through the main entrance and beholding the soaring glass stack of books is splendid. Combined with the presence of existing wood detailing, this effect does much to make up for the fact that the original coffered ceiling of the apse is hidden by the stacks. The play of natural light, warm wood, cork floor, and upholstered chairs and sofas nicely counterbalances the neutral color palette and the still coolish tones of the fluorescent and halogen lighting (although fiber-optic lights also help).

The only severe problem is the acoustical-tiled ceiling and fluorescent baffles in the George Ticknor Room. Incandescent lamps should be mandatory for historic rooms with period furniture, in spite of facilities managers' penchant for easier solutions. ■

Timberland Library
Belfair, Wash.

3

CARLSON ARCHITECTS CREATES A NEW CIVIC PRESENCE AND REFLECTS A TIMBER TOWN'S PAST AT A LIBRARY BESIDE A NATIONAL FOREST.

By Sheri Olson, AIA

Architect: *Carlson Architects—Donald Carlson, FAIA, principal-in-charge; Mark Withrow, AIA, project architect*
Client: *North Mason Timberland Library*
Consultants: *Barbara Leland Interior Design; Nelson Architecture (library planner); Sider & Byers Associates (mechanical engineer); Hargis Engineers (electrical engineer); Swensen Say Faget (structural engineer); Bush, Roed & Hitchings (civil engineer); Hough Beck & Baird (landscape architect); Merit Construction (general contractor)*

Size: *14,400 square feet*
Cost: *$2.1 million (construction)*
Completion date: *February 1998*

Sources
Windows, exterior doors: *Hope's Architectural Products*
Masonry: *Mutual Materials*
Roofing, sheet metal: *BHP Steel Building Products*
Wood framing, millwork: *Gray Lumber*

WWW *For more information on the people and products involved in this project, go to* ***Projects*** *at* ***www.architecturalrecord.com***

Program

Across a two-lane highway from an auto parts store, and with the Olympic National Forest as its backyard, North Mason Timberland Library embodies the dilemma faced by Belfair, Wash., and other waning timber towns. An expanding strip of fast-food joints and gas stations has replaced sawmills that once were fixtures on the landscape. "We're surrounded by plain vanilla buildings; we wanted a library that fits our community's spirit," says librarian Victoria Rexford.

The new 14,400-square-foot facility, by Carlson Architects, replaces an outmoded 3,600-square-foot library on the edge of a wetland forest. As befits a region noted for growing ecological awareness, a dilapidated house was leveled to clear space for parking, minimizing the cutting of trees. The old library building was sliced into three pieces and barged down Hood Canal to become Hoodsport's new library.

Timberland serves a population of 400,000 spread over five counties, so its role as a center for the community was a key design consideration.

Solutions/intentions

To distinguish the library from its boxy neighbors and ease it between trees, Carlson Architects borrowed the shed roofs and clustered forms of timber mills. With varied finishes on the standing-seam roofs—either dark green or galvanized metal—the library alternately recedes among the leaves or glimmers in the sunlight for visibility from the road. Two intersecting gables define the main

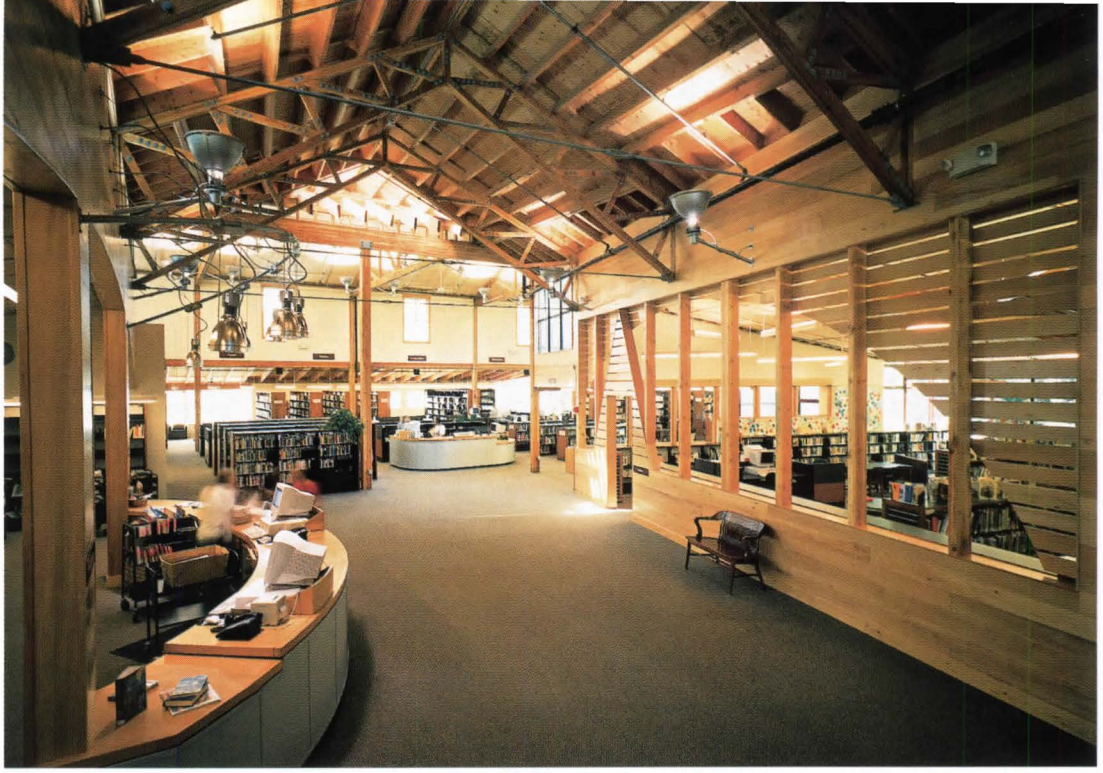
Seattle-based contributing editor Sheri Olson is the author of the forthcoming monograph Miller/Hull Partnership.

By borrowing the clustered roof forms of the region's timber mills, the library alternately blends in with the forest or signals its civic role on a busy commercial strip, depending on the vantage point.

interior volumes, a central lobby and the reading room. A children's library and staff offices are situated under shed roofs to either side. The gable over the lobby extends outside into a deep front porch framed by a pair of treelike columns. Inside, a glazed vestibule allows after-hours access to a community meeting room, while staff can survey the entire library from the lobby's circulation desk.

"It's a dilemma," says Donald Carlson, FAIA. "Librarians require open spaces for visibility and security, but there also need to be intimate places to sit and read."

The main reading room and the children's library have oversized bay windows that float reading nooks among the trees. In contrast to the lobby's lacework of trusses and plywood decking, this area features simple roof trusses and spare white walls. Large punched windows tuck up under the eaves, and metal brackets raise an eyebrow on the roof to let in sky. Aisles aside the double-height space and "rose" windows centered on the gable ends have an ecclesiastical resonance.

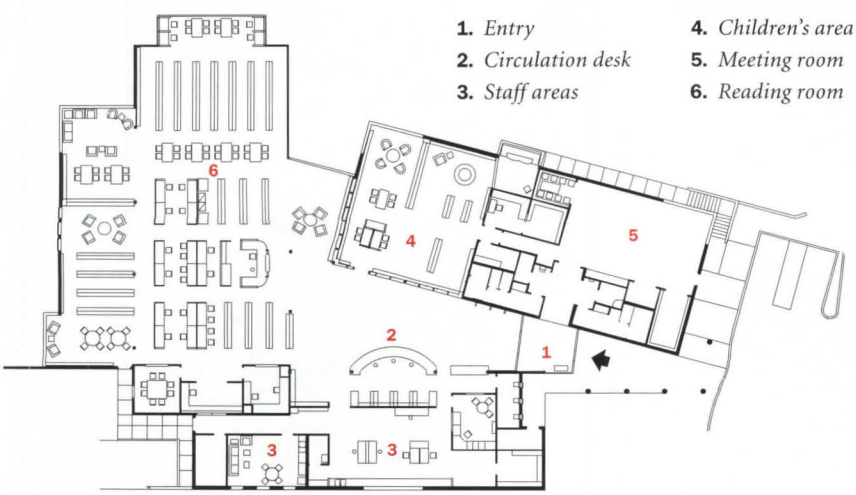


Commentary

By tweaking the vernacular, Timberland sidesteps the clichés that can plague Pacific Northwest architecture. In place of a heavy-timber structure, the lobby's reversed scissors trusses dynamically shape the space and capture the mutability of wood framing. Four-foot lapped sections of exterior metal siding recall the hand-split royal cedar shingles once plentiful here. Some ambivalence about the rustic aesthetic creeps into the detailing, however: where the plywood ceiling stops short of the wall to expose the ends of roof rafters, plywood edges are trimmed in wood and boxed back to the underside of the roof decking. Revealing the thinness of the material instead would have emphasized its planar qualities.

Lighting unifies the library: industrial shades are paired with custom mounts for uplights throughout. Metal halide sources bounced off whitewashed plywood panels subtly alter the color of light. ■

The lobby's splayed walls push its ridge line uphill to intersect with the reading room's gable roof (this page and opposite). A skylight filters sunlight through multiple layers of framing members.



TIMBERLAND LIBRARY


New Books
Audiovisual
Video CDs
Audiovisual
CDs

Biblioteca Latinoamericana
San Jose, Calif.

4 **STEVEN EHRLICH AND GARCIA TEAGUE DESIGN A LIBRARY AND GYMNASIUM COMPLEX THAT SERVES AS A NEIGHBORHOOD'S CENTRAL PUBLIC VENUE.**

By Lisa Findley

Design Architect: *Steven Ehrlich Architects—Nick Seierup, AIA, principal-in-charge; Steven Ehrlich, FAIA; Thomas Zahlten, AIA, project architect; Brent Eckerman, Scott Hunter, Cecily Young, Mohamed Sharif, Yuki Murata, John Gerard, Susanne Proesl, Jonathan Riddle, Todd Flournoy, Juergen Zimmerman, Tina Hollenbacher, project team*
Executive Architect: *Garcia Teague Architecture+Interiors—Gilbert Garcia, AIA, Wendy Teague, principals; Eddie Ketner, project manager; Denise Chew, Dan Patterson, Karen Jamieson, Alexander Moraviov, Jeremy Steinmeier, project team*
Consultants: *Biggs Cardosa Associates (structural engineer); Alpha Tech Consulting Engineers (MEP engineer); Kier & Wright (civil engineer); Patricia O'Brien Landscape Architecture*

Size: *15,148 gross square feet (library); 16,870 gross square feet (youth center)*
Cost: *$7.9 million (construction)*
Completion date: *November 1999*

Sources
Masonry: *Calstone, Orco Block, Interstate Brick*
Curtain wall: *Progress Glass*

WWW *For more information on the people and products involved in this project, go to* **Projects** *at* **www.architecturalrecord.com**

Program

A new community-oriented complex is a beacon within a working-class Latino neighborhood struggling to stay alive amid dot-com prosperity in San Jose, Calif. Situated on a four-lane strip south of downtown, the Biblioteca Latinoamericana holds the sidewalk edge alongside used-car lots, taquerias, and long-time local businesses. Along with its companion building, the Washington United Youth Center, the library brings focus to neighborhood public life. Designed by Steven Ehrlich Architects and executed by Garcia Teague Architecture+Interiors, the $15.8 complex was funded by the city as part of redevelopment efforts stretching over two decades.

Now the largest branch in the city's public library system, the 15,000-square-foot Biblioteca was founded 26 years ago as a grass-roots effort to preserve and promote Spanish-language literacy and literature. Once comprising a few books stored in a church basement, the library now can store 60,000 books, videos, and periodicals. The adjacent 17,000-square-foot Youth Center hosts activities including sporting events, classes for teenage mothers, and a recent election speech by Al Gore. Linking the two buildings is a courtyard

Contributing editor Lisa Findley lives in Oakland, Calif., and teaches at the California College of Arts and Crafts.

Lighting animates the facade at night. A steel pergola shades the path from the street to the courtyard (opposite below), while a tower marks the entry to the Youth Center (opposite above).

called La Placita, designed as "a neighborhood gathering place for casual, everyday use as well as special occasions such as fiestas and cultural events," says architect Steven Ehrlich.

Solutions/Intentions

The site commands half a city block, extending from busy South First Street to a quieter, residential street behind. A 27-foot-high multicolored masonry wall serves as both formal library facade and symbolic face of the entire complex. The massive wall is only 12 feet thick, however. Like a western storefront, it is a civic-scaled, unifying gesture that masks varied building forms beyond.

The masonry wall is interrupted by a glass-and-steel storefront section that pushes out onto the sidewalk. Here passersby can view teens glued to computer screens or seniors browsing Spanish magazines in the technology area and periodical reading room. Patrons within feel part of the city as buses rumble past along the busy street.

The heart of the library is a voluminous, 5,200-square-foot concrete-block room housing children's reading, information, and circulation areas. Spanned by curving laminated wood beams, it is a smaller cousin to the gymnasium of the Youth Center. Lower-height satellite rooms accommodate adult and teen reading areas, offices, and auxiliary facilities. Similarly, wings in the Youth Center house classrooms, a game room, and offices.

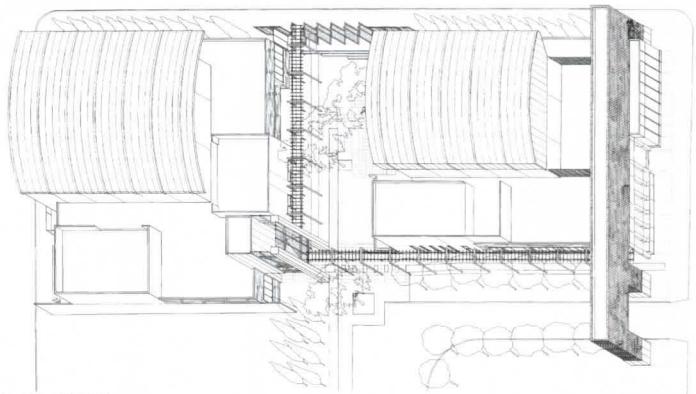
1. *Library*
2. *Youth Center*
3. *Courtyard*

In operation even when the library is closed, a 1,300-square-foot community room is situated in a back corner of the library, where gatherings can spill out into La Placita via a large glass roll-up door.

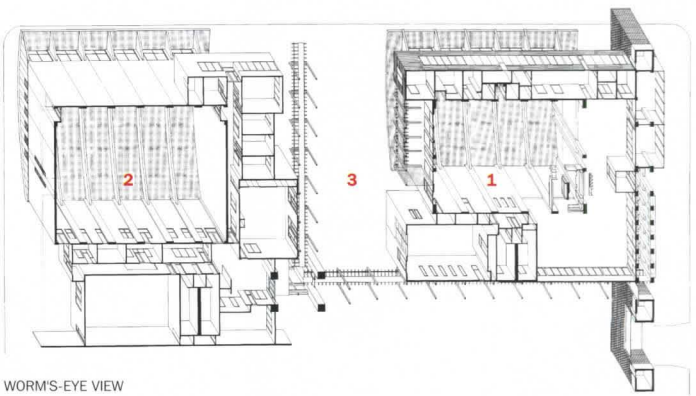
Commentary

The clustered massing of the buildings confronts the complex's dual identity as a formal institution and informal gathering place. Set alongside taller spaces, the smaller volumes admirably address the scale of tidy stucco residences in the area. The bright yellow metal siding that sheathes these sections, however, recalls the cladding of commercial buildings and trailers. It strikes a tinny note in an otherwise gracious and thoughtfully designed project.

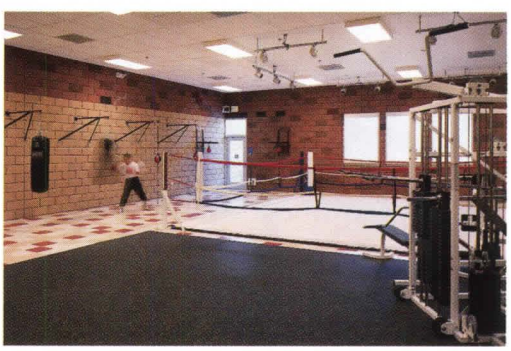
Completed at $284 per square foot, Biblioteca Latinoamericana delivers a lot for the money. Joined by the Youth Center, it expands and elevates the notion of learning, offering varied programs that aim to enrich the lives of its patrons. ■

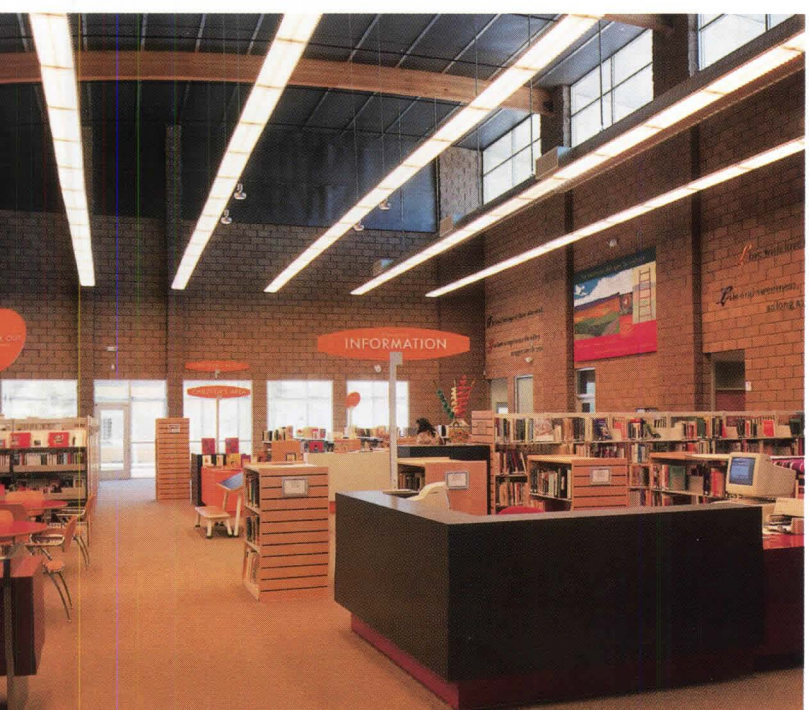


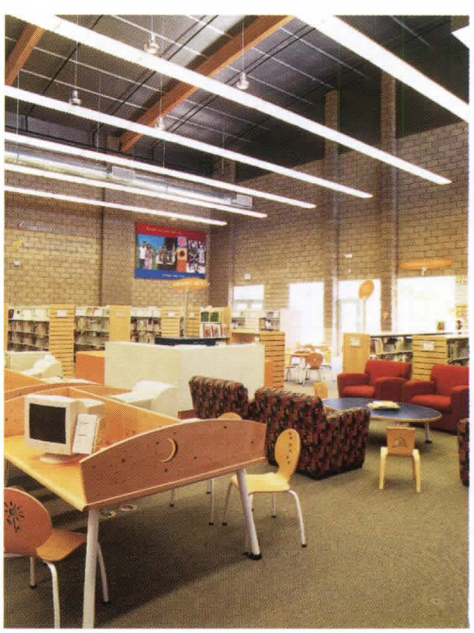
BIRD'S-EYE VIEW



WORM'S-EYE VIEW







Fluorescent lights visually lower the scale of the 32-foot-high main library space (left). The children's area features playful furniture designed by Wendy Teague (right). The Youth Center houses many areas for active workouts (above).

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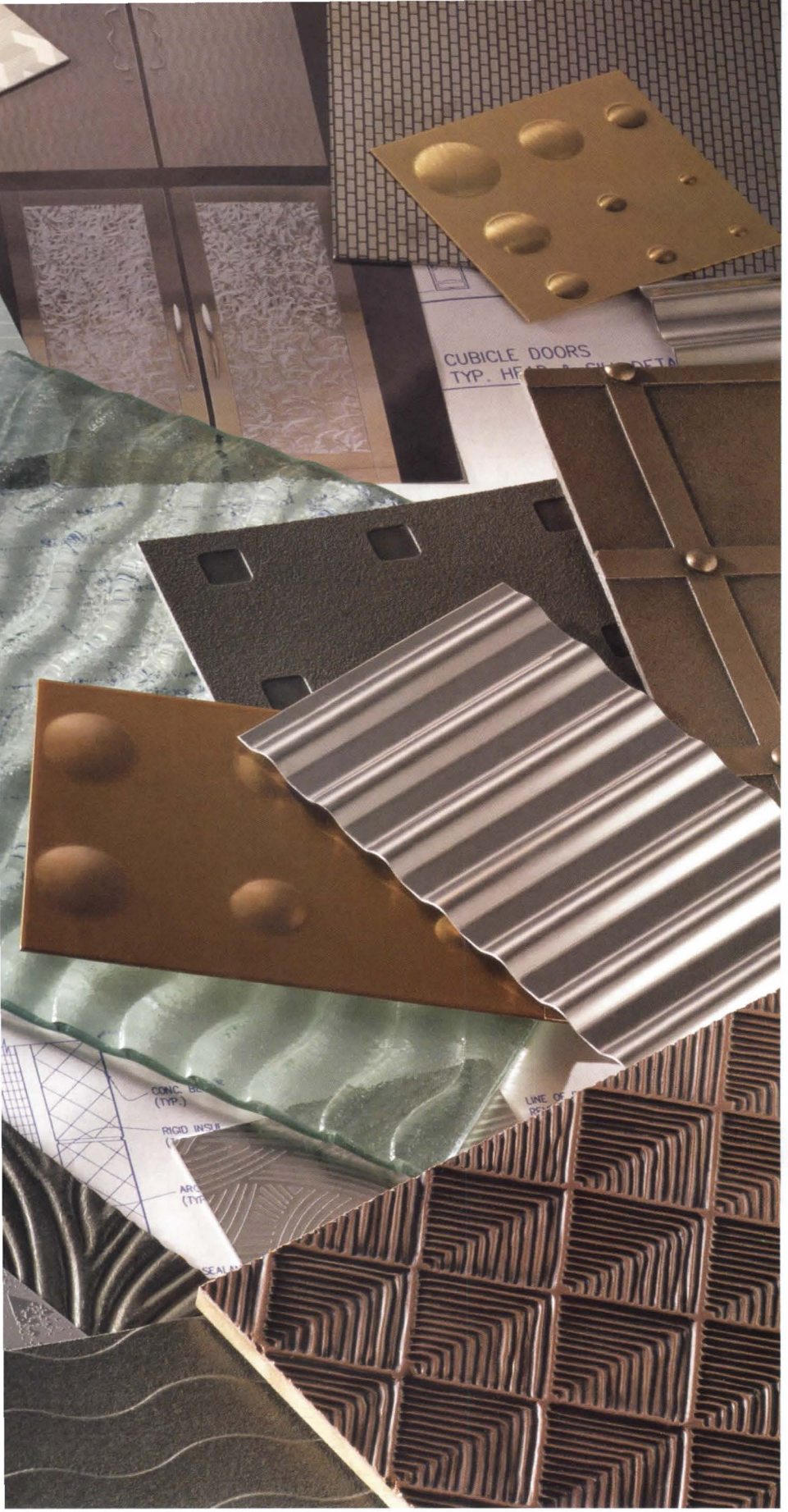

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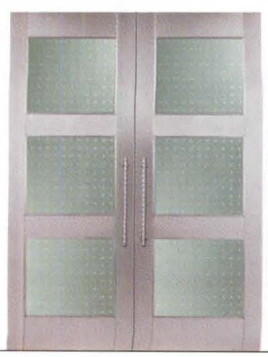

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Creating sleek metal skins for buildings

COMPUTER TECHNOLOGY MADE THE DESIGN, FABRICATION, AND INSTALLATION OF EMP'S SKIN POSSIBLE.

By Charles Linn, AIA

If you've ever looked at one of Frank Gehry's swooping structures and thought, "What's the big deal? I could do that," the story of the fabrication of the Experience Music Project's metal skin may change your mind. As the sheet metal contractor, L. William Zahner, of A. Zahner Company says with a hearty laugh, "If I had it to do all over again, I probably wouldn't." But Zahner is being modest. Working with a digital model of the exterior of the structure provided by Frank O. Gehry and Associates, Zahner's firm accomplished something that might be regarded as impossible if it hadn't been done: The 180,000-square-foot metal skin comprises over 4,000 panels that interlock within tolerances as close as 1/16 to 1/8 of an inch. No two are alike. The panels were being fabricated at Zahner's shop in Kansas City, Mo., even as the frame of the amorphously shaped building was going up in Seattle.

Building a digital model

Sketches and study models done in Gehry's office provided the basis for creating a digital model of the building skin. "As we approach a final shape we go to bigger and bigger scale models," says architect Craig Webb of the Gehry office. The digitizing is done using a device that has an articulated arm with a probe attached to it. When the probe touches a point on the surface of the model, the x, y, and z coordinates of the point are recorded. The accuracy of the digital model of the building that was created once it had been digitized was critical, because once scaled to full size it became the basis on which the metal skin was fabricated.

The computer's software, called CATIA [see OCTOBER 1997, page 74], was developed for use by the aerospace industry. It "rationalizes" the surfaces, taking the double-curved shapes and converting them into what are called "rule-developable" surfaces. "That basically means that they can be unfolded and fabricated out of flat sheets of metal," says Webb. There were, however, limits as to how much the aluminum and stainless-steel sheets could be bent in two directions yet still be shaped and installed by hand. To predict which of the surfaces on the proposed building were curving beyond that point, Gehry's office performed another computer study called a Gaussian analysis. The analysis produces a drawing that indicates, through various colors, the extent of the curvature of different areas on the surface of the building. According to Zahner, "We used the Gaussian analysis to see if we could work out the curvature problems by changing the shapes of the pieces. In certain cases Gehry's office had to change the shape of the building a little bit, but we did our best to work with them."

Five-inch aluminum pipe girts, which could be adjusted four inches in any direction at either end as required to locate them precisely, were first anchored to structural pedestals. Next, the metal panels were installed.

Fabrication and detail development

Zahner, whose firm designed and installed the skin as a design-build contractor, worked with Wallace Engineering, also of Kansas City, Mo., to create the panel details, while developing software that would use CATIA's digital model of the building's surface to drive CNC (computer numerically

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 178 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. Describe how double-curved shapes are made from flat metal sheets.

2. Explain the wind-load considerations in designing compound-curved structures.

3. Explain what an interference coating is.

WWW *For this and more continuing education go to:* **www.architecturalrecord.com**

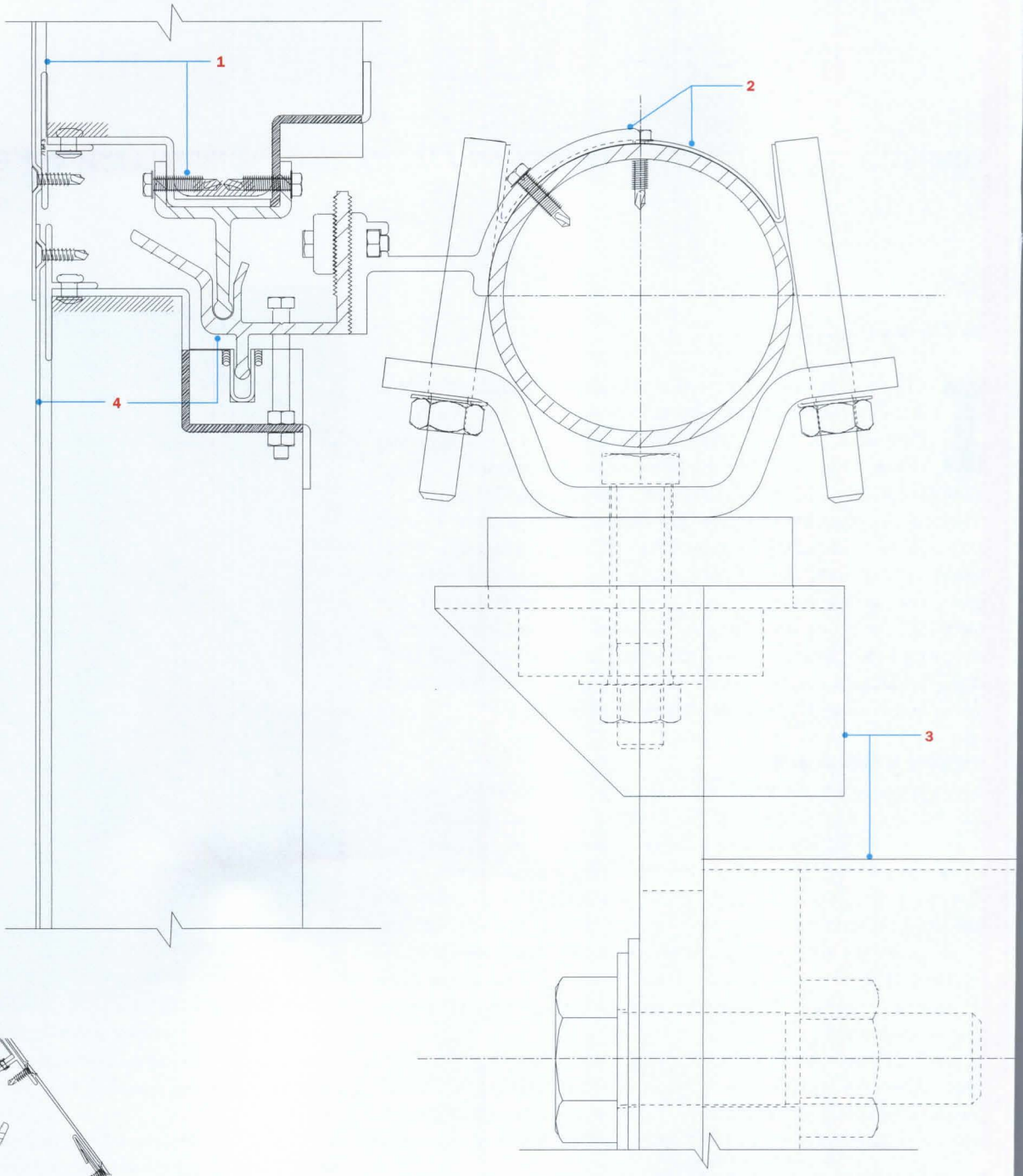
1. Sill detail. The sill extrusion has a tongue that slides into a slot in the head extrusion of the panel below.

2. Pipe girts. Five-inch-diameter pipe girts span between pairs of pedestals. Positions of the pipes are adjustable and were verified on-site using GPS.

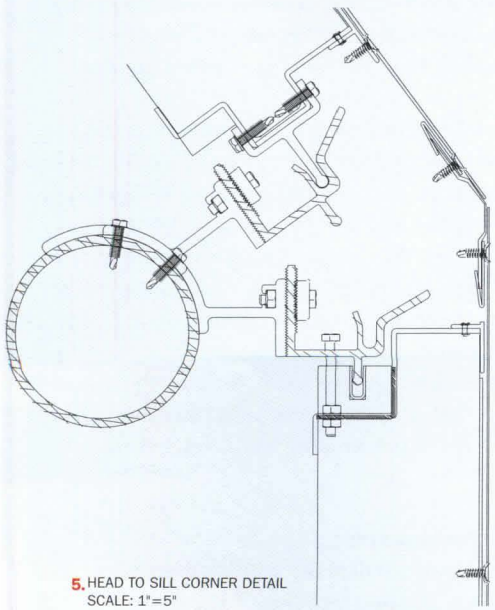
3. The pedestals, made from steel tube, extended from the main structural frame of the building through the concrete shell.

4. Head detail. Metal panels, consisting of the building's skin, structural fins, and edge extrusions, hang from the pipe girts.

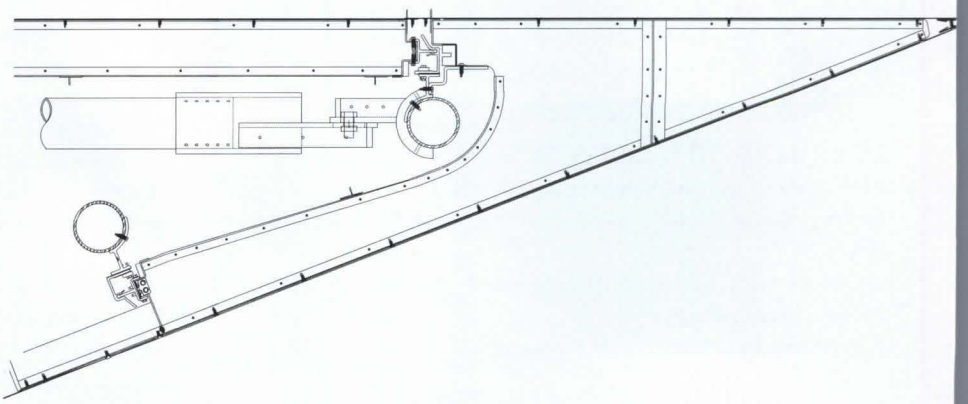
5, 6. These details show how the various components were assembled where special conditions occurred.



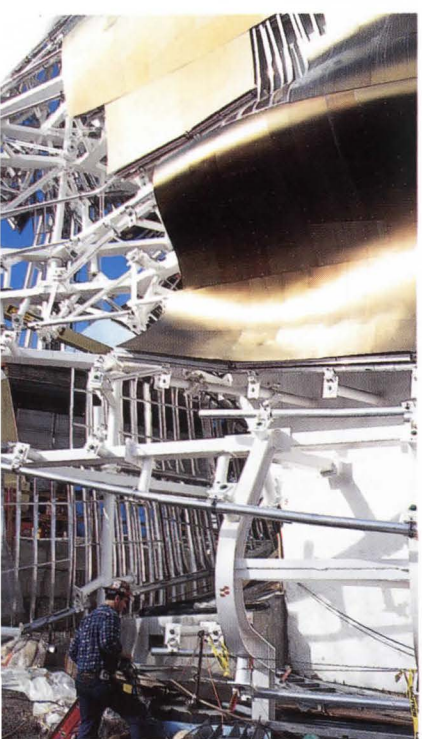
TYPICAL DETAIL AT PEDESTAL.
SCALE: 1"=2 1/2"

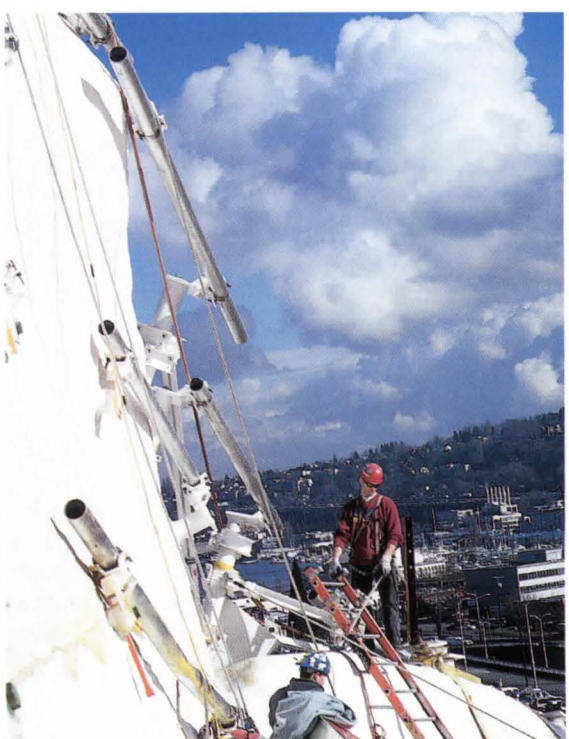


5. HEAD TO SILL CORNER DETAIL
SCALE: 1"=5"

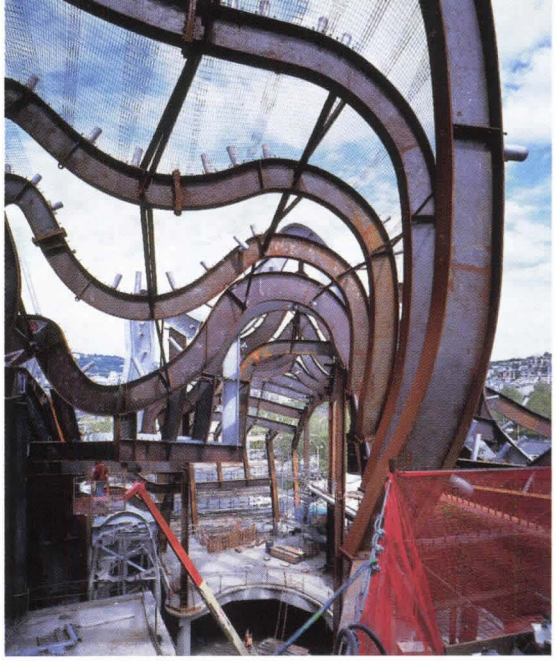


6. SECTION AT SCOOP EDGES
SCALE: 1"=10"





The aluminum pipe girts from which the skin panels hang are connected to steel pedestals. The pedestals, in turn, are anchored to the main structural steel frame of the building (top and left). The sloping surfaces of the building made installation of some panels extremely tricky (above).



A worker at A. Zahner Company's Kansas City, Mo., shop (left) examines a series of fins that have been assembled and await the installation of metal-skin pieces and head and sill extrusions. Shotcrete and waterproofing were applied to reinforcing steel overlaid with stainless-steel hardware cloth (top). The skin was field-applied wherever curves were extremely complex (bottom).

controlled) machines to manufacture the metal panels. As designed and built, each panel consists of extruded aluminum head and sill sections that are bolted to five-inch aluminum pipe girts; "fins," or rib-shaped pieces built out of flat aluminum sheet and T shapes; and 16-gauge metal sheets that are pressed onto the fins and fastened using high-strength aircraft pop-rivets. The metal panels are both decorative and structural,

"IF I HAD IT ALL TO DO OVER AGAIN, I PROBABLY WOULDN'T," SAYS CONTRACTOR BILL ZAHNER WITH A SMILE.

although they are not load-bearing—the head extrusions are bolted to metal hangers and clipped to the pipe girts. A tongue that runs along the bottom of each sill extrusion (see detail drawings) fits into a slot in the top of each head extrusion. This arrangement keeps the panels from moving in windy conditions, while allowing for thermal expansion and contraction. The panels are not intended to act as waterproofing—the waterproofing is applied to the building's concrete shell, which lies beneath the skin—but only as a rainscreen.

Because the panels bear only their own weight and wind loads, the task of Wallace Engineering was to examine how the load paths would affect the panels. Engineer Steve Huey explains, "Normally, when you have a flat sheet and the wind is normal to the surface, you assume that the loads will be distributed equally to the four corners. But when you have a piece with a double-reverse curve and apply a wind load to it, you may get both positive and negative pressure on the panel; one corner may take three times the load of the other corners." But doing an aerodynamic analysis of all 4,000 panels would take a lot of time, and designing for the worst-case scenario would have been wasteful. Wallace used Multiframe software to do windload simulations on groups of panels that appeared to have similar loading conditions, while collaborating with A. Zahner Company on the design and detailing of the panels.

For Zahner, the first challenge was building the panels, and the second, installing them. CNC machines were used to cut out, prepunch, and form the hundreds of thousands of metal pieces used for making the fins, skin, and aluminum pipe girts. The software driving the machines is even capable of optimizing the layout of shapes on

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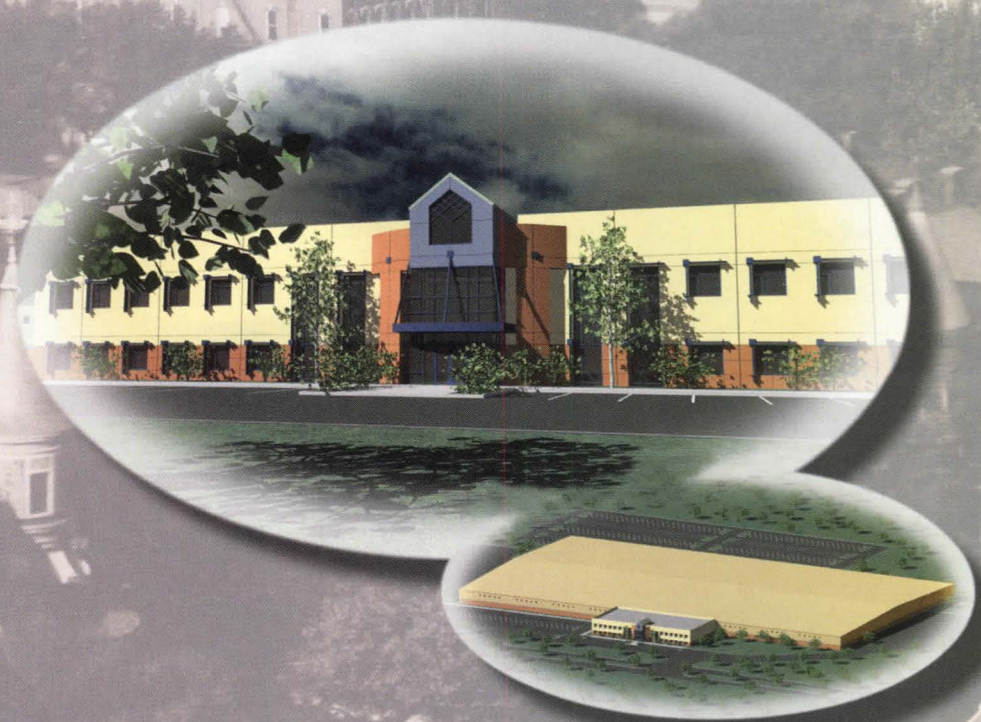

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each sheet to minimize waste. "In the beginning," says Zahner, "one of the hardest things for us to accept was that the pieces we were making this way would fit. We didn't trust what the computer was saying. Every other week we would clear out the shop floor and lay a bunch of the panels together. I think that was a mistake. It was time-consuming and we risked damaging the panels."

On site, accuracy was more difficult to achieve. The aluminum pipe girts were to be anchored to steel pedestals which, in turn, were welded to the main structural steel frame of the building. In some cases, the pedestals cantilevered as much as 10 feet from the frame, so the deflection in the metal frame, which might have occurred when shotcrete was applied to the shell, would be multiplied over their lengths.

To solve the problem, Zahner made a device that allowed the location of the pipe girts to be adjusted in any direction within a four-inch "sphere." GPS technology was used to verify the girts' locations, which were initially provided by CATIA. "It would have been great to survey these locations and then make the panels," says Zahner, but it would have delayed completion of the project by many months.

