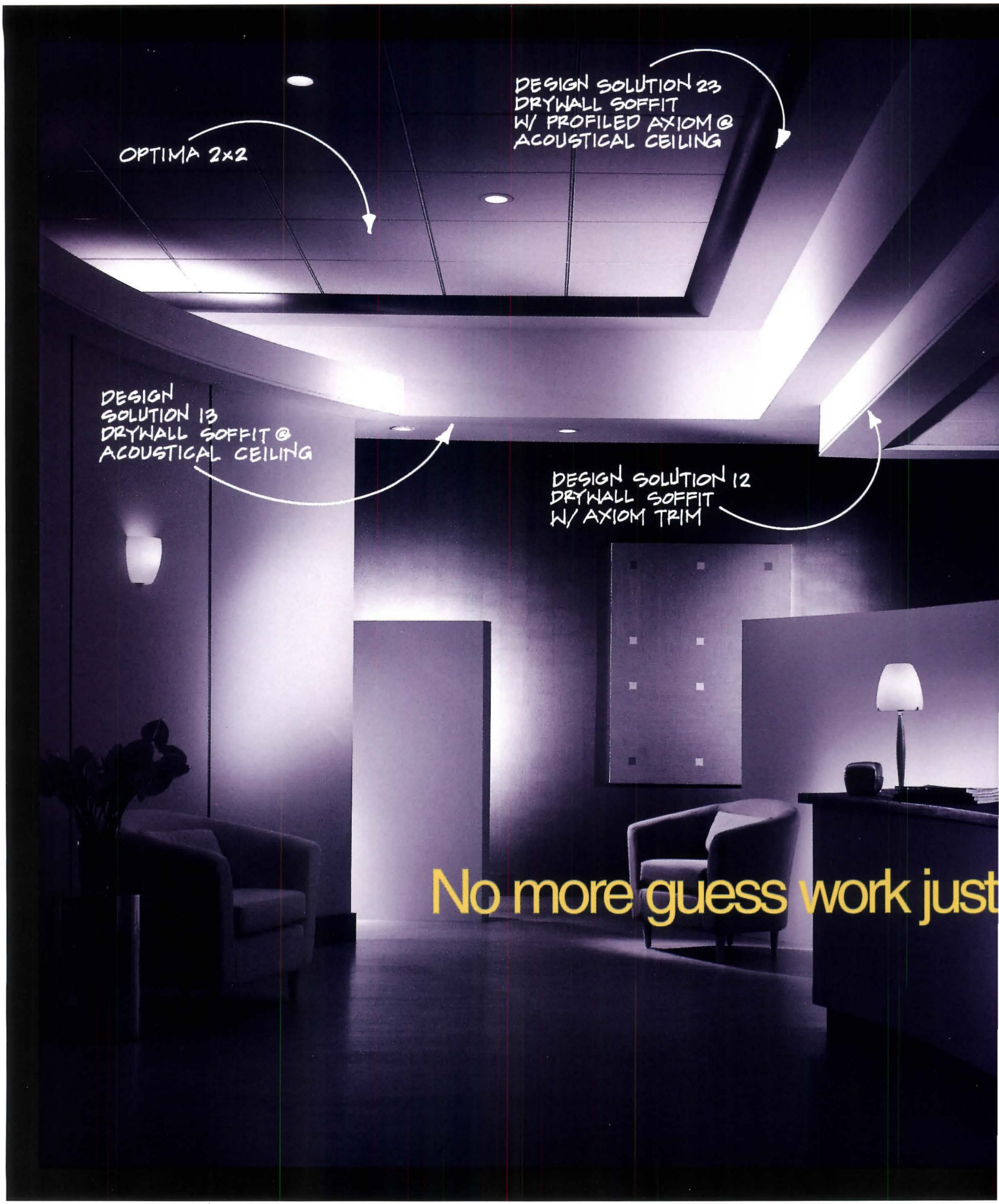

archit
TM
$8.95 usa $11.00 canada
THE ART OF INDUSTRY: ARCHITECTS ROMANCE THE MACHINE
ENCE
Y'S
SE PARTY
T'S SO
RT
UT SMART
VTH?
UCING
R NCARB
KE
V-570


OPTIMA 2x2
DESIGN SOLUTION 23
DRYWALL SOFFIT
W/ PROFILED AXIOM @
ACOUSTICAL CEILING
DESIGN
SOLUTION 13
DRYWALL SOFFIT @
ACOUSTICAL CEILING
DESIGN SOLUTION 12
DRYWALL SOFFIT
W/ AXIOM TRIM
No more guess work just

The AIA convention should be reformed.

By Reed Kroloff

Last month's American Institute of Architects (AIA) national convention in Dallas was a lackluster affair. It convened in an uninspiring city with half the attendance of the previous year, and featured a roster of speakers that with few exceptions was completely forgettable. The greatest challenge for most attendees was finding the right meeting: This year, the AIA met just down the convention center hall from the AUA (The American Urological Association). The urologists helped conventioneers locate their own tribe, however. Their association distributed caps with nifty little bladders on top. The AIA, meanwhile, handed out copies of *AIA Architect*.

For the 100,000 American architects who missed the show, or for the 51,700 AIA members (out of 63,700) who had something better to do than spend Mother's Day weekend in Dallas, let me summarize what went on: not much. There were no charettes to design shelters for victims of the Midwest tornados that struck the week before. There was no plan put forth to salvage the disaster known as internship (*Architecture*, May 1999, page 40).

Instead, there were seminars with catchy titles like, "'Empathy' as an Effective Tool for Consensus Building in Design," or "Facilitated Brainstorming: A New Architectural Programming Tool." Herds of bleary-eyed architects rushed to and fro among them in an effort to secure enough continuing education credits to renew their membership in the very organization offering the seminars. That, in essence, is what the annual meeting has become: an all-you-can-eat, continuing-education smorgasbord concocted to sustain AIA membership goals. To speed the plow this year, the AIA even extended its definition of education to sales pitches: Members earned credits simply by listening to exhibitors in the convention's exposition hall.

The educational value of a sales pitch notwithstanding, AIA does need to keep its membership up. And many of the legitimate seminars were genuinely informative. But continuing education can happen more efficiently and economically at the local level. Further, if the AIA really wants to boost its numbers—and therefore its clout—it should cut membership dues in half.

The annual meeting of this nation's only significant professional organization for architects should aspire to higher goals. It should be a place to debate matters critical to the profession's health, and develop strategies for improving the AIA's notoriously poor lobbying and legislative effectiveness. It should be a forum in which state (and even local) chapters can present the work and ideas of their members for review and comment. The convention should be organized around a critical theme, an issue that unites or divides the profession. This year's slogan, "Think Big—Make it Happen," sounded like a bad ad for Viagra.

Imagine what convention attendance would be if architects were actually inspired. People might attend for some reason other than expediency. They might join the AIA because they wanted to, rather than simply to secure use of the organization's initials on their business cards.

The AIA isn't alone in throwing anesthetic conventions. These kinds of meetings have become window dressing for the trade shows that pay the bills. And to the extent that live product catalogs are more informative than their printed or Web-based equivalents, there is some value to the peculiarly American mix of commerce and education.

But there are better examples out there. Attend a meeting of the Urban Land Institute or one of Richard Saul Wurman's Ted conferences on design. People pay dearly for both because they know they'll come home with a head full of fresh ideas. The most valuable thing people brought home from Dallas was a bladder cap.

J. Windom Kimsey, AIA
Tate & Snyder Architects
McCarran International Airport, D Gates
Tate & Snyder Architects Design Studio
Clark County Regional Justice Center

"Within the span of a curve, yo

Windom Kimsey doesn't have to search to find inspiration for his ceilings. All he really has to do is look up. And soon, the sweeping curves and dramatic forms that infuse his designs begin to take shape. "When you can turn the ceiling into the feature, it gives you more ways to make the space exciting," he says. "Why not push the limits?"

Find out where the curves of our Drywall Suspension System can take *your* designs.

Call us today at 1-800-USG-4YOU or visit our website: www.usg.com

Circle 15 on information card

Horse sense

I thumbed through your April 1999 Annual Awards Issue until the Somis Hay Barn & Stable by SPF:a (*Architecture*, pages 104-105) caught my eye. However, my spirit was dashed after reviewing the design and reading the judges' confused comments. I own horses and have recently designed and built a barn. What amazes me is that the designer stacked hay in a single layer on the unprotected sides of the building. There is a small overhang, but it does little to protect the hay bales. Also, a person is required to stand on a ladder to reach the top five layers of hay bales.

[Mehrdad Yazdani] said, "It has intelligence." A building does not present intelligence if it requires clients to put themselves in unsafe, time-consuming situations. I had hoped that this would have been one of the great examples of good design. Unfortunately, awarding the building a citation gives the wrong message of what good design is.

Terrance Brown
JNR Partners
Albuquerque, New Mexico

Air pocket

I normally wholeheartedly agree with fellow New Orleanian, Andre Codrescu, which is why I felt compelled to respond to his essay, "The Unfriendly Skies" (*Architecture*, April 1999, page 170). Travel is still an adventure worthy of respect, and if air travel "now approaches cattle-wagon density," it is because if one is interested in the "travel" part of traveling, one is not on an airplane.

While I much prefer driving at my own pace, I've also been fortunate to travel on airplanes, and my only discomfort has come from the occasional passenger who isn't used to sharing an armrest. I don't think the airlines should indulge our cultural need to continually "keep getting fatter" or to have more space "for our private selves." And if I have conceded an extra inch of my personal space for the opportunity to disembark in Cesar Pelli's Ronald Reagan National Airport or even the new terminal in New Orleans, I'm happier for it.

Casius H. Pealer
Regional Urban Design Center
Tulane School of Architecture
New Orleans

Sage decision?

The Hillier Group's "reuse" of Cornell University's Sage Hall (*Architecture*, March 1999, pages 124-128) doesn't come close to achieving its own sadly limited goals: preserving the building's facades. After all, the original building was a giant *C*—which means it had six main facades, not three. The architect made no effort to preserve the courtyard facades. Had they done so, the new atrium could have reveled in [Charles] Babcock's exuberant masonry. Instead, the atrium has four tacky new walls. Can these facades possibly be as kitschy and cartoonish as they appear in the photos?

Fred Bernstein
New York City

CORRECTIONS

Jay Lane of Ellerbe Becket created the digital rendering for Vincent James Associates' Minneapolis Rowing Club Boathouse (*Architecture*, April 1999, pages 86-89).

Stephen Teeple Architects designed the University of Toronto Graduate / Second Entry Residence in joint venture with Morphosis (*Architecture*, April 1999, pages 102-103).

WE WANT TO HEAR FROM YOU!

Please mail your letters to the editor to: *Architecture*, 1515 Broadway, New York, NY 10036. Or fax to: 212/382-6016. Or E-mail us at: *info@architecturemag.com*. Please include your name, address, and daytime telephone number. Letters may be edited for clarity or length.

BETTER information

MARVIN WINDOWS & DOORS

VisuaLibrary® has proven to be an excellent lead generator for Marvin. The number of visitors VisuaLibrary® sends to our site far exceeds any of our other internet partnerships. I have been very impressed that a large percentage of these visitors have turned into active sales leads for us.