The golden sheen on the stainless-steel skin comes from an "interference coating" applied to the metal by Rimex Metals. Enamel was baked onto the aluminum skin.

Finishing the skin

The colors of the stainless steel were achieved through an "interference coating" applied to the raw metal in England by Rimex Metals, specialists in applying coatings to metal products. The finish is called an interference coating because it interferes with the natural reflection of the spectrum of light, absorbing selected wavelengths and reflecting the desired color. The painted sections of the building were fabricated of coil-painted aluminum. In this process, an extremely thin coat of enamel is applied to uncoiled aluminum sheet, using a procedure similar in concept to silk-screening. The coated sheet is passed through an oven where the enamel is baked, then the sheet is recoiled.

"I've heard Frank Gehry say that he wants to return to the ways of the master builder," says Bill Zahner. "He wants to be able to control my shop floor from his office. And this method of working together comes pretty darned close. The system we developed together allows more complex geometries to be developed at a more affordable price than ever before. It has permanently changed the way we do business." ■

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- Read the article "Creating Sleek Metal Skins for Buildings" using the learning objectives provided.
- Complete the questions below, then check your answers [page 266].
- Fill out and submit the AIA/CES education reporting form [page 266] or file the form on ARCHITECTURAL RECORD's Web site at www.architecturalrecord.com to receive one AIA learning unit.

QUESTIONS

1. What is the design process for creating a curved metal building skin?

2. Why was the Gaussian analysis used?

3. What keeps the metal panels from moving in windy conditions?

4. What is an interference coating?

5. How do curved metal sheets react differently to wind than flat sheets?

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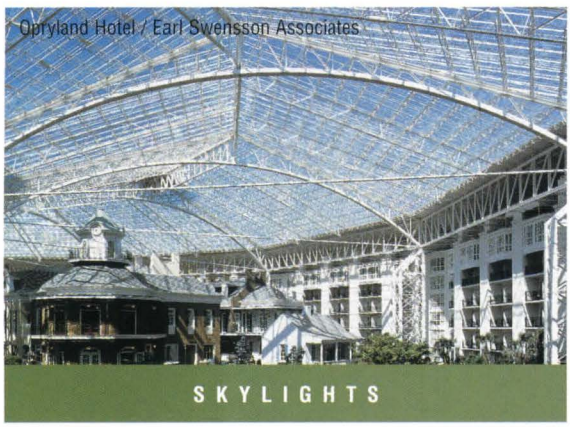

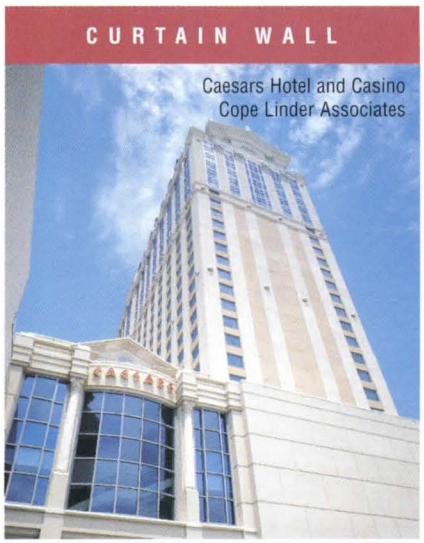

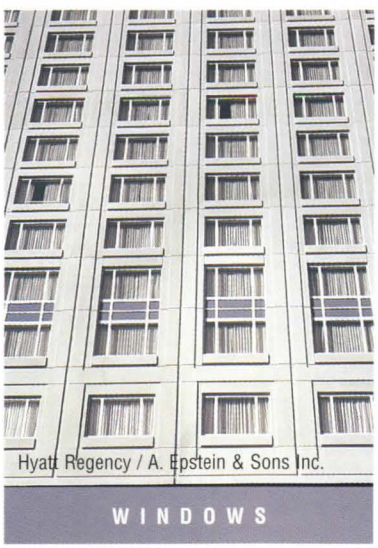

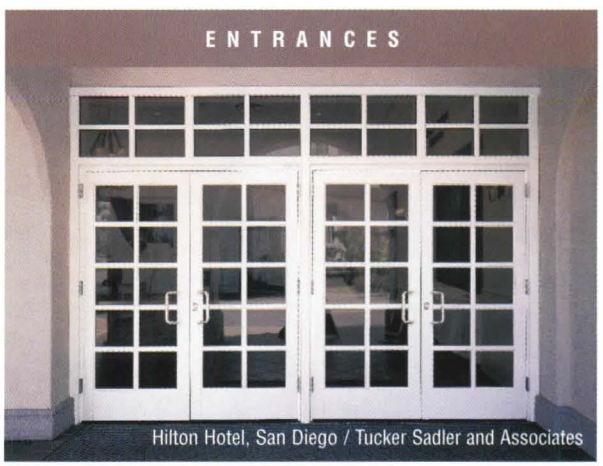

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Tech Briefs

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What's the Buzz: Use BEES to Design Greener, Lower-Cost Buildings

Designers are increasingly asked to address the issue of "green" building materials. How do you identify environmentally preferable products? Is a product environmentally preferable if it has recycled content? Is it not preferable if it offgasses during use? Are mainstream products always less preferable than products marketed and perceived as "environmentally friendly"? Do environmentally preferable products always cost more? Not necessarily, according to the BEES (Building for Environmental and Economic Sustainability) software.

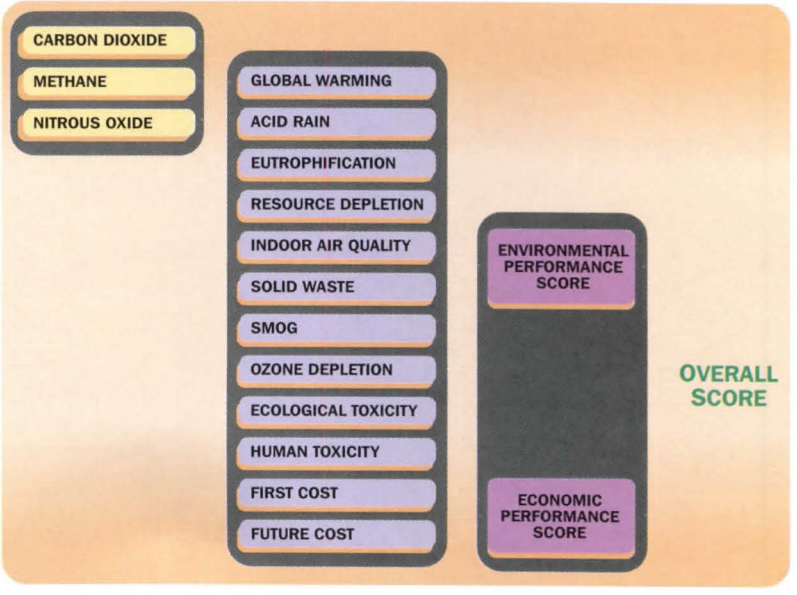
BEES 2.0, an updated, expanded version of the powerful software designed to help the construction industry select cost-effective "green" building products, can be downloaded to your computer for free (www.bfrl.nist.gov/oae/bees.html). BEES Version 2.0 is aimed at designers, builders, and product manufacturers, and it includes comparative environmental and economic performance data for over 65 building products.

The National Institute of Standards and Technology (NIST) Building and Fire Research Laboratory began developing the decision-making tool in 1994 to help the design community measure a product's environmental and economic impact. The idea was to provide key science-based information often lacking in product-selection decisions. The NIST research has been supported by the U.S. EPA Environmentally Preferable Purchasing Program and the White House–sponsored Partnership for Advancing Technology in Housing (PATH).

BEES 2.0 evaluates generic products for framing, exterior and interior wall finishes, wall and roof sheathing, ceiling and wall insulation, roof and floor coverings, slabs, basement walls, beams, columns, parking-lot paving, and driveways. Each product category contains U.S. average performance data for competing products. For example, the "floor covering" category surveys ceramic tile, linoleum, vinyl tile, different types of carpets, marble, and terrazzo. Similarly, exterior wall alternatives include brick, stucco, and aluminum, cedar, and vinyl siding. Future BEES versions will evaluate brand-specific products, allowing for benchmarking against generic product performance. (To that end, manufacturers are encouraged to submit brand-specific product performance data through the new BEES Please program—contact: blippiatt@nist.gov.)

BEES measures the environmental performance of building products using the internationally standardized and science-based Life-Cycle Assessment method. All stages in the life of a product are analyzed: raw material acquisition, manufacture, transportation, installation, use, and recycling and waste management. The environmental-impact analysis measures the product's impact on global warming, acidification, eutrophication (the unwanted addition of mineral nutrients to the soil and water), indoor air quality, resource depletion, and solid waste. In addition, the new software assesses ozone depletion, smog, ecological toxicity, and human toxicity for a number of products.

Due to its comprehensive, multi-dimensional scope, BEES can account for shifts of environmental burdens from one life-cycle stage to another, or one environmental medium (land, air, or water) to another. The tool highlights the trade-offs that must be made to genuinely reduce overall environmental impacts.



Computing the BEES Overall Performance Score: Environmental and economic performance scores are combined into an overall performance score.

BEES measures economic performance using similar life-cycle thinking. Economic performance is measured using the ASTM standard Life-Cycle Cost method, which covers the costs of initial investment, replacement, operation, maintenance and repair, and disposal. Environmental and economic performance scores are combined into an overall performance score. The BEES user specifies the relative importance weights used to combine environmental and economic performance scores and may test the sensitivity of the overall scores to different sets of relative importance weights.

Applying the BEES approach to the scores of products included in BEES 2.0 leads to several general conclusions. First, environmental claims based on single impacts, such as recycled content alone, should be viewed with skepticism. These claims do not account for the fact that one impact may have been improved at the expense of others. Second, measures must always be quantified on a functional unit basis as they are in BEES, so that the products being compared are true substitutes for one another. One roof covering product may be environmentally superior to another on a pound-for-pound basis, but if that product requires twice the mass as the other to cover one square foot of roof, the results may reverse. Third, a product may contain a negative-impact constituent, but if that constituent is a small portion of an otherwise relatively benign product, its significance decreases dramatically. Finally, a short-lived, low-first-cost product is often not the cost-effective alternative. A higher first cost may be justified many times over for a durable, maintenance-free product. In sum, the answers lie in the trade-offs.

Barbara C. Lippiatt

WWW *for more about sustainable architecture go to* **Green Architect** *at* **www.architecturalrecord.com**

The Grass Is Greener on the Topside with These Innovative Roofing Systems

Extensive Sarnavert Green Roof System, Zurich, Switzerland

Grass roofs have historically been massive and weighty. Scandinavia's traditional sod homes or homes of the Great Plains settlers relied on the roof mass to temper interior spaces. Current earth-sheltered architecture utilizes the same principles of reducing energy requirements.

Wide use in different epochs, climates, and cultures has not exhausted new practices and products that are pushing green-roof developments even further. An emerging area in the movement, at least in the U.S., is a lightweight version of these earlier precedents, one that blankets the entire roof with a thin growing medium suitable for low vegetation.

In contrast to earlier systems, the light weight of these new roofs places little additional load on the structural system. Often, green roofs are installed directly onto existing buildings. They are common in northern Europe today: they cover many flat and pitched roofs in Germany, where the technologies are well developed through three decades of use.

Major U.S. roofing companies, such as Hydrotech and Sarnafil, are now actively marketing two green-roof systems in North America, teaming with German-based firms ZinCo and Optigrün, respectively. One is the "extensive" roof system, a shallow, two-to-six-inch soil depth that supports grasses and sedums capable of withstanding harsh growing conditions and requires low-to-no maintenance. The other is the "intensive" roof system that supports a wide variety of plants, shrubs, and small trees and requires six or more inches of soil.

Beyond these differences, both systems provide waterproofing, drainage, water/nutrient retention, and a growing medium, with thermal and acoustic insulation that exceeds conventional roofs. New green roofs weigh a fraction of their predecessors, which often topped 150 pounds per square foot.

Green roofs offer particular advantages in cramped urban settings. Intensive roofs, in fact, become an amenity, serving as terraces or other occupiable green spaces. Whether used to reclaim lost space or simply provide a verdant view, these roofs offer many advantages that extend beyond the obvious benefits to owners and occupants.

Green-roof plants help counter the heat island effect through evaporative cooling, and they convert carbon dioxide to oxygen. They also absorb and retain precipitation, reducing storm water runoff 50 to 90 percent. Some German municipalities actively encourage green roofs for these reasons, offering tax incentives to reduce sewer system loads and easing zoning codes to allow greater site-development freedom if systems recapture greenery.

The U.S. lacks such incentives, but several projects have gained prominence. James Stewart Polshek's Mashantucket Pequot Museum & Research Center in Ledyard, Conn., features a 60,000-square-foot green roof. On the other coast, in Mountain View, Calif., a green roof covers Hoover and Associates' Alka headquarters. Given this geographic dispersion—with additional projects in between—drainage medium, soil depth, and plant specimens must be based upon local conditions.

William McDonough addressed this point in discussing his Gap office complex in San Bruno, Calif., noting that airborne birds can't distinguish a building from the natural landscape. The undulating roof's plantings, all native to the region, blend seamlessly with the landscape. At the Mashantucket Pequot Museum, landscaping and roofscape are also conceived as a single entity. Roofmeadow (affiliated with Optigrün) even markets an extensive roof system with a regional plant palette—the Philadelphia Roofmeadow—tailored to the mid-Atlantic coast.

For all the positive benefits of green roofs, they face obstacles, including initial costs and the inertia of standard practice. A green roof requires a waterproofing system and additional components to support the plants themselves. Even a shallow, extensive green roof runs at least $3-$6 beyond what an owner would ordinarily spend. Furthermore, green roofs run counter to conventional roofing practice; they absorb and retain water for plants instead of shedding it immediately as do traditional roofs.

Mashantucket Pequot Museum, Ledyard, Conn.

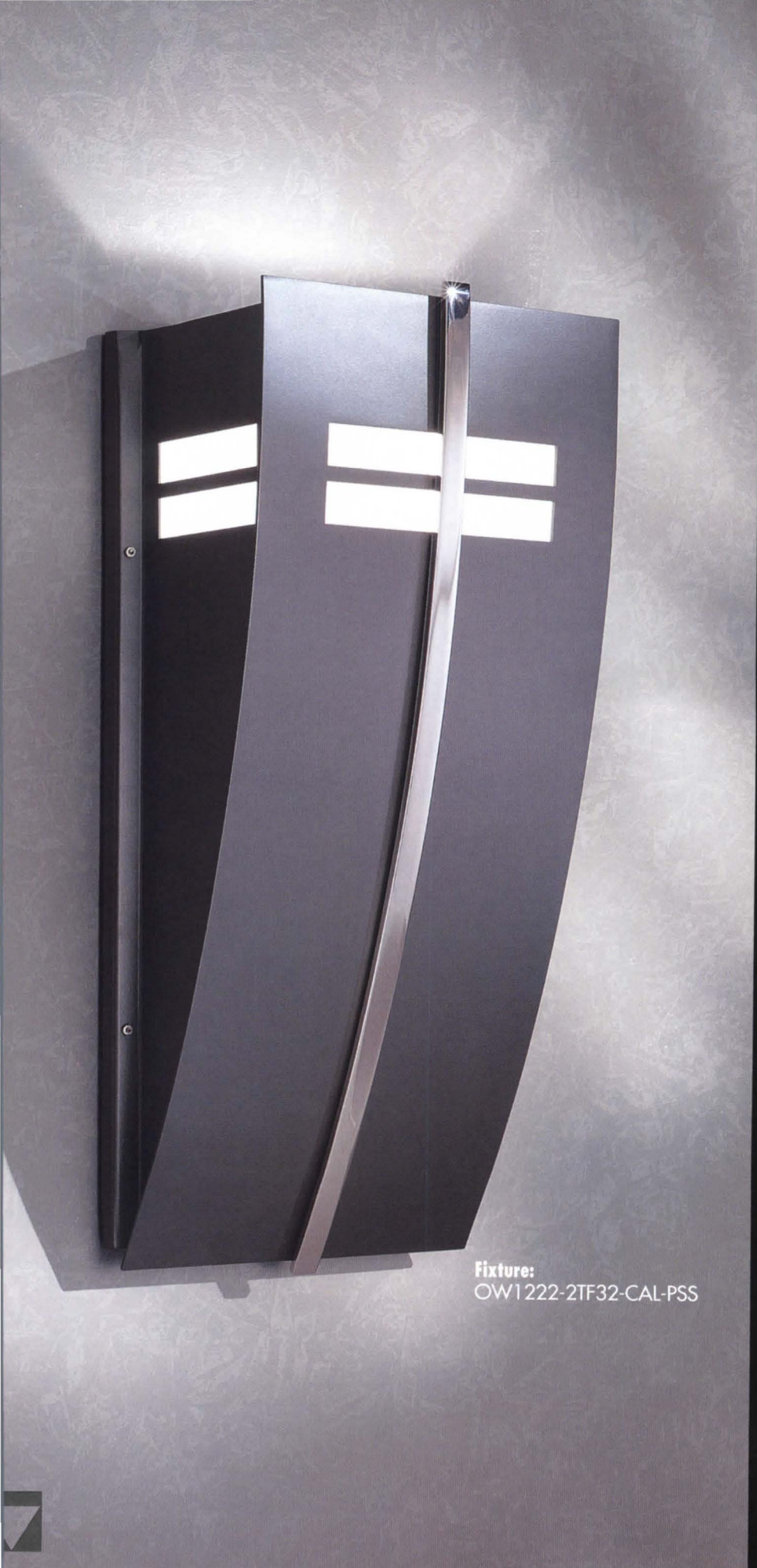
We don't yet have government incentives in the U.S. to propel the use of green roofs, but there is interest. Chicago City Hall's roofscape is being transformed with a green roof. The project, stemming from EPA/NASA heat-island studies, intends to demonstrate how green roofs moderate summer temperatures in the city.

The early Modernists eloquently noted how flat roofs were habitable areas that were not thoughtfully developed. Green roofs, which most readily cover this roof form, are an emerging design vocabulary that positively addresses this fifth facade, while offering substantive benefits.

For further information, see www. hydro-techusa.com/garden, www. rnafilus.com/Green Roofs, www.roofmeadow. com, and www.architecturalrecord.com.

Todd Willmert

Gap Office Complex, San Bruno, Calif.



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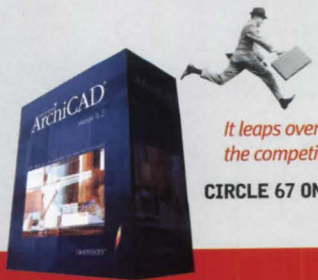

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Digital Architect

Emerging standards for design data

By Jerry Laiserin, FAIA

The process of designing, constructing, and operating buildings is among the least computerized of all industries. Software is available to help architects and their collaborators perform all their tasks—from computer-aided design to computer-aided facility management—yet integrating those individually automated tasks into a cohesive process that spans the building life cycle remains an unfulfilled promise. Even World Wide Web technology has failed to transform the highly fragmented businesses of architecture, engineering, and construction. Recent advances in software standards, however, point toward new kinds of communication among software programs that will, in turn, support new kinds of collaboration among all project team members.

The here and now

Current AEC software provides diverse descriptions without capturing the entire picture. CAD has been limited to describing the geometry of a building and its constituent parts, and different CAD programs use incompatible internal formats to store their data (*see* "Digital Architect," MAY 1999, pages 57–58).

Definitions of windows, wall sconces, or water closets may be represented in different cost-estimating or specification programs by various internal codes, often incompatible with one another and with the descriptions in any CAD program. Similar incompatibilities hold true for software that aids building-code analysis, energy performance, and lighting simulation.

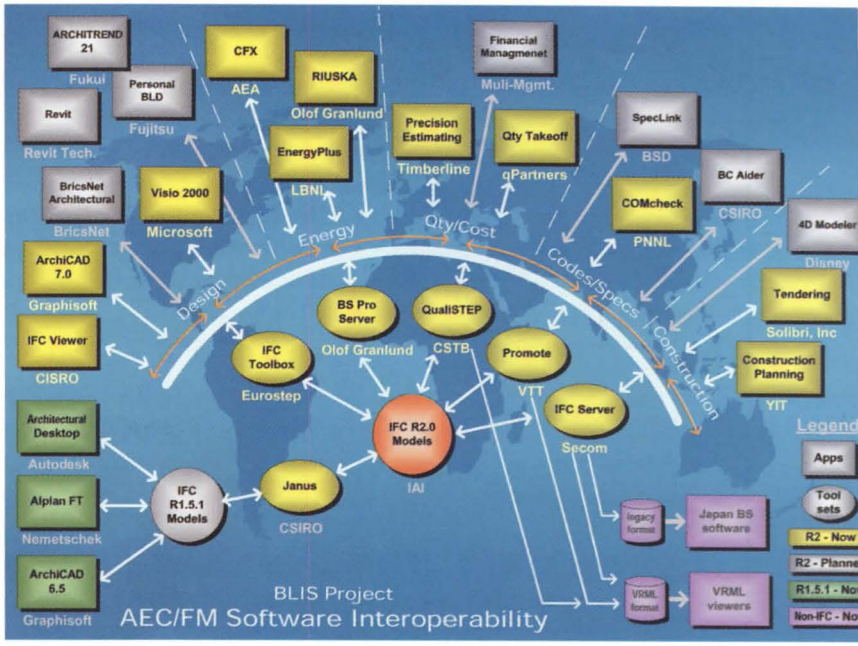
The cumulative effect of these software incompatibilities is that the AEC industry cranks out digital drawings and project manuals that are scarcely better coordinated or more dynamic than their paper-based antecedents, despite 20 years of effort and hundreds of millions of dollars. Consultants and contractors who work with architects' output often must translate files into their own software or extract architects' data into some neutral format prior to importing it. These processes are both time-consuming and error-prone. Occasionally, if the design issues are important enough and the project budget large, multiple involved parties will resort to building many independent software models of the same building, for their separate analyses (*see* "Digital Architect," AUGUST 2000, pages 177–78).

While it is possible for large or tech-savvy design firms to develop custom linkages between their CAD programs and other software, such customization is costly and subject to obsolescence whenever the underlying programs are upgraded. Recently, CAD vendors began creating predefined links from their proprietary design packages to other tools, such as estimating or specifying software. Bentley Systems (Microstation), Graphisoft (ArchiCAD), and Revit Technology (Revit) are among the leaders in this regard, but users remain limited by specific links between, say, one CAD program and one estimating database, not a freely interchangeable set of building data that works with any software. The real goal—the "grand unified theory" of AEC software—is for any two programs to be able to interact with, or operate on, each other's data. Programs that can do so are said to be "interoperable."

Stepping into the future

In July 1995 an industry alliance initially led by Autodesk, HOK, Carrier, AT&T and others launched a standards effort now known as the International Alliance for Interoperability (IAI). With several hundred members (including the AIA) in every industrialized country, IAI devoted most of its efforts from 1995 to 2000 to building a consensus around a set of definitions and descriptions for all the elements of buildings and attributes of those elements (*see* "Digital Architect," NOVEMBER 1999, pages 33–34). This is not a computer language, but something that logicians call a taxonomy, a classification system for every aspect of design, construction, and building operation. For example, the attributes that together constitute the "doorness" of a door include its swing, size, material, hardware, keying, finish, etc. This system is codified in a set of software standards called Industry Foundation Classes, or IFCs, that amount to universal, virtual representations of building elements. The IFCs are now in version 1.5.1 but soon will be upgraded to IFC2x.

According to Richard Geissler, executive director of IAI North America, IFCs constitute "a set of



Building Life-cycle Interoperability Software (BLIS) demonstrates the ability of any IFC-compliant programs to operate on one another's building model data.

Contributing editor Jerry Laiserin, FAIA, served as executive director of the aecXML project during its six-month start-up phase.

process definitions sufficiently universal to apply across the full spectrum of AEC business, from energy analyses to project plans." IFC-compliant programs don't just share common definitions of building components; they operate on a software building model assembled from such components by any other IFC-compliant software. The first certified implementers of IFC1.5.1, announced in mid-2000, include Graphisoft, Autodesk (AutoCAD), and Nemetschek AG (the German maker of AllPlan software, not the Nemetschek North America subsidiary that produces VectorWorks software).

Analysts estimate that widespread adoption of IFCs could slash by 70 percent the wasted effort in translating or duplicating data from one software model to another. This would free the design team to focus on quality improvement, such as energy performance or construction coordination. IFCs will provide a competitive edge to the software companies that promote them and to AEC businesses that adopt IFC-compliant software.

"X" marks the spot

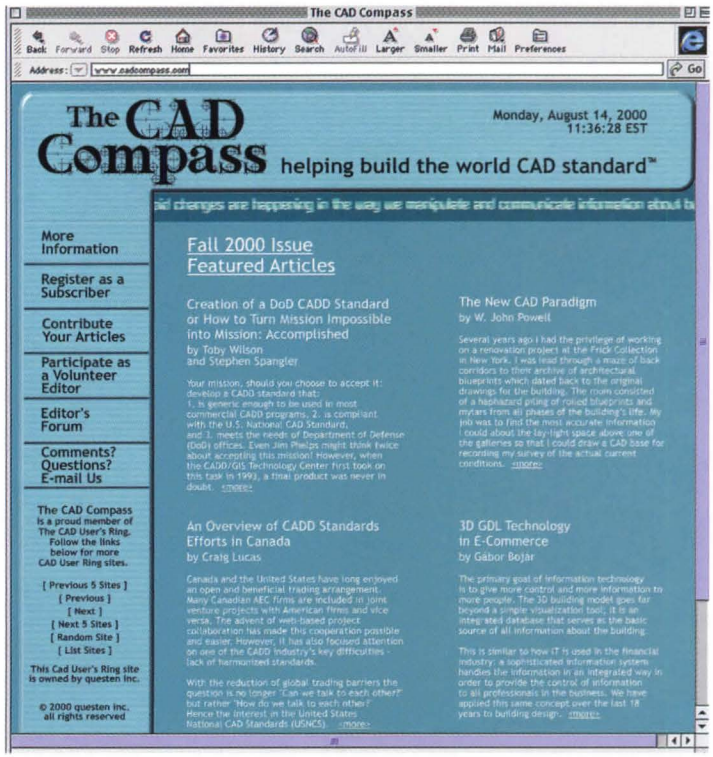
The Internet might seem ideally suited to sharing data in IFC-based models, but IFCs were conceived in 1995, before the Internet had matured, and therefore they evolved without regard to Internet compatibility. While it is easy to publish building information, such as code requirements and fire ratings, on a Web site, the standard HyperText Markup Language (HTML) for Web publishing deals only with the format or appearance of information, not with its meaning. Thus, a standard Web site that uses HTML cannot determine whether a number is a quantity, a date, a unit of measure, or a unit of currency. Ever-ingenious Internet developers recently devised a way to extend HTML so as to define content, and they called the result XML (eXtensible Markup Language). In August 1999 an industry project initially led by Bentley Systems, Primavera Systems, Bidcom, and the McGraw-Hill Construction Information Group (which publishes RECORD) launched a project to develop a subset of XML tailored to content and meanings appropriate to AEC business.

The resulting aecXML Project quickly attracted widespread industry support, including significant overlap with the membership of IAI. It soon became obvious to all concerned that aecXML and the IFCs were complementary ways of addressing similar problems. By January 2000, all work on aecXML moved under the organizational umbrella of IAI, as a committee chaired by Keith Bentley of Bentley Systems. Dozens of companies and organizations have proposed subsets of aecXML content descriptions, called schema, and IAI director Geissler expects they will be consolidated into an approved aecXML version 1.0 schema by the end of the year. Then architects using software that adheres to the aecXML schema will be able to click on design elements represented in their CAD program, for example, and automatically launch a Web search for building products with aecXML-tagged attributes matching the design requirements.

With commercially usable versions of IFCs available now and versions of aecXML becoming available soon, the key question for designers, specifiers, and builders is, Which does what? Duane Barrett, a product manager with Bentley Systems who serves as vice chair of IAI's aecXML committee, says, "IFCs were developed to transfer entire data sets from one CAD platform to another with no loss of information, whereas aecXML does not capture complete model information but only transfers requested attributes." In other words, aecXML is both more specific and more adaptable than the IFCs, and IFCs are more comprehensive and universal than aecXML.

Because the current versions of IFCs and aecXML define building elements by slightly different technical means, their software implementations will initially be used for different tasks. For example, aecXML need only transfer a few descriptive attributes of fire-rated assemblies to enable a CAD program and a code-checking program to "talk" to each other about a specific design issue, such as the placement of three-quarter-hour doors in one-hour partitions. Deploying the entire IFC "object model" would be overkill in that limited context. Yet in a more general context, such as interactive modeling of a building envelope, energy performance, and construction cost, the comprehensiveness of the IFC approach works better. Through the Building Life-cycle Interoperability Software (BLIS) Project, an informal cooperative group of IAI members has successfully demonstrated interoperability using IFCs among a dozen disparate programs all sharing the same building model data.

Both Geissler and Barrett agree that aecXML eventually will be able to derive information from IFCs, and that IFCs, in turn, will use aecXML as an Internet extension. Until that convergence occurs, software users will have to rely on their program suppliers to decide which standard is best suited to which type of design transaction. Careful software shoppers who want to avoid prematurely obsolete technology should start inquiring about their vendors' plans to adopt aecXML and to get their products IAI/IFC certified. As Tamas Hajas, president of Graphisoft U.S., observes, "Using these industry formats guarantees companies that their choice of design software never turns into a dead end." ■



The CAD Compass, www.cadcompass.com, is a new Internet site exclusively devoted to emerging standards for design software.

EVEN WORLD WIDE WEB TECHNOLOGY HAS FAILED TO TRANSFORM THE FRAGMENTED BUSINESSES OF ARCHITECTURE.

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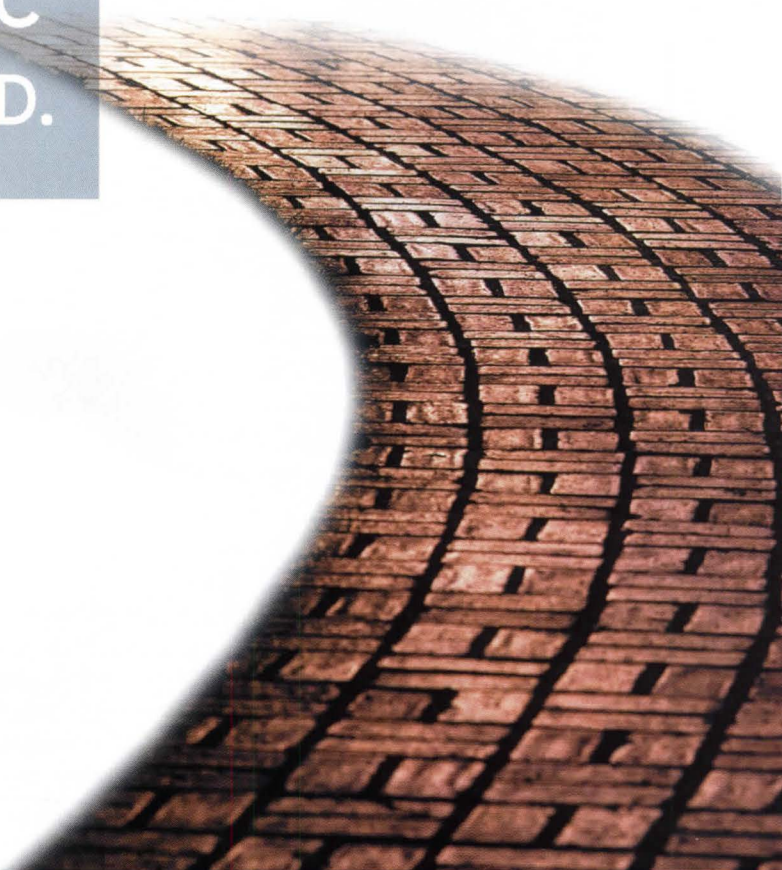

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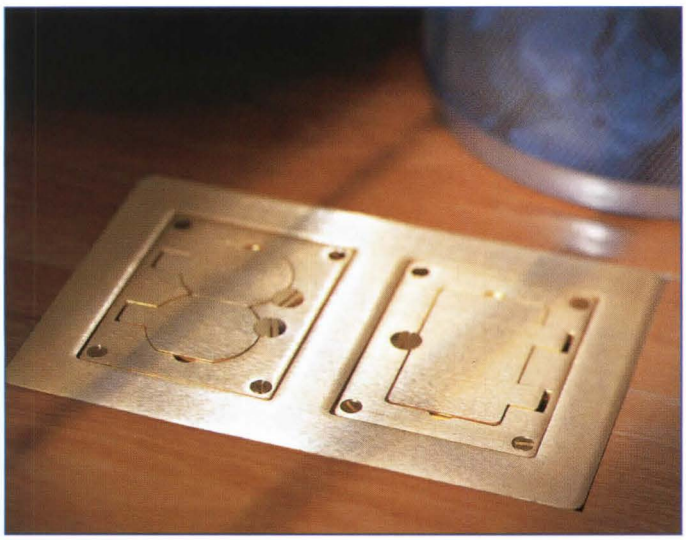
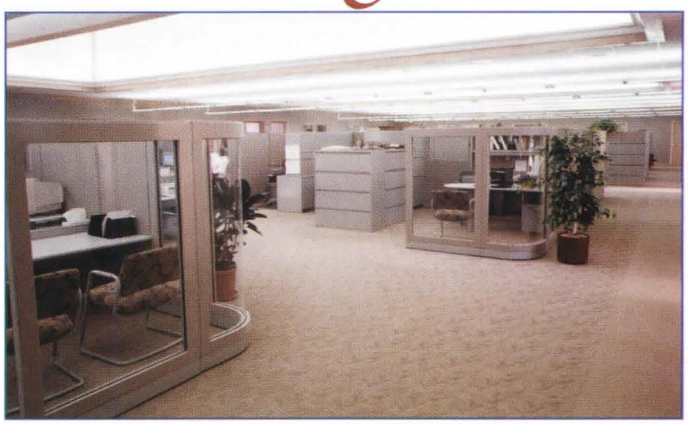
Infloor Wire & Cable Management





Increased workstation specialization means a "one size fits all" approach to providing wire and cable in open plan space is falling from favor. Instead, there is now a premium on systems that have the capacity and flexibility to meet all current and future workstation demands. At the same time, aesthetic considerations demand that the wire and cable infrastructure be as unobtrusive as possible.

In many new buildings, particularly those with open plans, infloor wire and cable management systems offer maximum efficiency and aesthetics. These fully integrated systems effectively manage complex data/communications requirements in environments where flexibility is a paramount concern. And, because these systems are located within or under floors and have flush or recessed power and data connections, they are practically invisible.

Infloor wire and cable management systems are particularly effective for large, open areas such as offices with modular partitions, schools, and retail stores. They can also be used to provide service to partitioned spaces, such as private offices, training centers, and conference rooms. These systems include:

- Underfloor duct
- Cellular and cellular deck systems
- Floor boxes
- Poke-thru devices
- Raised floor systems

SYSTEM CONSIDERATIONS

The location and capacity of infloor wire and cable management systems are critical concerns that ultimately depend on workstation requirements. In fact, the central importance of the workstation dictates that the selection of an infloor wire and cable management system begins at the workstation and works back toward electrical closets and telecommunications rooms.

Determine service requirements. Typical workstations require a minimum of five services: filtered, surge protected, isolated ground AC power; unfiltered AC power; LAN connection; internet connection; and telephone line(s). A growing number of workstations also need specialized services, such as video, and/or multiple monitors. Outlets and jacks may be built into modular furniture, attached to the surface of partitions, or located in the floor, independent of any furniture.

AIA/ ARCHITECTURAL RECORD CONTINUING EDUCATION

Use the learning objectives below to focus your study as you read **Infloor Wire** *& Cable Management*. To earn one AIA/CES Learning Unit including one hour of health safety welfare credit, answer the questions on page 192 and follow the reporting instructions on page 266. Or use the Continuing Education self-report form on Record's web site -- www.architecturalrecord.com.

Learning Objectives:

- Explain how wire and cable systems can lend flexiblity to an interior environment.
- Describe the different considerations in selecting a system.
- Describe variations of infloor duct systems.

Determine system density. Cellular and duct systems are laid out in a grid pattern. Floor boxes, poke-thru devices, and raised floor systems are not constrained by a grid, though they are frequently installed in such a pattern. In all cases, infloor systems offer nearly unlimited flexibility to choose the density of service for a particular area. This density must be balanced against the project budget and the capacity of the wire and cable management system.

Locate distribution system. Since wire congestion is most likely to occur near service closets and in feeder runs, careful planning is needed to eliminate this concern. Dividing the area to be wired into zones can reduce the size of the feeder run by lowering the number of workstations it will be required to feed. Optimal placement of feeder runs also lowers wire pulling distance, reduces feeder size, and minimizes the amount of feeder required.

INFLOOR WIRE & CABLE MANAGEMENT SOLUTIONS

Cellular and cellular deck systems combine separate wire and cable channels in a single, unified infloor raceway that is encased in the concrete pour. If a building is of steel frame construction, a cellular deck system serves as part of the steel reinforcement for the slab, as well as a wire and cable management system. Both systems offer moderate to high capacity and options to meet all service density requirements.

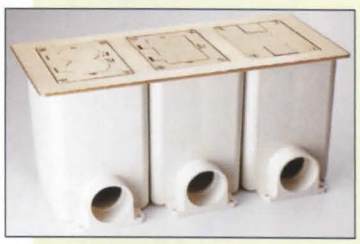
In order to maximize the benefits of these systems, close coordination is required between the owner, architect, electrical engineer, and structural engineer. Not only is this good design practice, but in the case of infloor distribution systems the specification channels themselves can differ. Deck systems are considered structural components and are specified through Division 5, while other infloor systems are specified through Division 16 (electrical). Infloor distribution products specified in multiple divisions should be coordinated with one another to ensure compatibility.

Underfloor duct systems offer support and security for power and data/communications wiring in reinforced concrete and steel construction. These duct systems have been employed with great success for decades and, although cabling has increased in volume and complexity, properly designed systems can accommodate even the most complex power, voice, data, and other wiring and cabling.

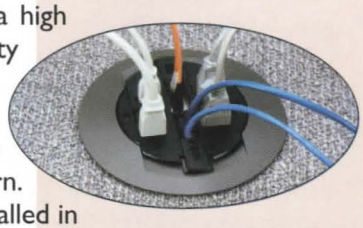
Available in a variety of sizes and configurations, underfloor duct systems provide separate channels for power and data/communications systems. Junction boxes facilitate cable pulling and allow cabling to be added or upgraded. Users access single points of service for workstations through low profile or flush service activations, which may be located anywhere along the duct run.

Trenchduct is a variant of infloor duct. The duct is set into concrete, but the removable cover is flush with the floor, providing ease of access and lay-in installation capability. Trenchduct is used in high-capacity applications and as a feeder system for other infloor wire and cable management systems.

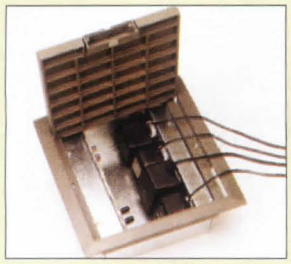
Floor boxes are ideal for low-density, low-churn applications, and for providing cost-effective wire and cable management in open space areas. Single and multiple gang boxes are available. If the application is on-grade, a cast iron floor box or an approved on-grade stamped steel floor box may be needed. If the application is above-grade, a stamped steel or nonmetallic floor box may be appropriate. Floor boxes are available in both shallow and deep versions with a wide array of round and rectangular covers.



Poke-thru devices offer a high degree of design flexibility for open office space, since their placement is not constrained by partitions or by the grid pattern. Poke-thru devices are installed in core-drilled holes that enable wires and cabling to penetrate from plenum space below through the concrete slab. The only limitations are the presence of major structural components such as beams, and the rare instances where there is no available plenum space (since poke-thru devices require plenum access, they cannot be used in slab-on-grade applications). The UL fire resistance directory details the standard for poke-thru specifications as a "minimum of 2' on-center and not more than 1 insert per 65 sq. ft. of floor area in each span."



In general, poke-thru systems are most advantageous in structures where low churn rates are anticipated or where churn does not result in physical alterations. Among commonly installed wire and cable management systems, poke-thru devices typically have low initial installation cost. However, the cost to add or relocate a device is relatively high because of the need to drill a new hole, purchase a new device, and open the plenum space for installation.



Raised floor systems are sometimes the most cost-effective solution, especially when the highest levels of capacity and flexibility are required. With workstations requiring more voice and data services than ever, raised floors are no longer confined to computer rooms. Low-profile floors have significantly reduced the vertical space requirement for these systems. In addition to providing the physical space for wires and cables, raised floors provide the added advantage of convenient access to power and data/communications outlets that are housed in raised floor boxes.

In order to maximize the flexibility and cost benefits of raised floors, many designers are now also specifying manufactured wiring systems. A manufactured wiring system consists of factory-assembled connectors and modular cable assemblies that connect raised floor boxes to electrical and data/communications systems. If a box must be relocated it is a simple matter to unplug the cable set, move the box to a new floor cut-out, and plug the cable set back in. An estimated 45 to 55 percent of raised floor systems now employ a manufactured wiring system instead of conduit.

AN INTEGRAL INFRASTRUCTURE

Wire and cable management systems are part of an integral, building-wide infrastructure that is of critical importance to owners. The design team should work closely with client's technology managers to understand their data/communications concerns and meet their requirements in ways that will not compromise aesthetics. Infloor systems in particular must be considered early in the design process – rather than leaving it until later.

Such an approach maximizes flexibility and protects the original design against the unplanned intrusions that can result when wire and cable management is not addressed until late in the process. Even a well-designed network can fail to live up to expectations if it is locked into an inflexible, difficult-to-change cabling infrastructure. The accessible design of infloor wire and cable management systems enables them to support both operational and systems flexibility. Operation flexibility encompasses the day-to-day or month-to-month changes required for the workplace to keep pace with the functions being performed in it. Systems flexibility enables a facility to accommodate new or expanded communications technologies over the long term.