– Bob Connolly
Public Relations Manager
Marvin Windows & Doors

SIMPSON Strong-Tie CONNECTORS

The Simpson Strong-Tie® catalog on VisuaLibrary® is the best presentation of our complex product offering. It is available to everyone instantly. This information service is the ultimate in the AEC world.

– Steve Eberhard
Vice President, MIS
Simpson Strong-Tie

Hilton

VisuaLibrary® and the concept of instantly available and usable information for Architects is the future.

– Phil Keipper
Vice President-Architecture and Design
Hilton Hotels Corporation

RABUN HOGAN OTA RASCHE ARCHITECTS

Our firm has never experienced a greater time saving tool than VisuaLibrary® on the Internet.

– Thomas J. Hogan, Jr.
Principal, Rabun Hogan Ota Raschi

www.visualibrary.com

Circle 19 on information card

Exhibitions

city	dates	exhibition	contact
Glasgow, Scotland	through August 29	**Mies van der Rohe—Architecture and Design in Stuttgart, Barcelona, Brno** at the Burrell Collection	(44) (141) 287-7346
Montreal	through October 31	**Carlo Scarpa, Architect: Intervening with History** at the Canadian Centre for Architecture	(514) 939-7000
New York City	through June 27	**Landscapes of Hope: Rebuilding New York City's Neighborhoods** at the Museum of the City of New York	(212) 534-1672
	July 1-October 5	**The Un-Private House** at the Museum of Modern Art	(212) 708-9400
Santa Monica, California	through July 11	**Pierre Koenig: A Modernist's Vision** at Form Zero Architectural Books + Gallery	(310) 450-0222
Washington, D.C.	through July 4	**George Washington, Architect** at the Octagon	(202) 626-7387

Contemporary painting by Peter Waddell in Octagon exhibit recounts founding father's involvement in designing his Virginia estate.

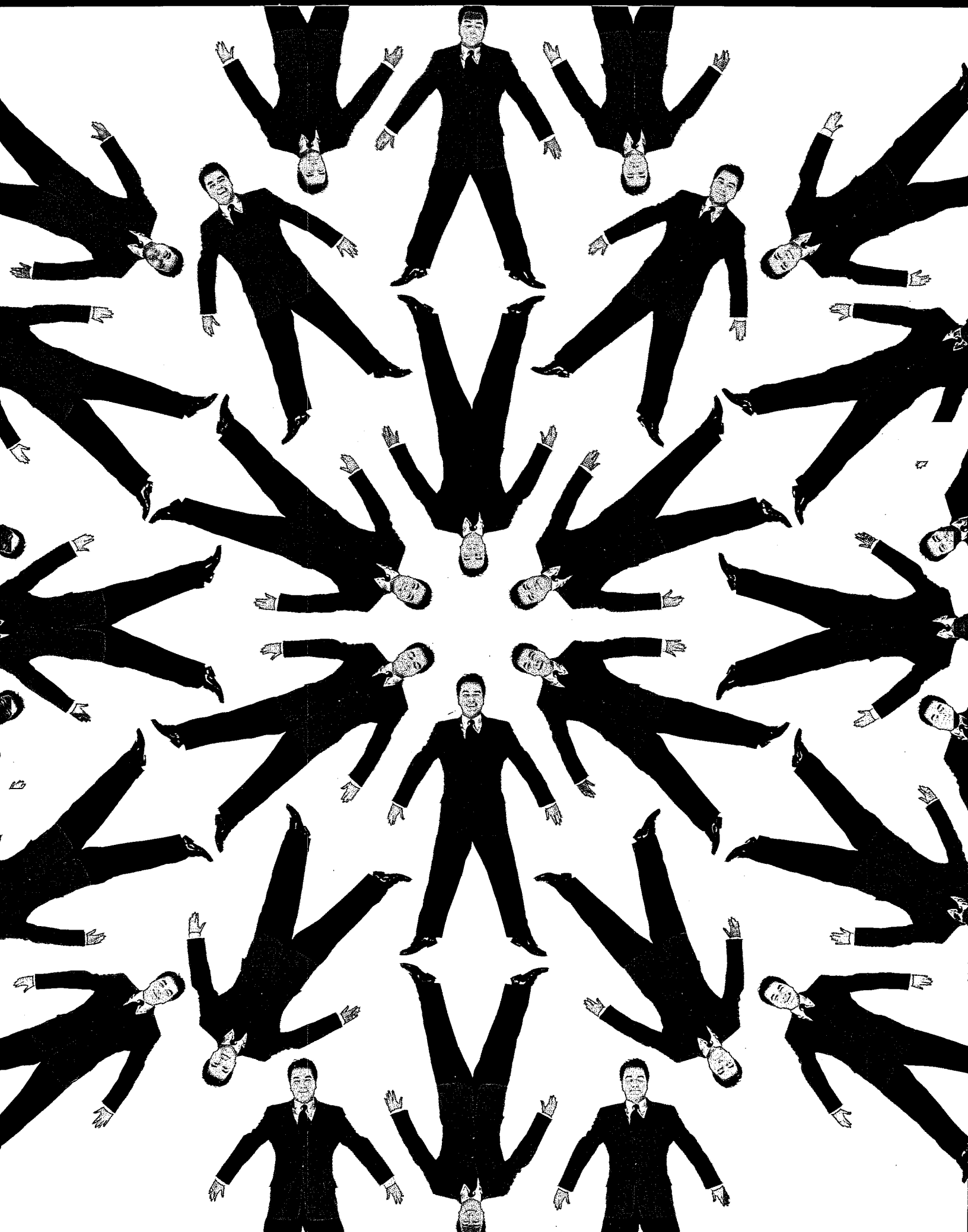
conferences

city	dates	conference	contact
Boston	September 12-16	**Annual Meeting of the American Society of Landscape Architects**	(202) 898-2444
Charleston, South Carolina	October 7-9	**Urban Waterfronts 17,** sponsored by the Waterfront Center Renovation of Charleston, South Carolina's Battery by Sasaki Associates (a past Waterfront award winner) is setting for center's annual conference. 	(202) 337-0356
Chicago	June 11-14	**Annual Meeting of the National Council for Urban Economic Development**	(202) 223-4735
Four Corners	September 27-October 3	**Ancient Pueblo Sites of the Southwest: Native American Art and Architecture of New Mexico, Arizona, Utah, and Colorado study tour,** sponsored by the Society of Architectural Historians	(312) 573-1365
Los Angeles	June 11-27	**Construction Specifiers Institute '99 Annual Convention and Exhibit**	(703) 684-0300
Washington, D.C.	October 28	**North American Construction Forecast,** presented by the Construction Market Data Group	(800) 598-6434

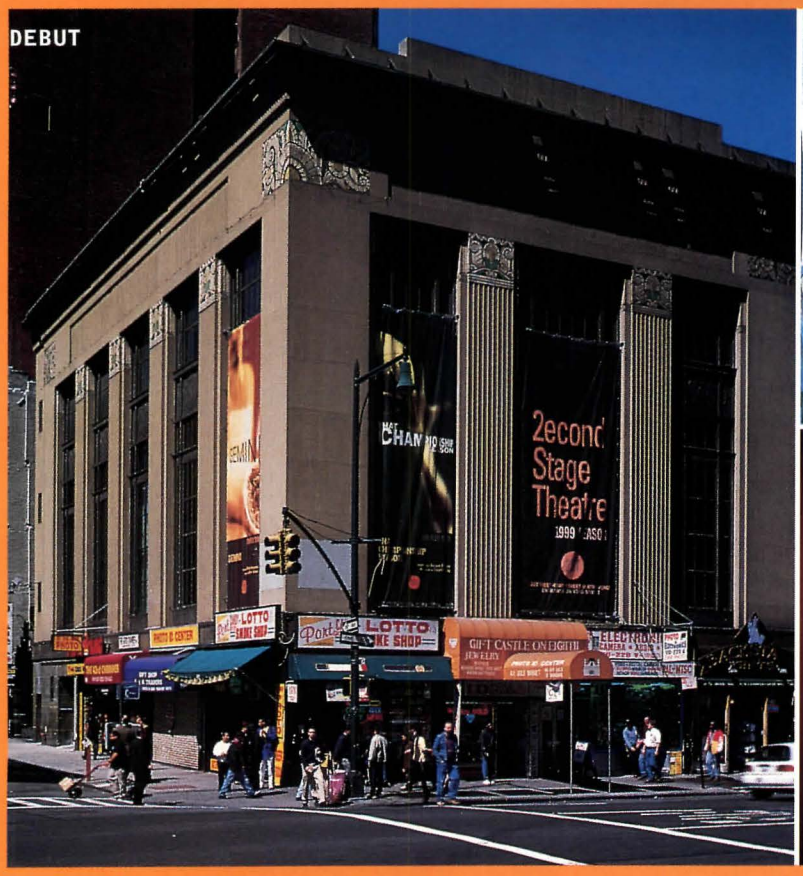
competitions

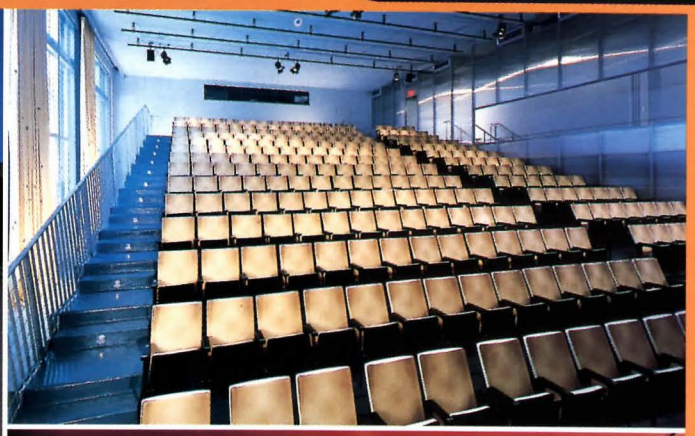
competition	deadline	contact
Good Design Awards Competition, sponsored by the Chicago Athenaeum	July 1	(312) 251-0175
Boston Society of Architects Unbuilt Architecture Design Awards	August 24	(617) 951-1433, ext. 221
Visionary Design Awards, sponsored by *Landscape Architecture*	August 31	(202) 216-2335
The James Marston Fitch Charitable Trust Mid-Career Grants	September 1	(212) 777-7800
ar+d Award for a promising young (45 years or younger) architect, cosponsored by *The Architectural Review* and d-line international	September 6	www.arplus.com
Europandom competition for sites in Guadalupe, French Guiana, Martinique, and Réunion, sponsored by the French government	September 15 (registration)	www-europan.gamsau.archi.fr/eeuropan.htm
tkts2k Times Square Tickets Booth Competition, presented by the Theatre Development Fund with the Van Alen Institute	September 30 (registration)	(212) 924-7000, ext. 18

Theatre Development Fund and Van Alen Institute are sponsoring competition to redesign reduced-cost tickets booth in New York City's Times Square.



DEBUT





Quiet on the outside, bright on the inside, **Second Stage Theater's new home** (left) boasts epoxy walls (below) and gel-filled seats (above).

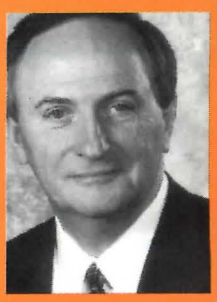
Second Stage's Second Act

Manhattan's Second Stage Theater has slipped quietly into its new home in Times Square, just a block north of the mouse-eared chaos of the "New 42nd Street." Housed in the historic hall of a former bank, Second Stage's new stage is the offspring of a curious collaboration between Rem Koolhaas and Richard Gluckman. The design weds Koolhaas's look-at-me bravura with Gluckman's hushed modesty in a sexy interplay of hot and cool.