ACCOMMODATING FIBER OPTICS

The use of optical fiber cable in horizontal applic tions, frequently called fiber-to-the-desk, has focus attention on the effect of bend radius on system pe formance and the need to maintain a specified cab bend radius at all points of the cabling pathway.

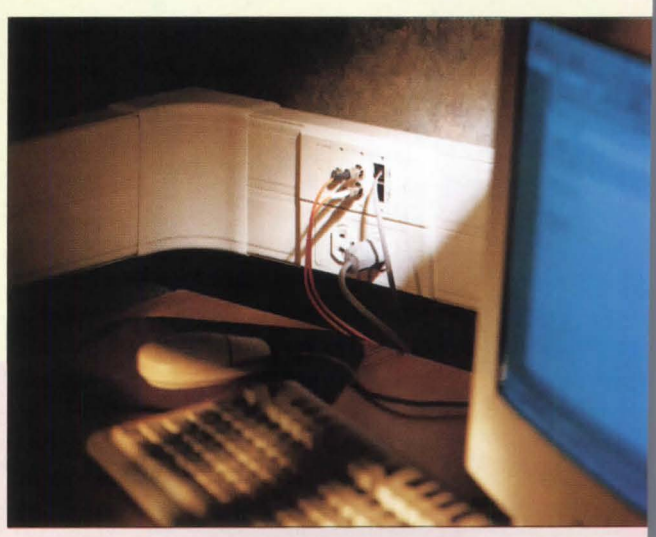
The TIA/EIA and the American National Standar Institute (ANSI) have recently approved a bend radi standard for fiber optic cable. Of particular concern selecting and installing cabling pathways is the new

minimum bend radius standard for these cables:

1. 1.0" under no pull load.

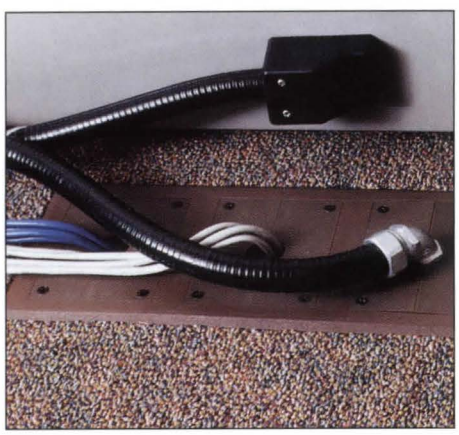
2. 2.0" when subject to tensile loading up to the rat limit.

Not all wire and cable management systems offer 2.0" bend radius. Since no one can be certain that t initial installation or any future changes will n require cable pulling, the installation and maintenan of cables may be severely limited by a pathway th does not maintain the bend radius that is requir suitable for pulling fiber optic cable.



HIGH-CAPACITY INFLOOR SYSTEM

When the Wyndham Anatole Hotel in Dallas expanded its exhibition space, a primary concern was increased electrical and data/communications demands of trade show booths that utilize interactive displays and internet connections. Cellular duct were laid out 30 feet apart to conform to the typical trade show floor plan where 10-foot-deep booths are placed back to back facing ten foot aisles. A high-capacity trench system was selected to feed the cellular system. And extra-large floor boxes accommodate multiple receptacles and data/communications jacks.



POKE-THRU DEVICES IN NEW CORPORATE HEADQUARTERS

The headquarters of Clayton Homes in Alcoa, Tenn., is a completely open environment with no enclosed offices at all. The owner needed the flexibility to provide power, voice, and data cabling to modular furniture in a way that doesn't detract from the appearance. The solution was high-capacity poke-thru devices that accommodate high-speed UTP cabling. Ninety-one of the poke-thru devices are connected directly to modular office furniture.

FLEXIBLE SOLUTION FOR BANK BUILDINGS

Three new buildings on the corporate campus of First Union Corporation in Charlotte, N. C., had to be up and running quickly in order to maintain quality customer service. To speed installation and maintain flexibility, designers specified raised floors with a manufactured wiring system. The flexible connection between the distribution boxes and the raised floor boxes allows the Customer Information Center to change and expand.

PROFILE: THE WIREMOLD COMPANY

The Wiremold Company, headquartered in West Hartford, Conn., is a leading manufacturer of wire and cable management systems, power and data quality products, and data/communications connectivity systems.

Rapidly evolving data/communications technology and the need for flexible workstations have increased the amount and complexity of wiring and cabling. At the same time, building owners demand improved aesthetics and lower life cycle costs. The Wiremold Company anticipated these changes and introduced the concept of integrated wire and cable management systems. Leading product lines include Walker" infloor systems, SpecMate' cable tray, the Interlink Cabling System, the Activate' Connectivity System, Wiremold" perimeter raceway systems, and Sentrex" power and data quality products.

The Wiremold Company has embarked upon an aggressive program of product development that focuses on customer needs. A top priority is to extend future-ready enhancements, such as bend radius support, across a broad range of wire and cable management systems.

The Wiremold Company has expanded its global sales, support, and manufacturing capabilities. Its strategically located staff is "on the ground" with a thorough understanding of construction techniques and local codes. Value-added services include product testing and securing appropriate country approvals, design engineering support, and on-site project coordination.

LEARNING OBJECTIVES:

- Explain how wire and cable systems can lend flexiblity to an interior environment.
- Describe the different considerations in selecting a system.
- Describe variations of infloor duct systems.

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Then turn the page upside down and check your answers. Fill out the self report form on page 266 and submit it or use the Continuing Education self report form on Record's web site - -www.architecturalrecord.com - to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS:

1. Where do you begin when selecting the location and capacity for an infloor wire and cable system?

2. Why would you divide the areas to be wired into zones?

3. What are the advantages of poke-thru devices?

4. When are raised floor systems the most cost-effective solution?

5. What areas are infloor wire and cable systems most effective for?

6. What is the bend radius to allow for in fiber-to-desk cable applications?

ANSWERS:

1. Because the requirements of the workstation are of utmost importance, the location and capacity are dictated by the needs of the workstation.

2. Dividing the area in zones can reduce wire congestion. It reduces the size of the feeder run by lowering the number of workstations it will be required to feed.

3. Poke-thru devices can be installed in core-drilled holes in the concrete floor, not constrained by partitions or a grid. They can be placed where they are needed and they can be added to an existing system. Their initial installation cost is low and their only limitations are that they need plenum space and the drilled hole must avoid structural components.

4. Raised floor systems are most cost-effective when the highest levels of capacity and flexibility are required. They provide convenient access to power and data/communications outlets in raised floor boxes. Manufactured wiring systems connect raised floor boxes by modular cable assemblies which allow relocation by unplugging the cable set, moving the box, and plugging the cable set back in.

5. Large open areas such as retail stores, schools, and offices with modular partitions are the most effectively served by infloor wire and cable management systems

6. When optical fiber cable is being used horizontally, the cable management system needs to offer a two inch bend radius. Recently TIA/EIA and ANSI standards have established a minimum one inch radius bend when there is no pull load, and a minimum two inch bend radius when there is a tensile load. However it is best to design for the two inch bend since cable pulling may be required at some time during the life of the system.

AIA/ARCHITECTURAL RECORD
CONTINUING EDUCATION SERIES

SITE / ROADWAY
Optical Systems
DESIGN AND APPLICATION GUIDE

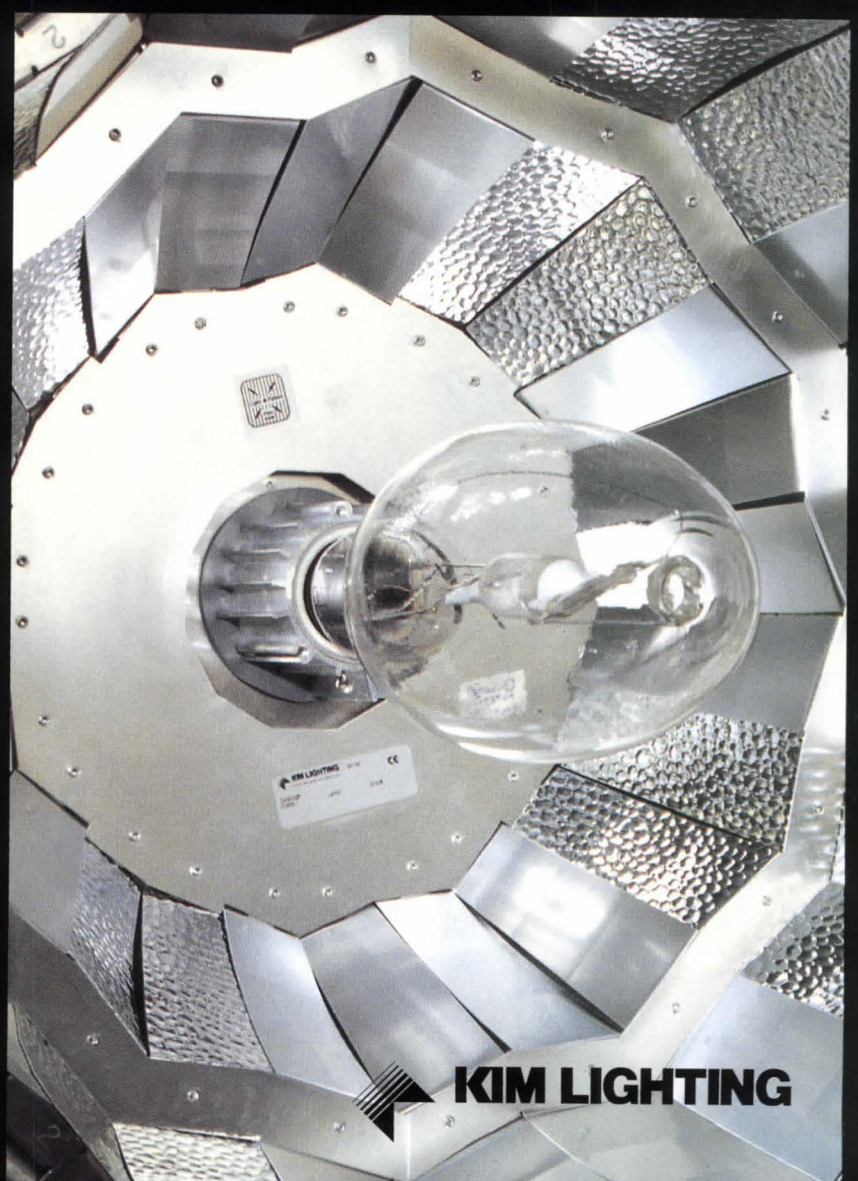
AIA/ARCHITECTURAL RECORD
Continuing Education

Use the learning objectives below to focus your study as you read **Site / Roadway - Optical Systems - Design and Application Guide**. To earn two AIA/CES Learning Units including one hour of health safety welfare credit, answer the questions on page **192S** and follow the reporting instructions on page **266**. Or use the Continuing Education self report form on *www.architecturalrecord.com*.

Learning Objectives:

After reading **Site / Roadway - Optical Systems - Design and Application Guide** you will be able to:

- Identify the lighting requirements in each area of site lighting.
- Describe different methods to direct light toward or away from areas not to be illuminated.
- Describe the distribution types of luminaires and how they are best suited for lighting outdoor environments.
- Explain how isofootcandle plots are used to design site lighting.

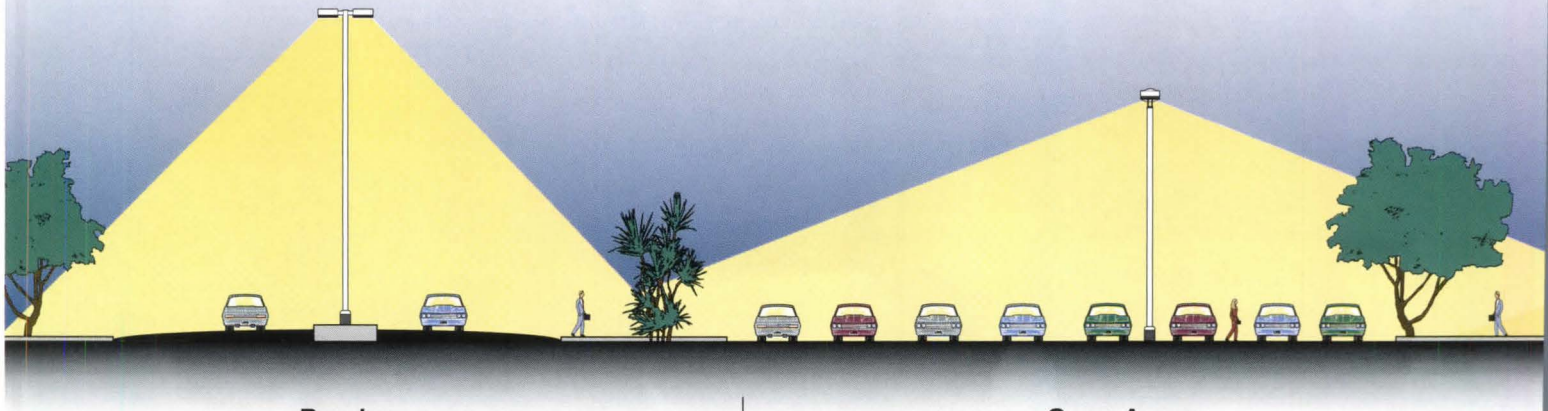


Advertising Supplement Provided by Kim Lighting

Site Integration

Design, Focused on Applied Performance

Conceptually, project sites can be classified into four basic areas; Roadways, Open Areas, Pedestrian Areas, and the Site Perimeter, each representing a unique set of lighting circumstances. Meeting the diverse needs of site illumination requires a wide range of solutions. Optical systems selection begins with identifying the specific illuminance requirements, combining a product's aesthetic design with relevant performance features, to achieve an integrated site lighting design.



Roadways

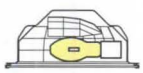
Roadways require narrow perpendicular and wide lateral beam spreads. This facilitates wide pole spacings, excellent uniformity, and control of glare.

Luminaire selection criteria includes performance, consideration of maintenance, lamp choices influenced by utility interests, and the ability to remain in service for long periods with minimal attention.

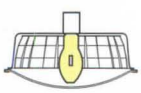
Optical designs must include an array of distributions in order to illuminate varied roadway widths, traffic patterns and to support traffic flow / organization.

Desirable Optical Features

Lamp Orientation



Horizontal Lamp
Flat Lens



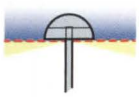
Vertical Lamp
Convex Lens

Distribution Options

Type II

Type III
Asymmetric

Cutoff Control



Open Areas

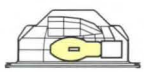
Open Areas require careful consideration of illuminance requirements, uniformity, and brightness control.

These areas are subject to scrutiny relevant to the safety and security of site occupants and the interface between vehicle and pedestrian traffic. Parking areas and connecting walkways are a potential source of litigation and liability for the project owner, requiring accurate prediction of illumination levels and dependable performance.

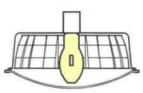
Illumination levels, uniformity, and glare must also be controlled to optimize visibility. Maximized luminaire spacings produce an economical installation.

Desirable Optical Features

Lamp Orientation

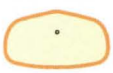


Horizontal Lamp
Flat Lens



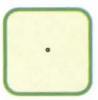
Vertical Lamp
Convex Lens

Distribution Options



Type II

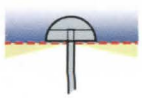
Type III
Asymmetric

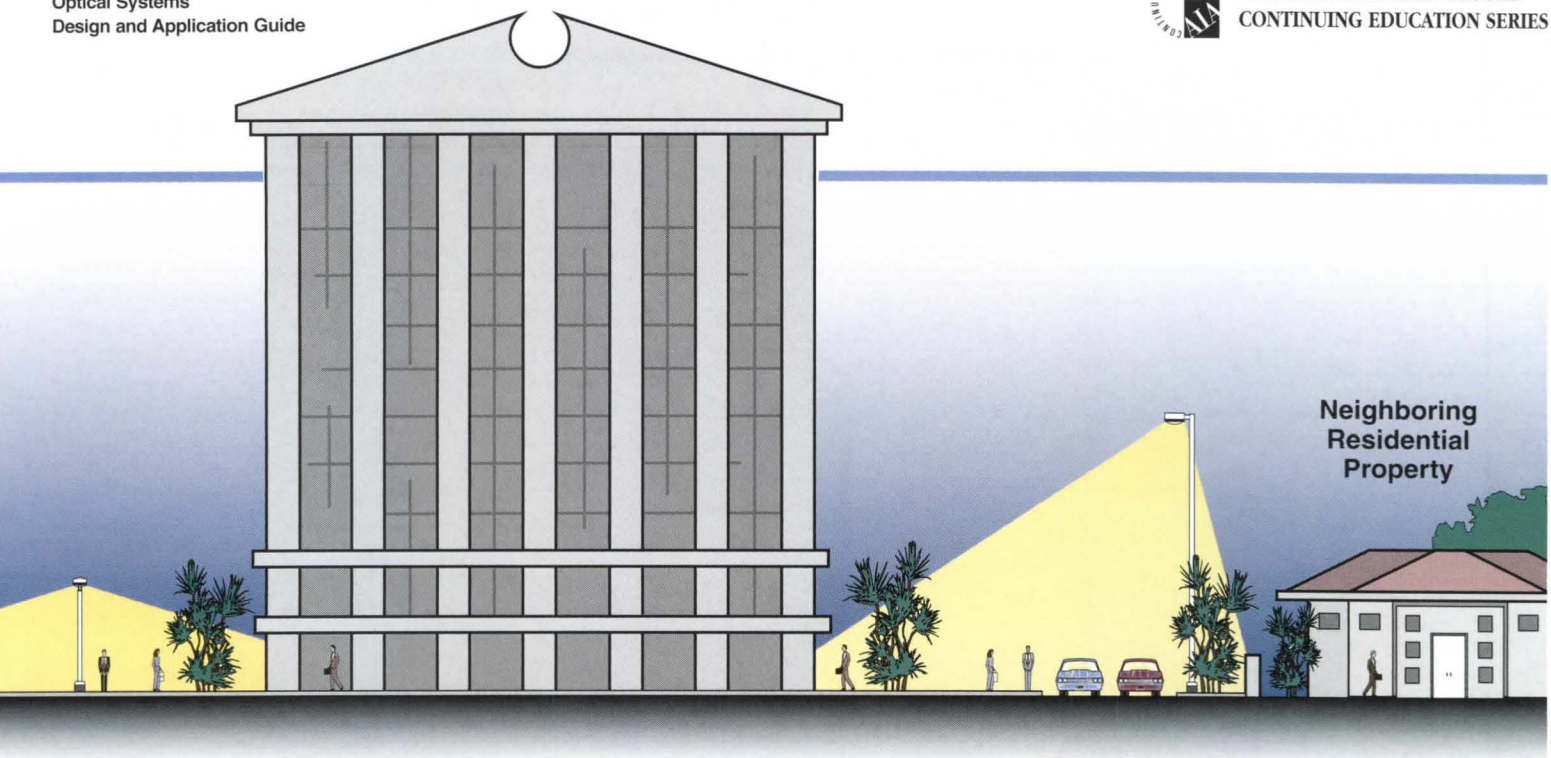


Type V
Symmetric

Rotatable Optics

Cutoff Control





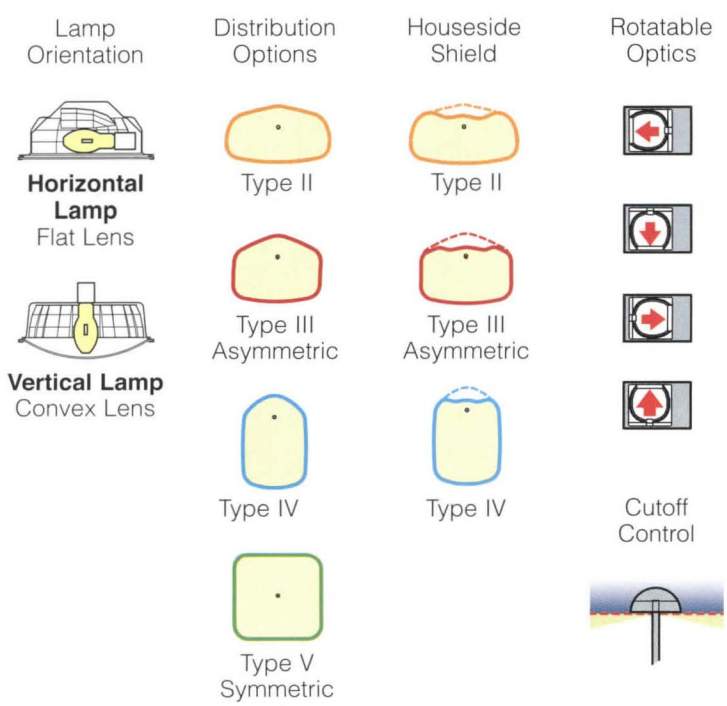
Pedestrian Areas

The transition between the surrounding site and the building itself defines the Pedestrian Area. Plazas, Courtyards, and Pathways require the widest range of optical solutions. These areas combine the concerns of Open Areas, with a heightened concern for integration of luminaire appearance with site architecture.

Illumination of irregularly shaped spaces, and a need to control stray light, requires optical diversity. Fixture placement may also be influenced by aesthetic concerns.

Luminaires in this area are highly visible, requiring attention to finish quality and detail. Design components shared with other area luminaires enhance integration of the entire site.

Desirable Optical Features



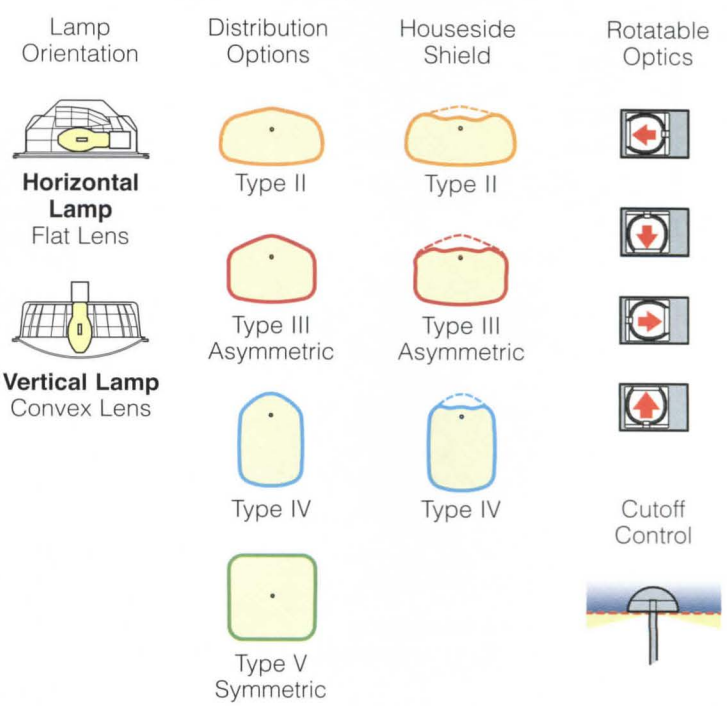
Site Perimeter

The Site Perimeter may include requirements to control illumination onto adjacent properties.

Light trespass ordinances, and courtesy to neighboring property occupants, require tight control of light emitted behind the luminaire.

Efficient design satisfies some of this demand, while cutoff optics provide an additional level of control. Houseside shields may also be required to provide even tighter control by trimming the distribution pattern. These concerns must be satisfied, without affecting overall system performance.

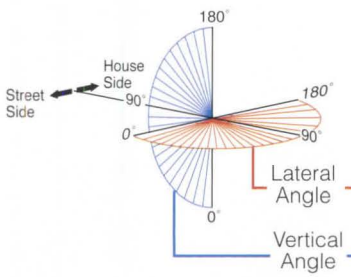
Desirable Optical Features



Photometry Information

Basic Language and Presentation

Luminaire Orientation



Candela Tabulation

Presenting the raw data used for all illuminance calculations, the information is tabulated with the Vertical Angles in rows and Lateral Angles in columns.

Lateral values from 0° to 90° are in front of the luminaire and referenced as "Street Side." Lateral values from 90° to 180° are behind the luminaire and referenced as "House Side."

Vertical values from 0° to 90° are below the fixture, while values 90° to 180° are at the fixture level and above.

Candela data is also used to define a luminaire's distribution type and cutoff characteristics.

itl boulder
THE LIGHT CENTER OF THE INDUSTRY
INDEPENDENT TESTING LABORATORIES, INC. • 3396 LONGHORN ROAD, BOULDER, CO 80302 USA • PHONE (303) 442-1255
FAX (303) 449-5274

REPORT NUMBER: ITL44999
DATE: 05/02/97
PREPARED FOR: KIM LIGHTING INC.

CANDELA TABULATION — LATERAL ANGLE

VERTICAL ANGLE	STREET SIDE 0.0	15.0	35.0	55.0	71.0	75.0	95.0	115.0	135.0	155.0	HOUSE SIDE 180.0
180.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
155.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
125.0	0.	0.	0.	5.	0.	5.	9.	9.	9.	0.	0.
115.0	0.	0.	0.	9.	0.	9.	12.	12.	12.	0.	0.
105.0	4.	7.	9.	12.	9.	15.	15.	15.	15.	9.	12.
95.0	7.	9.	15.	15.	15.	18.	18.	18.	18.	12.	12.
85.0	18.	24.	27.	36.	36.	45.	36.	45.	55.	45.	36.
75.0	327.	491.	700.	1701.	3893.	3993.	810.	500.	300.	518.	382.
66.0	728.	746.	2492.	4011.	8595.	8232.	3183.	1783.	1674.	1437.	1037.
65.0	782.	810.	2465.	4339.	8295.	8141.	3429.	1810.	1737.	1483.	1110.
55.0	1674.	1983.	2610.	4066.	7104.	6631.	3029.	2001.	2010.	1655.	1492.
45.0	2219.	2192.	2310.	2392.	2301.	2228.	1974.	1865.	1865.	1719.	1674.
35.0	2110.	2165.	2092.	2092.	2056.	2047.	1956.	1910.	1846.	1774.	1746.
25.0	982.	964.	1137.	1674.	1946.	1956.	1956.	1874.	1792.	1728.	1674.
15.0	582.	600.	664.	655.	582.	600.	746.	1101.	1264.	1392.	1346.
5.0	491.	491.	491.	491.	455.	464.	418.	364.	327.	318.	309.
0.0	363.	363.	363.	363.	363.	363.	363.	363.	363.	363.	363.

Maximum Candela

figure 4.1

Footcandle Calculations

The data provided in the candela tabulation is used to calculate footcandle levels within a proposed lighting design. Generally, this is accomplished by using computers to produce numeric calculations.

The evaluations are dependent upon the accuracy of the data used to make the requisite calculations.

Figure 4.2 illustrates the relationship of the calculated illumination at a single point, to the information provided in the *Candela Tabulation*. See figure 10.1 for the correlating location on an Isofootcandle Plot.

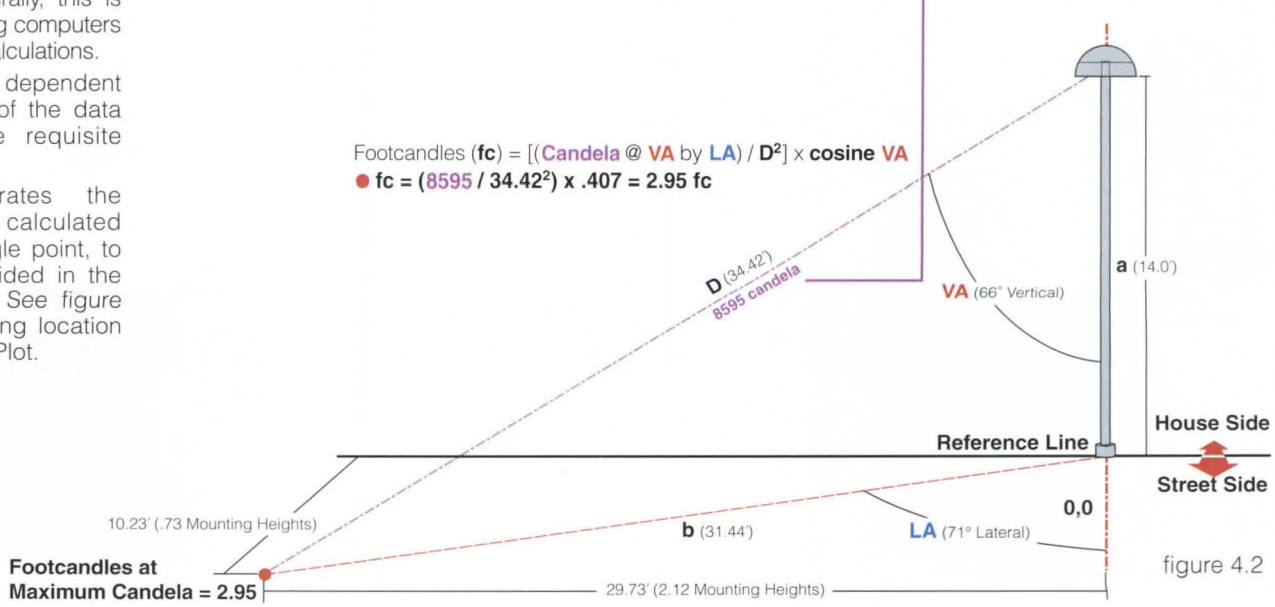


figure 4.2

Photometry is the foundation on which all evaluations of luminaire performance are built. Independent testing assures the photometry is accurate and reliable.

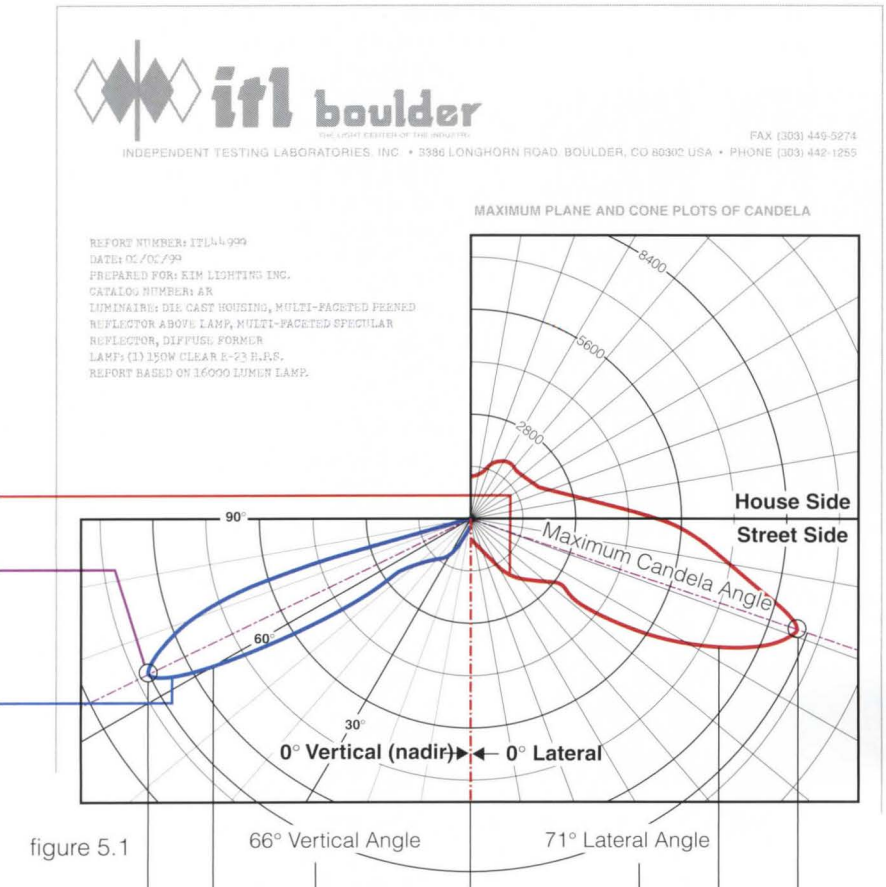


figure 5.1

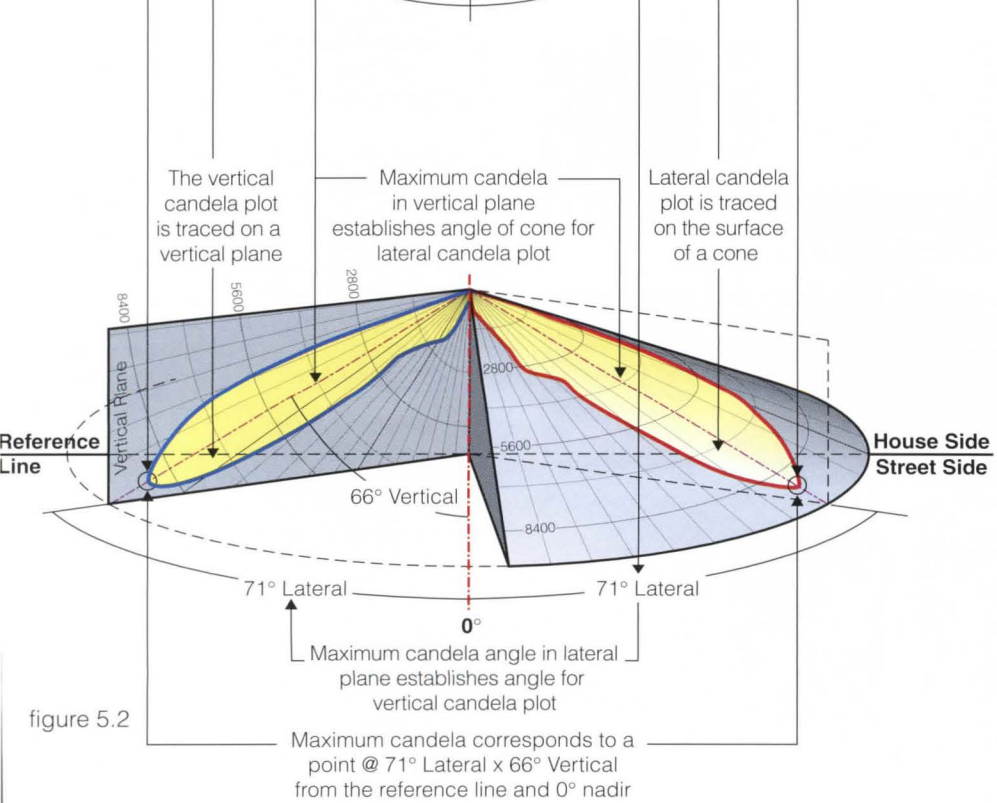


figure 5.2

Candela Plots

Candela Plots are based on the candela tabulation data (figure 4.1). Outdoor lighting produces unique light patterns, that are difficult to represent in a flat two-dimensional plane.

To create distribution plots that illustrate luminaire performance, curves are plotted with a three-dimensional dynamic.

Using the **maximum candela value** – in this example **8595** – two planes are identified; a lateral angle of **71°**, and a vertical angle of **66°** (see figure 5.1).

The vertical angle is used to create a cone, with its slope equal to the vertical angle of **maximum candela** – in this example **66°** – on this cone, all **lateral candela distribution values** from the tabulated data **row** at **66°** are plotted. The result is shown on the right side of the chart (figure 5.1). The two-dimensional view is looking down at the top of the constructed cone.

The second value – the **lateral angle** of **71°** – is used to construct a vertical plane off the lateral baseline. On this surface, all **vertical candela distribution values** from the tabulated data **column** at **71°** are plotted. The result is shown on the left side of the chart (figure 5.1). For purposes of presenting the plot, the vertical plane is flattened – or laid back 90° – to show it in the same plane as the right side plot.

The combination of the two curves represents luminaire performance in three dimensions.

Figure 5.2 (at left) shows the chart in a perspective view, to help visualize the relationship between the two plotted curves.

Photometry Testing

Variables Affecting Accurate Information

The Importance of Accuracy

Site / Area Illumination design is concerned with relatively large lamp sources, applied over large areas. Visual acuity is greatly influenced by control of glare and uniformity. In this, subtle variations in the performance of luminaires have a dramatic effect on the illuminated field. The only way to accurately predict the performance of a proposed design, is through the application of accurate performance data.

Comparing Performance

In addition to accurately predicting the performance of a single system, comparisons of performance between two systems, produced by disparate providers, can only be accomplished if the data provided by both is acquired using some form of mutually accepted standard. Ideally, this would include an independent source of testing, unbiased, utilizing industry established standards.

True comparisons of different optical systems can only be accomplished when the method of testing is the same for both systems.

Assumptions and Compromises

To save money, many manufacturers utilize methods that compromise accuracy under the assumption that small variances are not important. Just how far these assumptions are carried is never clearly defined and varies from one provider to another. This makes it very difficult to determine where actual test information and the compromises begin and end.

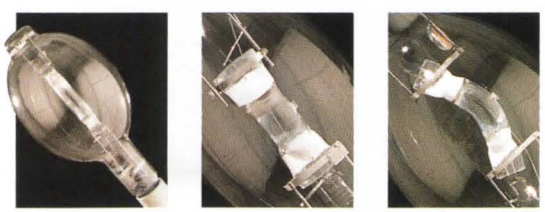
To make the most qualified, informed decisions, accuracy and dependability of information is vital. Compromises and assumptions have no place in the raw data being used to make selections.

Lamp Variations (images to scale with each other)

Metal Halide

70MH ED-17 | 175MH ED-17 | 175MH ED-28

250MH ED-28 | 400MH ED-28 | 400MH BT-37

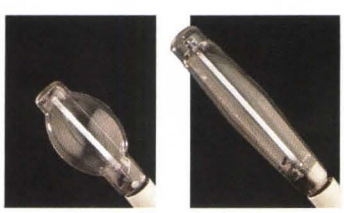


1000MH BT-56 | Vertical Arc Tube | Horizontal Arc Tube

High Pressure Sodium

70HPS ED-17 | 100HPS ED-17 | 150HPS ED-17

150HPS ED-23 | 250HPS E-18 | 400HPS E-18



750HPS E-37 | 1000HPS E-25

In addition to these obvious differences, HPS lamps are very sensitive to arc tube temperature and voltage rise during operation.

figure 6.1

Prorating

Prorating is a common practice in the representation of luminaire performance. It is based on applying multipliers, based on raw lamp lumens, to a known test result. For example; A test accomplished on a system with a 10,000 lumen lamp, is pro-rated to represent a system using a 5,000 lumen lamp, by simply applying a .5 multiplier to the test data on the base luminaire.

This wrongly assumes that all other factors are exactly equal, that the only variation is raw lumens.

With High Intensity Discharge (H.I.D.) sources, every lamp is different, based on:

- Arc Tube Shape (Metal Halide or High Pressure Sodium)
- Arc Tube Size
- Envelope size (ED-17 through BT-56)
- Base Size (medium or mogul)
- Envelope shape
- Intended operating position (vertical, horizontal or universal)
- Position of the arc tube within the envelope
- Whether or not the socket design locks the lamp into a given position (pin orientation).

The combination of these elements produces unique configurations for virtually every H.I.D. lamp. Prorating cannot account for these variables.

The photos shown in figure 6.1, show the numerous variations in common H.I.D. lamps.

In addition to these variables, the position of the lamp within a reflector system, heat dissipation, internal reflection and lamp/optical system interaction are all variables not represented in prorated performance reports.

In the case of High Pressure Sodium lamps, heat plays a large part in lamp life. HPS lamp Voltage Rise at Arc Tube information is an indication of how the optical system controls arc tube heat. The higher the rise, the shorter a lamp's life will be. This is also not considered in prorated information, as it can only be gained through testing of each optical system.

Test Sources

Photometry testing can come from several sources. The two most common are the manufacturer or an Independent Test Facility. The two most recognized independent testing facilities are ITL of Boulder Colorado and ETL.

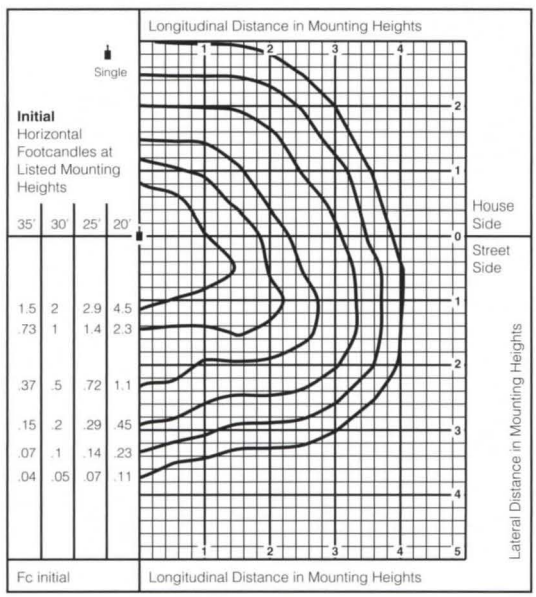
Manufacturers' data may or may not be trustworthy and must be carefully scrutinized. It is very difficult to determine whether the information provided by two different manufacturers can be accurately compared. Unless the testing procedures used by each producer are known, comparative results may be highly suspect. If the manufacturer has no other process in place to assure that every test is accomplished under strict procedural standards (such as ISO 9001), test results may not be accurate. Without strict control, testing process may shift, creating variations from one test to another over time.

Independent testing by ITL and ETL are accomplished using IES established standards, under strict procedural processes. In addition to this, independent labs utilize seasoned lamps of known output, driven by laboratory quality ballasts, whose electrical characteristics are tightly controlled. This produces results that are accurate from one optical system to another, regardless of when they are tested.

A Hybrid method, where a core series of optical systems are tested by an independent source, with additional tests accomplished by the manufacturer, can also be used. By providing a redundant series of bench-mark tests against the independent data, the accuracy of the manufacturers' information can be determined. This allows the manufacturer to test a larger range of systems which might be otherwise impractical.

In any case, it is important to know the origin of test data. If the source is suspect, so is the information provided.