The front door of the 296-seat theater, which is three times the size of the company's former space, is hard to spot among the shopfronts of 43rd Street. Once inside the lobby, though, theatergoers are transported from urban grit to a visual funhouse: walls drenched in orange epoxy, black-out shades dotted with metallic circles, and gold velour curtains with giant metal grommets. Things quiet down somewhat in the metal mesh-paneled auditorium. The toffee-colored seats look standard enough—until you sit down and let the gel padding slowly mold to your every contour. Quirky yet sensible, the seats embody the theatrical synergy of Koolhaas and Gluckman's team project. *Raul A. Barreneche*

THE INSTITUTE

Koonce Stays On as AIA Head



The board of directors of the American Institute of Architects (AIA) named Norman L. Koonce *executive vice president/chief executive officer* (EVP/CEO) last month, ending two dizzy years of musical chairs in the big corner office. Koonce had served as interim EVP/CEO since last January, when the board abruptly fired his predecessor, Mark Hurwitz, one year into a four-year contract. AIA President Michael J. Stanton cited "key conditions in our contract with Mark that were not fulfilled." Hurwitz, in turn, had replaced Terrence M. McDermott, who left the AIA for the National Association of Realtors in July 1997.

More than anything else, Koonce brings a measure of stability and experience to his post. He prevailed over 250 applicants (candidates reportedly included Paul W. Welch Jr., executive vice president of the AIA California Council) with a résumé that includes a 10-year stint as president of the American Architectural Foundation. "Norman may be the safe choice," says AIA member Stanley Tigerman, "but he's less commercially inclined than his predecessors, thank God. Those two guys diminished the profession." The new boss pledges to "generate greater public awareness" by concentrating on a national media campaign and lobbying. An AIA spokesman declined to discuss the terms of Koonce's contract. *Michael Cannell*

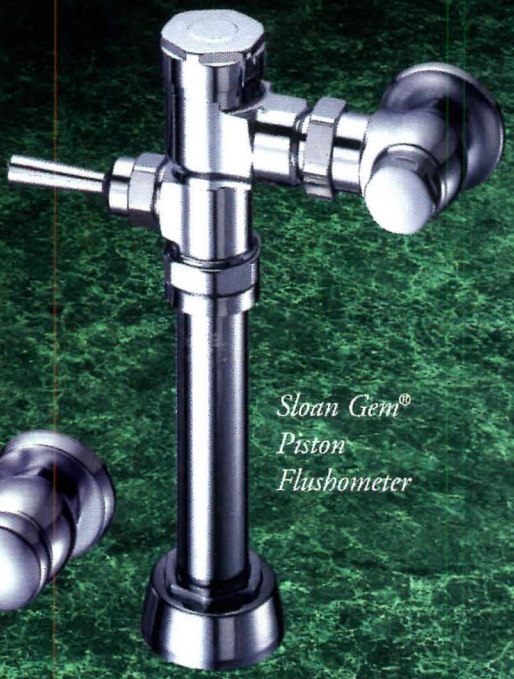
Buzz

NEW YORK CITY: French architect **Jean Nouvel** is designing a new shopping and entertainment complex for a burgeoning Brooklyn arts district called DUMBO (Down Under the Manhattan Bridge Overpass). **The Polshek Partnership**, **Gluckman Mayner Architects**, and **Dave Gauld** (formerly of **Arata Isozaki**'s office) will compete to convert a former paper factory into the new Dia Center for the Arts in Beacon, New York. Polshek and Isozaki are collaborating on an addition to the Brooklyn Museum. Gluckman Mayner will also design a $40 million renovation

SLOAN

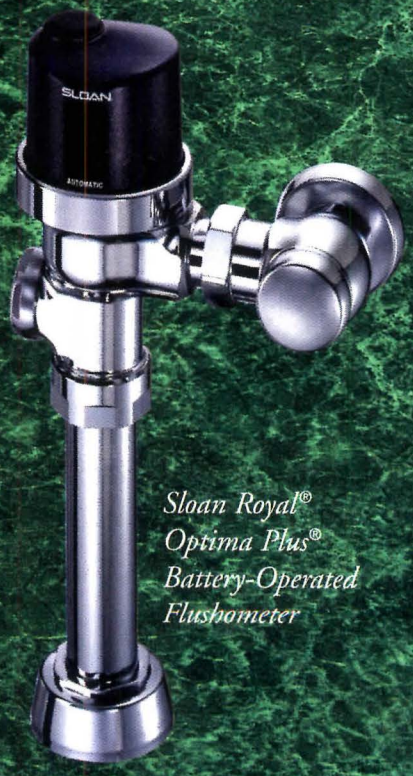
The World Leader In Flushometer Design

There can be only one company that is the leader in its market. In Flushometers, that leader is Sloan Valve Company. Sloan manufactures and sells more Flushometers to world markets than all other brands combined. Sloan's innovative design, high quality, dependable operation, long life and knowledgeable technical support have become the benchmarks of an industry. And, they are the same reasons that the best buildings have used Sloan Flushometers since 1906. Doesn't your own building deserve the very best?



Sloan Gem® Piston Flushometer

Sloan Royal® Diaphragm Flushometer



Sloan Royal® Optima Plus® Battery-Operated Flushometer

SLOAN®

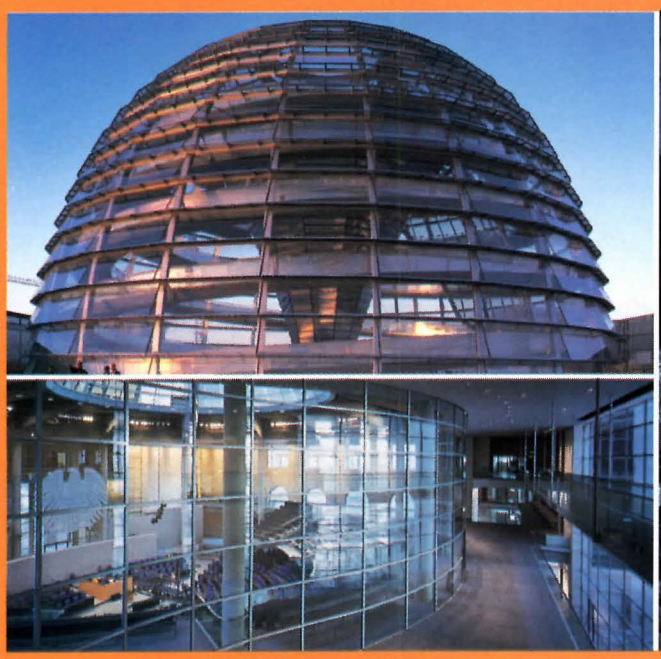
Leading Manufacturer of Quality Flushometers

Sloan Valve Company
10500 Seymour Avenue
Franklin Park, Illinois 60131
800-745-0800 (U.S. and Canada)
847-671-4300 (Corporate Headquarters)
Fax 847-671-6944
www.sloanvalve.com

Circle 33 on information card

SPACE

Reunited (And It Feels So Good)



On April 19, the Bundestag, reunified Germany's national legislature, held its first session in the newly rebuilt Reichstag building in Berlin. The event marked a new era for the war-pocked 1894 building that the Nazis famously torched in 1930, and which since 1971 had languished in a half-hearted state of restoration as a museum of German history.

Foster made certain to preserve the scars of history—graffiti, bullet holes, and fragments of original moldings—while restoring original axial alignments and illuminating the building's dark interiors by carving out new lightwells. Most prominently, the new dome, which replaces the original removed due to war damage in 1954, controls the light in the main chamber and, when illuminated at night, is meant to symbolize Germany's renewal. ***Ned Cramer***

Foster created **new dome** to cap 1894 Reichstag building (below) and opened main chamber to public view with glass walls (above left). On interior, dome (above) filters and **reflects light** to illuminate main chamber. Ramp (top left) winds around inside of dome, allowing visitors to view sessions in chamber below.

University of Virginia's new **dean**, Karen Van Lengen

HUMAN RESOURCES

At the Academy

A recent round of appointments at architecture schools is again disproving the old adage that "those who can't do, teach." The School of Architecture at the University of Virginia has named New York City-based architect **Karen Van Lengen** to succeed William McDonough as dean. Van Lengen, chair of Parsons' program since 1995, is a former associate of I.M. Pei. She gained notoriety for her work on Pei's Fragrant Hill Hotel in Beijing, China (1982), and her own competition-winning, although unbuilt design for an American Memorial Library in Berlin (1991).

Berlin-based architect **Daniel Libeskind** will join the architecture department of the University of Pennsylvania as the Paul Philippe Cret Professor of Architecture and Practice Professor. **Michael Rotondi**, after 23 years of punching the clock at SCI-Arc, has been offered a half-time tenured position at Arizona State University (ASU), a one-hour plane commute from his Los Angeles-based practice, RoTo Architects (this issue, pages 38-39). ASU has also tapped **Daniel Hoffman** (*Architecture*, March 1999, pages 76-79), former chair of architecture at Cranbrook Academy of Art (1986-1996), for a full-time tenured position. *Lisa R. Findley*

and expansion of the North Carolina Museum of Art in Raleigh, North Carolina.

BOSTON: *The Boston Globe* reports that the City of Cambridge has approved a demolition permit filed by architect **Graham Gund** to destroy a half-completed house he designed for himself. Reports Gund: "It's much harder to be your own client." **Machado and Silvetti Associates** will design a 214,000-square-foot graduate student housing complex for Harvard.

CHICAGO: The Chicago Historical Society has honored **Skidmore, Owings & Merrill** senior statesman **Bruce Graham**—designer of that city's Sears Tower and John Hancock Center—with their 1999 Daniel H. Burnham History Maker Award for Distinction in Architecture. Chicago **Mayor Richard M. Daley** has announced that the Pritzker family has donated $15 million to fund improvements by **Frank Gehry** to Millennium Park.

WASHINGTON, D.C.: **The National Capital Planning Commission** has approved a 4.5-acre site on Washington, D.C.'s National Mall for a memorial to honor slain civil rights patriot **Martin Luther King, Jr.**, adjacent to the site earmarked for **Friedrich St. Florian**'s World War II memorial. **President Clinton** has appointed **J. Carter Brown**, former director of the National Gallery of Art, and **Harry G. Robinson III**, former architecture dean and current vice president for administration at Howard University, to the Commission on Fine Arts, which oversees all construction on the National Mall.

SAN FRANCISCO: **C. David Robinson Architects** will design a new museum in Santa Rosa, California, to honor **Charles M. Schulz**, the creator of the *Peanuts* cartoon strip.

HOUSTON: **Dominique de Menil**'s family has announced that they will sell her **Philip Johnson**-designed house in Houston to the highest bidder.

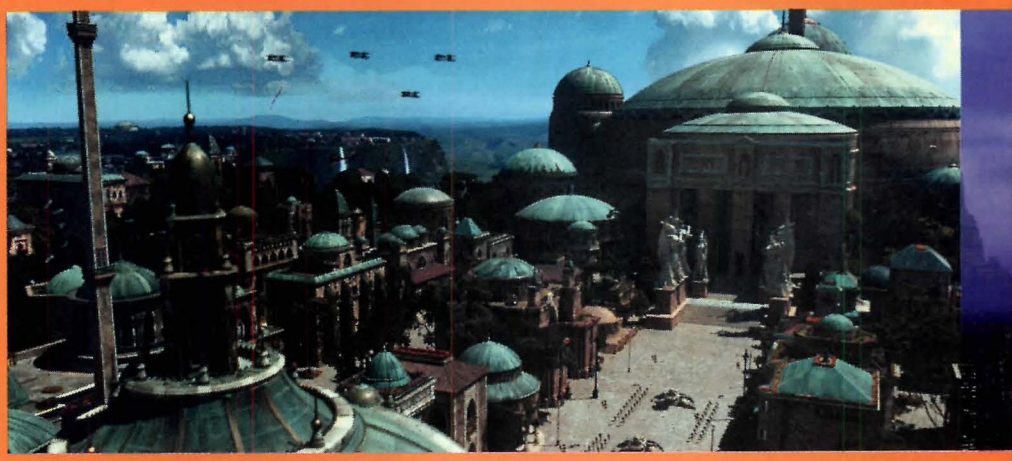
OKLAHOMA CITY: After a bureaucratic financing bungle prevented the federal

THE BIG SCREEN

The Forces of Good and Evil (Buildings)

A short walk around filmmaker George Lucas's San Rafael, California-based Skywalker Ranch reveals his interests in Victorian, Arts and Crafts, and Wrightian architectural principles. Everything you see is meticulous, even precious: a seductive forgery that conveys a certain mood.

His approach to film is no different. When the frantically anticipated *Star Wars: Episode I—The Phantom Menace* finally hit the screens last month, viewers experienced a whole new world of design dogma that reflects Lucas's belief that the prequel's setting—a generation before the original *Star Wars*—is a Renaissance-like era of esthetic sophistication, environmental awareness, and peace. Concept Designer Doug Chiang, an Oscar-winning digital animator, confronted his "fear of architecture," bringing Lucas's vision to life with solutions that support the film's nonstop action with subtle messages about power and virtue. *Michael J. O'Connor*



Lucas and Chiang modeled the peaceful planet of Naboo on Venice, Italy. The capital city of Theed says monument writ large: Overscaled porticos, domes, and Romanesque statuary dwarf the fair-minded populace. Craggy cliffs, a complex system of waterways and falls, and more greenery than Venice has ever seen put into relief the injustice that Naboo suffers when it—natch—finds itself under siege. Lucasfilm's technical wizards melded footage of scale models, digitally created environments, and interiors shot in an actual Renaissance palace in Caserta, Italy.

Lucas envisioned the city of Coruscant, the seat of the corrupt galaxial senate, as "a planet of buildings." Centuries of accretive construction have left the megalopolis without a ground datum. In a wry commentary on overdevelopment, floating landing platforms and treacherous railing-free walkways at the city's highest level unsettle the viewer. Although Chiang looked to the works of architectural illustrator Hugh Ferriss to convey a mishmash of styles, the blocky, romantic forms of Manhattan's step-back skycraper heyday are immediately recognizable.

government from purchasing all three lots required to build the replacement Alfred P. Murrah Federal Building in Oklahoma City, architect **Carol Ross Barney** of Chicago-based **Ross Barney + Jankowski** has unveiled a modified design that requires only two of the lots.

DETROIT: Eco-architect **William McDonough** will consult on the renovation of the Ford Motor Company's River Rouge, Michigan, manufacturing complex.

MIAMI: Just as city protests about the new Beach Village at Miami Beach, Florida's Delano Hotel were coming to a head (*Architecture*, March 1999, page 35), the lighthouselike tower at the complex's center burned to the ground. Proprietor **Ian Schrager** does not plan to reopen the village and has donated the remaining tents to charity.

ABROAD: **Daniel Libeskind** has designed an $11 million national

PRACTICE

Which PR Methods Work?

A survey of 55 architecture firms ranks the effectiveness of 16 common marketing techniques.

1. workshops/seminars for clients
2. case studies on projects
3. editorial board meetings
4. project media kits
5. participation in client associations
6. community involvement
7. articles offered to publications
8. direct mail campaigns
9. brochures/marketing materials
10. special events
11. newsletters with firm and project news
12. video news releases
13. news conferences
14. trade shows
15. news releases with firm information
16. advertising

SOURCE: PSMJ RESOURCES

ON THE MALL

Indian Museum Groundbreaking Delayed

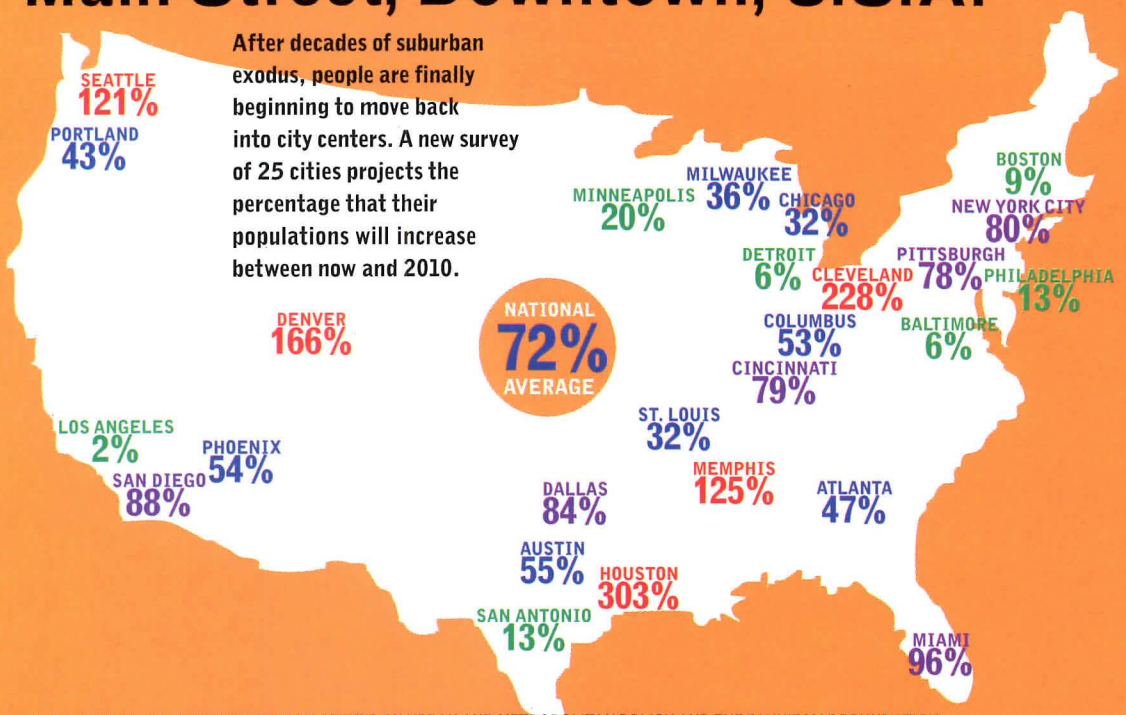
Could this be Sitting Bull's revenge? The Smithsonian Institution's troubled National Museum of the American Indian suffered yet another setback last month when Director Rick West announced that groundbreaking would be delayed—again. The disclosure came as the museum struggled to finalize a disputed design for a prominent site between the National Air and Space Museum and the U.S. Capitol—the last available plot on the Mall.

Last year, the Smithsonian fired architect Douglas Cardinal, a Canadian of Blackfoot ancestry, and his American collaborator. "The Smithsonian concluded that [dismissal] was in the best interests of the museum as well as the taxpayers," Smithsonian Secretary Michael Heyman said at the time. A new team headed by the Polshek Partnership inherited Cardinal's design, which calls for clifflike stone facades and windows aligned with seasonal solstices.

On April 21, the Commission of Fine Arts, which must approve all structures built on the Mall, rejected Polshek's version, charging they had "lost the spirit and general unity implicit in the original design." The museum still hopes to break ground, however, with Polshek's updated plans, in time for the scheduled opening in late 2002. *M.C.*

THE CITY

Main Street, Downtown, U.S.A.

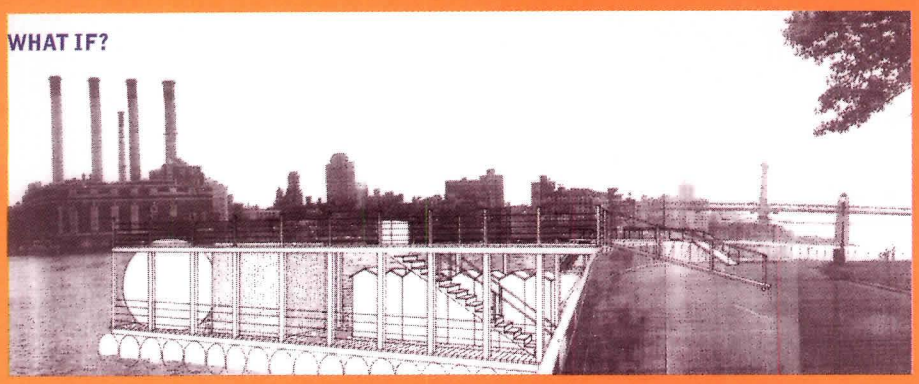


SOURCE: THE BROOKINGS INSTITUTION CENTER ON URBAN AND METROPOLITAN POLICY AND THE FANNIE MAE FOUNDATION

Holocaust museum for a site adjacent to his Imperial War Museum of the North in Trafford, England (*Architecture*, December 1997, page 25). London-based **Richard Rogers Partnership** has won the commission to design law courts for Antwerp, Belgium—a $79.5 million complex comparable to the law courts that Rogers just completed for Bordeaux, France (*Architecture*, January 1999, pages 64-73). Hong Kong architect **Thomas Tang Kang-wah** has received the commission to design a memorial that commemorates the handover of the island nation to China. The $9.7 million, 20-meter-tall concrete column will be completed by next month to designs Tang whipped up in a scant three hours.

OBITUARY: Graphic designer **Tibor Kalman**, 49, whose oeuvre included editing and designing *Colors* magazine, **Talking Heads** album covers, and signage guidelines for New York City's Times Square Redevelopment Corporation.

WHAT IF?



Pooling Their Resources

The idea of swimming in New York City's East River may strike fear into the hearts of those who know of its murky reputation. But with the city's public pools pushing maximum density and the river's ecology consistently improving, Aardvarchitecture Principals Lynette Widder and Christian Volkmann saw potential for an alternative. Their honorable mention-winning scheme for a Van Alen Institute ideas competition proposes a fleet of floating pools anchored to different spots along the riverbank.