400MH Type III



400HPS Type III

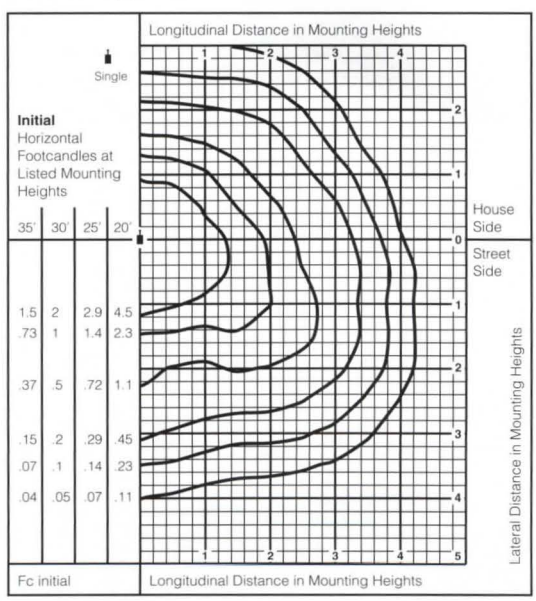


figure 7.1

Photometric Variations

The subtle variations in these two isofootcandle footprints are based on differences in lamp configuration only. All other components of the optical systems were identical.

Optical Variations

Optical systems are precise devices, that are affected by a wide range of variables. The effects of subtle variations from one lamp to another, an arc tube design, or the position of the lamp within a reflector system, can have a dramatic impact on performance. Any change in these variables requires testing to create accurate evaluation of performance. Figure 7.1 shows an example of how two reports vary, resulting from a change of lamp (MH to HPS).

Four Basic Rules

The following guidelines assure that the information used to evaluate and compare the performance of optical systems is the most accurate and dependable:

1. **Testing of every configuration**

   The only way to be assured that performance information is accurate is through testing. Each lamp/reflector combination must be tested. Prorating does not accurately represent actual performance.

2. **Known testing procedures**

   Testing and manufacturing should employ a quality program that is audited to **ISO 9001** standards. This assures that procedures are in place that control consistency in testing and manufacture.

3. **Independent verification**

   Independent testing and/or verification is the only way to assure that the data provided is accurate and does not include special "tuning" of performance to gain more attractive test results.

4. **Sealed optical systems**

   To assure the performance desired is achieved in application and will remain so without degradation from optical system contamination, the optical chamber must be tightly sealed.

Distribution Types

Definitions and Methodology

Method

Outdoor Luminaires produce lighting patterns that can be identified by their reach in front and to each side of a single fixture location. Distribution Types describe the reach of the luminaire's light pattern forward of each fixture, while Distribution Ranges define the reach to either side.

Distribution Types

Classification is based on locating the luminaire's effective major output pattern on a grid representing distances in Mounting Heights. The pattern is defined by tracing an area representing distribution at 50% of Maximum Candela. Classification is established by measuring where the bulk of this pattern falls on the grid (see figure 6.2).

In some cases, minor deviations in a beam pattern may cross the boundary from one pattern description into another. Where this has a nominal effect on applied performance, it should not be considered.1

Distribution Type defines how far forward of the luminaire (Street Side) the effective output reaches. Type II defines shallow reaches, while Type IV identifies luminaires with a definite forward-throw distribution. See the following diagrams for definitions of each specific type.

Distribution Range

Distribution Range defines how far the distribution pattern reaches laterally, perpendicular to the axis used to identify general Type. See the definitions below figure 6.2 for each of the ranges used.

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FAX (303) 449-5274

REPORT NUMBER: ITL44933[3]
DATE: 06/02/99
PREPARED FOR: KIM LIGHTING INC.

CANDELA TABULATION — LATERAL ANGLE

VERTICAL ANGLE	STREET SIDE 0.0	15.0	35.0	55.0	71.0	75.0	HOUSE SIDE 90.0	115.0	135.0	155.0	180.0
180.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
155.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
125.0	0.	0.	0.	5.	0.	5.	9.	9.	9.	0.	0.
115.0	0.	0.	0.	9.	0.	9.	12.	12.	12.	0.	0.
105.0	4.	7.	9.	12.	9.	15.	15.	15.	15.	9.	12.
95.0	7.	9.	15.	15.	15.	18.	18.	18.	18.	12.	12.
85.0	18.	24.	27.	36.	36.	45.	36.	45.	55.	45.	36.
75.0	327.	491.	700.	1201.	4325.	4325.	1256.	500.	300.	518.	382.
66.0	728.	746.	2492.	4011.	8595.	8232.	4302.	1783.	1674.	1437.	1037.
65.0	782.	810.	2465.	4339.	6913.	8141.	4466.	1810.	1737.	1483.	1110.
55.0	1674.	1983.	2610.	4066.	4325.	6821.	3250.	2001.	2010.	1655.	1492.
45.0	2219.	2192.	2310.	2392.	1946.	2228.	1974.	1865.	1865.	1719.	1674.
35.0	2110.	2165.	2092.	2092.	582.	2047.	1956.	1910.	1846.	1774.	1746.
25.0	982.	964.	1137.	1674.	455.	1956.	1956.	1874.	1792.	1728.	1674.
15.0	582.	600.	664.	655.	363.	600.	746.	1101.	1264.	1392.	1346.
5.0	491.	491.	491.	491.		464.	418.	364.	327.	318.	309.
0.0	363.	363.	363.	363.		363.	363.	363.	363.	363.	363.

figure 6.1

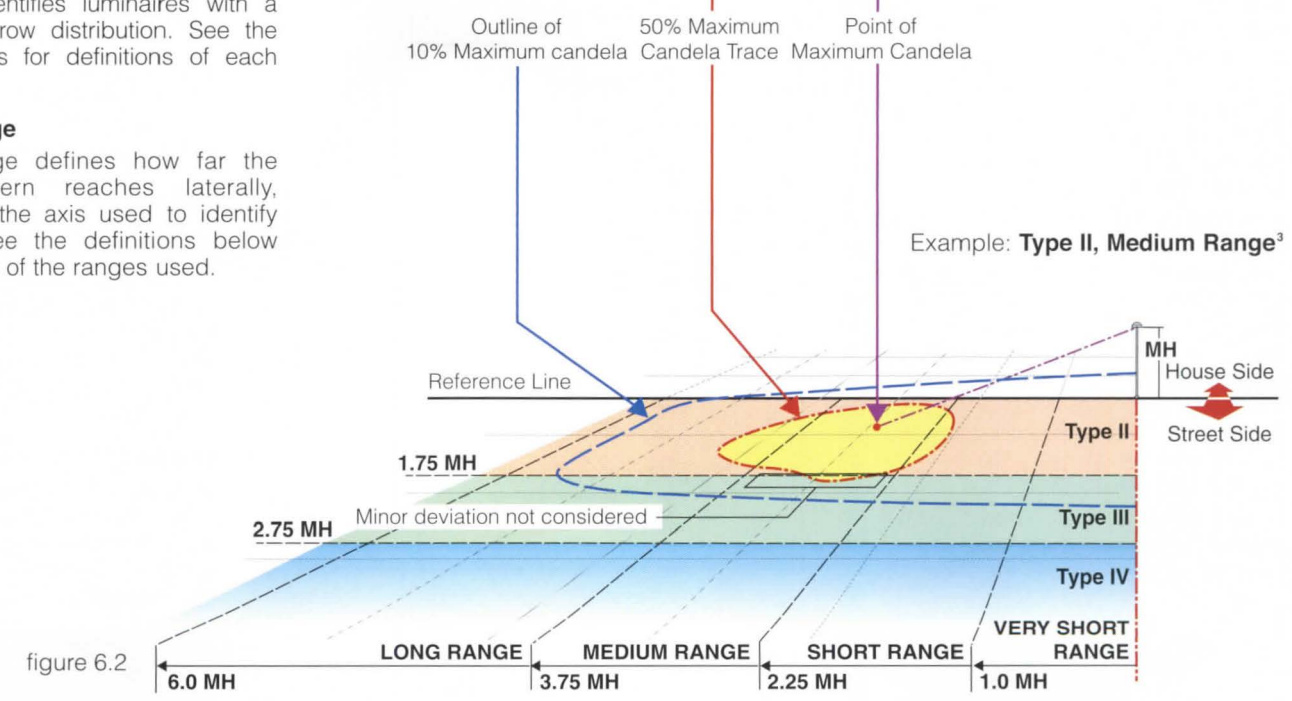


figure 6.2

Long Range

A distribution is identified as Long Range when the point of maximum candela lies from **3.75 to 6.0 MH** from the luminaire's centerline, along the reference line.

Medium Range

A distribution is identified as Medium Range when the point of maximum candela lies from **2.25 to 3.75 MH** from the luminaire's centerline, along the reference line.

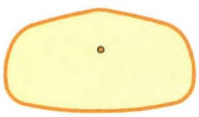
Short Range

A distribution is identified as Short Range when the point of maximum candela lies from **1.0 to 2.25 MH** from the luminaire's centerline, along the reference line.

Very Short Range[2]

A distribution is identified as Very Short Range when the point of maximum candela lies from **0 to 1.0 MH** along the reference line.

Distribution Types only generally describe a distribution pattern. To establish the suitability of a luminaire for an application, evaluation must be completed using actual photometric data for the specific fixture and lamp combination being considered.



Type II
Horizontal Lamp

A distribution is classified as **Type II** when the **50% maximum candela trace lies within 1.75 MH** on the street side of the reference line.[4]

Example: **Type II, Medium Range**[3]

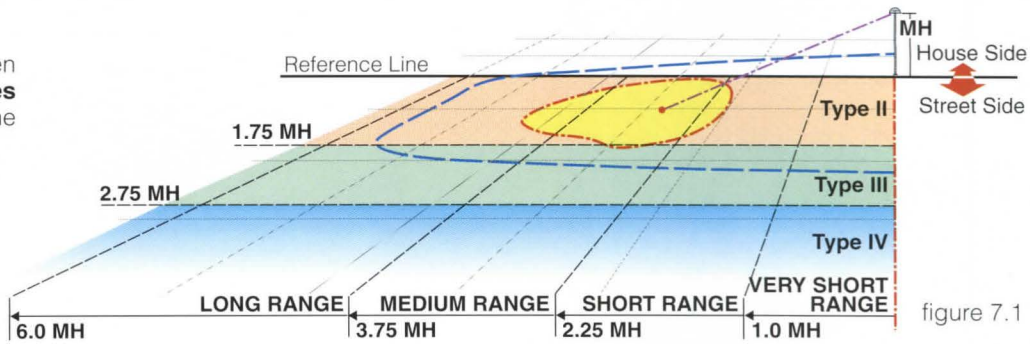
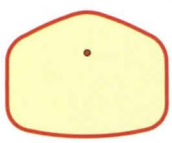


figure 7.1



Type III
Horizontal Lamp

A distribution is classified as **Type III** when the **50% maximum candela trace lies within 2.75 MH** on the street side of the reference line.[4]

Example: **Type III, Medium Range**[3]

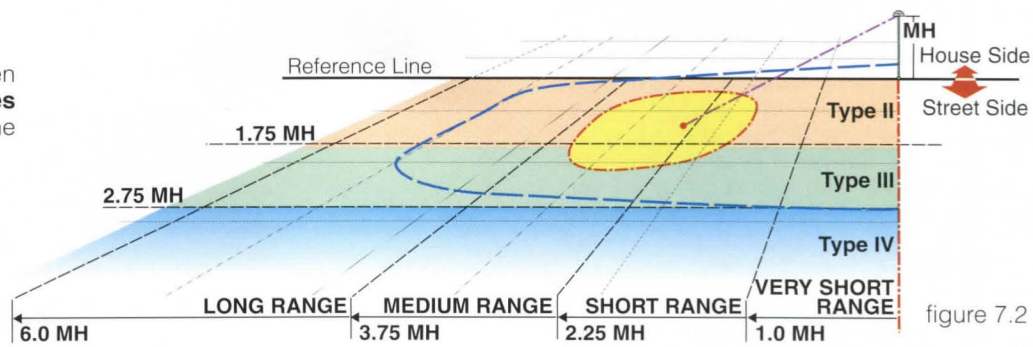


figure 7.2

Type IV
Horizontal Lamp

A distribution is classified as **Type IV** when the **50% maximum candela trace lies beyond 2.75 MH** on the street side of the reference line.[4]

Example: **Type IV, Short Range**[3]

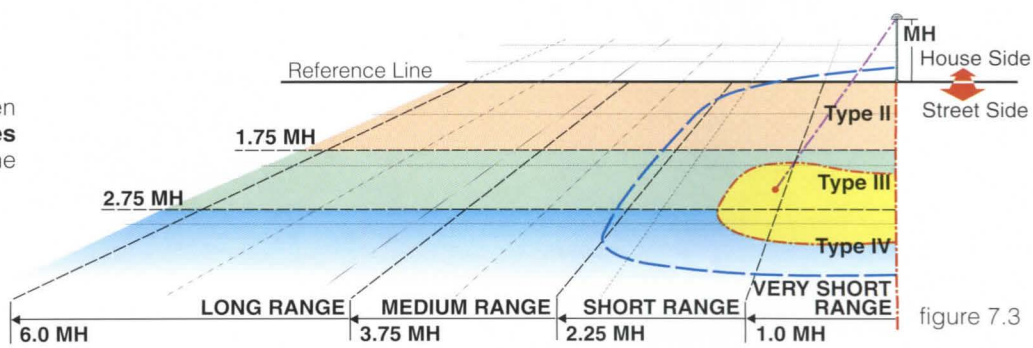
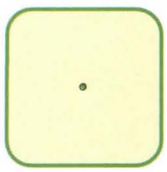


figure 7.3

Distribution Types

Definitions



Type V Square[5]
Horizontal Lamp

Distribution is classified as Type V Square for horizontal lamp luminaires when the **50% maximum candela trace is symmetric in four quadrants.** This distribution is characterized by four candela peaks, diagonal to the reference line.

Example: **Type V Square**[3]

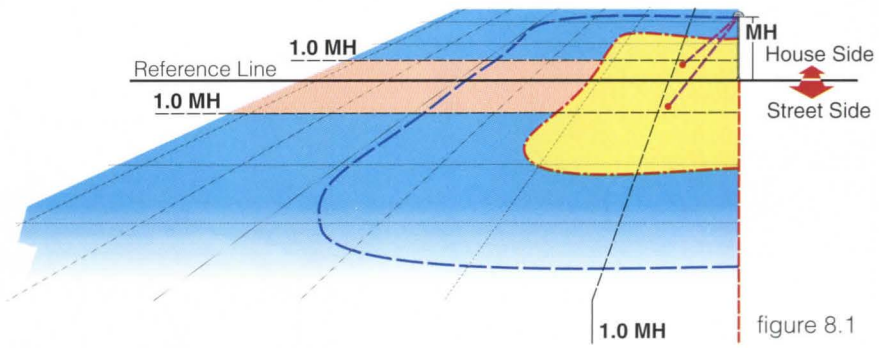
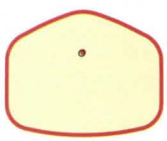


figure 8.1



Asymmetric[5,6]
Vertical Lamp

General pattern appearance is similar to Type III. Distribution is classified as Asymmetric for vertical lamp luminaires when the **50% maximum candela trace lies beyond 1.0 MH** on the street side of the reference line, and inside 1.0 MH on the house side of the reference line. **Narrow Range distribution** is identified when the **point of maximum candela** falls **inside of 2.25 MH, Wide Range** is identified when the **point of maximum candela falls beyond 2.25 MH.**

Example: **Asymmetric, Wide**[3]

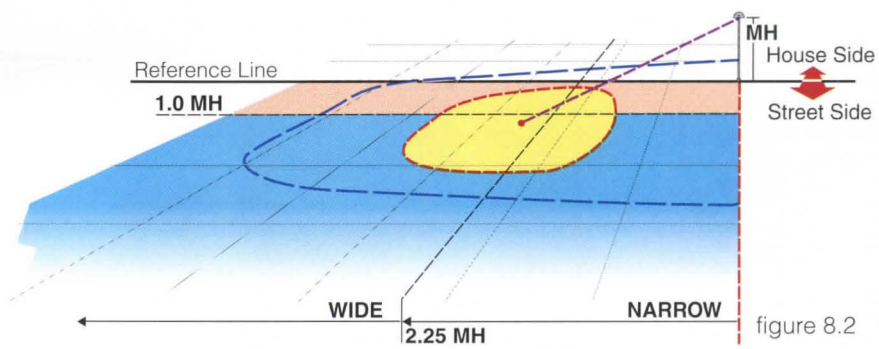
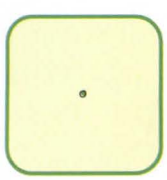


figure 8.2



Symmetric Square[5,6]
Vertical Lamp

General pattern appearance is similar to horizontal lamp Type V Square. Distribution is classified as Symmetric Square for vertical lamp luminaires when the **50% maximum candela trace is symmetric in four quadrants** on both street and house side of the reference line. **Narrow Range distribution** is identified when the **candela peaks** fall **inside of 2.25 MH along the reference line, Wide Range** is identified when the **candela peaks** fall **beyond 2.25 MH.**

Example: **Symmetric Square, Narrow**[3]

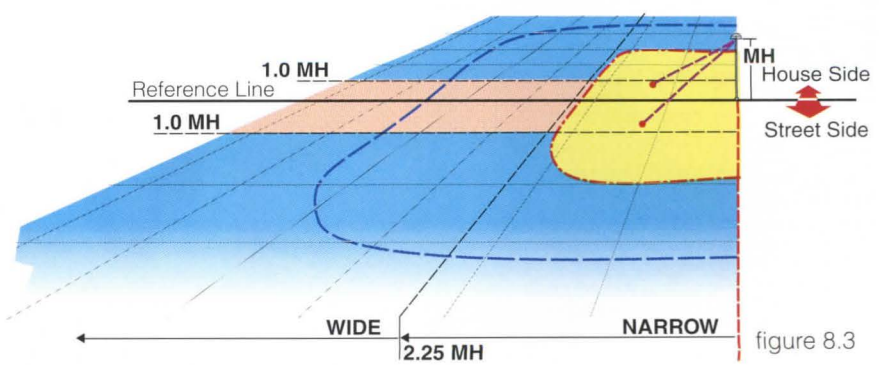


figure 8.3

Cutoff

Definitions and Methodology

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REPORT NUMBER: ITL44999
DATE: 02/05/99
PREPARED FOR: KIM LIGHTING INC.

CANDELA TABULATION — LATERAL ANGLE

VERTICAL ANGLE	STREET SIDE 0.0	15.0	35.0	55.0	71.0	75.0	HOUSE SIDE 90.0	115.0	135.0	155.0	180.0
180.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
155.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
125.0	0.	0.	0.	5.	0.	5.5	9.	9.	9.	0.	0.
115.0	0.	0.	0.	9.	0.	9.5	12.	12.	12.	0.	0.
105.0	4.	7.	9.	12.	9.	15.	15.	15.	15.	9.	12.
90.0	7.	9.	15.	15.	15.	18.	18.	18.	18.	12.	12.
80.0	18.	24.	27.	36.	36.	45.	36.	45.	55.	45.	36.
75.0	327.	491.	700.	1701.	4325.	4325.	1256.	500.	300.	518.	382.
66.0	728.	746.	2492.	4011.	8595.	8232.	4302.	1783.	1674.	1437.	1037.
65.0	782.	810.	2465.	4339.	6913.	8141.	4466.	1810.	1737.	1483.	1110.
55.0	1674.	1983.	2610.	4066.	4365.	6631.	3250.	2001.	2010.	1655.	1492.
45.0	2219.	2192.	2310.	2392.	1946.	2228.	1974.	1865.	1865.	1719.	1674.
35.0	2110.	2165.	2092.	2092.	582.	2047.	1956.	1910.	1846.	1774.	1746.
25.0	982.	964.	1137.	1674.	455.	1956.					
15.0	582.	600.	664.	655.	363.	600.					
5.0	491.	491.	491.	491.		464.					
0.0	363.	363.	363.	363.		363.					

Maximum Candela at vertical angle of 90° (shown: 18 candela)

Example Luminaire **Rated Lamp Lumens = 16000** figure 9.1

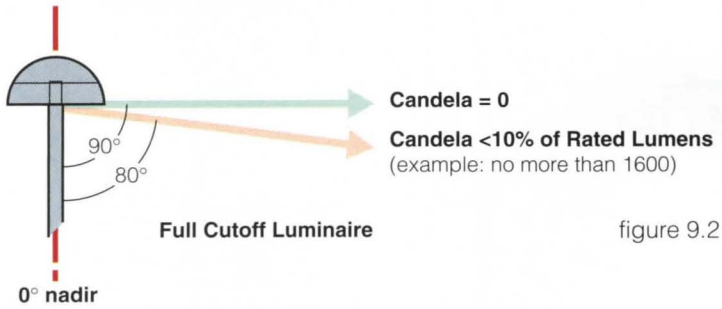


figure 9.2

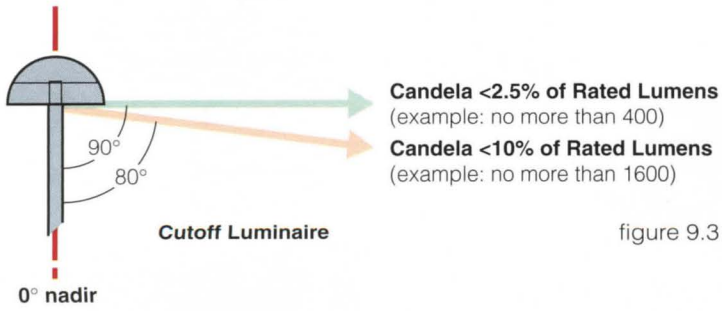


figure 9.3

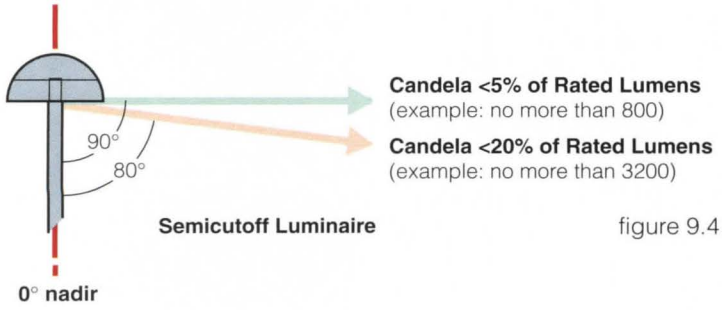


figure 9.4

What is Cutoff?

Beyond distribution and range, luminaires are defined by how well they control light at angles above 80° from nadir.

Designs without significant cutoff characteristics distribute light in zones unlikely to contribute to useful visibility, contribute to light pollution, and are inefficient.

Definitions

Definition of Cutoff is based on what proportion of a luminaire's output is being distributed at 80° and 90° above nadir.

NonCutoff

A luminaire's light distribution is designated as Noncutoff when there is no luminous limitation in any zone.

Full Cutoff

A luminaire's light distribution is designated as Full Cutoff when the candela at 90° above nadir is 0 and less than 10% of rated lumens at 80° above nadir.* See figure 9.2

Cutoff

A luminaire's light distribution is designated as Cutoff when the candela at 90° above nadir is less than 2.5% of rated lumens, and less than 10% of rated lumens at 80° above nadir.* See figure 9.3

Semicutoff

A luminaire's light distribution is designated as Semicutoff when the candela at 90° above nadir is less than 5% of rated lumens, and less than 20% of rated lumens at 80° above nadir.* See figure 9.4

Example:

The luminaire represented in the sample Candela Tabulation (figure 9.1) produces **18 candela at 90°** (<2.5% of Rated Lumens) and **55 candela at 80°** (<10% of Rated Lumens). These values fall within the defined ranges shown in figure 9.3, classifying this as a **Cutoff Luminaire**.

* Extracted from IES Publication RP33-99 (2/99)

Isofootcandle Plots

Conventions and Usage

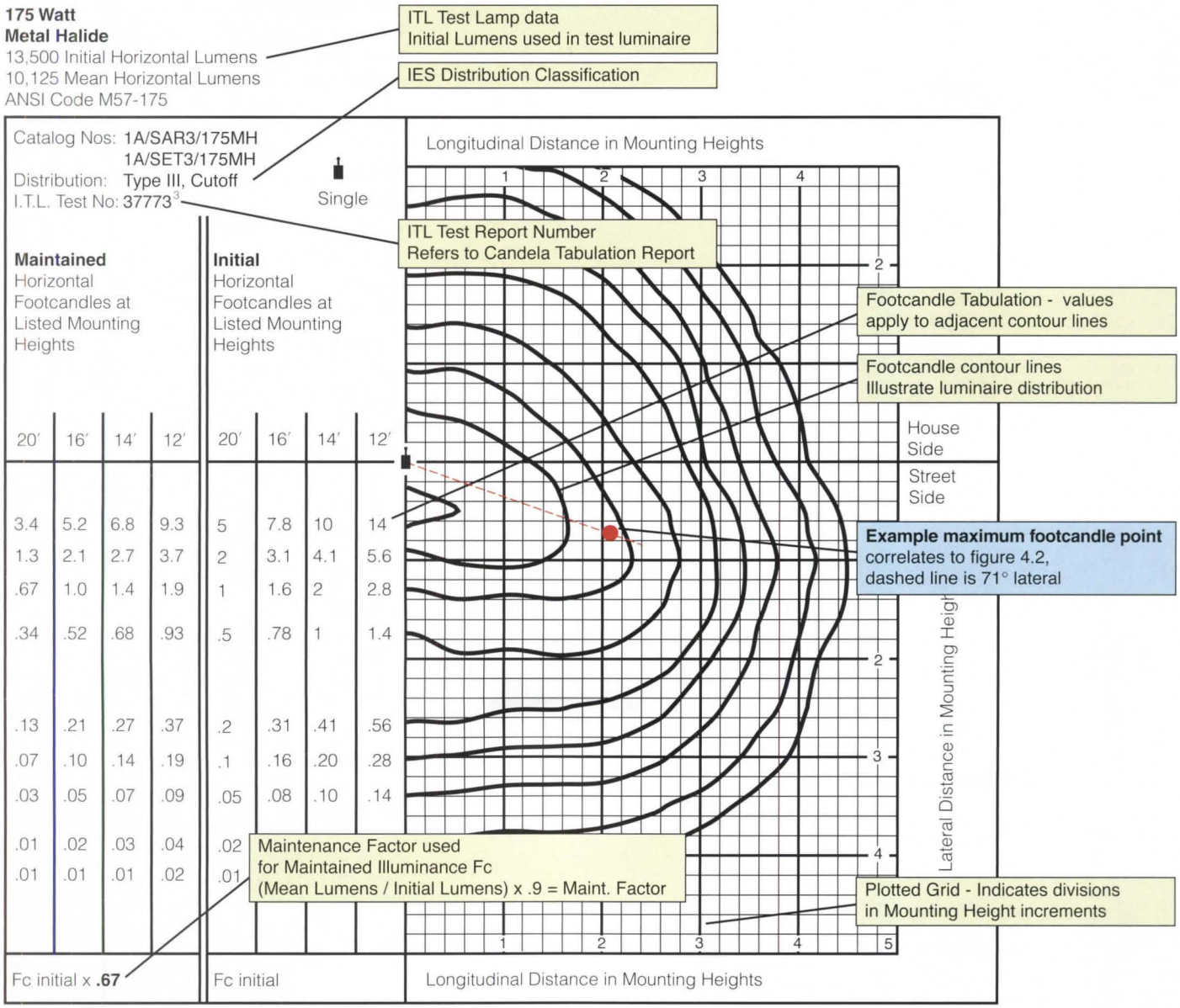


figure 10.1

Conventions

Footcandle calculations are shown with the luminaire at various mounting heights. Contour lines are drawn through illuminance values. Each contour, from the center out, represents approximately 50% of the value of the previous contour.

The plot is placed over a grid, indicating mounting height divisions, to demonstrate the luminaire's applied performance.

Usage

The isofootcandle plots graphically represent the luminaire's lighting pattern, in illuminance, striking a horizontal surface. These plots are scalable as they are represented in mounting height increments.

An approximation of pole spacings required to attain a desired uniformity can easily be determined from the information provided.

These plots also provide a productive tool for the comparison of various luminaires. The easily read visual reference indicates beam patterns graphically, where other information (such as candela tabulations and isocandela curves) may be less clear.

Example maximum candela point
and lateral angle line is included here to illustrate how illumination levels at a point correlate with the Isofootcandle Plot information shown.

The location of the point is 2.12 Mounting Heights lateral to the fixture reference line and .73 Mounting Heights from the Street Side.

The point represents a calculated 2.95fc, which corresponds to its position between the 2fc and 4.1fc Isofootcandle contour lines (at a 14′ Mounting Height).

Estimated Spacing and Uniformity

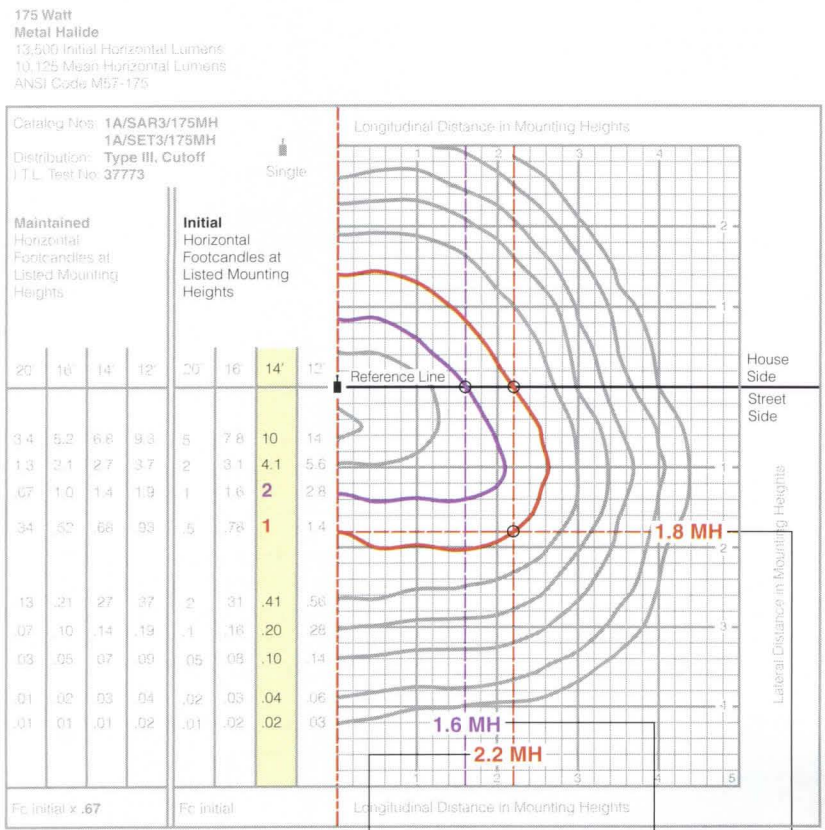


figure 11.1

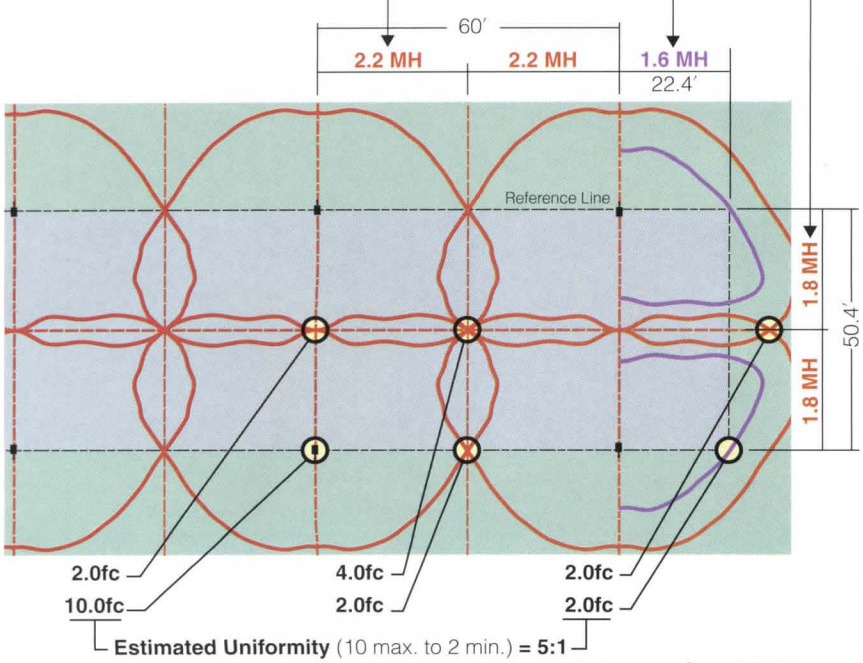


figure 11.2

Estimating Maximum Spacing

During the Schematic Design phase of a project, rough luminaire layouts can be created using isofootcandle plots.

EXAMPLE

This example assumes a desired **Minimum Initial Illuminance of 2.0fc,** using luminaires mounted on 14′ poles.

To estimate a fixture layout - start from the perimeter, where the **2.0fc** isofootcandle trace crosses the Reference Line, to establish the maximum single fixture distance to the site perimeter (**1.6 MH**, figure 11.1).

In order to attain the minimum illuminance (2.0fc) between fixtures, the 1.0fc traces of two fixtures must intersect at the site perimeter and interior. Therefore, lateral spacing is determined by where the 1.0fc trace intersects the Reference Line (**2.2 MH**), and maximum forward spacing is identified where the lateral spacing line intersects the 1.0fc trace on the street side of the luminaire (**1.8 MH**). These two dimensions indicate the mid-points between luminaires, in Mounting Heights.

Multiplying these **M**ounting **H**eight dimensions by the pole height (**14′**) defines the maximum luminaire spacings in both directions. In this example, **60′** (4.4 MH x 14′) x **50.4′** (3.6 MH x 14′).

Approximate Illuminances

By overlaying Isofootcandle Plots, a rough idea of illuminances can be accomplished by adding the values of each contour where they intersect (figure 11.2).

More accurate calculations (computer generated evaluations) will generally return levels higher than those achieved using this method, as smaller contributions from every adjacent luminaire would be included.

Approximate Uniformity

Through observation of the overlapping of the Isofootcandle Plots, approximate uniformity can also be estimated (figure 11.2).

Application

Distribution Pattern Uses

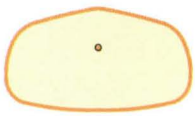
Estimating Maximum Spacing

Ideally, all light energy produced would be focused into desired "lighted" zones with no wasted energy being directed elsewhere. This would require an infinite array of distributions, with the ability to tune them to every site condition.

While this is not realistic, the combination of careful luminaire selection, mounting height, and luminaire placement, can produce very efficient designs, using just four basic distribution patterns.

For each of the basic distributions, variations such as range and the characteristics of horizontal vs. vertical lamp optics, produce additional choices. Further fine tuning can be attained with houseside shields and reflector orientation.

The example below (figure 14.1) shows how the combination of four basic distribution patterns are used to direct light energy into the lighted zones.

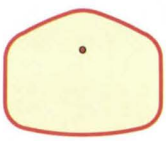


Type II

Type II distributions are well suited for narrow areas, running parallel to the luminaire's reference line, such as roadways, paths and driveways.

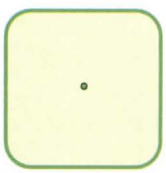
Type IV

Type IV distributions produce a deep forward throw, well suited for perimeter lighting.



Type III - Horizontal Lamp
Asymmetric - Vertical Lamp

Type III and Asymmetric distributions are well suited for site / area perimeters, wide roadways, and open areas.



Type V Square - Horizontal Lamp
Symmetric Square -Vertical Lamp

Type V and Symmetric distributions produce a wide, symmetrical pattern with excellent uniformity for large, open areas.

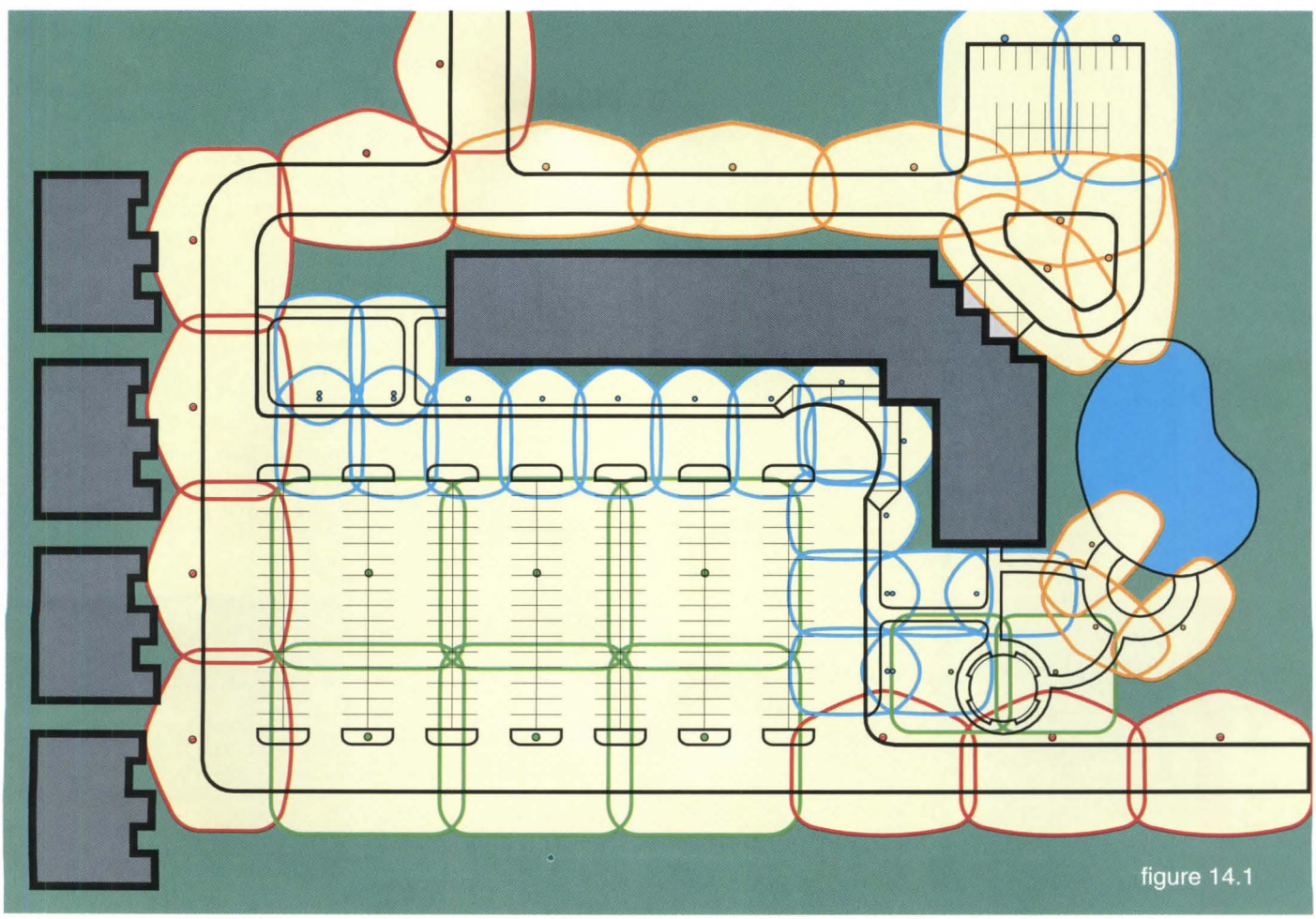
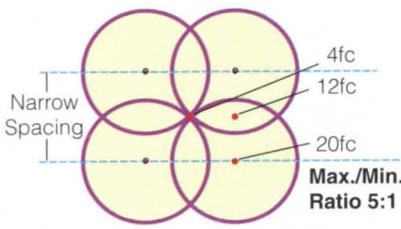


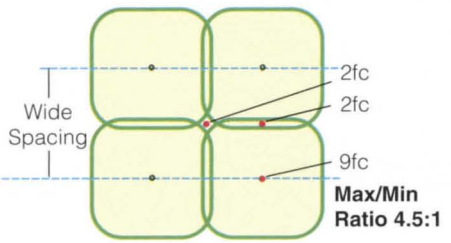
figure 14.1

Important Features for Fine-Tuning Designs



Typical Round Pattern Overlap

Poor diagonal overlap requires tighter pole spacing to maintain acceptable uniformity.

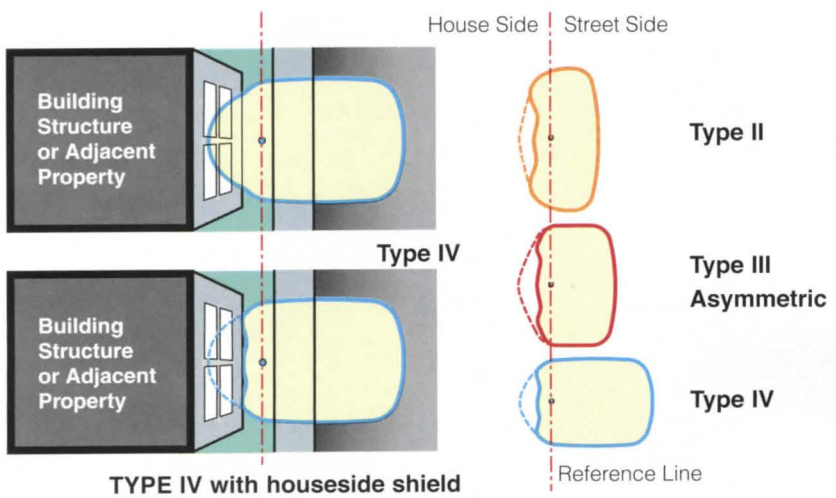


Type V Square Pattern Overlap

Improved diagonal overlap allows wider pole spacing while maintaining excellent uniformity.

Square vs. Round Distribution

For large areas, symmetric distributions provide maximum pole spacing in both lateral and longitudinal directions. Round distributions, however, do not reach well diagonally between pole locations, reducing uniformity and requiring shorter distances between luminaires. Kim square distribution patterns are specifically engineered to maximize pole spacing by improving uniformity diagonally between fixture locations.