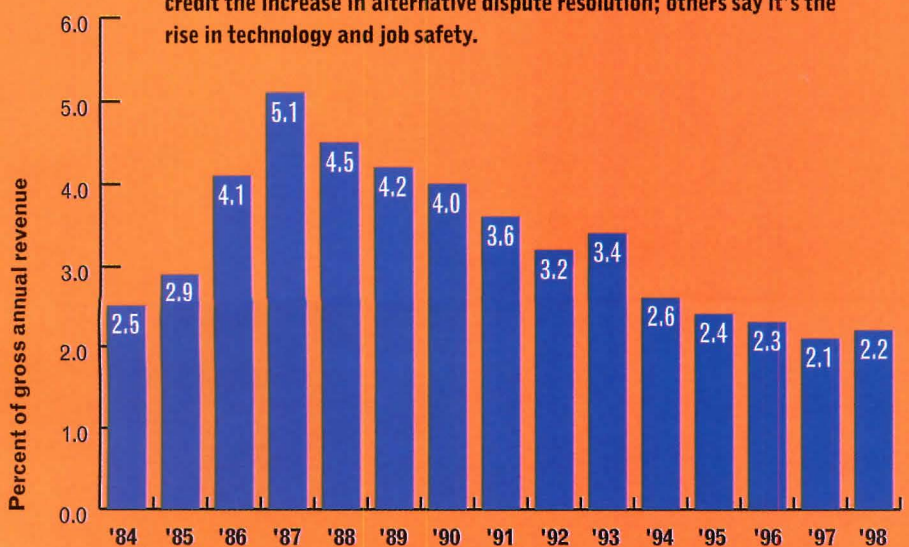
Their straightforward design comprises a 3,000-square-foot pavilion: Visitors proceed through a turnstiled ticket booth and downstairs to enclosed changing rooms, showers, and toilets. This sequence culminates in a 32-by-80-foot pool made of plasticized vinyl, a material similar to that of landlocked, above-ground pools (Widder calls it a "water condom"). A pontoon structure supports the pool and its surrounding rubberized deck; wooden ribs that protect the pontoons flex to conform to the contours of the shore.

The architects are currently compiling a feasibility study for both Hudson and East river sites for an independent recreation consultant who has worked with the city and has been investigating a similar floating pool idea for more than a decade. The architects estimate the cost of each pool at between $300,000 and $350,000. *M.J.O.*

VITALS

Liability Insurance Premiums at Record Low

Liability insurance premiums (expressed here as the percentage of a firm's gross annual revenue) are the lowest they've been in 15 years. Some credit the increase in alternative dispute resolution; others say it's the rise in technology and job safety.



SOURCE: AMERICAN CONSULTING ENGINEERS COUNCIL

The Solutia Doc Awards are an industry benchmark achieved by only the most distinguished designers.

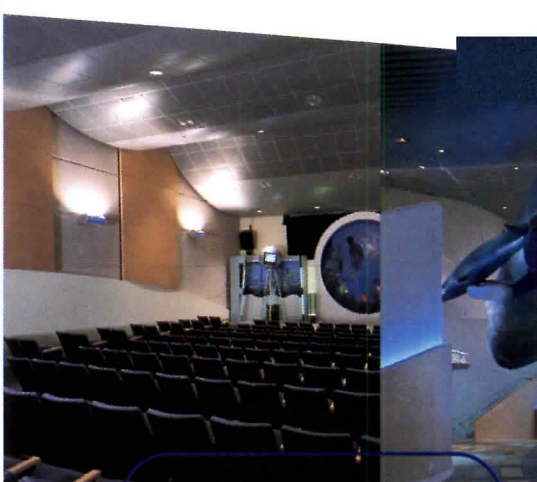
WINNING FIRM: Hellmuth, Obata + Kassabaum, Inc., Santa Monica, CA

DESIGN TEAM: Thomas Nelson, AIA, and other members of HOK in a joint venture with Esherick Homsey Dodge & Davis (Photo: Chuck Davis, EHDD, left, and Tom Nelson, HOK)

PROJECT: Long Beach Aquarium of the Pacific

CARPET: Shaw Contract Group, custom pattern

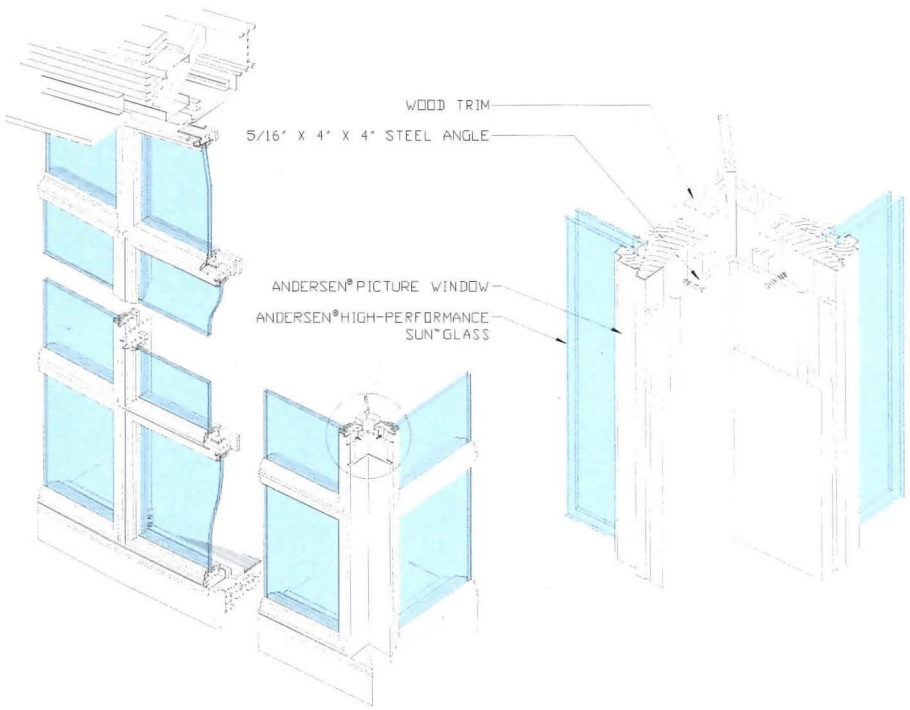
CARPET FIBER: Ultron® VIP Nylon



PFVS Architects, Inc., Atlanta, GA
Director Of Design and Architect In Charge: Clarence T. Vinson, AIA
Design Associate: Preston Bennett
General Contractor: Dudley Barrett, tlanta, GA • Fenestration: Andersen® Flexiframe® and casement/awning picture windows in white color with Perma-Shield® low maintenance xteriors and energy efficient Andersen High-Performance Sun™ glazing

Architecture Defined.

Andersen® Flexibility Refined.



We wanted our new offices to be a ement about what we do as architects," l Director of Design Clarence Vinson. The result? Using interlocking forms, tial planes and contrasting materials, firm defined its profession, and ned the role of Andersen® windows in mmercial design.

We used the Andersen Flexiframe® dows in a truly flexible way," said Mr. son. "Below the curved roof soffit, we ified the height for each vertical llion and the windows were made to the arc without curving themselves. ow them, Andersen helped us create a tainwall look by using their standard d windows with low maintenance riors and energy efficient glazing."

Andersen people were flexible, too. Said Vinson, "From the expert support of architects in the Andersen Commercial up,℠ to on-time delivery by the local ributor, everyone was incredible."

This is how Andersen helps architects ieve imaginative, flexible window tions. Call on us to play a definitive in your next project.

For a cd-rom project portfolio featuring this design and more than 150 other projects, call
1-800-426-7691, EXT. 2591

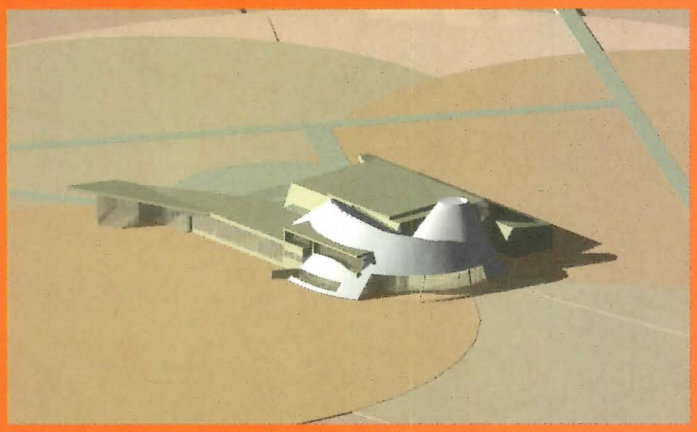
ANDERSEN COMMERCIAL GROUP℠

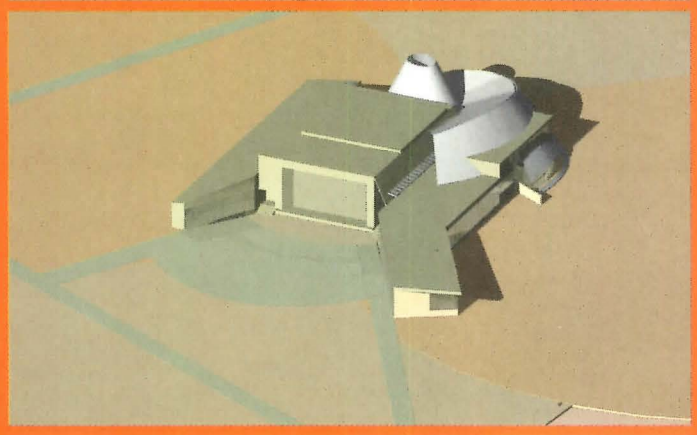
Also ask for our catalog or visit
WWW.ANDERSENWINDOWS.COM

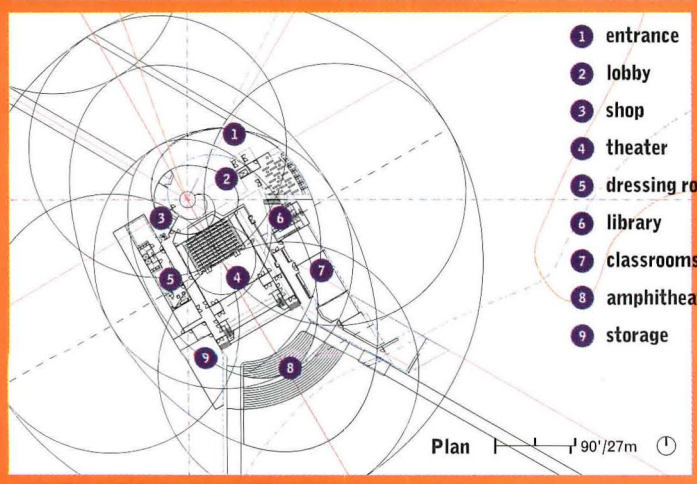
Circle 1 on information card

Spiritual Presence

RoTo Architects, Oglala Lakota Media Creation Complex, Kyle, South Dakota; Xiyuan Buddhist Monastery School, Suzhou, China







Storytelling theater's spiral wall serves as entrance canopy on northeast corner (top), and culminates in cone over lobby. Wings that house storage (center, at left) and classrooms (center, at right) frame **stepped outdoor amphitheater**. Diagram (above) indicates siting at confluence of two rivers and alignment with **events of lunar calendar**. Civic functions sit to north and east of theater; "backstage" area is to west.

Los Angeles-based RoTo Architects' P/A Award-winning design for Sinte Gleska University, a Native American college in southern South Dakota (*Architecture*, January 1997, pages 78-79), caught the eye of the Hecel Oyakapi Foundation. This nonprofit educational organization—founded by actor-activist James Cromwell to preserve the art of Native American storytelling—hired RoTo Principals Michael Rotondi and Clark Stevens to create a storytelling theater on the Pine Ridge Indian Reservation in nearby Kyle, South Dakota, for Oglala Lakota College.

Sited at the confluence of two rivers, the 25,500-square-foot media complex centers on a 250-seat theater. A removable rear wall allows the stage also to serve an outdoor amphitheater. The plan includes additional civic functions: public spaces for rehearsals and tribal meetings and a shop.

Stevens describes the building's whirling forms as "the desire to merge earth and sky." A spiral plane emerges from a berm and culminates in a conical shape over the lobby. RoTo intends to utilize local building materials and techniques for the building's construction, which is slated to begin in the spring of 2000.

A Southern California Institute of Architecture (SCI-Arc) student exchange with China's Southeast University led to a fortuitous commission for RoTo: a $5 million, 55,000-square-foot living and teaching facility for the Xiyuan Buddhist Monastery School in Suzhou, a garden city west of Shanghai.

Water courses and walled gardens run throughout the school's 25-acre campus, which includes a 500-year-old monastery and a Buddhist temple. RoTo's straightforward addition tucks five new buildings into a squarish site at the northern end of the Xiyuan public gardens. An undulated roof distinguishes a bar building at the site's eastern edge that houses a lecture hall, retail outlet, tearoom, and a restaurant. A conical form punctures this roof, creating a dramatic light shaft over a ramped ceremonial room that connects to the monk's living units by a second-story bridge. A small guest pavilion at the site's northwest corner sits opposite the public building. Two ponds—to the north and south—complete the square.

At the square's center are three slender dormitories clad in traditional Chinese timber louvers. Each dormitory features a meditation pavilion and an attached classroom wing. Water channels that connect the two ponds run beneath the dormitories, which are raised on pilotis. Although RoTo has just finished preliminary design development, the school intends to complete the new buildings by early next year. *Michael J. O'Connor*

Someone To Watch Over Me

In a new exhibition at the Museum of Modern Art, architecture and design curator Terence Riley argues that changing demographics and technologies are transforming the traditional private house. Interview by Ned Cramer

The nuclear family and contemporary life in general are changing fast, and some suggest that the poor old suburban house just can't keep up. In its stead, the Museum of Modern Art Architecture and Design Chief Curator Terence Riley's forthcoming exhibition, The Un-Private House, *proposes alternatives by architects that, instead of providing a single new residential norm, interpret particular technological and societal changes that affect Western domesticity. The exhibition, which is on view from July 1-October 5, includes some of the most important houses and apartments of recent years, such as Sulan Kolatan and William MacDonald's Ost|Kuttner Apartments in New York City (*Architecture, *September 1997, pages 114-119); Rem Koolhaas's Bordeaux House in France (December 1998, pages 72-83); and Van Berkel & Bos's Möbius House in Amsterdam, the Netherlands (March 1999, pages 96-103).*

NED CRAMER: The house is a perennial issue in architecture. Why do a show about houses now?

TERENCE RILEY: Actually, you're not right. I went to five years of undergraduate school in architecture and a year and a half of graduate school and never once designed a house; it was not considered to be

Cooking has never been so easy with **virtual chef** in Hariri & Hariri's 1998 Digital House Project.

COPPER SALES, INC.

UNA-CLAD

Architectural Metal Building Products

1-800-426-7737

"The Preferred Choice"

UNA-CORE Series 10 Honeycomb Panels

www.unaclad.com

1001 Lund Boulevard

Anoka, MN 55303

Circle 51 on information card

intellectually stimulating. So you can imagine how surprised I was to find out that 10 of the current 22 studios at Columbia University are doing houses.

You're kidding.
No. And it isn't the schools that have changed; it's the houses. The house has become more interesting architecturally. I see a lot of new architecture and much of what I'm interested in is houses. A lot of public architecture is not nearly as stimulating.

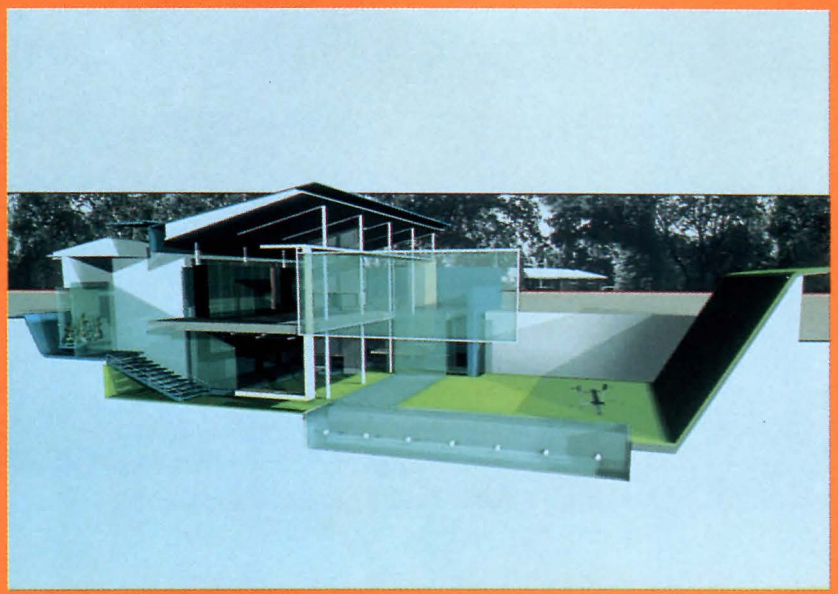
What makes houses more interesting now, increased architectural quality or sociological issues?
It has to do with the shifting boundary between public and private. You used to have a fairly strong connection between the idea of individual liberties and privacy, meaning that you could not be observed in your home, that you had a kind of anti-Orwellian perimeter around yourself. A hundred years ago people could relate to this "home sweet home" sense of seclusion. In the intervening century, people have relentlessly invited more of a public presence into their house.

In the form of new media?
Yes. People don't realize that the telephone was a huge innovation, the social implications of which had to be grappled with when it was first introduced. You used to have a calling card [for personal visits to someone's house]. A servant intercepted the card and passed it to the occupant of the house. The occupant then decided whether or not they wanted to meet you.

Now we have Caller ID.
Telephones, the Web, and video rentals are a huge and mostly welcome presence. There has been a shift in attitude on the part of the public, certainly the younger generation.

Those are passive media. It's not like *1984*, where you watch TV in your apartment and it's watching you at the same time.
A lot of people invite a certain level of scrutiny into their home via the Internet.

But there is a distinction between someone getting your credit card number or your social security number over the Web and someone literally being able to look

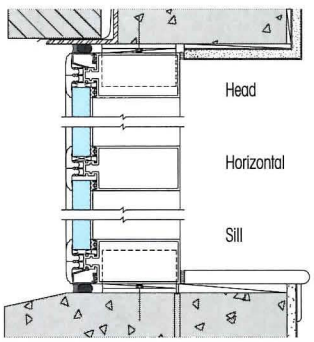


Joel Sanders' 1998 **House for a Bachelor** project accommodates single life by reconfiguring traditional domestic interior. Bedroom, for instance, opens into outdoor exercise area with pool.

EFCO™ CURTAIN WALL LETS YOUR IMAGINATION GO SOARING WHILE PROJECT PARAMETERS STAY ON THE FLIGHT PLAN.

Now the horizons are within your reach. Narrow sightlines and unobstructed views. Curved walls and slopes. A panorama of colors. And zero water infiltration.

Discover EFCO Series 5800 Silicone Gasket Curtain Wall System. It's the only one with a unique silicone gasket that allows narrow 2½" sightlines and low profiles. You can design curved walls using flat infills up to 7° off-axis, or create slopes down to 20° from horizontal. And the patented gasket is impervious to harmful U.V. rays, water, temperatures, and pollutants for the lifetime of the building.



Series 5800 silicone gasket is pigment dyed throughout for continuous color; choose from 21 standard EFCO colors, or unlimited custom shades. And Series 5800 is compatible with the complete line of EFCO windows, storefronts, and entrance systems.

Product: EFCO Series 5800 Silicone Gasket Curtain Wall System

Architect: Gensler & Associates

Building: San Diego International Airport

Erector: Tower Glass, Inc.

Let your creativity take flight. Ask your EFCO representative about Series 5800 Silicone Gasket Curtain Wall System, call EFCO direct at 1-800-221-4169, or visit our Web site at www.efcocorp.com.

Circle 55 on information card

EFCO™

WINDOWS
CURTAIN WALLS
ENTRANCES
STOREFRONTS

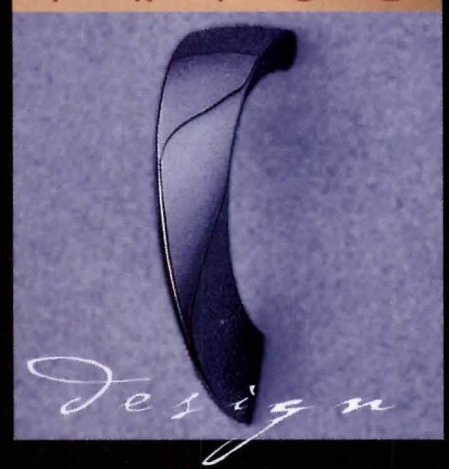
See us at CSI Booth 1811

straight through the facade of your house and watch you shower.
People have a diminished sense of the distinction between public and private. The movie *Rear Window* fixated a whole generation because there was a certain naughtiness associated with the act of observing someone. Even back then, though, there was a double-edged message: Being a Peeping Tom is bad, but because this man was looking, he wound up doing a socially important deed; he caught somebody in the act of a crime. So there are two aspects to it. Now, the idea that someone is watching you, especially through the Internet, is not necessarily perceived as bad. It could be that it's easy for the younger generation to think of someone watching them as comforting.

Are these projects really indicative of general social trends? Will the ideas that these houses represent show up in average homes?
I want to make sure that nobody mistakes this for a dream house show. There was a time when society was slightly—well, a lot—more homogenous. This is why the private house has always been politically volatile: It has always been deemed as a model for a class of people. It's not just what an individual wants.

Witold Rybczynski, in your magazine (*Architecture*, December 1998, pages 56-59), remarked that Philip Johnson's Glass House never had a broad impact on houses for the general public because it only housed one or two people. Now, statistically, it is people who live alone or with one other person who are the general public. Fifty percent of American households are couples with no children: older people whose kids have moved out, people who never had kids, or people who are younger and have decided to delay having kids. And 25 percent of American households are people living alone. So society is very different now in its constituent parts: reconstituted nuclear families, same-sex relationships. All these different combinations certainly didn't have a custom house in the past—they either lived in a single-family house and

s t y l e



Contemporary Entry Handles and Complimentary Interior Trim.

Custom entry pulls for Getty Center made by TRIMCO.