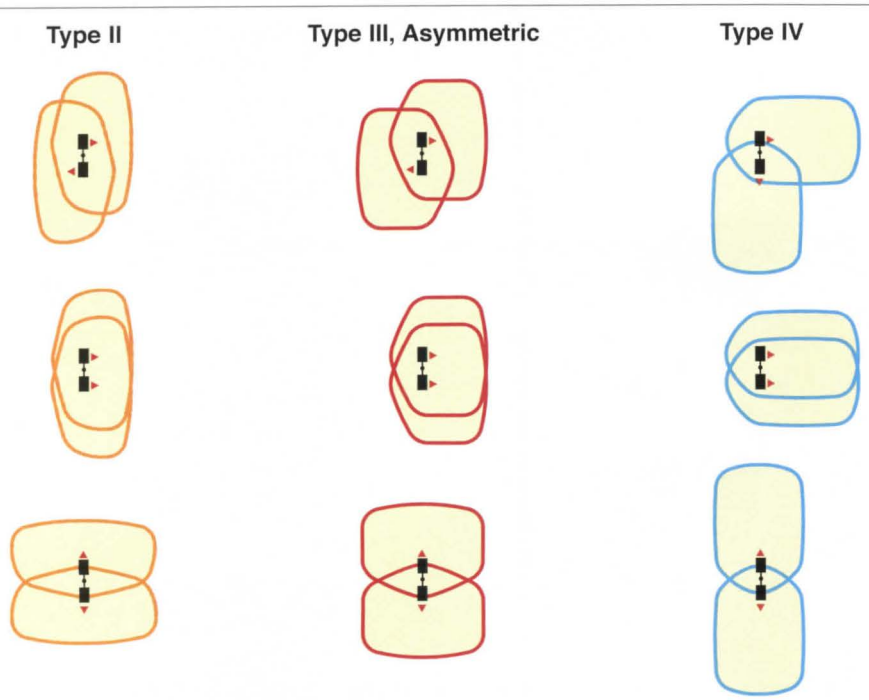
TYPE IV with houseside shield

Houseside Shields

When luminaires are located close to structures, or areas where the illumination emitted on the houseside of the reference line is objectionable, houseside shields offer additional control.

These devices "trim" light emitted by the lamp, as well as light reflected from within the optical system. These are applied to Type II, Type III and Type IV (horizontal lamp) and Asymmetric (vertical lamp) optical systems only.

Houseside shields are not applied to Type V or Symmetric optical systems, as they will not function properly.



Reflector Orientation / Rotatable Optics

Orientation of luminaires is often controlled by available pole locations and product aesthetic design. The luminaire head, arm or yoke may dictate an orientation that varies from the desired optical orientation.

The ability to rotate optical systems provides a high degree of flexibility to tailor luminaire performance to specific applications, while maintaining aesthetic continuity of the luminaires used.

The combination of optical distributions in multiple luminaire applications produces additional unique "footprints," creating customized performance and/or increased illumination levels to suit a very wide range of needs.

The illustrations shown at left are just a few examples based on a simple twin mounting arrangement.

Optical System Design

Lamp and Reflector System Integration

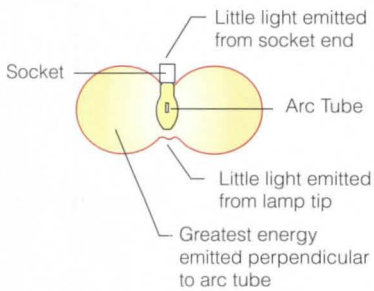
Optical Design

The function of an optical system is to direct light energy emitted by the lamp into desirable luminous zones. This can be accomplished by reflection, diffusion, baffling, refraction, or transmission through a lens.

Lamp placement also plays a significant role in determining optical system performance. Lamps placed higher in reflector systems produce narrower distributions with very sharp cutoff control, while lamps placed lower in reflector systems produce wider distributions with less precise cutoff.

Lamp Characteristics

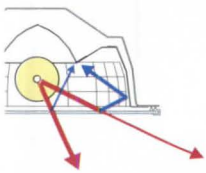
Clear envelope H.I.D. sources do not produce significant output from the lamp ends (socket and bulb tip). This characteristic has a significant impact on optical system design.



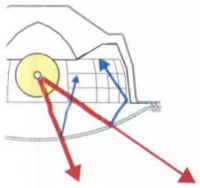
Lamp orientation and the design of reflector components use these characteristics to achieve the greatest end result.

Lens Effects

As light strikes the surface of a flat lens, some portion is reflected back into the optical system. This is most apparent at shallow incident angles and impacts the ability of an optical system to spread light horizontally.

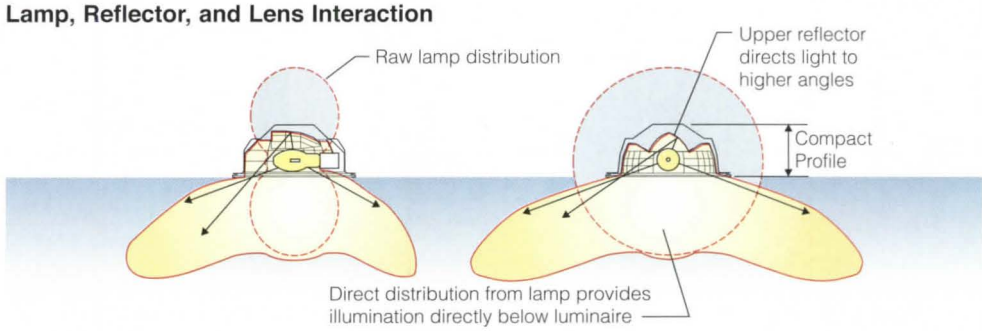


Flat lens surfaces can produce undesirable inter-reflections at shallow incident light angles.

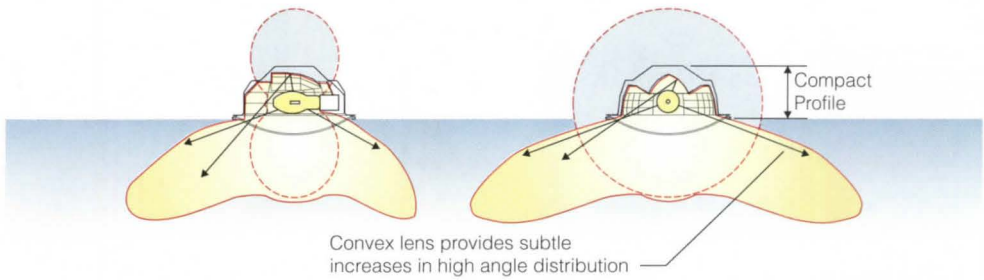


Convex lens reduces inter-reflections, improving luminaire efficiency at high distribution angles.

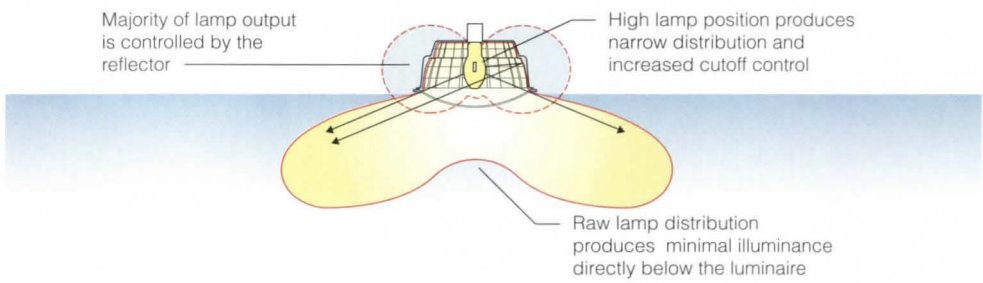
Lamp, Reflector, and Lens Interaction



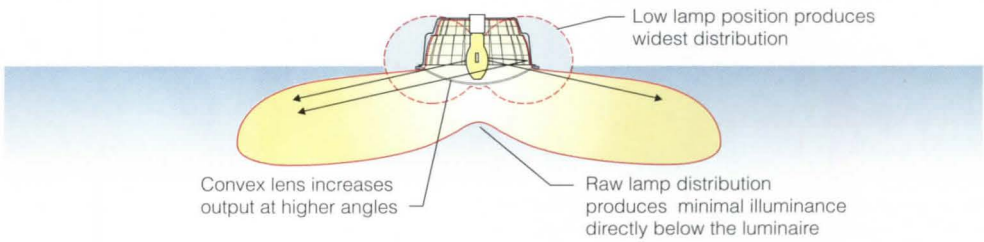
Horizontal Lamp with Flat Lens is well suited for asymmetric distributions with very sharp cutoff control.



Horizontal Lamp with Convex Lens is well suited for asymmetric distributions with good cutoff control, where increased lens presence is desirable. A subtle improvement in uniformity is also realized.

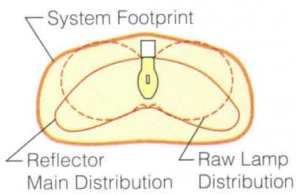


High Vertical Lamp Position with Convex Lens is well suited for narrow symmetric distributions with sharp cutoff control.

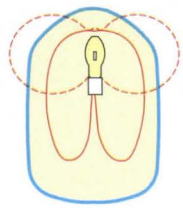


Low Vertical Lamp Position with Convex Lens is well suited for wide symmetric distributions.

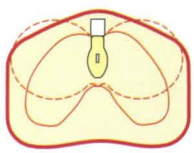
Design Considerations



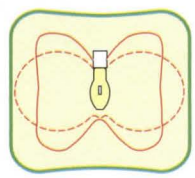
Type II - Horizontal Lamp



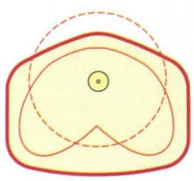
Type IV - Horizontal Lamp



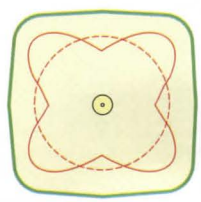
Type III - Horizontal Lamp



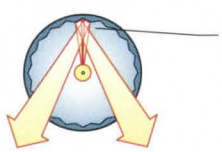
Type V Square - Horizontal Lamp



Asymmetric - Vertical Lamp



Symmetric Square - Vertical Lamp



Split-Beam Optical Design
Vertical lamp reflector design redirects light energy away from the arc tube center by "splitting" distribution using reflector facets.

Orientation

Using the lamp's natural distribution to its greatest advantage produces the most effective optical designs. In plan view, the horizontal lamp orientation produces asymmetric lateral distribution, while vertical lamp orientation produces a strong symmetric pattern. Reflector designs that enhance these characteristics produce the most efficient results.

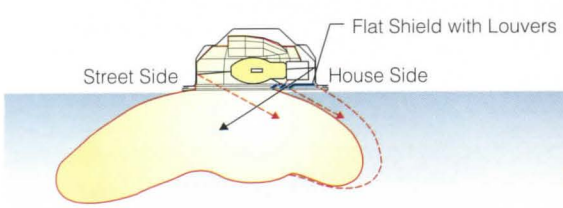
Horizontal Lamp Orientation

Horizontal lamp orientation provides the greatest control over lateral distribution. The normal lamp distribution is very well suited for asymmetric as well as square symmetric distribution. Horizontal lamp orientation produces relatively small arc tube exposure to high distribution angles. This produces a superior cutoff characteristic.

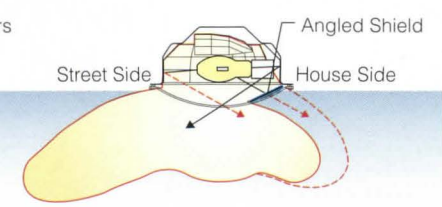
Vertical Lamp Orientation

Vertical lamp orientation subjects the greatest portion of the lamp's output to control by the reflector system, producing optimum vertical distribution control. This orientation provides less control over lateral output, favoring symmetric distribution patterns. Vertical lamp orientation also takes advantage of the higher lumen output produced by a vertical arc tube positioning.

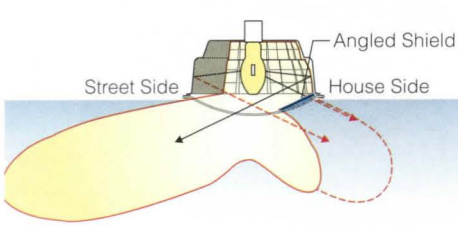
Split-Beam optical features produce the optimum optical system performance by reducing energy being redirected through the arc tube and lamp envelope. This also reduces damaging arc tube voltage rise in High Pressure Sodium sources.



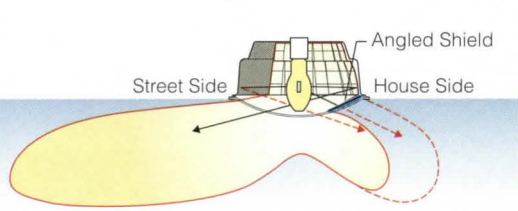
Horizontal Lamp with Flat Lens: Least effective shielding



Horizontal Lamp with Convex Lens: Effective shielding



High Vertical Lamp Position with Convex Lens: Most effective shielding



Low Vertical Lamp Position with Convex Lens: Very effective shielding

Houseside Shields

The effects of lamp orientation and lens configuration on houseside shields are dramatic.

Main reflector distribution, street-side reflector brightness, and direct lamp visibility are factors that determine the effectiveness of houseside shields in reducing unwanted brightness on the house-side of the optical system.

Horizontal lamp orientation presents the greatest challenge in designing effective shielding. Convex lenses allow more effective control, as the shielding device is able to better control direct arc tube brightness. Vertical lamp orientation provides even greater control, as the arc tube is already deeper in the optical system.

Reflector Mechanical Design

General Methods of Construction

Reflector Construction

Reflectors can be constructed using several methods: hydroforming, stamping, spinning, segmented strips and fabrication. The greatest difference between methods lies in how the reflective surfaces are finished and how precise the reflector elements are shaped and held in place.

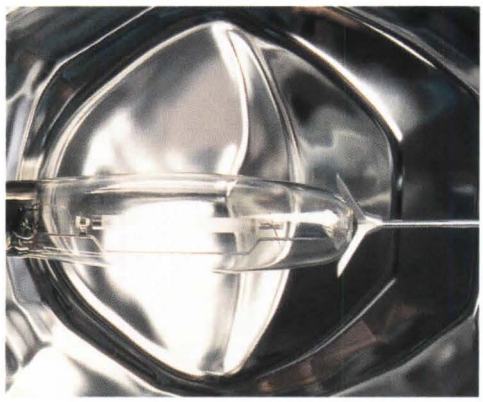
Hydroforming, stamping, and spinning begin from raw, unfinished sheet metal, which is formed, then finished in one piece. The material used in these methods often compromises reflectivity to accommodate forming and finishing of the component. The shape of the reflector segments, corner radii and surface texture are also affected by these forms of manufacture, at the cost of performance.

Pre-finished optical reflector sheet offers much higher reflectivity than any post-form finishing. The variety of reflective qualities and surface textures produces the greatest level of design control. These materials are alloyed to improve reflective qualities and are finished to very tight tolerances, using computer controlled machine processes. The pre-finished surface, however, cannot be hydroformed, spun or stamped, as this destroys the reflective qualities and durability of the material.

Reflectors made from pre-finished reflector materials must be carefully formed and fastened to create an optical assembly.

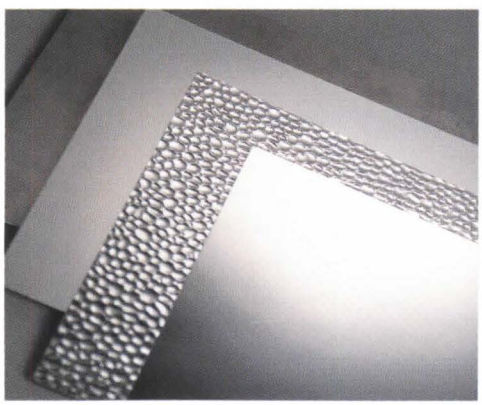
Footnotes:

1. ITL Reports using IES guidelines consider any crossing of the identified boundaries as definition of overall Type, regardless of its impact or significance to applied performance. Classifications indicated do not consider minor deviations in classification of Type shown.
2. The "Very Short Range" identification is not an IES standard definition, but is used by ITL to identify distributions with ranges inside the 1.0 MH allowed in the "Short Range" definition established.
3. Information shown is for illustrative purposes only and does not represent a specific luminaire's performance.
4. Definition is extracted from IES Lighting *Handbook, 8th edition.*
5. Definition has not been identified by the IES at this time. Definition shown is based on Kim Lighting research and development efforts and engineering of optical systems to improve applied *performance.*
6. Distribution may be classified by ITL, using IES standard practices, as a Type IV distribution, due to a small portion of the 50% isocandela trace falling beyond the 2.75 MH line. This aberration in classification methodology conflicts with luminaire applied performance. Classification indicated more accurately represents *actual* luminaire usage.



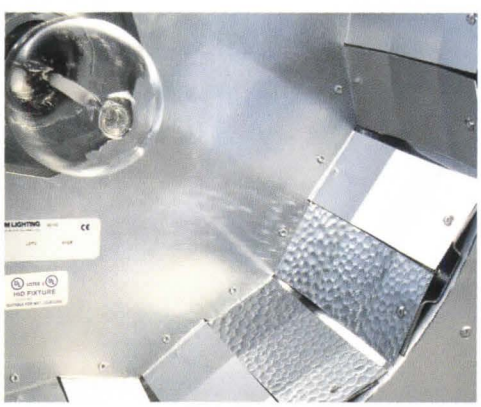
Hydroforming, Stamping, or Spinning

Reflectors created with these forming methods require the addition of draft-angles for tool release and large corner radii. These requirements often result in a compromise to optical design. Final finishing of these components may suffer unevenness in corners and bends. While producing consistent shape and allowing easy sealing of the optical chamber, these forming methods do not offer the precision of pre-finished lighting sheet. These forming methods are well suited to small scale optical systems, where compact design is more critical than optimum output.



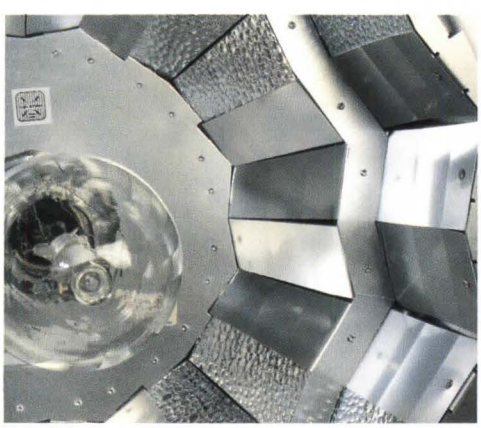
Pre-finished Lighting Sheet

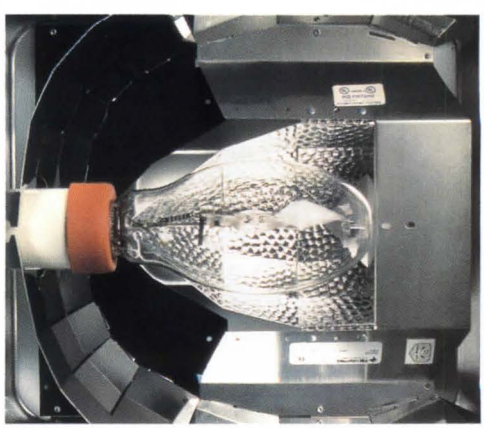
Pre-finished optical sheet materials offer the most precise surface finish, optical quality, surface durability and consistency. These materials are alloyed and finished specifically to produce the reflective qualities. Reflectivity can be as high as 98%, with optical clarity near that of scientific first-surface mirrors. The availability of a wide range of finishes (specular to diffuse) and surface textures (flat to heavily dimpled), provides the opportunity to create very precise optical systems, not possible with other forming methods.



Fabricated Construction

Using a combination of pre-finished materials, formed, interlocked and riveted to a rigid frame, this method of construction creates a robust optical system. Each reflector element is held firmly and precisely in place. The three dimensional attributes of this design also increase efficiency by controlling a larger portion of lamp output. These systems are tough enough to be cleaned and will withstand years of regular maintenance with no degradation of performance or precision.





Learning Objectives:

After reading **Site / Roadway - Optical Systems - Design and Application Guide** you will be able to:

- Identify the lighting requirements in each area of site lighting.
- Describe different methods to direct light toward or away from areas not to be illuminated.
- Describe the distribution types of luminaires and how they are best suited for lighting outdoor environments.
- Explain how isofootcandle plots are used to design site ligthing.

Instructions:

Refer to the learning objectives above. Complete the questions below. Then turn the next page upside down and check your answers. Fill out the self report form (page 266) and submit it for use in the Continuing Education self report form on *Record's* web site, *www.architecturalrecord.com*, to receive two AIA/CES Learning Units including one hour of health safety welfare credit.

Questions:

1. What is the function of an optical system for site lighting?
2. Site lighting is classified into what four basic areas?
3. What are the requirements of each of the four areas of site lighting?
4. What do Distribution Types describe?
5. What does Distribution Range describe?
6. What is Cutoff?
7. How are reflectors used?
8. What is the difference between placing a lamp vertically or horizontally in a fixture?
9. What is the difference between a flat lens and a convex lens?
10. What variable factors affect the testing of H.I.D. lamps?
11. What are isofootcandle plots?
12. How are isofootcandle plots used to determine spacing of light poles?

Answers:

1. The function of an optical system is to direct light energy emitted by the lamp into desirable luminous zones. Ideally, all light energy produced would be focused into desired lighted zones with no wasted energy being directed elsewhere.

2. Project sites are classified into four basic areas: roadways, open areas, pedestrian areas, and site perimeter.

3. Roadways require low maintenance lamps that will remain in service for long periods with excellent uniformity and glare control. Their light pattern should be narrow perpendicular, to not spill over the curb and wide lateral beam to facilitate wide pole spacings. Open areas require uniform illumination levels and glare control. Pedestrian areas require that design of the luminaires be aesthetically coordinated with the entire site and that stray light be controlled. Site perimeter requirements are to control illumination onto adjacent properties.

4. Distribution Types describe the light pattern reaching forward of the luminaire, or how far forward of the luminaire the effective output reaches. Type II defines shallow reaches, Type III defines moderate reaches, and Type IV identifies luminaires with a definite forward-throw distribution. Type V Square is symmetrical on all four sides.

5. Distribution Range defines how far the light reaches to either side of the luminaire. The ranges are categorized as very short, short, medium and long.

6. Cutoff describes the luminaire's output at 80 degrees and 90 degrees from perpendicular. Noncutoff describes no limitation of light. Full cutoff describes no light above 90 degrees, Cutoff is describes less than 2.5 % lumens at 90 degrees, and Semicutoff describes less than 5% lumens at 90 degrees.

7. Reflectors are designed to increase efficiency by controlling a large portion of lamp output. Lamps placed higher in reflector systems produce narrower distribution with very sharp cutoff control, while lamps placed lower produce wider distribution with less precise cutoff. Because H.I.D. lamp sources produce the most illumination perpendicular to the arc tube, lamp orientation and reflector components are used to achieve optimum results.

8. Placement of the lamp horizontally or vertically effects the pattern of light. Vertical lamp orientation produces the most vertical distribution control and produces higher lumen output. Horizontal lamp orientation provides the greatest control over lateral distribution with superior cutoff. Houseside shields are most effective when used with lamps placed vertically, and especially if the lamps are placed high in the optical system.

9. Lenses can be either flat or convex. The flat lens reflects some light back into the optical system and impeeds the ability to spread light horizontally. Convex lenses reduce inter-reflections, improving luminaire efficiency.

10. Every H.I.D. lamp is different in arc tube shape, arc tube size, envelope size, base size, intended operating position, position of the arc tube withing the envelope, and whether or not the socket design locks the lamp into a given position. The combination of these elements produces different configurations for each HID lamp which prorating cannot account for.

11. Isofootcandle plots graphically represent the luminaire's lighting pattern as it hits a horizontal surface. This plot demonstrates the fixture's applied performance. The plot is made by drawing contour lines of the footcandle calculations when the luminaire is placed at various mounting heights.

12. Spacing of light poles is determined by projecting isofootcandle plots. To maintain the minimum illuminance of 2.0 fc between fixtures, the 1.0 fc traces of two fixtures must intersect at the site perimeter and interior. Lateral spacing is determined by where the 1.0fc trace intersects the reference line. Forward spacing is identified where the lateral spacing line intersects the 1.0 fc trace on the street.

RESIDENTIAL

The ultimate contextualism: Houses that are inseparable from their sites

The houses on the following pages are the ultimate in contextualism. They don't just interact with their surroundings but are in, of, and about their sites. In fact, these homes are so site-specific that it is impossible to imagine them anywhere else. They are buildings that do more than show respect for the land; they celebrate it.

Having long searched for a backyard for his son, Melbourne architect Sean Godsell left a hilly site virtually untouched when he designed a home for himself and his family. Native plants surround the house, blurring the distinction between inside and out.

Two houses in Connecticut, one by Gray Organschi Architecture and the other by G. Mackenzie Gordon, are inseparable from the land on which they are built. Lisa Gray and Alan Organschi seamlessly integrated a tennis court with a guest house. The subterranean house Mac Gordon designed for himself and his wife is both theoretical and practical. It tests some of the architect's theories on building underground while also providing natural insulation, preserving the landscape, and making the large house virtually invisible.

The clients of Richard Fernau, FAIA, and Laura Hartman presented them with a piece of land in the inhospitable, but exquisitely beautiful, hills of western Marin county, California. Fernau and Hartman delicately sliced into the earth to incorporate their gentle addition to the landscape. The result is a quiet and respectful house.

The architects whose work is featured here understand that buildings don't have to denigrate the land. They clearly love nature, and their architecture shows it.

Elizabeth Harrison Kubany

199 **Residential Briefs**

200 **Anderson/Ayers Residence**
Fernau & Hartman Architects designs an homage to the California landscape.

208 **Kew House**
A challenging site inspires stunning simplicity in a house designed by Sean Godsell.

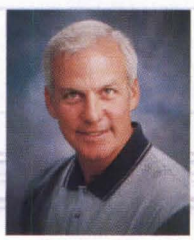
216 **Tennis House**
A guest house and tennis pavilion designed by Gray Organschi hews to a former quarry site.

222 **Gordon House**
Home and hillside intersect in the house G. Mackenzie Gordon built for himself.

229 **Residential Products**

"No photo eyes means no callbacks. I'm making it automatic in my homes."

Jim Ayers, Builder
Hendersonville, NC



"Safe, quiet, real cutting edge. Wayne-Dalton sure has the handle on innovation."

Bill Davis, Builder
Fort Walton Beach, FL

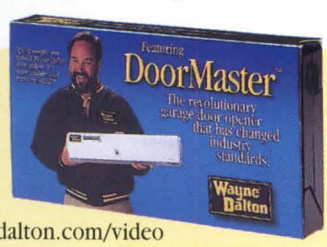
Our new DoorMaster™ garage door opener is the talk of the industry.

(You have their word on it.)

The DoorMaster garage door opener has it all: wireless technology to reduce builders' construction time and costs; no photo eye requirements, so misalignment callbacks are eliminated; quiet operation; and customized light location.

Plus, it has no unsightly rails or ceiling-mounted power unit, no exposed springs, no door operating arm; it's highly sensitive to obstructions; and features exclusive, built-in safety features. The DoorMaster opener, when combined with a WayneGard pinch resistant door, makes the first ever UL Listed door and opener system.

It's revolutionary, and you can quote *us* on that.



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CIRCLE 120 ON INQUIRY CARD

Residential Briefs

Shake, rattle, and roll: Testing the effects of earthquakes on houses

The Northridge earthquake, which shook southern California in 1994, recently struck again. But this time, its epicenter wasn't the Northridge fault line; it was 140 miles to the south, in a laboratory at the University of California at San Diego.

On July 11, through the efforts of the California Universities for Research in Earthquake Engineering (CUREe), a nonprofit corporation devoted to the advancement of earthquake-engineering research, education, and implementation, viewers were able to witness what happens when an earthquake as powerful as Northridge shakes a house.

Researchers in San Diego placing a house on an earthquake simulator to measure its strength.

According to Dr. Andre Filiatrault, a professor of structural engineering at the University of San Diego and the project's principal investigator, "Northridge really showed for the first time the vulnerability of wood frame." The earthquake inflicted considerable damage to wood-frame buildings.

The two-story, 600-square-foot test house was designed and constructed based on current building practices in California; it had a tile roof, stucco exterior finish, and all rooms finished with painted gypsum board walls. It was also fully furnished, with cameras installed to record the effects of strong motion on the building's systems and contents, including water heaters, shelving, televisions, bookcases, refrigerators, and cabinets.

The July 11 test culminated five months of testing on the house, which underwent a series of modifications to its configuration and materials to prepare it for what the researchers called "the ultimate jolt." Although the jolt was expected to severely damage the house, amazingly, it came through with just a few small cracks.

One of the lessons learned seems to be the power of stucco. The test house's exterior, like most in southern California, held a layer of stucco mounted on a wire mesh attached to the outside of the plywood sheathing. Before the jolt, most of the engineers expected the shaking to break apart the stucco.

In an earlier test, without the stucco and drywall interior walls, the top of the house swayed back and forth five inches away from the footprint. In the last test, the top swayed only one inch. In the event of a real earthquake, the kind of damage sustained by this home would only cost a few hundred dollars to repair.

Dr. John Hall, a professor of civil engineering at the California Institute of Technology and manager of the house-shaking project, said stucco and drywall "have the potential of providing a lot of earthquake resistance. The building was quite a bit stronger than when we previously tested it."

Information from this great jolt, as well as subsequent tests on the same house, will also be used to develop new standardized guidelines for adjusting insurance claims after an earthquake.

New York West: Two new loft buildings planned for San Francisco

To suit the many former New Yorkers who are now making San Francisco their home, a spate of loft buildings are either being constructed or created from existing buildings. Two currently under construction are the designs of prominent architects.

San Francisco architect Stanley Saitowitz, FAIA, in association with Natoma Architects (also of San Francisco), is designing Yerba Buena Lofts for the Yerba district near downtown. The 336,000-square-foot building includes 200 residential lofts ranging from 900 to 1,300 square feet, with an integrated 78,200-square-foot, four-level parking structure. The building, which will cost just under $40 million to construct, is being developed and built by the Pankow Companies. Completion is slated for July 2001.

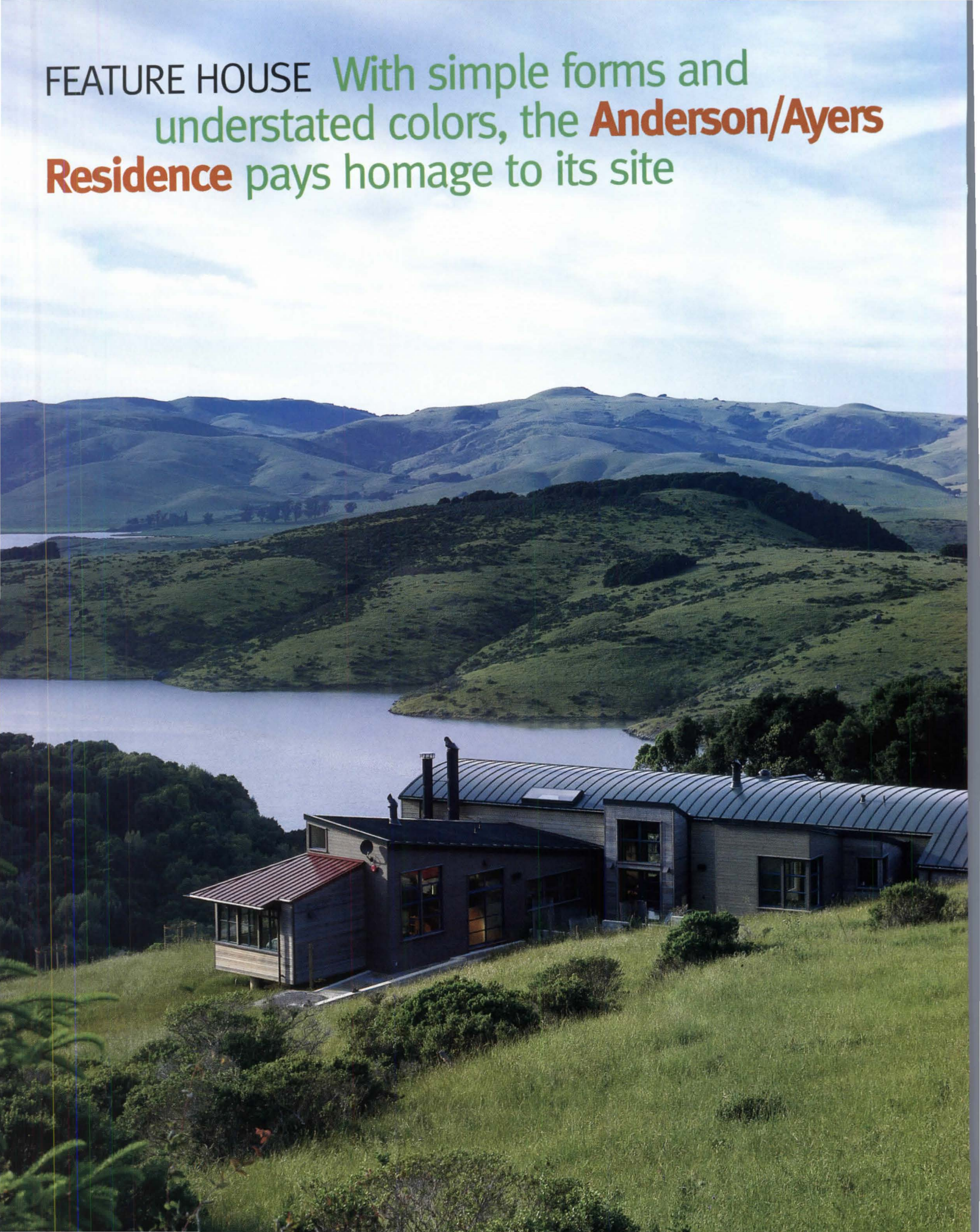
Yerba Buena lofts (left) and One Embarcadero South (right).

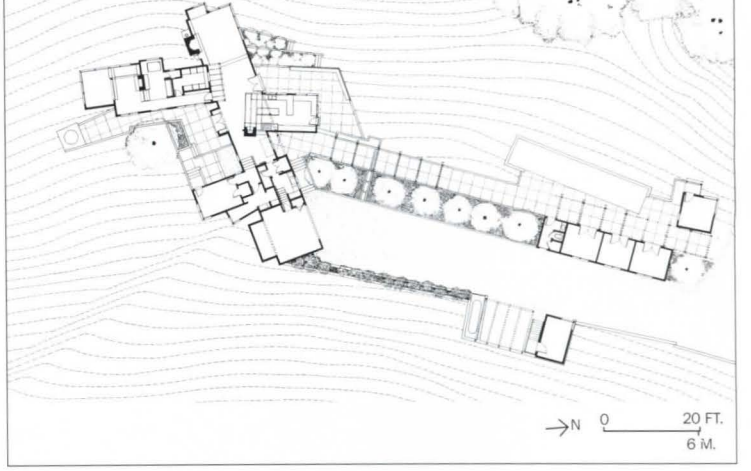
Also changing the skyline of the City by the Bay are Asymptote Architecture of New York and Tom+Aguila Architecture of San Francisco. The two firms are converting an existing residential building into One Embarcadero South.

Located on the Embarcadero promenade across from Pacific Bell Park (home of the SF Giants), the building will feature 233 residential units in twin towers with a three-level podium amenity area. Among the building's technological services are 24-hour continual high-speed Internet connections, and an intranet amenity system called WebConcierge.

One Embarcadero South is billing itself as "America's smartest residential complex" because of these amenities. Asymptote Architecture is well versed in the challenges of integrating technology with architecture, having created the new New York Stock Exchange's Virtual Trading Floor.

FEATURE HOUSE With simple forms and understated colors, the **Anderson/Ayers Residence** pays homage to its site





By Lisa Findley

The landscape of western Marin County in northern California is not very hospitable: by early summer the grass is golden brown and subject to wildfires for the rest of the year; unstable soil covers the steep slopes; the forests are thick with poison oak; and on any given summer morning, chilly fog can blanket the area, only to be chased away by a stiff wind in the afternoon. The rolling, grassy hills have their own rugged beauty, however, and are increasingly populated by expensive vacation homes scattered among existing working farms. Unlike the farm buildings, which modestly occupy low areas protected by topography, the second homes often perch awkwardly on the hills, commanding the vistas while also asserting themselves into the view.

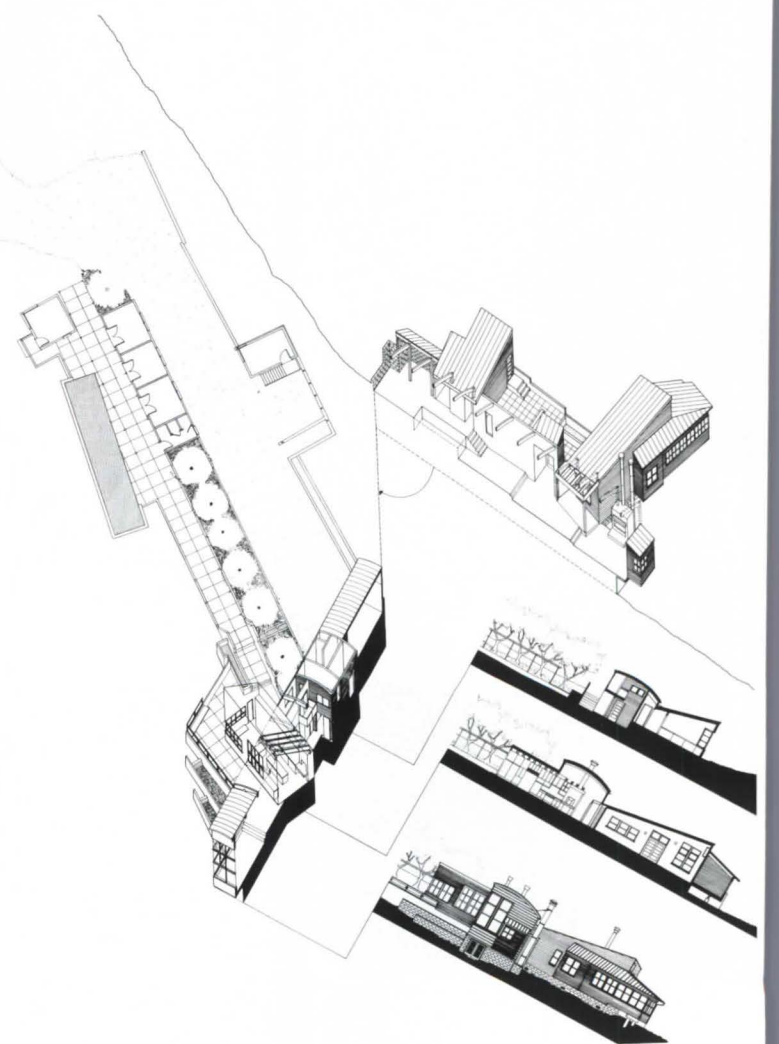
Borrowing from the landscape

In its recently completed Anderson/Ayers house, the Berkeley, Calif., firm Fernau & Hartman took on all the complexities of making architecture in this sublimely beautiful place. Drawing on its experience in building on

Project: *Anderson/Ayers house, Nicasio, Calif.*
Owner: *Jane Anderson and Tess Ayers*
Architect: *Fernau & Hartman Architects—Richard Fernau, FAIA, and Laura Hartman, AIA, partners-in-charge; Susan Stoltz and Scott Donahue, project architects*
Engineers: *MKM & Associates and Richard Hartwell (structural); Lefler Engineering, Inc. (mechanical)*
General Contractor: *Kerr Construction*
Area: *3,000 square feet*

Rather than perching on the highest point of its site, the Anderson/Ayers house sits respectfully in the hillside. It still enjoys magnificent views of western Marin County.

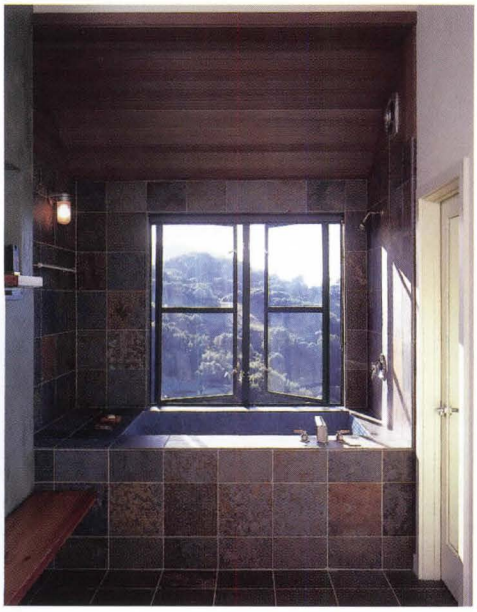
The "introverted" exterior—with its simple forms, green and gray wood siding, and gray-green metal roof—blends masterfully with its surroundings, making it seem like an extension of the landscape.



The "great room" comprises the main body of the house.

Even on the interior, the Anderson/Ayers house is intricately linked to its site.

Views of the outdoors are available from every possible angle and level.



strong, natural sites, the firm designed this 2,700-square-foot vacation home for a dramatist, a writer, and their small child. The clients had asked for a comfortable house that would be a retreat—but not a complete escape—from their fast-paced Los Angeles lives. They still wanted a taste of the theater to follow them to Marin. According to the architects, "Their desire was for a 'barn/theater'—introverted on the exterior and extroverted on the interior. The house is not only a retreat from the wind and fog, but also a venue for traveling players."

Richard Fernau, FAIA, and Laura Hartman are intrigued by just such challenges. They have adopted and personalized landscape strategies such as Frank Lloyd Wright's insistence that a building on a hill be placed well below the crown. Also incorporated are the Japanese concepts of "borrowed landscape," where views outside the site are visually included in the design of the interior, and of the conscious layering of foreground, middle ground, and background. Fernau & Hartman's design also respects the basic volumetric relationships of the nearby farm compounds with their grand, simple barns and scattered outbuildings.