FOCAL

mastercraft

MODERN masterpieces

f u n c t i o n

1096TL Tuf-Lo

New from Trimc

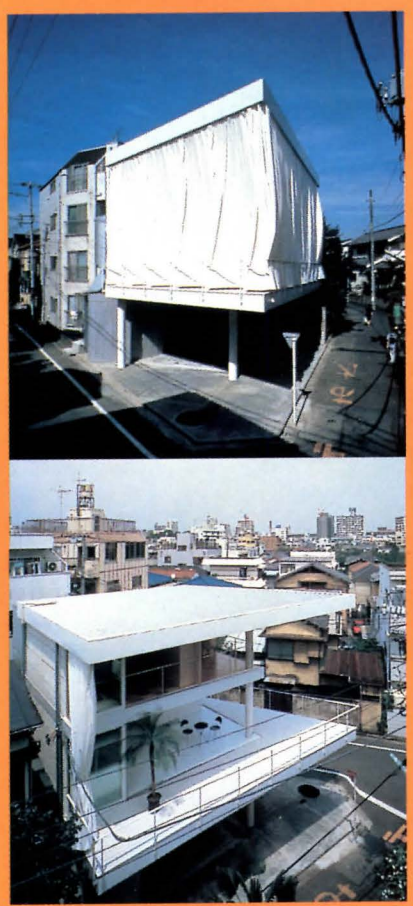
From the same company that offers you fine decorative, functional hardwar
comes a line of Anti-Vandal and Heavy Duty hardware. These products a
specially designed for high traffic, exposed, rough service areas like schools, prison
and other public buildings. Trimco's stylish and rugged products are current
protecting against break-ins and vandalism in thousands of schools and buildin
across the United States. Call us for the new Trimco Anti-Vandal brochur

TRIMCO offers the broadest range of sturdy and tasteful accessory door produc
For additional information see us in the SweetSource CD and at t
SWEETS web site: www.sweets.com or at www.trimcobbw.co

Circle 59 on information card

Trimco

CALL US AT 323/262-4191 OR FAX TOLL FREE 800/637-8



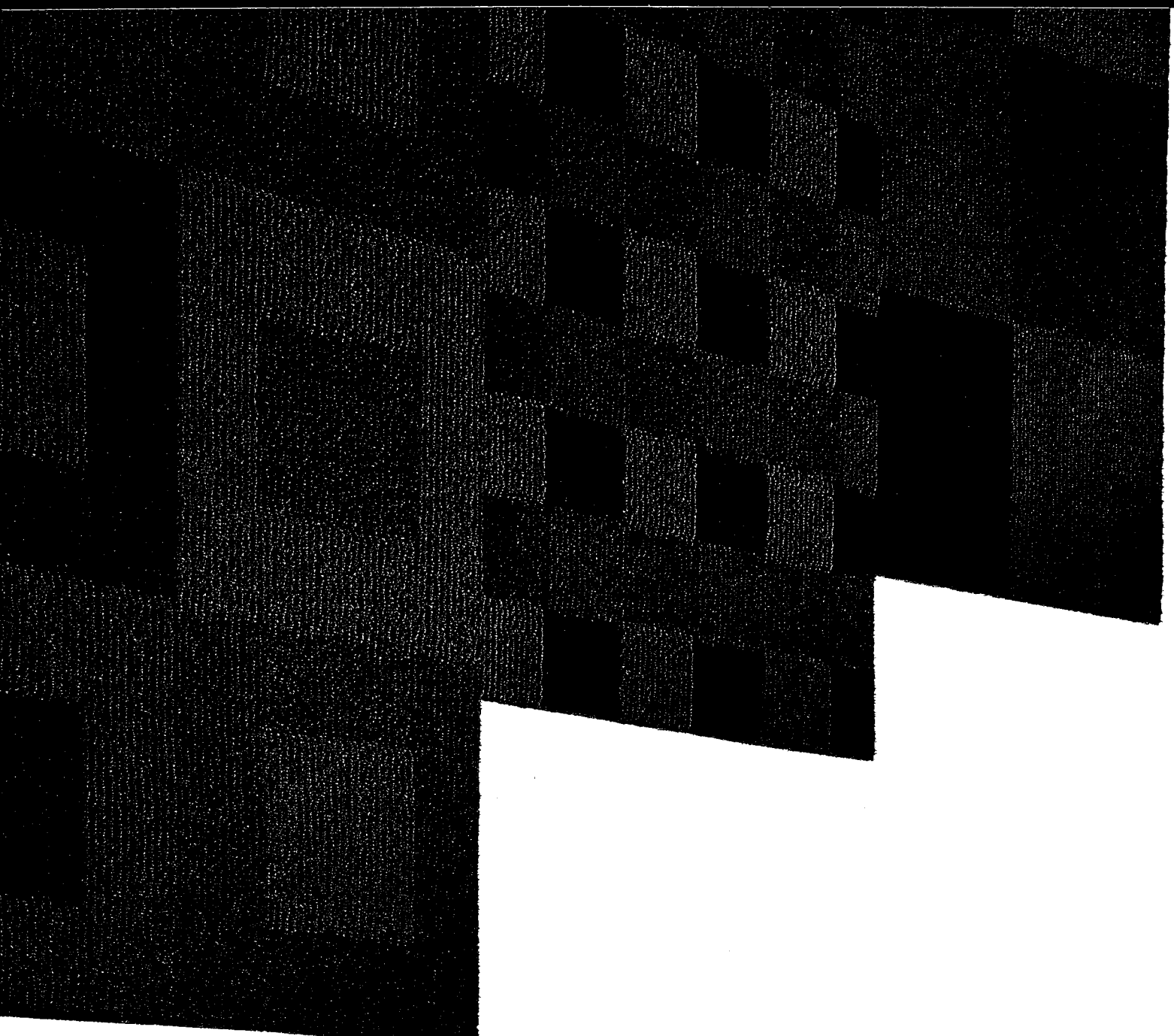
Shigeru Bau's 1995 **Curtain Wall House** in Tokyo plainly illustrates idea of privacy with giant fabric curtain that can be drawn back to reveal open facade.

conformed the way they lived to the house, or did without.

These are not ideal houses, the kind where you're supposed to go to the show to look for the one you're supposed to live in. The point of the show is to remind people that the traditional private house was invented for a specific client that had specific needs. Changes that have been accepted by society for *many* years—divorce, for example—are finally being reflected in the design of houses. And the message underlying all of this would be that if you want a dream house...

Hire an architect.

Hire an architect, of course. But you had better be in tune with what your own dreams are, because that is what these houses are about. They are not about society's dream of what you should be.



around the block, city block, blockbuster
100% DuPont Antron® Legacy nylon

Beyond the Rhetoric of Smart Growth

Smart growth—great name, but what does it mean? By Alex Krieger

Few among us would oppose smarter growth, or wish to be identified with the creation of its opposite. Thus, as an expression, *smart growth* has rapidly gained popularity among critics of sprawl (who are steadily growing in number), champions of urban infill (who are not yet sufficient in number), environmentalists, preservationists, advocates for livable communities, public officials, land planners, and trend-sensitive developers. In an era in which public attention to an issue depends in part on a memorable phrase (remember "It's the economy, stupid"?), a phrase that promises wise planning appeals to the imagination.

Compare the sensibility implied by growing smart to other categories of enlightened planning. Strategies for regional growth management have been around for more than a generation. Yet despite successes such as Portland, Oregon, or Lexington, Kentucky's even older metropolitan growth boundary, land management is still perceived by many with suspicion. Conservatives and libertarians in particular love to point out how growth management restricts free enterprise and limits property rights. For some liberals, on the other hand, growth management can mask exclusionary zoning while restricting others from the economic benefits and environs enjoyed by the affluent middle classes.

For some, the buzzword has been *sustainable development*, though its precise meanings are elusive. Despite broadly used definitions such as "meeting the economic needs of living generations without spoiling assets for the generations that follow," no one is quite sure how to measure sustainability. Were the Gold Rush ghost towns not sustainable because they were built in the middle of nowhere, on inhospitable terrain, or because little gold was found nearby? Is Venice, Italy, non-sustainable because its foundations are rotting and the whole place is sinking, having been built where no city would rationally be built, or will it continue to endure because we cherish it? History indicates that for human habitats, sustainability has a lot to do with the desire to maintain qualities associated with certain places, even as the efforts to do so—as in Venice—become increasingly arduous.

Historic preservation and its kindred spirit, conservation, generally spring from such a cherishing of place. Yet calls for conservation and preservation also evoke images of narrow interests, even of class or

economic elitism. Cynics speculate that there is surely a higher percentage of sport utility vehicle ownership among members of the environmentally conscious Sierra Club than among the population at large. Sensitive to such connotations of elitism, Richard Moe, president of the National Trust for Historic Preservation, cajoles preservationists to embrace communities as wholes, to revere and preserve community structure, not only its artifacts. If we build places expeditiously and without care (as we often do today, he might say) or because our relationship to them is likely to be ephemeral, then their nonsustainability is assured. Still, if unfairly, "to preserve" will always connote a degree of inflexibility or of resistance to change.

The currently popular New Urbanism movement advocates tradition, sustainability, conservation, community, and has the virtue of containing urbanism in its title. But it risks devolving into a brand name; Its proponents' often exaggerated claims of success sound increasingly like product marketing. Since "new and improved" always sells better in America, there is little that production homebuilders enjoy more than a fresh angle on marketing not-so-different products.

> Americans seem to be saying: Do not limit my ability to benefit from—or even enjoy—the sprawl of my own making, but do protect me from future sprawl.

By comparison, therefore, to growth management, or sustainability, or preservation, or even New Urbanism, smart growth suggests action with less dogma and assumes growth and change, not just a need for protection against these. Smart growth sounds positive, and galvanizes public concerns about land use, real estate, and zoning. But will this coalition-building bandwagon lead to actual land-use enlightenment or languish on the lengthy list of feel-good slogans?

Under the more general themes of livability and community, smart growth is poised to become a part of the upcoming presidential election. With ample references to smart growth, Vice President Gore has been unveiling a "livability agenda for the 21st century." It focuses on the following objectives: preserving green space; easing traffic congestion in part by expanding alternative modes of transportation; fostering citizen and private-sector involvement in "restoring a sense of community;" promoting collaboration among neighboring towns, suburbs, and rural areas in creating regional growth strategies; and perhaps so as not to be dismissed as idealistic, Gore speaks of enhancing economic competitiveness, albeit by "raising standards of community livability."

Although vague on specific policies to further smart growth objectives (the jurisdictions likely to effect growth policies will be states or counties anyway), Gore's *livability platform* does encompass the triad of most smart growth initiatives: controlling sprawl; conserving open and rural space; and supporting reinvestment in existing towns, cities, and older suburbs. Each goal is worthy, but reining in sprawl seems to take on messianic status while reinvestment comes across less impassioned. Such a hierarchy may reflect mainstream views, but in the long run, may limit how smart our land policies become.

"I've come to the conclusion," Gore has written, "that what we really are faced with is a systematic change from a pattern of uncontrolled sprawl toward a brand new path that makes quality of life the

goal of all our urban, suburban, and farmland policies." The implication is that sprawl places quality of life at risk, but whose? There are defenders of sprawl. "Why," inquires pundit Gregg Easterbrook, in a recent defense-of-sprawl article in *The New Republic*, "are comfortable homes and long driveways all right for those who already possess them, but threatening when others ask for the same?" And from the right, a certain William McGurn, in a *Wall Street Journal* letter-to-the-editor, snipes: "I am old enough to remember when the liberal complaint was that the American dream was a fiction confined to a relative few; what disturbs them today is that it is all too affordable." Some diminish the sprawl issue, asserting that it is a local and not a ubiquitous concern, more a matter of inconveniences in some instances than a failure of social vision. The Sierra Club estimates that 400,000 acres of open space are consumed each year by sprawl. So what, Easterbrook asks, as he calculates that at this rate it will take 50 years to develop just one additional percent of America's undeveloped land. One percent doesn't sound like much but would nonetheless total 200 million more acres of ranchburgers, cul-de-sacs, and strip malls—not a particularly appealing prospect.