Modest on the outside

The long, low house sits high on a slope overlooking a reservoir and the surrounding hills. Rather than placing the house on the highest point of the site, the architects pulled it down in close proximity to a rock outcropping surrounded by small trees. This hillside placement gives the house a sense of belonging to a particular location in the vast landscape, embracing these natural features that are closer to its own scale.

The serene color scheme of the exterior relates the house to the landscape, with its almost entirely green and gray wood siding, and gray-green corrugated metal roofs. (The sleeping area of the master suite is the one exception; it is covered by an intense red roof.)

With great care, the architects cut into the site parallel to the slope, allowing the house to settle into the hill and reducing its apparent bulk. The resulting long retaining wall edges the driveway, holds a cozy writing studio and carport at midpoint, then transforms into the uphill wall of the garage and house. Just below the driveway sits a line of native trees. Below that is a pergola that serves as a porch.

THE DESIRE WAS FOR A 'BARN/THEATER'—A VENUE FOR TRAVELING PLAYERS.

The slender body of the house juts out at a 45-degree angle from the retaining wall, perpendicular to the slope. This placement sets up a rich range of relationships of house to the sloping site and the views. There are generous doses of the breathtaking panorama, but they are tempered by the middle-ground views of the nearby rocks, which add to a sense of scale and detail.

Bold on the inside

The "extroverted" interior is warm and lively, with carefully shaped areas of obvious performance and areas of backstage privacy. The main body of the house contains a "great room" for dining and living. The space is enveloped in plywood with a ceiling of curved glue-laminated beams reminiscent of a ship's hull. The floor steps down in places, helping to define smaller spaces within the large room. The tallest space, at the downhill end, contains the fireplace, while the corner opens up to a denouement of panoramic views. Sunlight fills the whole room on clear days; when the fog and rain set in, well-designed lighting makes the bad weather seem to disappear.

The kitchen and bedrooms are arranged off this large space according to their role in the drama of the retreat. For instance, behind the garage, nestled partially below grade, is the hidden storybook realm of the child's bedroom. Here, the slope of the hill runs down to meet a corner window just below the sill. From inside, the child's-eye view is just a foot above the ground, where insects struggle through the grass and wildflowers bloom.

Inside, a wainscot of green chalkboard invites coloring on the wall. In the more adult world, the kitchen and master bedroom each become stage sets onto the theater of the great room. The kitchen opens off at a slight angle, with the overlap between the two spaces articulated horizontally both overhead and underfoot. The depth of the kitchen is a proscenium stage where food and cooking are showcased.

The volume of the master suite angles into the great room as well. Rather than opening up into the space, this private world is presented as the front of a tiny house, covered in tongue-and-groove siding with a wood-framed overhang supported on eight-by-eight wood columns that

Some rooms allow the landscape to be seen up close, while others offer broad panoramas. From the writing studio, the house's occupants can contemplate nature.

suggest a front porch, complete with yellow porch light and rocking chair. Behind this prop, the master bedroom is a warm, private place that offers three diverse experiences of the site: the distant panorama, a view of the slope running alongside, and a view back up the slope.

A second phase for the house calls for an extension of the pergola, which serves as a front porch, to a series of bunk rooms edging the downhill side of the driveway. Another writing studio and a swimming pool, captured in the space between the pergola and the rocks, are also planned.

The Anderson/Ayers house is masterful on many levels. The architects have successfully negotiated the difficult act of placing a building in a delicate, unbuilt landscape. The inhabitants of the house can enjoy a full range of interior and exterior experiences of the site in all seasons. And because it is deftly specific to both the site and the clients, this is an unrepeatable house that provides valuable lessons—lessons that would not have been wasted on the person who designed the enormous peach-colored stucco house casually set on a nearby hill. ■

Sources
Masonry: *Calstone*
Skylights: *O'Keefe*
Metal doors: *Blomberg*
Wood doors: *Simpsom*
Sliding doors: *Blomberg*
Locksets: *Baldwin*
Resilient flooring: *Forbo Marmoleum*
Paints and stains: *Ameritone, Benjamin Moore, Fuller O'Brien, Kelly Moore*

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A writer tells of her own steel-framed home, designed by her husband, architect Sean **Godsell**, to capture the spirit of the Australian outback

An electrically operated door opens to become an entrance canopy. The landscaping, with its wild beauty and native grasses, seems to encroach on the steel box.

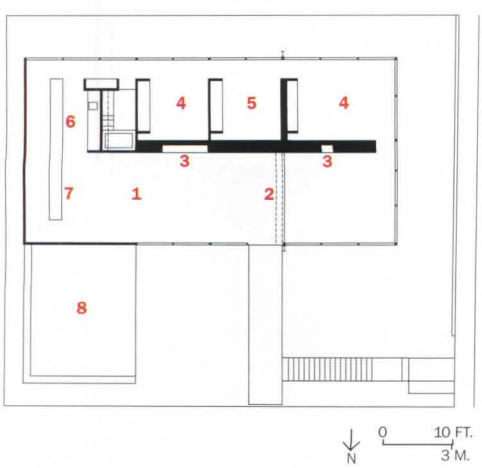
By Annemarie Kiely

It is amusing to hear first-time visitors to Australia wonder at the size and sophistication of our cities. The misconception that Australians are dwellers in an inhospitable landscape who must dodge hopping marsupials is instantly curbed by a cab ride from the airport.

Melbourne, the capital city of the State of Victoria, is a young, multicultural city whose burgeoning cityscape tells of architectural one-upmanship and sports fanaticism. Because of its location at the southern end of our island continent, it enjoys a mostly temperate climate with seasonal fluctuations. It is a city where lively debates on the subjects of regionalism and republicanism can often be heard, in a country that has long suffered or, depending on your viewpoint, benefited from its isolation.

My husband, the architect Sean Godsell, believes that the cultural climate and socio-political landscape of our city and country are as important in shaping our built environment as temperature and topography. In his words, "We are an adolescent nation in search of an identity." I am a writer and a mother, constantly in search of more space,

As seen from the street, the house cantilevers out over the front garden.



1. *Living room*
2. *Sliding wall*
3. *Fireplace*
4. *Bedroom*
5. *Study*
6. *Kitchen*
7. *Table*
8. *Deck*

as my books and my son's toys seem to multiply at an alarming rate.

Several years ago we reluctantly conceded that our inner-city dwelling (an intricate three-level infill house that Sean had designed) was being pushed to its limits by our young son, Jack. "The boy needs a backyard," Sean said, so we sold our home and went in search of one.

Two years later we found a beautiful piece of land close to Melbourne. With its beautiful views and mature trees, the house occupies an inner-city "bush zone" in the genteel suburb of Kew, near the Yarra River. We exceeded our budget when we bought it at auction, spending the princely sum of A $165,000 (around U.S. $95,000) for the house.

A large concrete retaining wall rose about five feet above street level, so there was no access other than through a neighboring property. The property measured 66 feet square, with a 23-foot change in level from the front to the back. Excavation into the block was, for financial reasons, out of the question, so Sean decided to make the most of the given conditions and designed a steel-framed glass box to perch on its slope. A flight of stairs leading to a timber walkway now gives access from the front of the property to the new house.

During construction, the framework was lifted onto the site by

Project: *Kew House, Melbourne, Australia*
Owner: *Sean Godsell and Annemarie Kiely*
Architect: *Sean Godsell Architects—Sean Godsell, partner-in-charge*
Engineers: *John Mullen + Partners PTY (structural and civil), Gordon Ford (landscape)*
General contractor: *R.D. McGowan Building*
Square footage: *1,700*
Construction cost: *$100,000*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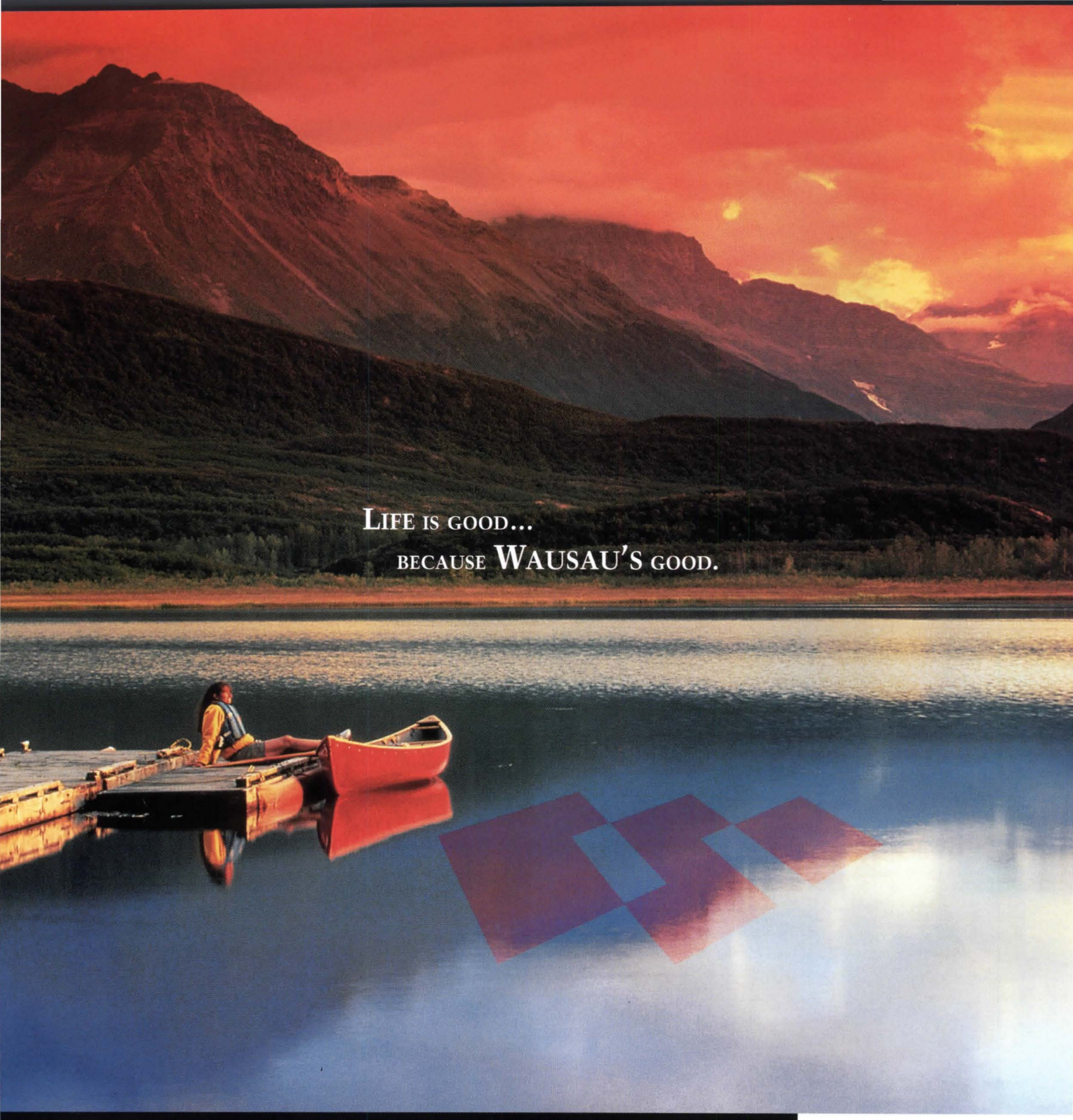
The steel grille, with its rusted patina, provides a sense of security as well as constantly changing patterns and colors, depending on the light. The wall-to-ceiling glass skin allows the outdoors to come in (below).

crane and bolted together like a child's Lego set. Positioned longitudinally on an east-west axis, it rests close to the southern boundary (allowing for maximum sun exposure on the long northern side), and cantilevers slightly over the slope. This exposed a large portion of the building's underbelly—the sixth elevation as we call it—to street view, so Sean clothed it in the same sheets of steel that line the inside wall of the building's east end. Extremes of climate were addressed by turning many of the building's glass walls into sliding panels for natural breezeway ventilation in summer. Standard pieces of industrial steel grid flooring (an homage to Jean Nouvel's Bordeaux hotel extension) were hung over the north, west, and part of the southern facades to provide shade in summer and allow maximum sun penetration in winter. Individual sections can be opened and closed by electrically operated hydraulic rams. These grids provide a sturdy veiling that generates a psychological comfort for inhabitants. They are also part of the land; they invoke the spirit of the outback—where everything has a function beyond



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its intended one—and appear to be covered in the outback's red ochre dust (in fact, the steel was oxidized with acid to promote a rust patina, then sealed with primer).

Sean's work manifests an interest in an Australian vernacular, but one whose politics concede an Asian influence, as is evident in the eastern aspects of the house. A single white spine of storage divides the building lengthwise into living and sleeping areas. On the sleeping side, individual rooms are separated by more walls of storage, with sliding doors intersecting a perimeter passageway when shut and connecting rooms when open. On the living side, one large wall can be pulled from a cavity behind a bedroom storage unit to turn a luxurious 59-by-13-foot zone into two smaller rooms (each with its own fireplace). When all doors are open the perimeter becomes a racetrack that provides endless delight for Jack and his remote-control cars.

Located at the eastern end of the building, the kitchen is not easily seen from the living room, but its presence is suggested by a long table that projects into the living room space. Referred to by Sean as "the icon of western culture," our kitchen table is used for many activities besides dining—homework, family conversations, food preparation. All three of us can help prepare Saturday's breakfast without a border dispute.

The house is small but feels big—an illusion enhanced by the building's transparency and relationship to the land. The late Gordon Ford, a pioneering landscape designer who saw the house as an "exciting piece of sculpture," completed Sean's vision with the selective placement of basalt boulders—placed right into the earth so as to appear stratified—and feathery Pennesetum grasses. When the prevailing wind blows, the house appears like a derelict crate awash on a sea of undulating green.

I consider the house both poetic and provincial, but not everyone agrees. As many times as we have been congratulated on the result, we have heard the scream: "What an ugly house, who'd live in that?" But we don't mind. We are just glad people are as passionate about it as we are. ■

Inside and out, a sense of openness pervades. The simplest of furnishings were chosen so as not to distract from the open floor plan. From every vantage point, the distinction between indoors and outdoors is blurred.

Sources

Exterior steel grid: *A.E. Vickery Richmond Steel*
Structural system: *A.E. Vickery Richmond Steel*
Exterior glass panels: *Pilkington*
Upswinging metal door: *Magnetic Automation*
Hardware: *Lockwood*
Interior lighting: *Eurolice*
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A guest house and tennis pavilion designed by Gray **Organschi** hews to a former quarry site

By William Weathersby, Jr.

Designing a private guest house and tennis pavilion in a pastoral setting presented a complex challenge for Gray Organschi Architecture: how to accommodate a family's fully loaded wish list of amenities—including a tennis court—on a site saddled with restrictive land-use easements?

The Tennis House is one component of a 170-acre estate in Litchfield County, Conn., which the firm is designing as the client's year-round retreat. A garage/workshop and caretaker's cottage were built prior to this latest phase, while work on the 15,000-square-foot main house is slated for completion in 2002.

The hybrid guest- and clubhouse comprises a two-level building hugging a tennis court at the southern end of a valley that was once a commercial gravel quarry. "We were compelled by the character of the land as we first found it," says principal architect Alan Organschi, "a hard-scrabble bowl surrounding a small, natural spring-fed pond and overgrown with wildflowers and thin meadow grasses." Adds partner Elizabeth Gray, AIA, "We wanted our design to negotiate the relationship

Viewed from the meadow, the sod roof of the Tennis House appears to have been lifted out of the terrain. The roof overhang creates a covered porch (above right) for viewing tennis play or the spring-fed pond (above left).

The spruce-framed roof is supported by 10 cypress columns and a wooden box housing the changing rooms and shower. Swinging doors of river-recovered cypress open at court-side for lower lounge viewing (below).

With sleeping bunks on the lower level, the pavilion functions as an overnight guest house (top). Limestone flooring continues from the terrace into the living/dining area. Teak doors slide back at the corner of the room to frame views (middle). The fireplace is an amenity (bottom); the primary heating system is geothermal. Counters are slate.

between the quality of the site as a former earthwork and its eventual role as a garden. We were struck in particular by the character of the thin new plane of surface vegetation that covered this former industrial site, and its manipulation became a theme in developing both the house and court."

The land at the floor of the valley is protected by a local conservation easement because of its location in the Bantam River watershed, so the building size was limited to a habitable space of less than 600 square feet per floor. The clients, however, presented an ambitious program for the constricted footprint: two changing rooms, a bathroom, kitchenette, laundry, bunk room, and multifunction living and dining area with a terrace overlooking the tennis court, pond, and the foothills of the Berkshire Mountains beyond.

The architects cut the tennis court into the southwestern edge of the basin that forms the pond. Board-formed concrete retaining walls shape the enclosure on three sides of the court, while the corner exposed by the falling grade is hemmed by a removable curtain of netting suspended from tension cable. The tops of the concrete walls align with the natural elevations of the surrounding land, rising and falling with the hillside's grade. A border of clover and vetch was planted to cascade over the edge of the concrete wall, visually diminishing the structure's mass. Viewed from the landscape, the court appears to have been neatly cut into the otherwise undisturbed meadow as it slopes to the water's edge.

The house itself also appears to have cropped out of the hillside. Ten tapered cypress columns and a wooden box containing the changing room and shower prop up the structure's glue-laminated, spruce-framed roof. The trapezoidal shape of the roof provides a low corner from which the rainwater drains into a concrete catch basin. The splay of its substructure addresses the orientation of the court—situated 22 degrees west of due north, the optimum orientation for tennis play at this altitude—with its axis aligned toward the long view up the valley. Covered with wild grasses, flowering weeds, and sedum and punctuated by only a skylight and concrete chimney, the plane of the roof seems to rise out of the surrounding meadow to protect the dwelling beneath it.

The overhang of the roof along the eastern elevation creates a covered porch for viewing tennis matches. The same limestone that surfaces the terrace continues along a courtside balcony and within the second-floor lounge area. Floor-to-ceiling sliding doors framed in teak

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Project: *Tennis House, Litchfield County, Conn.*
Architect: *Gray Organschi Architecture—Elizabeth Gray, AIA, Alan Organschi, partners-in-charge; Chris Louden, project manager; Kelly Feeney, Pankaj Vir Gupta, Tarra Cotterman, Vicente Sauceda, project team*
Engineers: *Gibble Norden Champion (structural); Tucker Associates (mechanical)*
Consultants: *Origin Lighting Design—Ken Daniel (lighting); Performance Imaging (communications/security)*

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Two side-by-side changing rooms are enclosed in a cypress box (above). The structure is topped by a perforated, maple-veneer plywood screen that filters rays from a skylight into the main space (right). Gray Organschi's woodworking shop fabricated the turned cypress columns that support spruce roof beams (above right).

open the room to breezes and views. At the opposite end of the room, a bar and kitchenette feature rough-hewn slate countertops and custom cypress cabinetry. Two changing rooms are accessed via pocket doors. A sliding cypress door separates the main entertaining areas from a shower room, which leads to a second shower perched on the terrace.

River-recovered cypress cabinetry is combined with spruce millwork to refine the interior.

Because of the restricted zoning requirements, the architects linked the two levels of the Tennis House with an outdoor staircase covered by the roof overhang. Initially programmed for equipment storage, the main space of the lower level was adapted to function as a secondary lounge space and overnight guest room for grandchildren. Four built-in bunks with nightstand alcoves give the room the streamlined look of a ship's cabin. And tempered-glass casement doors facing the court provide occupants with a tournament lineman's view of tennis matches.

Well integrated into the landscape and displaying a palette of finely worked materials, the Tennis House also embodies notable technical features. Addressing both aesthetic and horticultural concerns, the architects reduced the thickness and weight of the sod roof with a custom drainage system. Between the waterproofing membrane and soil layer is a 1½-inch-deep perforated plastic grid, formed like an egg carton, which holds water until it overflows the perforations at the top and drains through and out. This reservoir of water allows for soil depths of only 3 inches, although sod usually requires at least 6 inches of earth to support plant growth without constant irrigation. The shallow bed also helps to sustain the wild grasses and flowers native to the quick-draining soil and gravel of the site.

The building is heated and cooled by a geothermal heat pump, which adapts the water of the quarry pond as a thermal mass. In addition to providing energy and cost savings, the system has freed the bucolic property from the intrusion of heavy delivery trucks carting in fossil fuels. ■

Sources

Roof frame: *Architectural Timber and Millwork*
Windows, doors: *Case Window and Door, Amherst Woodworking, South Farm Construction, Guy Gillette*
Cabinetry, millwork: *South Farm Construction, Kingsland Architectural Millwork*
Wood stains, plaster wall finishes: *Crook Associates*
Hardware: *Nanz Custom Hardware, Edelman Metalworks, Leatherneck Hardware, D-Line*
Limestone flooring: *Valley Marble*
Countertops: *Petmal Supply*
Radiant floor heating: *Wirsbo*
Sod roof: *American Hydrotech*

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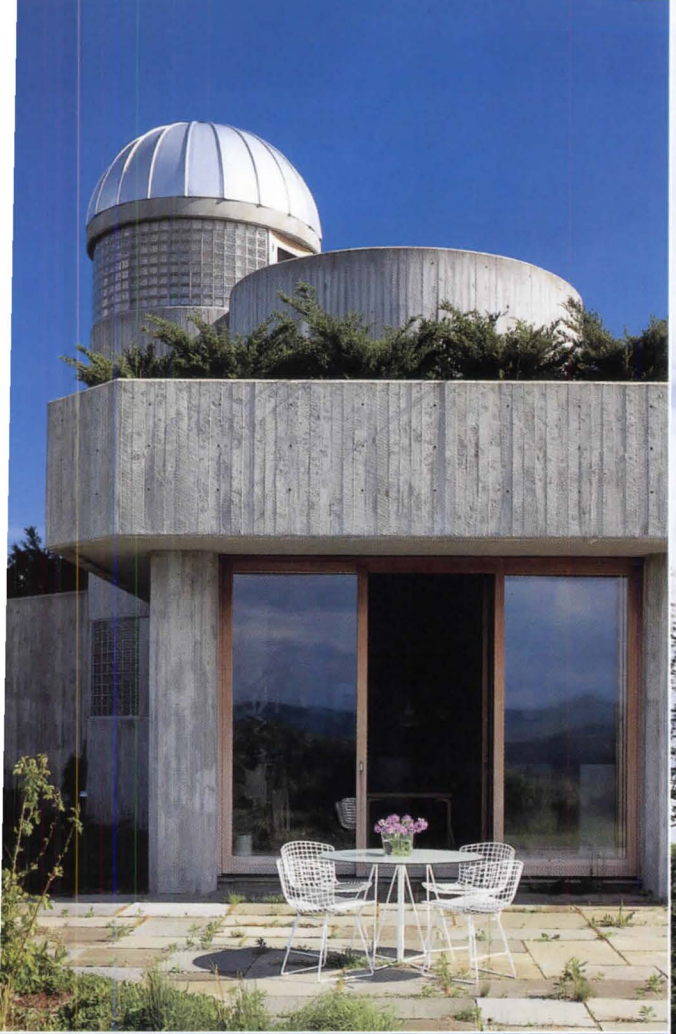
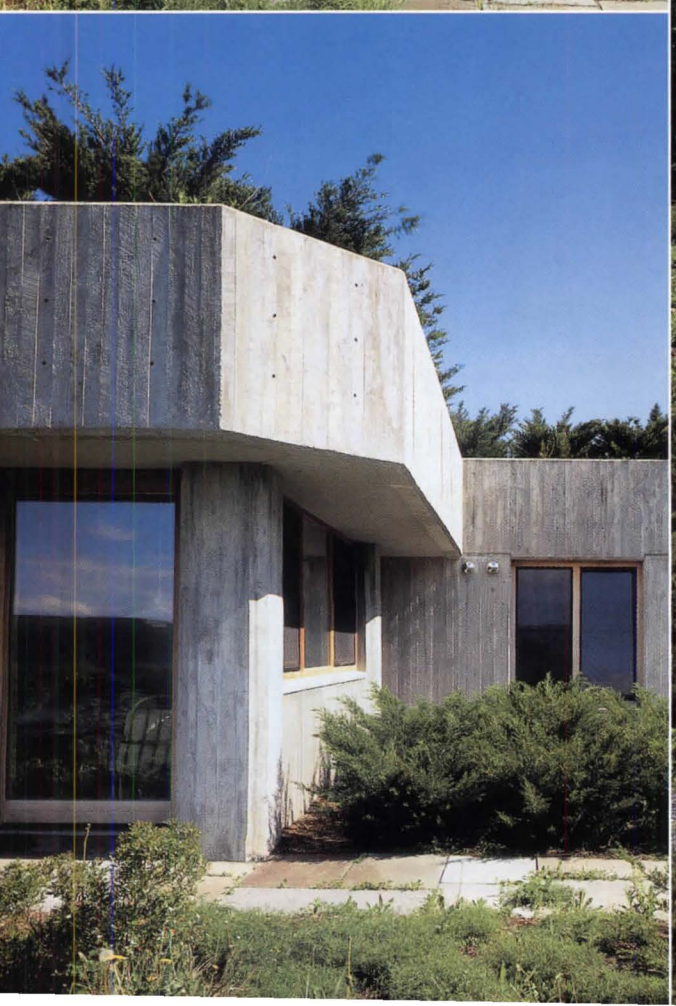




A blanket of juniper covers the buried roof, an 11-inch-thick reinforced-concrete plate. Bluestone terraces edge the rear of the house (insets), while plantings soon will climb up or cascade down most exposed concrete walls.

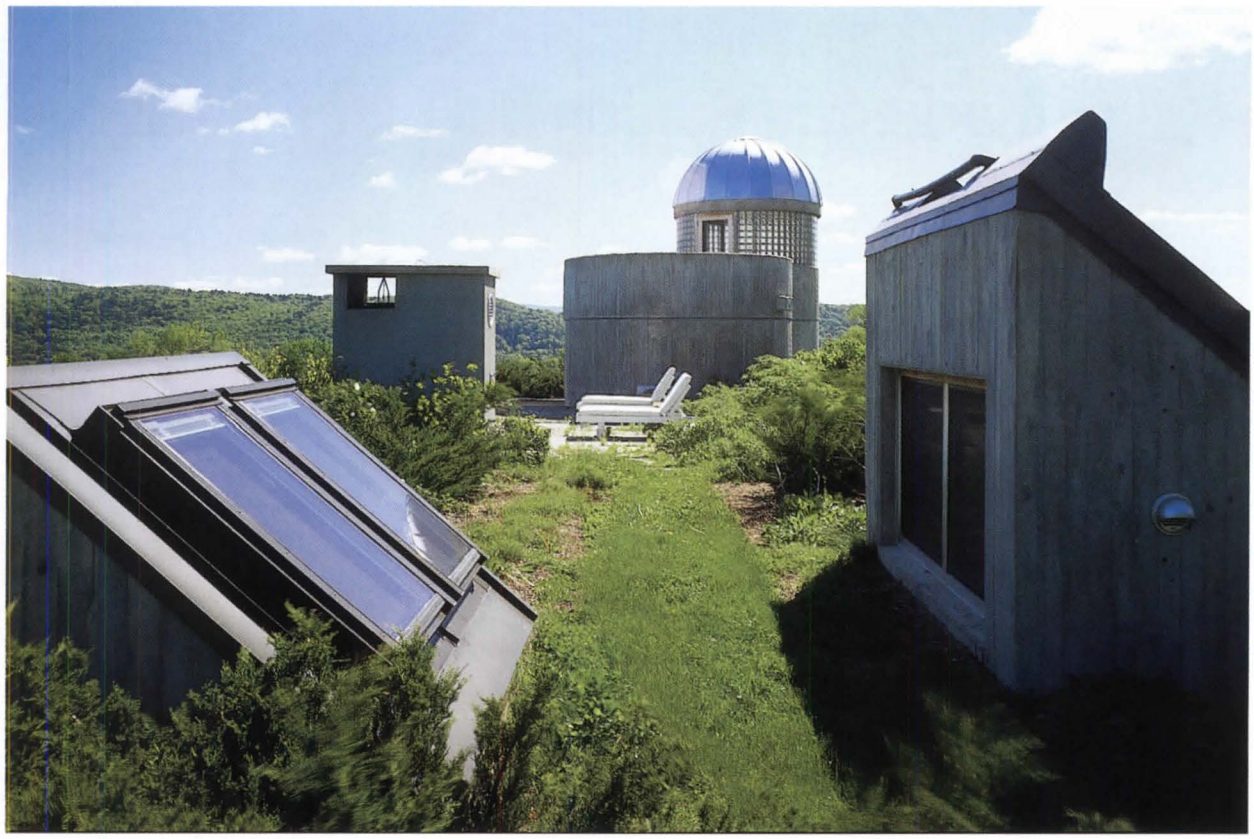
Home and hillside intersect in the house architect **G. Mackenzie Gordon** built for himself

By William Weathersby, Jr.

Driving along the winding country roads near Lakeville, Conn., visitors pass postcard-ready vistas of architecture frozen in time: 18th-century clapboard farmhouses, faded red barns, and rusticated stone churches graced with stately stained-glass windows. In the house architect G. Mackenzie Gordon, AIA, built for himself, however, details that are out of step with local tradition catch the eye. Visible from the road is a silo, but closer inspection reveals it is banded by glass-block windows—and it rises not from a barn but directly out of the hillside. Also sprouting from a blanket of junipers and black-eyed Susans are utilitarian yet sculptural forms, including an abbreviated chimney and wedge-shaped clerestory structures backed by solar panels. Where's the house? Exploring his theories of integrating residential architecture within rural landscapes, Gordon has gone underground.

Trained as both an architect and landscape architect, Gordon says he has always welcomed commissions that combine structure and site in unorthodox ways. "I had long had in mind to design a house for my wife and me as an earth shelter," says Gordon, who relocated his architectural practice to northwest Connecticut from New York City. "This open, sloping site lent itself to building below ground, which preserves the natural setting while helping to conserve resources."

Insulated by the earth, the house employs systems designed for energy efficiency. Solar water heaters, with propane backup systems, supply domestic hot water and radiant heat through tubes cast into a concrete floor slab. A heat-recovery ventilator provides fresh air during the winter months. "The thermal mass of the concrete and masonry helps keep the inside temperatures comfortable and even," Gordon says.



Shrubbery takes the place of a railing around the parapet and retaining walls (above and below). Backed by solar panels, clerestory structures sprout from the landscaped roof (top). The silolike form houses a staircase.

Set amid eight acres of former farmland, the 3,200-square-foot, three-bedroom house is carved into the apex of a hillside. From a winding driveway one approaches the structure's southern elevation, which all but disappears into the landscape. Meanwhile, a wall of windows captures views extending for 20 miles through a mountain valley into Massachusetts. A detached garage at the corner of the site helps to frame an arrival courtyard and masks the view of a neighboring house.

With its covering of evergreens and flowering plants, the house blends into the natural terrain.

Rooms are aligned along a corridor that spans the length of the house, forming an east-west axis. "The main level is basically a ranch house plan submerged into the ground," Gordon says. Though earth shelters can be constructed from a variety of materials, cast-in-place concrete appealed to the architect for its "monolithic character, both structurally and aesthetically." All foundations, columns, exterior walls, parapet, roof, and floor slab are concrete. Interior partitions and the roof beneath solar collectors are framed in wood. Custom exterior window and door frames are maple, with an outdoor layer of teak.

At the eastern end of the house, a spiral-stair tower mimicking a silo leads to a second-floor office—a space designed for Gordon's wife,

---

Project: *Gordon House, Lakeville, Conn.*
Architect, landscape designer: *Gordon & Gordon—G. Mackenzie Gordon, AIA, principal*
Engineers: *Robert Silman Associates (structural); Mark Rosenbaum (mechanical); Sharon Electric (electrical); Reginald Hough (concrete)*
Consultants: *Mark Swann (fireplace); Peter Pixley (masonry); William Perotti & Sons (HVAC, plumbing); Brian Richardson (tile work); Bunce Construction (grading)*
General contractor: *Morck Brothers Builders*

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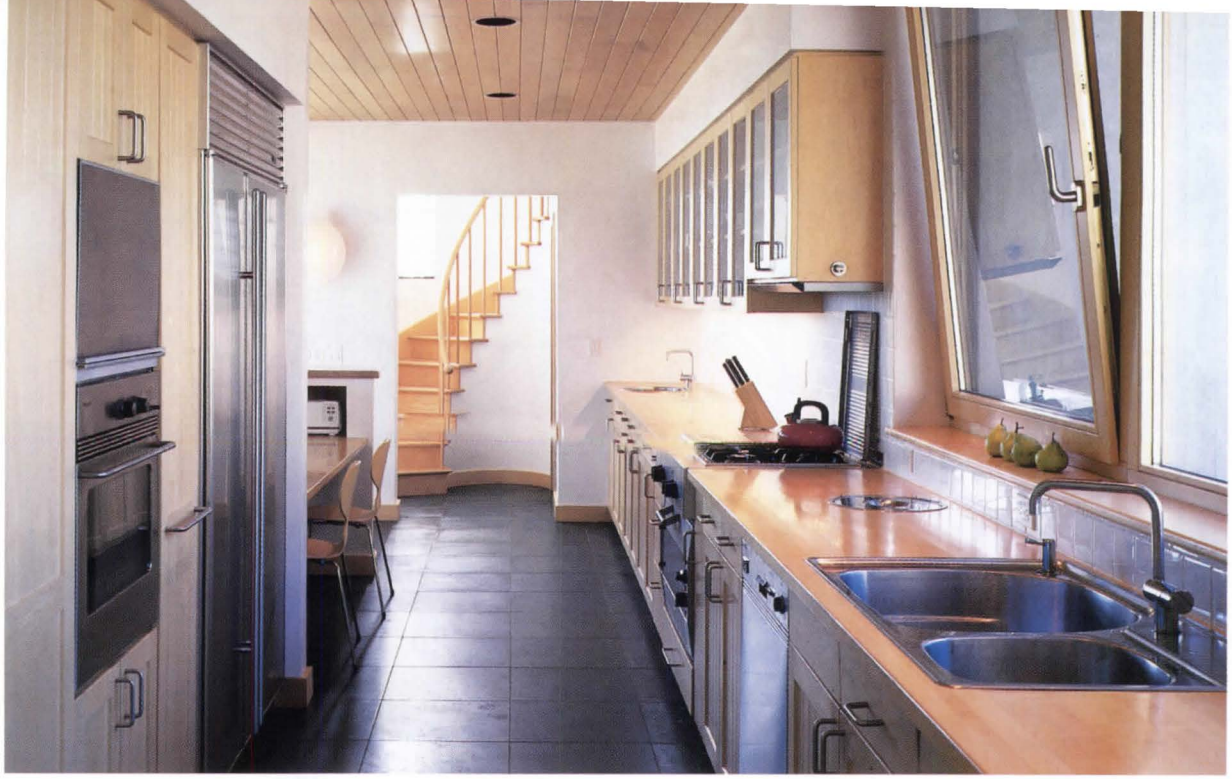


Beyond the galley kitchen (right), a spiral stair leads to a tower office and upper terrace. Windows wrap a corner of the dining area (below). Board-formed concrete adds texture to the ceiling.

film producer Doro Bachrach—and upper terrace. The tower is topped with a prefabricated-metal silo dome. Inside and outside, exposed concrete surfaces are board-formed, "a nice technique for providing texture while masking defects," Gordon says. "We used the cheapest, roughest boards available, so the grain imprints are crude in a pleasant way."

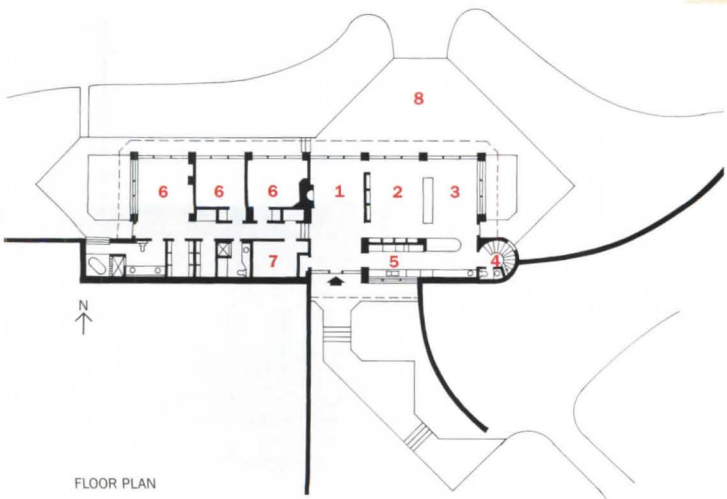
The main living and dining areas, aligned to face the spectacular views, flow together as one large space interrupted only by a freestanding bookshelf and credenza. Three bedrooms also are oriented toward the northern exposure, with two bathrooms, a mechanical room, and kitchen stacked along the earth embankment. Skylights lessen the feeling of being underground, while the primarily open plan creates clean sightlines.

A palette of natural materials wraps the interior. Millwork and cabinetry throughout is solid sugar maple, while slate floors complement skim-coat plaster walls buffed with a waxed finish. Aside from a clear finish on the woodwork, no paint or stain was used. Much of the furniture is built in, with lighting mostly recessed. "I wanted to let the construction forms themselves be the visible expression of the house," Gordon says.

The interior palette of natural materials lets the construction forms speak for themselves.

A hideaway submerged below a sea of plantings, Gordon's house fulfills his vision of a place where shelter and nature merge. ■

1. *Living room*
2. *Sitting room*
3. *Dining room*
4. *Stair to tower*
5. *Kitchen*
6. *Bedroom*
7. *Mechanical room*
8. *Terrace*



FLOOR PLAN

Sources

Windows, exterior doors: *Case Window and Door*
Interior doors: *New England Screen Door*
Cabinetry, millwork: *Bert Fitch, Peterson's Millworks*
Flooring: *Domestic Marble and Stone*
Tile: *Elon Tile*
Concrete: *Reinforced Concrete Services*
Skylights: *Velux, Wasco*
Solar panels: *South Mountain Solar*

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

Residential Products

Blending with the landscape

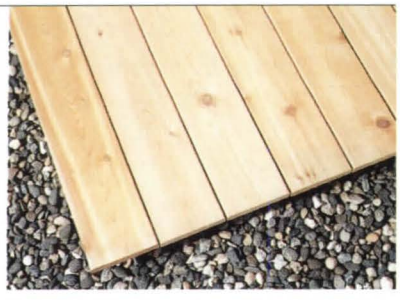
► Increased exposure

Acme Brick's new IBP grid system reduces the grid's aluminum T-bar framing by 50 percent, from ¾ inch to ⅜ inch, producing a gain in light transmission. The system, which features glass block in a selection of colors and patterns, can be used for windows, skylights, shower enclosures, and partitions. IBP panels can be mullioned together to create vast expanses of glass block for exterior walls. 800/932–2263. Acme Brick Company, Fort Worth, Tex. **CIRCLE 200**

▲ Sunscreen for your home

Besides offering homeowners natural light and greater outdoor views, Velux's skylights with Comfort-Coated Glass feature a laminated inner pane that provides safety from impact situations, such as hailstorms and high winds. The skylights reflect 99 percent of ultraviolet rays, which can cause carpet and furniture to fade. The glass also has a double layer of Low-E coating to act as a heat barrier. Argon gas, injected between the panes, increases the thermal performance. Velux also offers a selection of pleated shades and venetian blinds with a specially formulated, energy-efficient, reflective coating. 800/283–2831. Velux-America Inc., Greenwood, S.C. **CIRCLE 202**

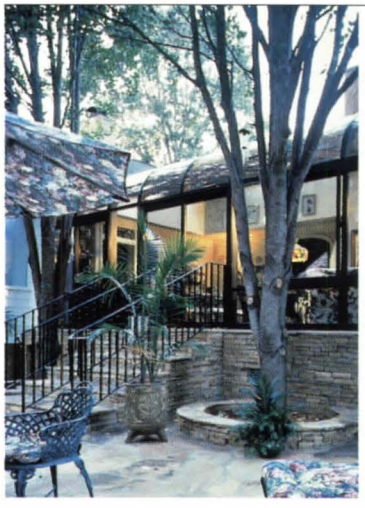
► Bug-free by nature



L/P Evans Western red cedar decking integrates home and landscape, makes use of damp or uneven terrain, and is naturally resistant to decay and insect attack due to inherent preservative oils. The red cedar, suitable for decks, patios, and other outdoor uses, comes from the interior of British Columbia, a region noted for the good knot quality of its cedar. The decking is available in two-by-four, two-by-six, and two-by-eight-inch widths. 604/643–5850. Louisiana-Pacific Corporation/Evans Forest Products, Vancouver. **CIRCLE 204**

► Back woods

Iron Woods brand hardwoods can be specified for residential deck building, fencing, furniture, docks, outdoor raised gardens, trellises, cabinetry, pools, whirlpool surrounds, and an array of remodeling projects. The wood can be used to connect exterior and interior spaces and to extend the total living area of the home. It requires no chemical preservative or water-repellent sealers. 414/445–8989. Timber Holdings Ltd., Milwaukee. **CIRCLE 201**



◄ A place in the sun

Sunrooms can be used for home offices, reading rooms, spas, greenhouses, or guest bedrooms. Specifiers have a choice between seasonal single-pane glass rooms, extended-use rooms with insulating glass, framing and roofs, and the all-glass solarium. The ComfortView Room features enhanced energy efficiency, greater view area with tempered safety glass, and European styling. Patio Enclosures holds the patent for the sunroom's glass-panel roof system. 330/468–0700. Patio Enclosures Inc., Macedonia, Ohio. **CIRCLE 203**

▲ Porcelain patio

Named for a nature preserve in Austria, Gold Seal's Karwendel porcelain tiles feature a clean, glazed look. Because it is a porcelain line (the brand's first), it is suitable for outdoor applications. The line comes in three color options—Day's End, Forest Floor, and Winter's Blanket—and is available in 12-by-12-foot field tiles, with 4¼-by-4¼-inch fossilized dot accents. Gold Seal tile collections are available with complementary trim. 877/370–5503. Florim USA, Clarksville, Tenn. **CIRCLE 205**

Residential Products

Blending with the landscape

▼ Air comfort system

In summer, Aprilaire's Fresh Air Exchanger removes heat and moisture from humid incoming air and transfers them to the outgoing airstream, reducing the load on the air conditioner. In winter, the Exchanger keeps heat and humidity loss to a minimum by transferring them from the outgoing warm airstream to the incoming cool airstream. Aprilaire's Zone Control System provides the flexibility to divide the home into as many as four zones per heating and cooling system. It works with virtually all mechanical and electronic thermostats. 800/545–2219. Research Products Corporation, Madison, Wis. **CIRCLE 206**

◄ From the old country

Subtle moss and sage green overtones and traces of taupe and plum enhance Old Country, an eighth color for Cultured Stone's rough-hewn Cobblefield texture (shown). The result is a rugged yet trim stone veneer with the appearance of age-old quarried rock. Six more colors join Honey, Chardonnay, Caramel, and Aspen to give Country Ledgestone 10 colors in all, the most of any Cultured Stone texture. 800/255–1727. Cultured Stone Corporation, Napa, Calif. **CIRCLE 207**

► Drier foundations

Styrofoam Perimate brand insulation offers both drainage protection and insulation for below-grade wall applications, reducing labor and material costs and helping eliminate the potential for mold and mildew. Perimate guides water down to weeping tiles, directing moisture way from foundation walls. The insulation is supplied in two-by-eight-foot boards to minimize job-site waste. 800/441–4369. The Dow Chemical Company, Midland, Mich. **CIRCLE 208**

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Residential Products

Blending with the landscape

▲ Give your landscape some structure

The Accent retaining wall system is ideal for many landscaping projects, including retaining walls and planting areas. Solid concrete units are lightweight, yet offer significant retaining-wall capabilities. Accent units permit tighter design radii and a smaller scale than their larger counterparts, and a unique pinning system allows construction of setback and near-vertical walls. 800/770–4525. Versa-Lok Retaining Wall Systems, Oakdale, Minn. **CIRCLE 209**

► Indoor/outdoor lounging

The Palazzio Collection of outdoor/indoor teak furniture includes a lounge chair (right) of plantation-grown, kiln-dried solid teak. All of the dining and occasional tables in the collection will be offered with either French Beaumaniere limestone (derived from ancient quarries), glass, or material supplied by the client. The limestone is specially coated with a transparent sealer to protect the tabletops without any alteration in color. 805/965–6535. Giati Designs Inc., Santa Barbara, Calif. **CIRCLE 210**

▼ Safe egress from the basement

Bilco's ScapeWEL window wells feature a terraced design step that attaches directly to the window buck or foundation for safe exit in an emergency. Unlike concrete window wells, ScapeWEL requires no forming or pouring, and it is faster and less expensive to install than a custom-terraced, site-built well. 203/934–6363. The Bilco Company, New Haven, Conn. **CIRCLE 211**

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CIRCLE 83 ON INQUIRY CARD

New Products

While metal cladding has been around for centuries, recently there has been a renewed interest in the material—partly as a result of the "Bilbao effect." Experts note an increasing willingness to explore the number of new textures and finishes available on everything from aluminum to zinc. Here are a few new metal cladding options. *Rita F. Catinella*

Finishes enhance metal cladding palette

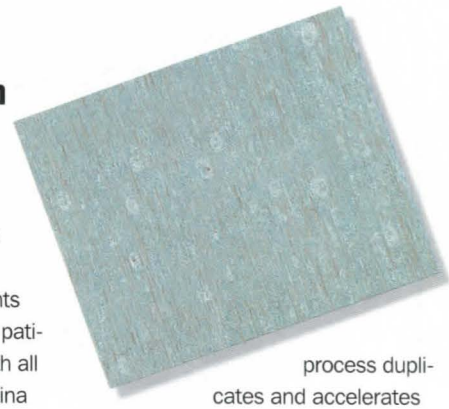
A. Zahner Company's fabrication of the metal skin for Frank Gehry's design of the EMP [AUGUST 2000, page 126] is highlighted in this month's Technology section [page 173]. In addition to using the latest software and technology to fabricate metal panels such as those at EMP (the company has even developed its own design software), A. Zahner produces custom finishes and patinas either for new projects or historic/renovation work. It has even acquired the rights to several finishes.

Working in all available metal types (including cor-ten, bronze, stainless steel, and aluminum), the company recently produced over 45 different finishes on copper panels alone for various projects around the country.

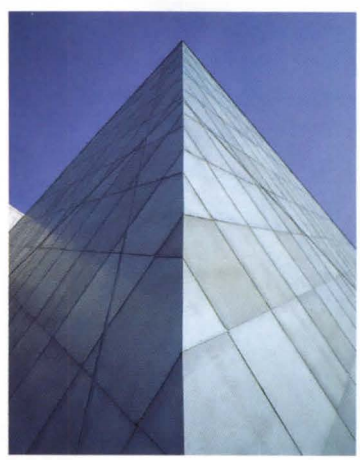
Along with the standard offerings, with the Meta-Bump, MetaPerf, and MetaShape lines, A. Zahner offers custom-embossed shapes and patterns in any size or spacing on any material.

A SuperPlastic aluminum MetaShape panel (above right) was fabricated recently for a project in England, while the Planet Hollywood restaurant in Orlando (above left) features a custom swirl finish on 2-millimeter-thick stainless steel. This is one of several finishes available on the full range of metals in the MetaMotif product line. 800/467–3125. A. Zahner Co., Kansas City, Mo. CIRCLE 212

Immediate copper patination



Not an acid-wash, spray-on paint, or an artificial coating of any kind, EverGreen prepatinated sheet copper (right) from Revere Copper Products gives architects and their clients the blue-green look of copper patination without the wait. As with all sheet copper, EverGreen's patina crystals form on the surface and transform to a copper hydroxide when exposed to moisture over time. Revere's proprietary manufacturing process duplicates and accelerates copper's natural aging, complete with the normal color variations and irregularities.



EverGreen was specified for Malden Mills in Lawrence, Mass.

Applications for EverGreen include roofing, sidewalls, fascias, mansards, spandrels, and hung-molded gutters. The product has been used in projects for the University of Iowa, Harvard University, and Malden Mills in Lawrence, Mass.

Care should be taken when using EverGreen in conjunction with mortar, cedar, and other materials capable of leaching acids that attack copper—which is still the most corrosion-resistant of all commonly used architectural metals. Also, runoff from iron and steel may adversely affect the patina. 800/448–1776. Revere Copper Products, Rome, N.Y. CIRCLE 213

Removable metal column covers

At the CSI show held this past June in Atlanta, Fry Reglet Corporation announced the addition of a new line of metal column covers: Series KS column covers provide a vertical butt joint, incorporating a key slot design for easy installation.

"Metal column covers with key slots provide unlimited removal and easy replacement," says Mac Hall, a partner at Fry Reglet. "These make it very easy to access electrical and mechanical items inside the columns. And you don't need any special tools."

The covers can be used on both interior and exterior applications, and they can be specified with a variety of heights, finishes, and gauge options (up to 14 gauge steel or .125 aluminum). The design of the key slot connections allows for flexibility in support methods. Installations can be accomplished by directly attaching the covers to the structure or by supporting them on standard drywall studs. 800/237–9773. Fry Reglet Architectural Metals, Alpharetta, Ga. CIRCLE 214

CLADDING OPTIONS:

Centria International Moon Township, Pa. 412/299–8240.

Permasteelisa Hartford, Conn. 860/253–4485.

Pohl, Inc. Marblehead, Mass. 617/639–2662.

Porcelain Enamel Institute Nashville. 615/385–5357.

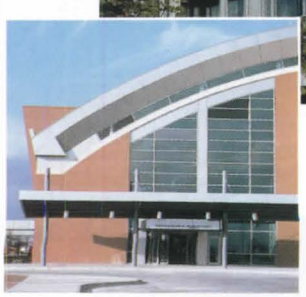
Timet Lawrence, Kans. 785/842–2299.

Rimex Metals (USA), Inc. Edison, N.J. 800/526–7600.

New Products

▲ Unsinkable zinc

Rheinzink's System-A architectural modular zinc wall-panel system utilizes advanced dry seal, pressure-equalized rainscreen technology. Rheinzink is a solid, titanium zinc alloy that develops a blue-gray patina and has a potential life span of over 100 years. The system can be applied for curtain walls, spandrel panels, fascias, soffits, column and beam covers, canopies, and signage. The system was specified for the Coal Harbour Towers (above), two residential towers in Vancouver. The entire exterior skin uses the rainscreen principle to resist the wet Vancouver weather. 617/948–2520. Rheinzink Canada Ltd., Boston. **CIRCLE 215**

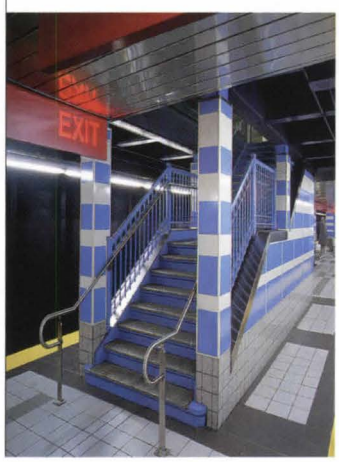


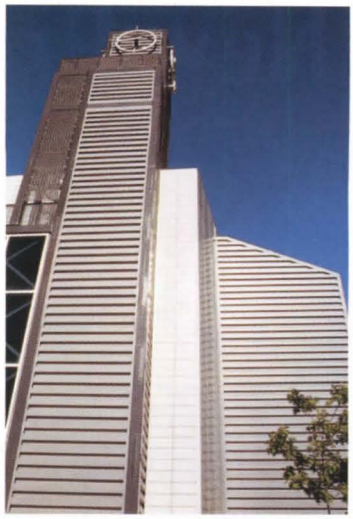
▲ Aluminum exterior cladding

Alucobond material, made of two sheets of .02-inch aluminum bonded to a proprietary plastic core, can be specified for a variety of residential or commercial applications. Approximately 60,000 square feet of the aluminum composite material was used on the Conservatory, an upscale condominium project in Vancouver (above right). The material was attached to the upper stories in a dry-joint, rainscreen, pressurized panel system. The exterior of the new air terminal at the City of Midland, Texas (above left), combines brick, precast concrete, blue-green glass, and silver metallic Alucobond material. 270/527–4200. Alusuisse Composites Inc., Benton, Ky. **CIRCLE 218**

▼ Ceramic steel

Polyvision is a producer of light-gauge Ceramicsteel products. Uses include interior partitions, abuse-resistant signage, and architectural panels. Ceramicsteel is produced by fusing ceramic or porcelain materials to steel at high temperatures. Ceramicsteel panels are graffiti-proof, and scratch-, stain-, acid-, heat-, and fire-resistant. Prescreened graphics will not fade. 918/756–7392. Polyvision Corporation, Okmulgee, Okla. **CIRCLE 216**



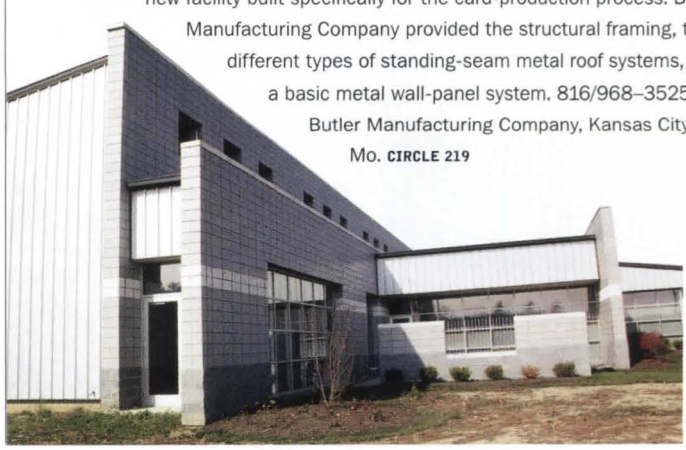


▲ Good bone structure

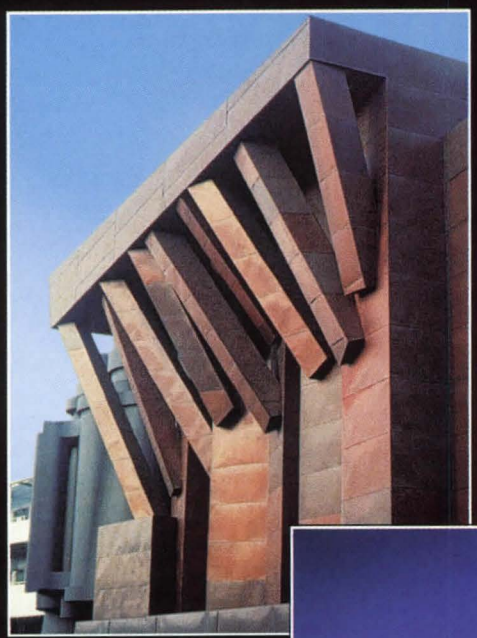
The "T-24" industrial rib panel features 3-inch depth and 12-inch pitch, creating a deep-ribbed look with pronounced shadow lines and increased span capabilities. The panel is available in galvanized steel, zinc, aluminum-coated steel, or aluminum, and a full range of colors and coating systems. 909/829–8618. Custom Panel Industries LLC, Rancho Cucamonga, Calif. **CIRCLE 217**

▼ Metal wall-panel system helps to achieve the American dream

The U.S. Immigration & Naturalization Service (INS) challenged HDR Architecture, of Alexandria, Va., to design, within a few months, a plant in eastern Kentucky for the manufacture of permanent-resident "green" cards. The project was the first new facility built specifically for the card-production process. Butler Manufacturing Company provided the structural framing, two different types of standing-seam metal roof systems, and a basic metal wall-panel system. 816/968–3525. Butler Manufacturing Company, Kansas City, Mo. **CIRCLE 219**

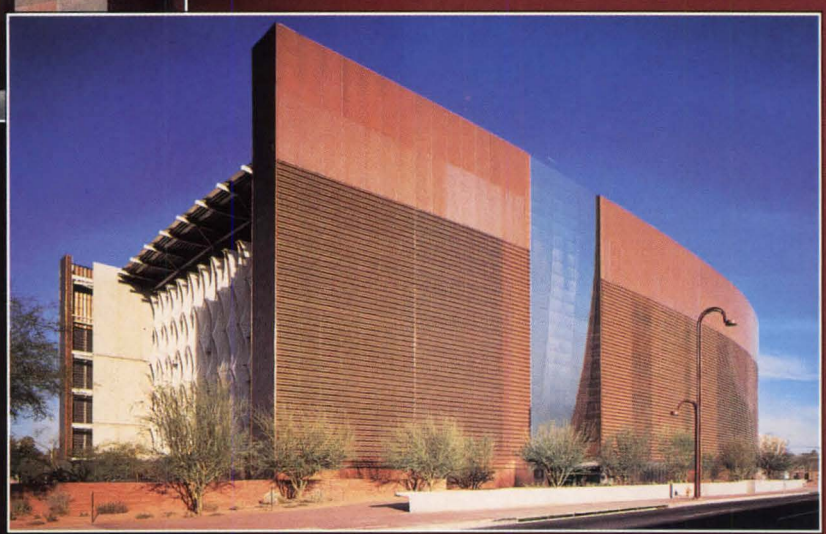


Designing with copper?



Omnicom Group, Venice, Calif.
Frank O. Gehry & Associates

Ceridian Corporation, Bloomington, Minn.
Hammel Green and Abrahamson, Inc.



Phoenix Central Library, Phoenix, Ariz.
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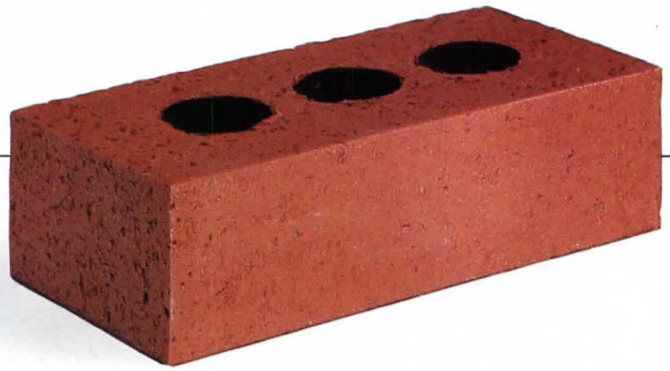
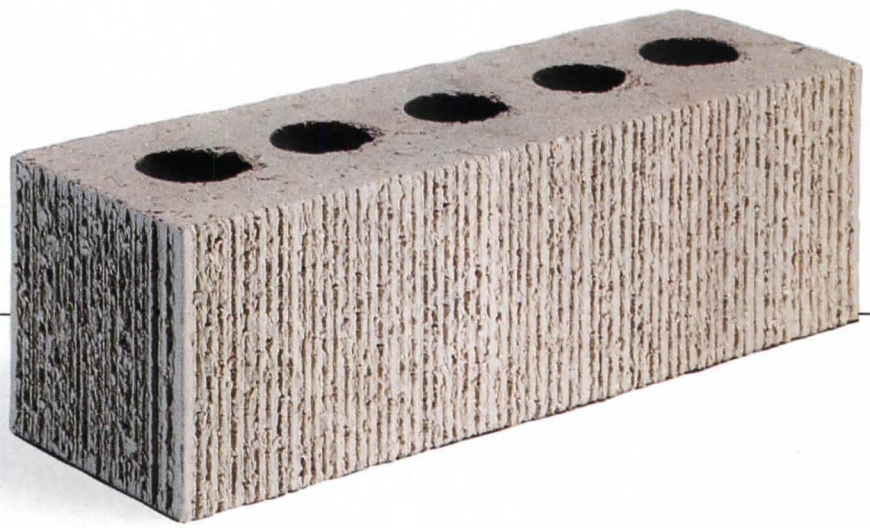


Belden Brick is made in over 116 colors that include 2 choices in black, 28 browns, 7 tans, 8 buffs, 3 creams, 18 grays, 16 pinks, 26 reds, and 8 whites.

In addition, it is made in 12 different textures, although not all our brick is made in the same range of textures.

Belden also offers a choice of extruded brick or molded brick (with the character of hand-made brick.) Each category includes a wide range of colors and textures providing more than adequate design latitude.

SIZES



Belden Brick is predominantly made in thirteen different sizes, representing the spectrum of Belden Brick colors and textures. Your design opportunities are broadened by the availability of virtually every Belden Brick color choice as pavers.

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CIRCLE 85 ON INQUIRY CARD

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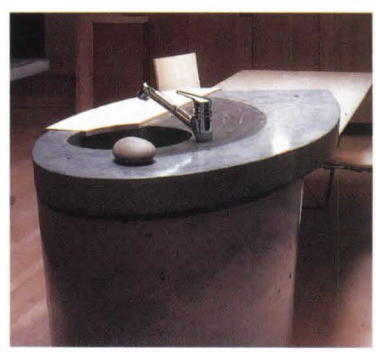
Product Briefs

▲ On the Wright block

The Museum Block Set is part of the Frank Lloyd Wright Collection of wooden blocks from T.C. Timber. This 54-piece hardwood maple block set comes housed in a wooden box, and the slate cover serves as the city street. Also included in the series is the Prairie House Block Set, which comes with 70 hardwood maple pieces and is inspired by works such as the Frederick Robie House. Nature Pattern Blocks, a set of 110 geometric shapes, teaches how to use Wright's principles of nature patterns. 800/468–6873. T.C. Timber, Skaneateles, N.Y. **CIRCLE 220**

► Hall of windows

Wausau manufactured six curtain-wall systems, ornamental aluminum covering for the exterior overhang, and dozens of support columns both inside and outside of the Anaheim Convention Center. The column covers are made of two curved aluminum shells that connect around the towering posts to hide the steel underneath. Wausau worked with a team of experts to develop several proprietary window systems for HOK's design. 877/678–2983. Wausau Window and Wall Systems, Wausau, Wis. **CIRCLE 221**



◄ Concrete countertops

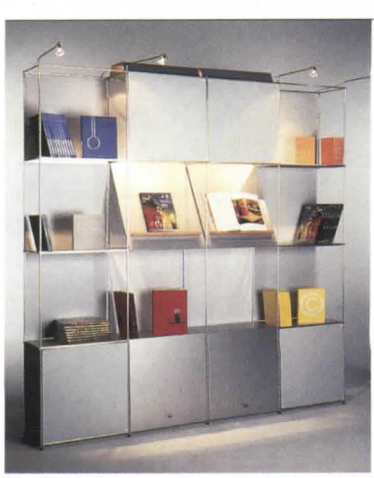
The five models in the Geocrete Pelago series of cast-concrete countertops take advantage of the sculptural quality of the material and may include elevation changes, sloped surfaces, cast-in drain channels, or inlaid objects and artifacts. The countertops are available in six colors and two finishes. 510/549–2805. Cheng Design Products Inc., Berkeley, Calif. **CIRCLE 222**

► New generation of seating

Fairbanks is the newest Arts and Crafts–inspired seating from the Generation series of KT Furniture's HumanCare line. Fairbanks features a wider arm for a feeling of stability, an 8 percent pitch on the inner side of each arm to ease circulation, and lumbar support to provide comfort for long periods of sitting. Fairbanks is available with an upholstered or wood back. 800/323–1030. KT Furniture, Gardena, Calif. **CIRCLE 223**

► Latin patterns

Bolyü introduces the Iberian Peninsula Collection of coordinating inner-loop scroll patterns, inspired by the cultures of Spain and Portugal. Patterns such as Belem, Medina, and Azores (shown) recall vines, Moorish window screens, or volcanic cliffs, and come in 19 colorways. 800/451–1250. Bolyü Contract, Adairsville, Ga. **CIRCLE 224**



◄ Storage for objects or people ►

Clic (left) is a modular display and space system from Burckhardt Leitner that uses magnets to connect components with a soft click. The structure is based on a grid system that can be configured with shelving, storage panels, lighting, and other accessories, making it ideal for exhibitions, retail displays, offices, and the home. The Lit Clos bed compartment (right), from Cappellini, features varnished steel legs in two heights, a steel frame, and panels in bent, lacquered birch plywood. An aluminum grille, translucent resin door, wooden floor with a cellulose carpet, and a fabric ceiling complete the structure. 305/437–7975. Luminaire, Miami. **CIRCLE 225**

Product Briefs

▼ Low-contrast healthcare flooring

Created specifically for the visual and performance demands of operating rooms, Mannington Assurance Low Contrast slip-retardant flooring, by Mannington Commercial, comes in five colors. The low-contrast visual reduces eyestrain for medical staff and provides a monolithic background that makes it easier to see dropped objects. Available in six-foot widths, Mannington Assurance may be chemical- or heat-welded and exceeds the ADA-recommended static coefficient of fraction for accessible routes. Mannington Assurance Low Contrast is the newest product in the company's LifeCare line, developed to address the specific needs of various health-care environments. 800/241–2262. Mannington Commercial, Salem, N.J. **CIRCLE 226**

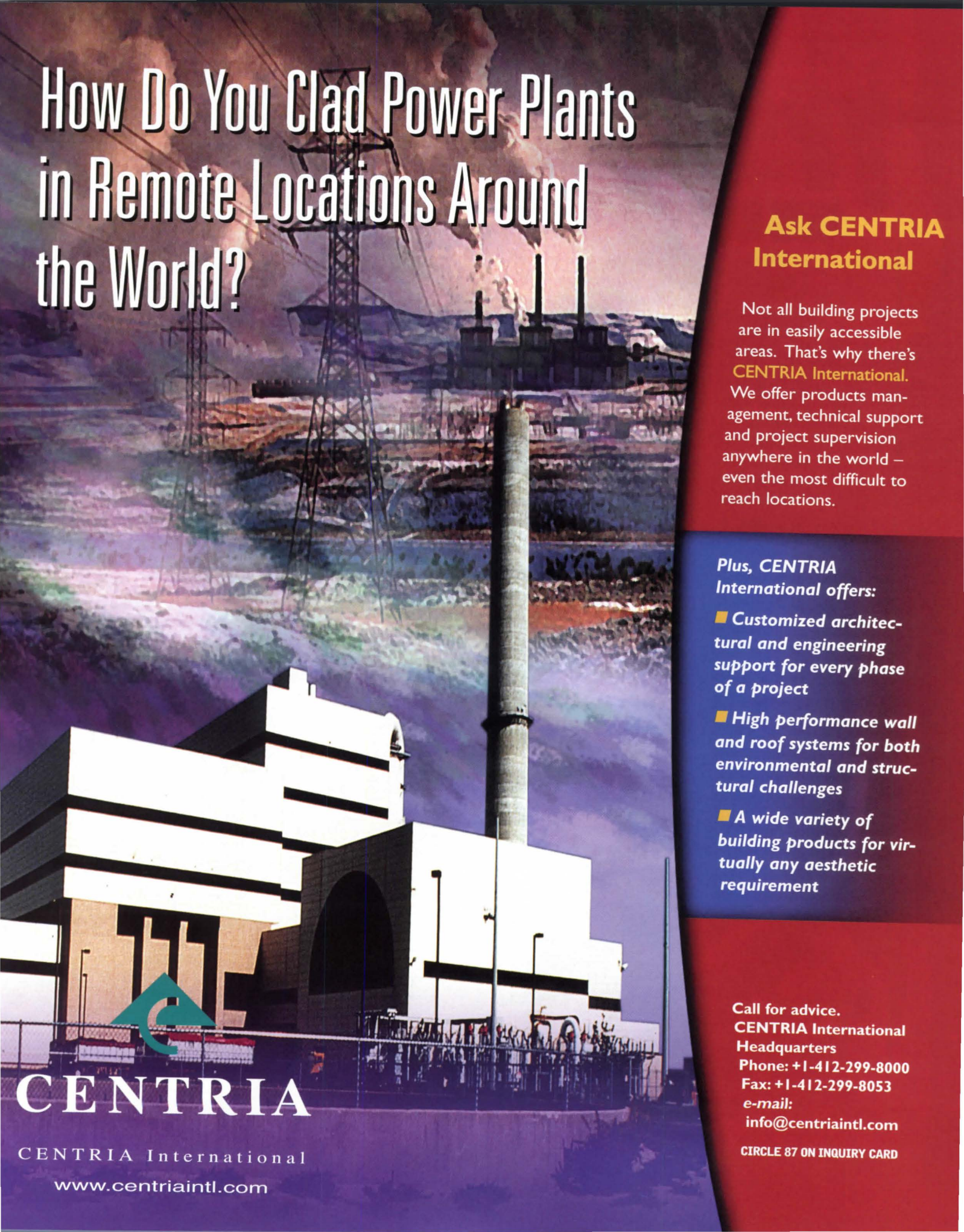
◄ Bon voyage

San Francisco Airport has unveiled a 21,000-square-foot cherrywood wall over the ticket counters in the new International Terminal. Made entirely from wood veneer, the 670-by-38-foot wall comprises 956 individual panels and has been certified as environmentally friendly by the Forest Stewardship Council. 202/342–0413. Forest Stewardship Council U.S., Washington, D.C. **CIRCLE 227**

► Late and modern

As a complement to the State of Mind rug collection [JULY 1999, page 161], Angela Adams presents a collection of late-century modern furniture by Sherwood Hamill. The series includes a bench with a matching stool, coffee tables, a workstation, and a work table. The pieces are made from a variety of materials, including walnut, ultrasuede, and brushed aluminum. The side case (above) features a fully finished back and sliding doors of quartersawn cherry with brushed aluminum legs and hardware. 800/255–9454. Angela Adams, Portland, Maine. **CIRCLE 228**

For more information, circle item numbers on Reader Service Card or go to www.architecturalrecord.com Advertiser & Product Info



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CIRCLE 87 ON INQUIRY CARD

Product Briefs

◄ Glory days

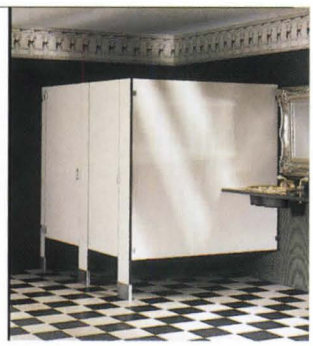
School lockers have been salvaged from auctions and demolition sites and given a new life by Sonrisa. The lockers can serve many functions, including toy storage or office organizers. Available in a range of sizes and formats, the lockers can also be re-enameled in mod colors if desired. 800/668–1020. Sonrisa Furniture, Los Angeles. **CIRCLE 229**

▲ Building with steel

By using light-gauge, cold-formed steel framing components and panels, the owners, architect/engineer, general contractor, and steel fabricator of the Atlantic Shores Retirement Community in Virginia Beach were able to increase the height and usable square footage of the building by 50 percent, to employ a noncombustible material, and to build a structure able to withstand winds up to 110 miles per hour. The senior-living facility is located in a hurricane-prone area only a mile away from the Atlantic Ocean. 202/452–7100. American Iron and Steel Institute, Washington, D.C. **CIRCLE 231**

► Laminate for the ladies room

ThickLam laminate from Nevamar is designed for a variety of high-use applications, including toilet partitions, rest-room compartments, door/frame systems, and door plates. Moisture-resistant ThickLam is stocked in ½- and ¾-inch thicknesses, and 5-by-10-foot and 5-by-12-foot panels. 800/638–4380. International Paper, Decorative Products Division, Odenton, Md. **CIRCLE 230**



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CIRCLE 89 ON INQUIRY CARD

Product Briefs

▼ Smashing design

George Papadopoulos cracks and smashes glass panels to create screens, partitions, and flooring that define space through light. Papadopoulos uses industrial and commercial laminating processes to produce glass for both domestic and public spaces. Last October he created two panels of laminated, shattered frosted glass for a temporary exhibition of contemporary jewelry for a jeweler in London (below). From October 5–8 he will be exhibiting at 100% Design, a trade show held in London. +44/020 8885 2029. Yorgos Architectural Glass, London. **CIRCLE 232**

▲ Avoid drain pains

CavClear masonry mat and insulation systems are intended to provide proper drainage and adequate ventilation within masonry walls. The masonry mat is made of fluid-conducting, nonabsorbent, mold- and mildew-resistant polymer mesh recycled from 100 percent postconsumer plastic. The insulation system includes the masonry mat bonded to extruded foam board insulation. CavClear claims that the products eliminate drainage and ventilation problems. 888/436–2620. CavClear/Archovations Inc., Hudson, Wis. **CIRCLE 233**

► Stop the abuse

Titan Panel FR is a new fiber-cement, fire-rated abuse- and impact-resistant panel. The panel has a fiber-cement surface with a proprietary fire-rated gypsum base that is ideal for schools, hotels, hospitals, and other applications requiring protection from high-traffic abuse. 800/9-HARDIE. James Hardie Building Products Inc., Mission Viejo, Calif. **CIRCLE 234**

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CIRCLE 92 ON INQUIRY CARD

Product Briefs

▲ Handy tiles

The Handmold series by Seneca Tiles makes use of a blend of local clays, incorporating techniques developed hundreds of years ago: craftsmen beat handfuls of plastic clay into shallow wooden molds, scrape the excess clay from the top, place a wooden drying board over the mold, and then lift the mold. The tiles are then dried, glazed, and fired under carefully controlled conditions. Evergreen (shown) is part of the Renaissance series of highly variegated glazes exhibiting a combination of matte, stonelike finishes with random areas of gloss. 800/426–4335. Seneca Tiles, Inc., Attica, Ohio. **CIRCLE 235**

► Flip it up

Designed by Giancarlo Piretti, Torsion on the Go is a lightweight, flex-back, four-leg alternative to traditional pedestal seating. With flip-up seat castors, chairs can nest together, then be quickly rolled away for storage. Backs are available with upholstery or in dimpled black or warm gray polypropylene. Torsion's steel-tube frames can be ordered chrome-plated or in KI's standard powder-coated finishes. Versions with or without arms are offered. 800/424–2432. KI, Green Bay, Wis. **CIRCLE 236**

◄ Bounce right back

PlayFlex is a urethane binder used in combination with granulated or shredded rubber to produce a permeable, soft surface. The product permanently binds the rubber particles into a cushioned blanket of protection for playgrounds, walking paths, or work areas. It can be spray-applied or machine/hand-applied. 314/521–4100. Futura Coatings Inc., St. Louis, Mo. **CIRCLE 237**

For more information, circle item numbers on Reader Service Card or go to www.architecturalrecord.com Advertiser & Product Info

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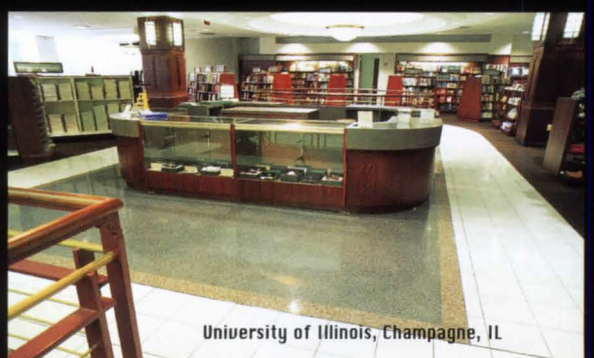
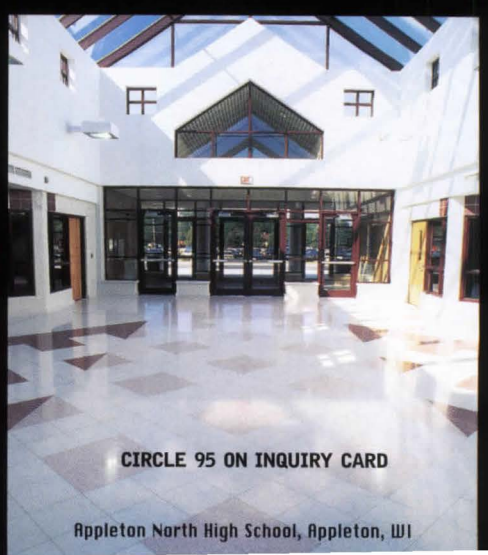

University of Illinois, Champagne, IL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Product Briefs

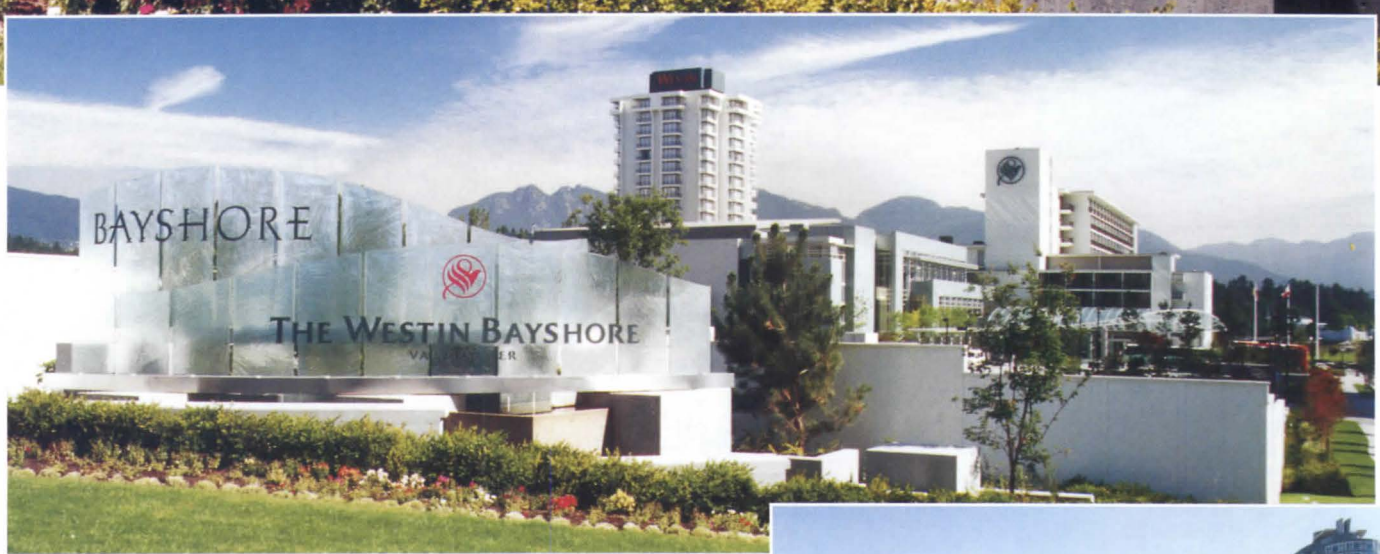
▲ Making an entrance
To create a curving curtain wall for Fore Systems in Marshall Township, Penn., Studios Architecture and Perfido Weiskopf Architecture used Vistawall's HP-400 window system and CW-250 curtain wall. Side-stacked in the ribbon wall, the window system is modified to segment at each vertical, allowing a variable degree of splay for both an inside and outside arc. Thus, the windows curve with the building. 800/869–4561. Vistawall Architectural Products, Terrell, Tex. **CIRCLE 238**

▼ Classical inspiration
Ancient Greece inspired Mark Goetz in his design for the Esperanto chair for Bernhardt (below). The solid maple chair features a large down cushion and low, deep seat. Claris, a modular seating group also designed by Goetz, comes with an optional raffia frame. To unify the group, Goetz created a profile that could be used as both an arm and a back. 212/888–3232. Bernhardt Design, New York City. **CIRCLE 239**

▲ Palette by nature
Accordia, designed by Dina Frank and Alan Dandron, features wood, metal, and glass work surfaces that float on metal pins; metal legs raise the entire system off the floor. The designers selected a new palette of natural, finished veneer combinations ranging from the lighter sycamore and anigre to darker sapele and pommele. A lockable, hinged panel on the worksurface opens to a storage area for laptops. 507/533–4235. Halcon, Stewartville, Minn. **CIRCLE 240**

► Gain more control
Instead of installing separate reader devices, electrified strikes, door contacts, and request-to-exit devices, users can install the Best IDH Max lockset, which combines multiple control-access functions in a single device. The lockset is available for Grade 1 cylindrical and mortise lock installations with a variety of levers, knob styles, and finishes. It can utilize magnetic strip, keypad, or proximity reader devices. 317/849–2250. Best Access Systems, Indianapolis. **CIRCLE 241**

For more information, circle item numbers on Reader Service Card or go to www.architecturalrecord.com Advertiser & Product Info



This cast glass corporate sign is one of the most visible landmarks in downtown Vancouver. The panels are cast in a 3/4" thick tempered safety glass, range up to 7' tall, and span two 30' lengths of bent stainless steel tubing. The aluminum letters are 1/2" thick and pinned through the glass. Letters & logo are powder coated, and all items are illuminated at night with water sealed halogen lights, one positioned below every letter. Nathan Allan provided all materials and installation for this project.

Nathan Allan
Glass Studios Inc.

Suite 118 - 11180 Coppersmith Place, Richmond, BC Canada V7A 5G8
Telephone 604/277.8533 · Facsimile 604/277.1515 · Website www.nathanallan.com

Photography by Action Images (Vancouver, BC)

CIRCLE 98 ON INQUIRY CARD

Product Literature

Fabric primer

A new primer on Xorel fabric from Carnegie focuses on the aesthetics, function, and sustainability of the product. A handy pull-out specifications card and sample card are stored in a pocket at the back of the primer. 800/727–6770. Carnegie, Rockville Center, N.Y. CIRCLE 242

Glass facts

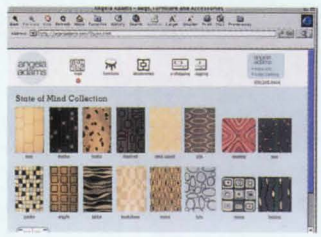
Three new laminated glass fact sheets from the North American Laminated Glass Information Center focus on the product's role in increasing sound control and earthquake protection for buildings and in promoting safety in schools. 800/230–4527. Laminated Glass Information Center, St. Louis. CIRCLE 243

Commercial windows catalog

The 212-page *Andersen 2000 Commercial Catalog* showcases Andersen casement, awning, speciality, double-hung, gliding, and skylight/roof windows, doors, and joining/combination designs. Each section has size charts, product features, and options, as well as basic unit details. 800/426–7691, ext. 1899. Andersen Commercial Group, Bayport, Minn. CIRCLE 244

NEW SITES FOR CYBERSURFING

Rug, furniture, and accessory e-commerce site **www.angelaadams.com**



Free site for sourcing design products and services **www.specsimple.com**

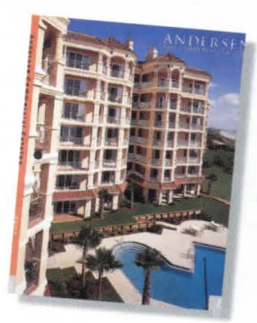
Guide to Resource Efficient Building Elements **www.crbt.org**

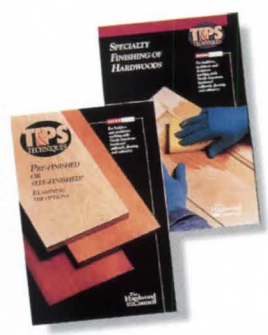
Business-to-business lighting product information **www.waclighting.com**

Fine furnishings resource for design trade only **www.designonlineinc.com**

Tips for hardwood

"Pre-Finished vs. Site-Finished" is part of the *Tips & Techniques* series from the Hardwood Council. The literature provides helpful information for choosing on-site or factory finishes, as well as a step-by-step guide to on-site finishing. "Specialty Finishing of Hardwoods", another installation, includes guidelines on designing with finishes using bleaching, antiquing, pickling, and coloring. 412/281–4980. The Hardwood Council, Oakmont, Pa. CIRCLE 245





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Product Literature

Color visualization software

Color@Home software, developed by The Glidden Company, lets consumers visualize how different color combinations will look before they paint. Color@Home features five styles of homes and 27 different interior rooms. Users can select any of the exteriors or rooms and see how they look with different color combinations. 440/331–3832. Glidden, Cleveland. **CIRCLE 246**

Ventilation overview

Ventilation, Solutions for Your Home is a booklet explaining how ventilation contributes in creating healthy living environments. It also highlights areas of the home where ventilation is needed and reviews some of the products available to solve a home's ventilation needs. 847/394–0150. Home Ventilating Institute, Arlington Heights, Ill. **CIRCLE 247**

Metal coating color guide

Alusuisse Composites has introduced a new color guide of paint chip samples from a wide range of colors and finishes for use in selecting Alucobond material colors and finishes. A special "coatings reference" page provides information including: architectural and corporate identity suitability; usage in various types of environments; gloss, metallic, graffiti and abrasion considerations; and performance standards. 800/382–6445. Alusuisse Composites Inc., Benton, Ky. **CIRCLE 248**

Laminate profile

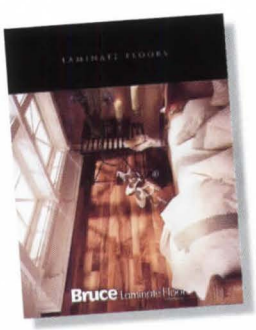
A new brochure from Bruce Laminate Floors features the styles and benefits of the company's three brands: Traffic Zone, Carnival, and Value Zone. 214/887–2100. Bruce Laminate Floors, Addison, Tex. **CIRCLE 249**

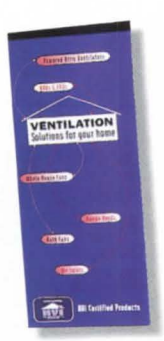
Fiber cabling system catalog

Krone Inc.'s new catalog features a complete portfolio of fiber optic cables, connectors, patchcords, adapters, modular panels, patch panels, hardware, and accessories for campus, building, and horizontal/closet distribution. 800/775–5766. Krone Inc., Arlington Heights, Ill. **CIRCLE 250**

Fabric duct design guide

KE Fibertec has released its new product binder, containing a design guide for its fabric duct ventilation systems. 877/229–0695. KE Fibertec NA, Oro Valley, Ariz. **CIRCLE 251**





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Dates & Events

Calendar

Frank O. Gehry: The Architects Studio
Seattle
Until November 12
From Bilbao to Seattle, the models, drawings, and projects of Gehry are featured in this exhibit. In the Henry Art Gallery's East Gallery. 206/543–2280; www.henryart.org.

The Monumental Designs of Cesar Pelli
New Haven
Until November 3
The Yale School of Architecture will showcase this exhibition on the second-floor gallery of the Art and Architecture building, designed by former dean Paul Rudolph. The gallery also shows work in progress by the current dean Robert A.M. Stern. Yale University, 203/432–2292; www.yale.edu.

Open Ends: Five Thematic Exhibitions and Four Large-Scale Installations
New York City
Until January 2, 2001
This exhibit is the third and final cycle of MoMA2000, which celebrates the richness of their holdings. Among the exhibits are 65 images, in a variety of media, of visionary projects by architects such as Rem Koolhaas, Zaha Hadid, and others. At MOMA, 212/708–9400; www.moma.org.

The Un-Private House
Los Angeles
October 4–January 7, 2001
Organized by Terence Riley of MoMA, this exhibit examines 26 contemporary homes by a roster of international architects whose design reflects the transformation of the private house in response to changing cultural conditions and recent architectural innovations. At the UCLA Hammer Museum, 310/443–7047; www.hammer.ucla.edu.

Santiago Calatrava: Artist, Architect and Engineer
Florence, Italy
October 5–January 7, 2001
The first comprehensive exhibition of the work of this noted architect will be mounted in the Renaissance setting in the Palazzo Strozzi. The show will include over 100 sculptures, models, drawings, and photographs. In Florence, 00.39. 05.52.39.85.63.

The Long View: MOMA and Municipal Art Society Present Visionary Architecture
New York City
October 5–December 9
This series of exhibitions, curated by Philip Johnson and organized by Terence Riley and Peter Reed of MOMA, features five young architectural firms: SHoP, Reiser+ Umemoto, Michael Maltzan, UN Studio/Van Berkely & Bos, and Foreign Office Architects. At MOMA, 212/708–9400, www.moma.org.

Masterpieces from the Vitra Design Museum: Furnishing the Modern Era
New York City
October 10–February 4, 2001
Sponsored by the Smithsonian, Cooper-Hewitt,

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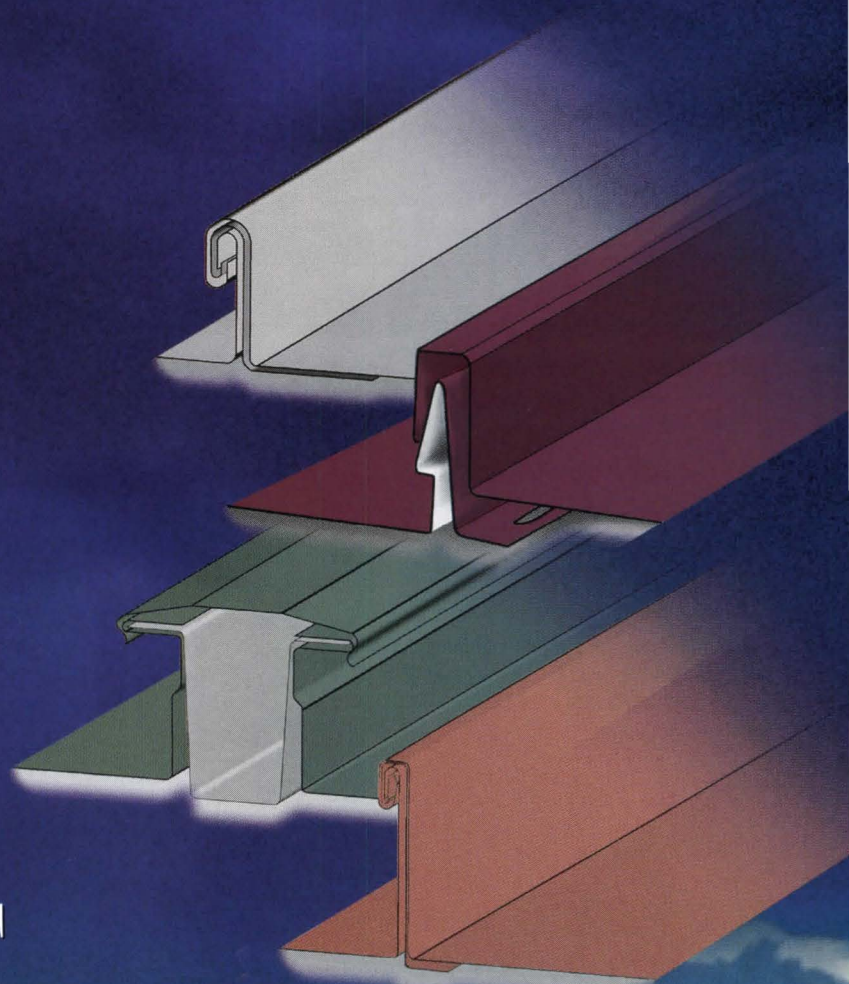

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CIRCLE 107 ON INQUIRY CARD

National Design Museum, this exhibition of important 20th-century furniture from the Vitra will focus on chairs and seating, selected for their role in the evolution of industrial furniture design from its beginning in the 1850s to today. Cooper Hewitt, 212/849–8400; www.si.edu/ndm.

Utopia and Reality—Modernity in Sweden 1900–1960
Stockholm
October 7, 2000–January 14, 2001
Exhibition of over 450 works by architects, designers, and artists focusing on how modernity was expressed differently in Sweden from the rest of the world. Modern Museum, +46 8 5195 5210.

Preserving the Recent Past II
Philadelphia
October 11–13
Sponsored by the National Park Service, the General Services Administration, the Society of Architectural Historians, DOCOMOMO, and other preservation-minded groups, this weekend of events includes 70 speakers, an exposition, tours, and a curtain-wall symposium. Loews Hotel (historic PSFS Building). 202/343–6001.

Form! Function! Future! Conference
Portland, Ore.
October 14–17
This conference offers professional development for private, corporate, and public architects to offer their services in a new marketplace environment. Features include: successful business practices, good design concepts, computing for design, meeting client's needs, and new sources of revenue. Portland Hilton Hotel. 202/626–7410.

62nd Annual F.W. Dodge Outlook 2001 Executive Conference
Washington, D.C.
October 17–18
Meet with your peers from across the nation to discuss the rapidly changing construction marketplace, and where technology will take the industry next. Renaissance Mayflower Hotel. To register go to https://outlook2001.800cmi.com or 800/847-4374.

Nature Constructed/Nature Revealed: Eco-Revelatory Design.
Washington, D.C.
Through October 22
This exhibition presents 15 landscape-architecture projects through video, sculpture, models, photographs, drawings, and plans. National Building Museum. 202/272–2448.

FEDCON 2001
Washington, D.C.
October 23
Federal officials involved in construction will present building budgets, plans, and updates on new regulations and impacts. Free of charge and cosponsored by CMD Group and the National Institute of Building Sciences. 800/283–4699.

North American Construction Forecast
Washington, D.C.
October 24
This daylong conference sponsored by CMD Group brings together economists and analysts from the United States, Canada, and Mexico to explore conditions that will determine building activity. National Press Club, Washington, D.C., 770/417–4261.

Aluminum by Design: Jewelry to Jets
Pittsburgh
October 28, 2000–February 11, 2001
The first major museum exhibition to explore

Dates & Events

how aluminum has inspired creativity and sparked innovation in design, including works by such visionaries as René Lalique, Jean Prouvé, Ludwig Mies van der Rohe, Russell Wright, Charles and Ray Eames, and Gio Ponti. Carnegie Museum of Art 412/688–8690.

Design Week and NeoCon
New York City
October 30–November 4; NeoCon Nov. 1–2
New York Design Week is a six-day design festival throughout Manhattan highlighting the city's permanent showrooms and creating a spectacle of trade shows and events. It incorporates manufacturers showroom tours; the NeoCon show with over 250 exhibits, educational seminars, cutting-edge design solutions, technology, trends, and more; an open house at the New York Design Center; a street party; tours of the A&D and D&D buildings and more. 800/528–8700; www.merchandisemart.com

Urban Land Institutes' Fall Meeting: Changing Places: Real Estate in the New Economy
Chicago
October 31–November 4
This year's meeting reflects the challenges faced by design professionals as they create places for people living and working in a digital economy. New opportunities, new rules, new players, and new patterns of development are addressed. 800/321–5011; www.uli.org

Art is Work: Milton Glaser Retrospective
New York City
November 2–December 8
The largest retrospective ever held in New York on the work of this well-known American graphic designer. AIGA's Fifth Avenue gallery. 212/807–1990/www.aiga.org.

Computers for Construction 2000 and AEC Systems
Anaheim, Calif.
November 6–9
The only trade show and conference dedicated exclusively to computer use by contractors. At this regional computer and high-tech event, the design and construction industries join forces. Anaheim Convention Center. 610/458–5472.

Good Design is Good Business: Design Strategies for the New Economy
Washington, D.C.
November 17
A Business Week/Architectural Record conference in association with the National Building Museum and the AIA. This half-day conference brings together key business leaders and architects to discuss collaboration between architects and clients resulting in the achievement of business goals. Participants can attend an exclusive preview reception for *On the Job: Design and the American Office*. National Building Museum, To register go to www.architectural-record.com.

8th Annual CANstruction: Designers Build Big to End Hunger
New York City
November 9–20
The winning teams' work will be on display at the New York Design Center. The public is asked to donate a can of food as the price of admission. 212/792–4666.

On the Job: Design and the American Office
Washington, D.C.
November 18–June 2001
This major exhibition documents the American office as an architectural and social space, a dynamic environment whose significance extends beyond physical boundaries. National Building Museum. Registration required 202/272–2448 www.nbm.org.

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Record Houses 2001

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The editors of ARCHITECTURAL RECORD announce the 46th 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 innovations in program, building technology, and use of materials. The entry fee is $50 per submission; please make checks payable to ARCHITECTURAL RECORD. Entries must also include plan(s), photographs (transparencies, slides, or prints), this entry form, and a brief project description, all firmly bound in an 8 ½-by-11-inch folder—postmarked no later than October 31, 2000. Anonymity is not necessary. Winning entries will be featured in the 2001 RECORD HOUSES. Other submissions will be returned or scheduled for a future issue. Please include a self-addressed envelope with the appropriate postage, and allow 10 weeks for return.

Submissions should be mailed to:
Sarah Amelar • RECORD HOUSES • ARCHITECTURAL RECORD • Two Penn Plaza, Ninth Floor • New York, NY 10121

This form must be included with your submission. If you have any questions, please E-mail Sarah Amelar at sarah_amelar@mcgraw-hill.com

Dates & Events

Competitions

Competition Notice for the Museum of the 20th Century in the Arengario
Deadline for first-stage plans: October 16
This juried competition involves the restoration and preservation of the Arengario, in Piazza del Duomo, and, on the interior, the creation of a new Museum of the 20th Century. The first stage of the competition consists of anonymous submissions. Five proposals will be chosen for the second stage. www.milanoprogetti.org or Raffaella Poletti at +02/89013883.

Before + After: The Intentions and Processes of Transformation
Deadline for entries: October 16
A juried exhibition will present a critical inquiry into architectural interventions and the trends affecting change in the built environment. Two images and supporting documentation will compare the state of an original condition and the effect of a practical and transformative intervention. $15 entry fee. 303/443–1945.

2001 Chicago Neighborhood Development Awards
Deadline for entries: October 25
Created in 1995 by Local Initiatives Support Corporation/Chicago and #8211, this program offers several awards for community-oriented architectural and development projects. Contact Garry Huebner or Jeanette Figueroa for an application. 312/360–0400.

Architecture, Image, and Emotion
Deadline for entries: October 30
The competition is designed to elicit ideas for a retail facility to be built on different scales. Open to all architects and engineers registered with their respective professional associations or possessing the appropriate qualifications in their home country, entries may be submitted as a team. www.arcadata.it.

Rudy Bruner Award for Urban Excellence
Deadline for entries: December 4
This award honors urban projects that demonstrative collaborative processes and meaningful values into good design. Cash prizes are awarded. 617/492–8401, ext. 184. www.brunerfoundation.org.

Please submit for the Dates and Events section to ingrid_whitehead@mcgraw-hill.com.

PSFS Project Diary *continued from page 147*

over to engineer's offices and the vault dismantled. Only some of the safe-deposit boxes were reinstalled on the second-floor telephone area. The black-and-white marble stair, plus a drinking fountain leading from the second-floor hall to the third-floor mezzanine, still remains. Although the lavishly wood-paneled boardroom, dining room, and ancillary spaces have been restored on the 33rd floor, none of the existing boardroom table and chairs or the furniture in the dining room is back in place yet. Since the opening, the floor has been used for various functions, but ordinary temporary furniture has been brought in for the occasion. Nevertheless, the original furniture is being stored in the warehouse. Jonathan Tisch reports that he intends to have it go back to the 33rd floor. (Daroff and Jones hadn't heard of this plan yet, but the Philadelphia Museum is delighted.)

The question remains: does the hotel identity of today now overwhelm the International Style identity of the Howe & Lescaze banking spaces? Actually not, but not for the stated intentions. Daroff says, "We wanted to show respect for the original and soften it while creating a smooth transition from the original design to the present day." In reality, anyone familiar with the 1920s International Style will still be able to tell where the old ends and the new begins. Strangely, that is the strength of Daroff's design. Her more flamboyant approach allows Howe & Lescaze's contribution to have its own identity, and Daroff to have hers.

All the players—Tisch and Loews, Daroff and Bower Lewis Thrower—may not have given us the hotel that Howe and Lescaze would have created if they had had the opportunity to come back to earth and do this conversion themselves. As noted, however, hotels are not office buildings. Convention guests could well prefer Daroff's interiors to anything the original architects would have tried. It is hard to know, since urban hotels of that period tended not to be International Style either. (Think of the classically moderne Waldorf Astoria) or the Art Deco ones in Miami Beach.)

In terms of the reaction, Robert Powers has voiced the general feeling: "I've been impressed by Loews' involvement. Jonathan Tisch does appreciate the building for what it is." At the same time, Powers warns, "If the hotel were sold after five years—or Loews decided to change the historic interiors after that time, there is nothing stopping them. It's only as safe beyond that as long as Tisch and Loews remain committed." ■

William Lescaze–designed chairs and tellers' counters from the PSFS bank have been incorporated in the new registration lobby.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

ANSWERS

Questions appear on page 178. To receive CES credits, fill in the education reporting form below or on our Web site (www.architecturalrecord.com).

1. The design process uses both two-dimensional sketches and three-dimensional models. These three-dimensional models get progressively larger as they approach the final shape. Once a scale model that closely resembles the desired shape has been created, it is digitized, creating a mathematical model of the building that can be used by the fabricator's machines to manufacture the metal skin.

2. The Gaussian analysis is a computer study that models the extent of the curvature of the exterior surfaces of the building. It was used to predict which portions of the metal skin would curve surfaces so much that they could not be shaped and installed by hand. The architects and fabricator reworked these portions of the outer surface of the building.

3. Each metal panel, consisting of aluminum head and sill extrusions, metal fins, and a metal skin, hangs from a five-inch-diameter metal pipe girt. A tongue that runs along the length of each sill fits into a slot in the top of each head extrusion. This keeps the panels from moving in the wind but still allows thermal expansion and contraction to occur.

4. An interference coating alters the natural reflection of the spectrum of light, absorbing selected wavelengths and reflecting the desired color.

5. With flat surfaces, it is assumed that the wind loads will be distributed equally to the four corners. When the wind strikes an oddly shaped panel, such as one with a double-reverse curve, there is no way to intuitively determine what the resulting load conditions may be. For example, it is possible that a single panel might be subject to both positive and negative wind pressure at the same time and have unequal loads at the corners. The engineers used computer analysis to study the loading conditions.

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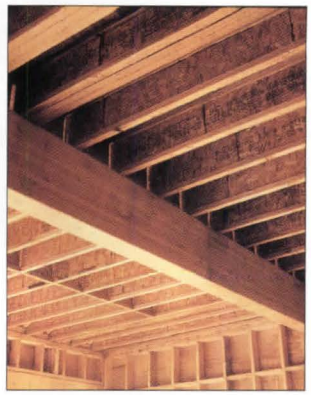

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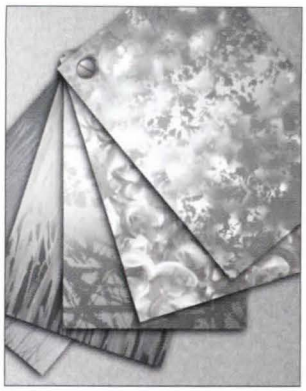

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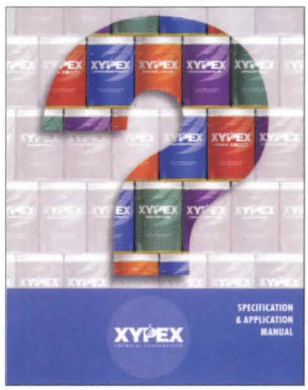

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Xypex Chemical Co.

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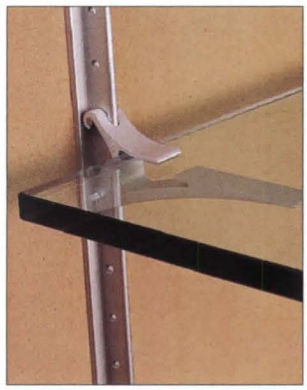

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Parallel Design

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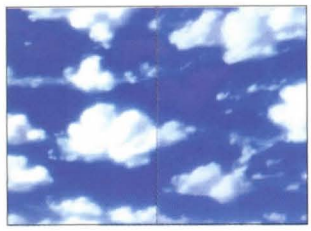

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Pilkington

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Gordon, Inc.

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The No. 2006 is a Bauhaus handle based on a Walter Gropius design. Nanz manufactures this and a wide range of other levers, knobs, locks, hinges and cabinetry hardware. Fax a request for our free Product Selection Guide or our $20 catalogue featuring this and over seventy other handles. Phone 212-367-7000, fax 212-367-7375. www.nanz.com

Nanz Custom Hardware Inc.

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Xenon Luminaries

Space Cannon Illumination Inc. introduces the Litehose, the latest in linear lighting technology made of extruded, durable optical-grade acrylic. Available in different diameters and sizes, reflective paints and films are not required. The Focus is an architectural colored luminarie utilizing a 1200w lamp source designed to work with the Litehose or separately. 888-705-1028.

Space Cannon

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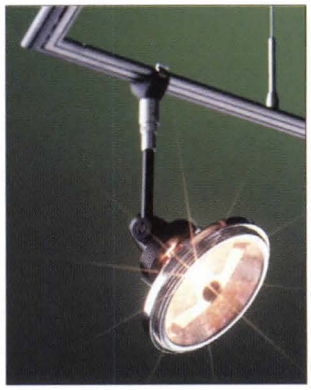
Boa Two-Circuit Track System



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Bruck Lighting Systems

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We have given special attention to each & every component of our fence. Every item is designed for strength, durability and low maintenance. No other company builds a complete fence — rail, rivets, brackets, pickets and posts, that is stronger, more durable, have more security or lower maintenance costs than our fences. Monumental Iron Works, 6500 Eastern Ave., Baltimore, MD 21224. Tel: 410-633-6500, Fax: 800-239-2963.

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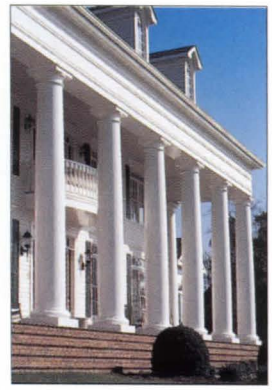
Melton Classics



Melton Classics architecturally correct columns, balustrades, and architectural details, are the industry standard for quality and design. Columns are available in fiberglass, resin composite, *GFRC*, *GRG* and wood. MarbleTex™ Balustrades and columns are integrally Colored and require no painting. Ask us about our complete line of architectural ornamentation in Melton Stone™ cast stone. 800-963-3060, www.meltonclassics.com

Melton Classics

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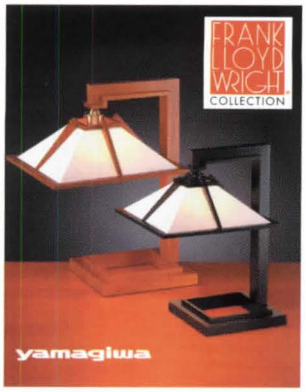

Taliesin®-1 Lamp, designed by Frank Lloyd Wright® in 1925. Taliesin®-Mini, adaptation of original design. Available in several finishes. Yamagiwa is the sole licensee of the FLLWFDN authorized to produce lighting. Other types, floor lamps, wall sconces, and pendants available. www.yamagiwausa.com PH: 800-879-8611, 31340 Via Colinas, #106, Westlake Village, CA 91362

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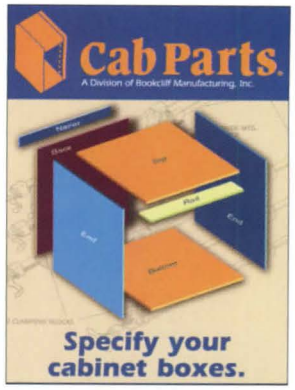

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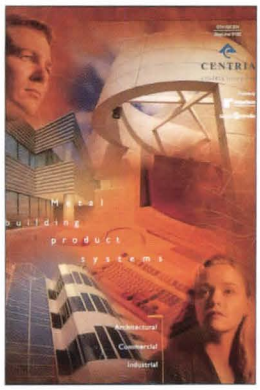

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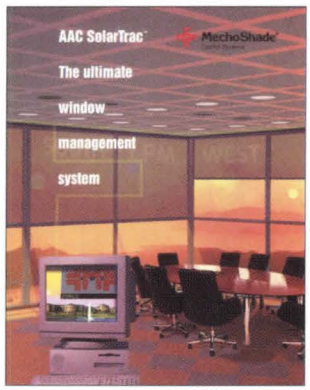
AAC SolarTrac™ Window Management System



The AAC SolarTrac™ Window Management System tracks the sun to incrementally adjust ElectroShades® automatically and building wide, to optimize the shadecloth's solar protection and energy efficiency characteristics. AAC SolarTrac™, using a PC-based program, factors in the sun's angle of incidence, solar heat-gain, allowable solar penetration, brightness and glare control based on the building's specific location. 718-729-2020 or www.mechoshade.com

MechoShade Systems, Inc.

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WILA Lighting, LLC

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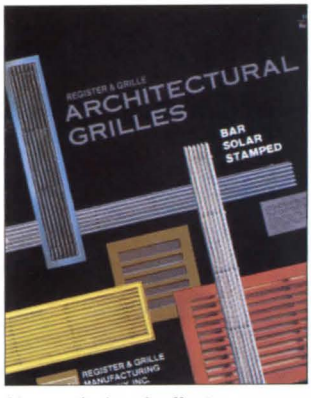
Keystone Ridge Designs

CIRCLE 177 ON INQUIRY CARD

Decorative Grilles



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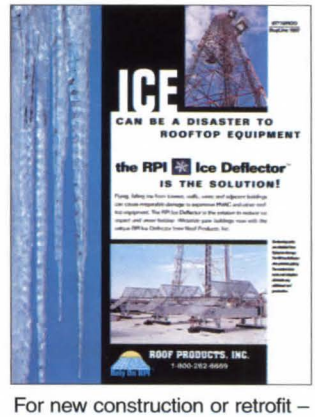

For new construction or retrofit – RPI Ice Deflector protects HVAC, fans, condensers, skylights, piping, ductwork and other roof-or-ground-mounted equipment against damage from falling ice from towers, walls and adjacent buildings. Also protects against hail and wind during spring and summer thunderstorms. Structural curbs, equipment supports and adapters also available. Call RPI for solutions. 800-262-6669 www.rpi-curbs.com

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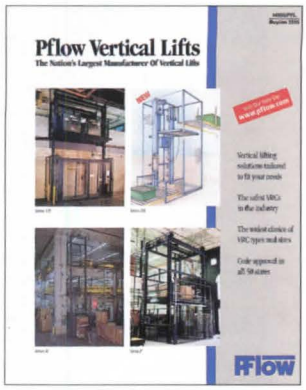
Pflow Lifts Safely Move Materials Between Levels



Pflow Vertical Lifts transport materials between two or more levels. Designed for mezzanines, through floor, interior & exterior applications. Capacities from 10 lbs. to 100,000 lbs., vertical heights to over 200', carriage sizes to 30' x 30'. Mechanical, hydraulic and fully automated systems. guaranteed code approval. Call 414-462-8810 Fax 414-462-2673 www.pflow.com

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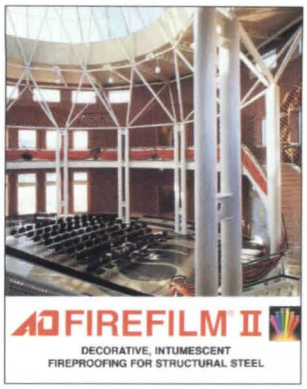

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A/D Fire Protection

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ASSISTANT PROJECT MANAGER STATIONS (DULLES)

00-0501-AH-AR

The Dulles Corridor Rapid Transit Project is in the preliminary engineering and NEPA phase. It is a 24 mile long phased implementation of Bus Rapid Transit to heavy rail in the Tysons Corner-Dulles Corridor in Northern Virginia. The position requires a senior design experienced professional, registered as a professional engineer, registered architect, or certified planner. The candidate must have hands on design experience of major projects which integrated with urban design issues such as land planning, zoning, vehicular and pedestrian access, and landscape. Transit oriented design experiences are critical, or similar experiences which can demonstrate the ability to manage a large professional consultant staff of many disciplines in the design of multiple facilities. The design issues will focus on the facilities required for the project. These include parking facilities, at grade or structured, ancillary buildings such as rail yard facilities, and multiple stations. The candidate must have demonstrated abilities to sketch or express ideas that will convey concepts for solutions to alternatives, and must also demonstrate abilities to lead and coordinate the concept designs for the facilities. Working experiences with the public in hearings and work groups and also with private developers is a must. The salary for this position is $66,997 to $100,497.

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Applications/resumes must be received in the Office of Human Resources Management Planning.

Washington Metropolitan Area Transit Authority (WMATA)

Office of Human Resource Management & Planning
600 Fifth Street, NW
Washington, DC 20001
Fax: (202) 962-1180

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Applicants should send a letter explaining their interest in the position, a curriculum vitae, and names of three references. Chair applicants should include a statement outlining their view of architectural education. Professor of Practice applicants should include a portfolio of their professional work. Fellowship applicants should include a portfolio and research proposal. Review of applications will begin November 1, 2000, with interviews planned for January through March 2001.

Send materials and address inquiries to:
Architecture Program Search Committee
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Assist general contractor and/or architect in drawing specs for commercial/industrial/residential structures and in prep of schematic drawings for presentation. Prep precise drawings for review by GC and/or architect based on specific direction as to dimensions, materials, and other design parameters; modifies drawings as requested. BS in Architect or Architectural Engineering + 2 yrs exp in Architectural drafting or Architectural Eng. Send resume to Cal-city Construction, Inc. 16300 Downey Ave., Paramount, CA 90723. E-mail: woolim@cal-city.com

COMPUTER SERVICES

SPECIAL SERVICES

FACULTY POSITIONS VACANT

ASSISTANT/ASSOCIATE DIRECTOR AND DAYTON HUDSON ENDOWED CHAIR II IN URBAN DESIGN DESIGN CENTER FOR AMERICAN URBAN LANDSCAPE UNIVERSITY OF MINNESOTA

The Design Center for American Urban Landscape (DCAUL), University of Minnesota, seeks applications for position of Dayton Hudson Chair II and assistant/associate director. Appointment holds title of assistant or associate professor. Appointment begins August 27, 2001. Assistant/associate director position is academic administrative, 12-month, 100%-time, five-year renewable contract. Associate/assistant professor position is 9-month, tenured or tenure-track faculty appointment. Responsibilities: managing projects, arranging contracts, fundraising, grant development, staff hiring, and implementing certificate program. Essential qualifications: professional graduate degree in architecture or landscape architecture, degree or experience in urban design, and ability to interact effectively with a diverse group of people. Information about DCAUL and full position description are available online: www.cala.umn.edu/design_center/dcaul.html Position is open until filled. Application screening will begin on December 16, 2000. Send letter of interest, CV, portfolio of design projects and/or samples of written work, and names of three references to: Jennifer Downes, Design Center for American Urban Landscape, Suite 222, 1313 Fifth Street S.E., Minneapolis, MN 55414-1546 The University of Minnesota is an equal opportunity educator and employer.

ARCHITECTURAL RECORD: (ISSN 0003-858X)Vol. 188, No. 10. Published monthly by The McGraw-Hill Companies, 1221 Avenue of the Americas, New York, N.Y. Periodicals postage paid at New York, N.Y. and additional mailing offices. Canada Post International Publications Mail Product Sales Agreement No. 246565. Registered for GST as The McGraw-Hill Companies. *GST No. R123075673.* **POSTMASTER:** *Please send address changes to* ARCHITECTURAL RECORD, Fulfillment Manager, P.O. Box 566, Hightstown, N.J. 08520. **SUBSCRIPTION:** Rates: U.S. and Possessions $59; Canada and Mexico $79 (payment in U.S. currency, GST included); outside North America $199 (air freight delivery). Single copy price $8; for foreign $10.

UNIVERSITY OF OREGON FACULTY POSITIONS

The Department of Architecture at the University of Oregon seeks thoughtful, skillful, and effective faculty members for three or four tenure-track positions at the rank of assistant or associate professor. Successful applicants must be able to demonstrate the promise of effective and inspiring teaching in architectural design studios and specific subject area courses. Candidates are expected to have well-defined research, scholarship, or creative practice interests with a commitment to sustained inquiry into emerging issues in the field. They must be proficient at nurturing creative inquiry by students, promoting integrative design exploration in both subject area classes and studios. For all positions, the normal teaching load will be five courses per academic year, distributed over three 10-week terms. These include regular involvement at all level of the architectural design studio program and leadership in required courses in the specific subject area of emphasis. All faculty anticipate the opportunity to teach a seminar of choice as part of the annual, five-course rotation. The successful candidates should show promise to actively pursue extra-mural funding for projects resulting in publications or buildings. Architectural Design + Digital Media: The Department is seeking candidates to explore the role of digital media in the design process, with a particular emphasis on effective and appropriate applications within a comprehensive architectural design studio. The use of digital media to support inquiry into spatial ordering, building construction, or other architectural subject areas is also encouraged. The successful candidate will be expected to teach introductory digital media courses to undergraduate and graduate students, design studios at all program levels, and advanced courses. Architectural Design + Environmental Control Systems: The Department is seeking candidates who have broad environmental interests while bringing focused attention and capability to teach the integration of ECS topics (thermal, luminous, acoustic, etc.) in a studio setting. The successful candidate will join a very distinguished tradition of research and creative inquiry in the teaching and research in ECS. This position requires co-teaching of large introductory lecture courses in environmental control systems, as well as advanced topical courses and design studios at all levels. Architectural Design + Structures: The Department is seeking candidates for one or possibly two positions in architectural design and structures that address the synthesis of structure and architecture in their teaching, research and/or creative work and have a strong interest in helping students learn to integrate structural principals into architectural design. This position(s) involves teaching required courses in the one-year structures sequence and architectural design studios at the graduate and undergraduate levels. Teaching expectations for this position includes co-teaching two of the required structures courses each year, design studios, and the opportunity for one advanced elective. Qualifications: 1. A terminal degree in architecture or related field is required. 2. Demonstrated potential to engage in integrative, scholarly work and to disseminate the results. 3. Previous teaching experience is desired. 4. Professional experience in architecture or a related field is an asset. Applications should include: 1. A curriculum vita and a narrative, 1-2 page description of your background, interests, qualifications for the position, and your intentions for seeking this position. Include a discussion of your views about teaching and your long-range plans for research/creative practice. 2. A portfolio (15 pages maximum) that includes representative examples of teaching and creative/scholarly work. a. Discipline-related course: course descriptions, syllabi and examples of student work; b. Design studio: program statements, syllabi and examples of student work; c. Suggestions and descriptions for classes that you are qualified to teach; d. Representative professional/ scholarly work and related publications. 3. A list of at least three references with their addresses, telephone numbers, and e-mail addresses. Complete applications and/or inquiries should be addressed to: Nancy McNaught, Office Manager, Faculty Search Committee, Department of Architecture, School of Architecture and Allied Arts, University of Oregon, Eugene, Oregon 97403-1206, tel. 541-346-1435; fax. 541-346-3626 DEADLINE FOR RECEIPT OF APPLICATIONS AND ALL MATERIALS: Review of applications will begin on November 15, 2000 and continue until complete. In order to be assured of consideration, it is recommended that all materials be received by the November 15 date. In addition to the tenure-track appointments, we are seeking a pool of applicants for two one-term distinguished visiting professor positions: The Fredrick Charles Baker Professor in Lighting and Architectural Design and the Pietro Belluschi Professor in Architectural Design. Please send nominations and inquiries to the department. The University of Oregon is an equal opportunity, affirmative action institution committed to cultural diversity and compliance with the Americans with Disabilities Act. Women and minorities are encouraged to apply.

OFFICIAL PROPOSALS

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY REQUEST FOR PROPOSALS TO PROVIDE DESIGN/BUILD SERVICES FOR THE WORLD TRADE CENTER ON AN "AS-NEEDED" BASIS

The Port Authority of New York and New Jersey (The Port Authority) is seeking corporations, partnerships, joint ventures and other entities ("firms") to respond to a Request for Proposals (RFP) to provide complete design and construction services for the World Trade Center on an as-needed basis. The Design/Build approach will be used primarily to develop standard office spaces in the World Trade Center with a minimum of special features. Some jobs may also require special finishes. Most Design/Build work is expected to affect less than 5,000 square feet of space, although any single job may involve anywhere from 1000 to 40,000 square feet of space. The value of Design/Build work undertaken at the World Trade Center is expected to range up to $3,000,000 annually. Proposals will be considered from firms that can demonstrate recent experience in providing Design/Build services for the development of offices and other spaces in commercial, hi-rise building complexes. Firms that have such experience are encouraged to respond to the RFP. The proposal information is set forth in the document entitled "The Port Authority of New York and New Jersey – The World Trade Center. Contract No. WTC-458.00. Request for Proposals for Design/Build Services for the World Trade Center." A copy of the RFP will be furnished to interested firms upon request made in person or via mail to the Port Authority of New York and New Jersey, One World Trade Center, Contract Desk, Room 72E, New York, NY 10048. Firms planning an in-person pick-up of the RFP are advised to call 212-435-7420 to insure availability. Proposals will be received through Monday, October 16, 2000. Questions by prospective responders concerning this RFP may be directed to Mr. Eli Moscovitz, Project Manager, at 212-435-3188.

RENDERINGS

Muralist Anthony Benton Gude: following in a tradition

Interviewed by Charles Linn, AIA

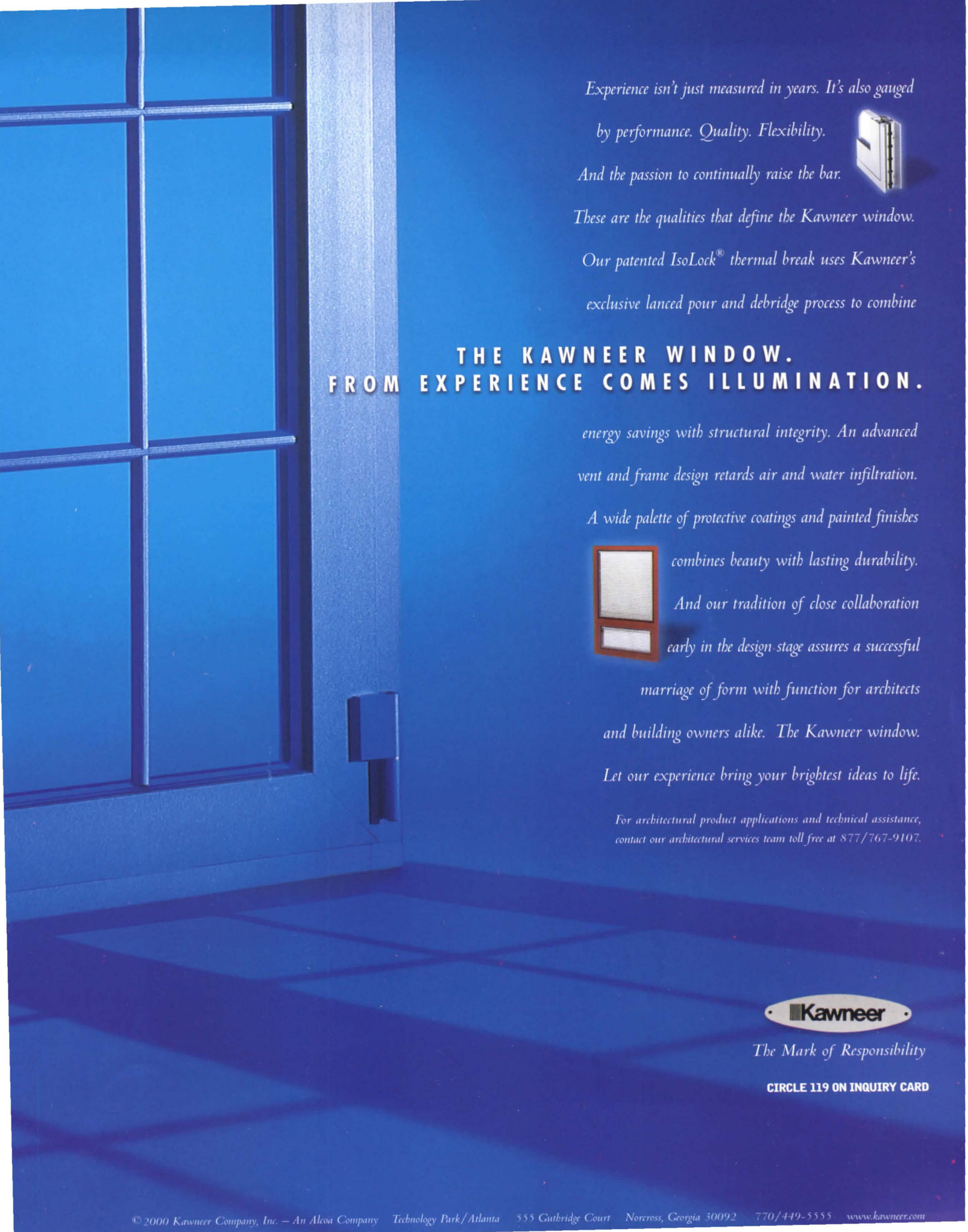
As you visit Anthony Benton Gude's Kansas farm, you may think you have gone back a few years. The spic-and-span prairie retreat has changed little since Gude's grandfather, Thomas Hart Benton, a painter and muralist known for his dramatizations of American life, bought the farm with the proceeds from a painting he did while visiting here, looking for a place for his daughter to live. His grandson grew up watching his grandfather work, observing the way he brought his subjects to life, and carries on his work.

Q: *Did you know your grandfather well?* Oh yes. We spent summers at Martha's Vineyard with him, from the time I was small I used to sit beside him and watched him paint. I don't think I made any conscious attempt to imitate him, but I definitely absorbed what I saw. He painted from sketches, and also from clay models, which were painted in approximately the colors that he would use when he painted them on canvas.

You've always been a very realistic painter. Did your teachers ever push you to work more abstractly? When I got to art school in Boston, I kept it a secret that I was the grandson of this famous artist, but I was lucky. The teachers there let me work on my strengths, although it was a bit frustrating too. I didn't want to continue doing what I already did well. My favorite class was with a professor who taught us classical painting: how to make the paints, gessoes, impastoes, glazes, varnishes, and how canvas was stretched and primed, but also to underpaint in monochrome before applying color, so the effects of shade, shadow, and value could be seen. I still paint this way.

How do murals affect architecture, like the one in the lobby of Western Resources in Topeka, Kansas? The spaces are like an empty museum gallery, with white walls and a stone floor. The mural tells the story of the people who brought, and bring, electric power to the state. It is a source of great pride for those who walk by it every day. I based it on historic photographs of these people doing their jobs. The greatest respect that I could show them was to study very carefully at what it is that they have accomplished and to show them that I understand it. ■

Portrait photograph by Charles Linn



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