For the now-suburban majority, it is this specter of more-of-the-same that rankles. Many calls for smart growth rise out of suburbanites' fear of the leap-frogging tendencies of their neighbors. The supposition is that the next subdivision will bring with it much added traffic congestion, loss of open space, and diminished livability. What *Time* magazine recently termed "the brawl over sprawl" comes with ample selfishness, along with ambivalence about weighing the public good over individual prerogatives. A March *Time*/CNN poll illuminated the contradiction well: By a two-to-one majority, Americans favored the establishment of greenbelts around their communities. But by a three-to-one majority they concluded, not surprisingly, that the right to control the destiny of their own land was more important than the ability of government to regulate development for the common good. Americans seem to be saying: Do not limit my ability to benefit from—or even enjoy—the sprawl of my own making, but do protect me from future sprawl. A more nefarious interpretation holds that the antisprawl campaign is about denying the advantages of sprawl to those not yet benefiting from them.

Last fall's 240 state and local, largely grassroot ballot initiatives on curbing sprawl have been euphorically heralded as a national referendum on the subject of livability. Some ballot initiatives did limit, somewhat, the ability of local officials to approve additional subdivisions, and a surprising number approved additional public expenditure for land conservation. California voters, for example, approved growth boundaries for seven communities (encompassing about 80 percent of rapidly growing Ventura County). In New Jersey, already a leader in growth management legislation, voters approved selective property tax increases to acquire, over a 10-year period, an impressive 1 million acres for conservation—nearly half of the state's remaining undeveloped land. In Maryland, some large development projects were halted by referendum, and in several counties, the process for issuing new water and sewage permits was significantly stiffened. The majority of the nearly 200 successful referenda involved the preservation of historical sites, farmland, or open spaces.

Twelve states in all passed some growth management legislation and that is good. But not one state proposed legislation to specifically

facilitate infill, nor increased any allowable densities, nor passed significant rule changes to streamline the approvals process for development in existing urban areas. No state seriously contemplated increasing transaction fees for greenfield site development. Citizens didn't vote on any real innovations in regional management of land, which is key to combating sprawl since it cannot be curbed by the actions of individual municipalities. No significant ideas emerged about revenue- or tax-sharing between prosperous, newly developing exurban areas and struggling nearby first-generation suburbs. There were no increases in taxes or fees to limit automobile use or to establish funds for urban reinvestment.

Moving in the other direction, Prince William County in Northern Virginia, several St. Louis suburbs, and Maryland's Prince Georges County all recently lowered their allowable densities for multifamily housing. An affluent town in Ohio approved a large single-home development, but with the limitation that homes have a maximum of two bedrooms to discourage children. Density is a four-letter word in most parts of the country, accompanied by fears of congestion and the belief that higher density development does not generate sufficient tax revenue to pay for all the services residents of a community use—like schools. Maybe it is easier to legislate out children than to tackle the improvement of public education.

So a more sober appraisal of recent progress reveals that, yes, some development is harder to implement in some suburban or exurban locations. But little has been done to make urbanized areas easier to permit, easier to finance, easier to build on—or simply more appealing to mainstream Americans. Reinvestment is the hardest concept to popularize or to achieve. Without it, we have not yet reached a culture of smart growth.

While the rhetoric on the costs of sprawl intensifies, the "smart" response by the typical American continues as it has been for decades: Go out to the periphery to find more housing for less money. This has been—and remains—one of the basic attractions of suburbanization, zealously guarded. Until this advantage is neutralized, sprawl will remain in our future. Indeed, limiting land available for growth raises local housing costs, and there is some evidence for this (from Portland, for example) that growth boundaries add pressure to spread even further to areas immediately outside the boundaries. Take a drive out to Dulles Airport from Washington, D.C., and then consider the future of greater Denver with the recent relocation of its airport another dozen miles away from downtown. We cannot continue to make dubious decisions if we genuinely wish to retard sprawl. They'll probably be calling it "infill" as the acreage between Denver and its new airport fills up in the coming years.

Of course, the urge to spread out is deeply embedded in our culture. Frank Lloyd Wright delighted in dividing humanity among "wanderers" (in his own likeness) and "cave dwellers," whom he would treat with derision. Wright's wanderer "lived under his own freedom beneath the sky and the stars," while the cave dweller became, in the modern age, a cliff-dweller, who built cities and then "suffered at the conformist hands of the urban mob." Wright could never admit, despite the evidence of his own troubled personal life, that it is the cliff dweller, not the wanderer, who builds community.

It is the wanderer's impulse that lurks inside many Americans, who move on average every four to six years, cherish their physical mobility

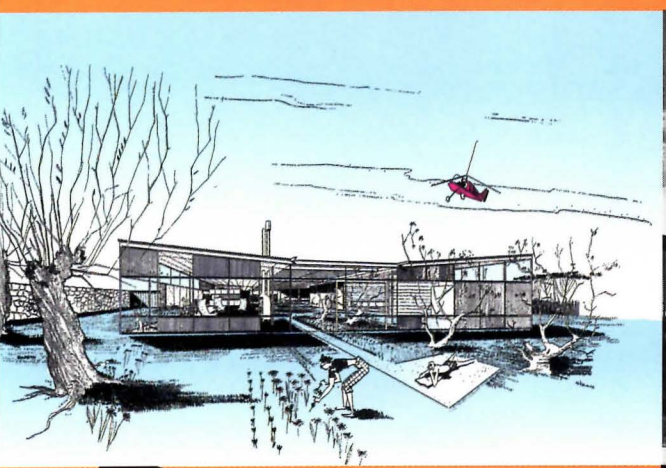
as much as their social and economic mobility, dream always of a better place to live, and then lament the absence of community in their lives. We may never make cliff dwelling acceptable, but we can at least show less tolerance toward redundancy. By some accounts, approximately one in 12 homes in metropolitan America are vacant—either abandoned or considered obsolete, between occupants, or waiting to be sold—with homes belonging to households with multiple residences not even in the count. Minimizing redundancy must be added to the smart growth drumroll, as should other "outrageous" steps.

Imagine economic subsidies for infill or taxes on sprawl. Imagine determining accurate costs of driving (accounting for pollution, congestion, traffic management, policing, and wear-and-tear on roads) and increasing gasoline taxes, tolls, or use fees to cover

> Density is a four-letter word in most parts of the country, accompanied by fears of congestion and the belief that higher-density development does not generate sufficient tax revenue to pay for all the services their residents use—like schools.

these combined expenses. Imagine, further, that the revenues from such use fees were channeled to specific reinvestment initiatives; a sort of linkage program to support infill. Imagine some regional form of transfer-of-development rights in which owners of valuable agricultural or open space property can "sell" this value to sites in already urbanized areas. Imagine greater funding (along with streamlined application procedures) made available for brownfield site redevelopment in the form of favorable financing, direct subsidy, liability protection, or reduced impact fees. Imagine combining tax bases between core cities and their suburban rings. Imagine such revenue sharing used to assure minimum funding for infrastructure, schools, parks, public facilities maintenance, and other quality-of-life amenities across a region, allowing poorer districts to compete with more affluent neighboring communities. Imagine something other than municipal property taxes—state sales taxes, for example—used to promote such regional equity. If not regional forms of governance, imagine regional land-use planning authorities—perhaps with their own bonding capacities. For each designated conservation area or growth boundary, such authorities would be mandated to identify growth areas or reinvestment zones, complete with streamlined permitting processes for these, and pools of financing.

Imagine portraying city life as positively as we have, until recently, portrayed suburbia. Even some impassioned rhetoric on behalf of urban reinvestment, or mixed-income and mixed-demographic neighborhoods, or about the socializing benefits of density (as distinct from congestion) would be helpful. Imagine a very desirable place to live like Cambridge, Massachusetts, supporting an up-zoning amendment, welcoming more development, instead of moving (as it is doing) toward a NIMBY-inspired radical down-zoning resolution. None of this sounds practical, but it will take more than the occasional land conservation referendum to alter the settlement patterns of America. To get smarter about growth we must become more courageous. ■



Rapson Revisited

Minneapolis is feting its resident modernist master, Ralph Rapson.

By Peter C. Papademetriou

If you're younger than 45 and live south of St. Louis, west of Omaha, or east of Detroit, then Ralph Rapson's name may be unfamiliar. But it shouldn't be. This architect is a peer and contemporary of Eero Saarinen, Charles Eames, and Gordon Bunshaft, whose nexus has always been the Midwest: He was born and educated in Michigan, and the greater part of his career has centered in Minnesota. At age 84, Ralph Rapson is not only alive, but thriving in Minneapolis. And it is there that his career is now celebrated under the theme *Sixty Years of Modern Design*—with exhibitions at the Minneapolis Institute of Arts (March 27-July 25) and the Frank Gehry-designed Frederick R. Weisman Art Museum at the University of Minnesota (March 27-May 23), as well as with a new monograph published by the Afton Historical Society Press.

Despite losing most of his right arm to amputation at birth, Rapson became a talented draftsman by the time he finished high school in rural Michigan. He graduated from the University of Michigan in 1938 and won a scholarship to the Cranbrook Academy of Art to study under Eliel Saarinen. Rapson attended Cranbrook during its halcyon days, coinciding with the advent of the office of

Rapson takes a puff on his signature pipe in 1941 (above right). Original stucco-covered, plywood **screen wall** of 1963 *Guthrie Theater* in Minneapolis (above center) has sadly been replaced. Unbuilt **Case Study House** of 1945 (above left) centered on wire, glass-roofed "greenbelt" courtyard.

Protecting your walls is the last thing on their minds.

And the first thing on ours.

You need to be sure your building can take every kind of abuse imaginable. That's why Pawling offers the world's most comprehensive entry and impact protection systems.

Pawling Pro-Tek® handrails, wall and door protection, and entry mats and gratings stand up to the punishment of high pedestrian and vehicular traffic. On any surface of any project in any application.

Pawling impact protection ensures that your built project not only measures up to your original vision, but is tough enough to withstand the test of time. In health care, hospitality, commercial or industrial facilities. In grand lobbies, public corridors, parking ramps and loading docks. On entry floors, walls, doors and columns.

Pawling is your only source for a comprehensive range of design-coordinated protection products, from ergonomically engineered handrails and photo-luminescent wall guards to heavy-duty vehicular bumpers.

Call today to learn more about how Pawling can keep your project intact. After all, it's a big, bad, careless world out there.

PAWLING

Pawling Corporation **800-431-3456**
Standard Products Division
Borden Lane, P.O. Box 200
Wassaic, NY 12592

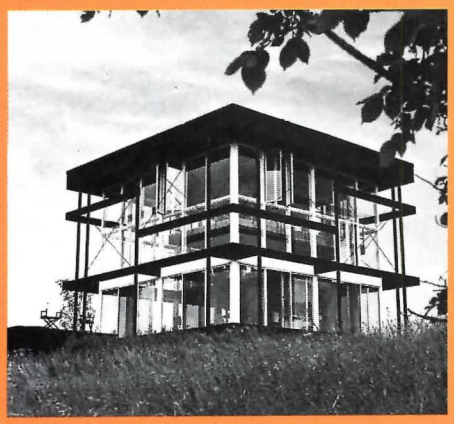
Circle 89 on information card

Eliel Saarinen and Eero Saarinen. He worked with both father and son on such seminal buildings as the Crow Island School (1940) in Winnetka, Illinois, and the Berkshire Music Center Summer Opera House (1942) in Tanglewood, Massachusetts. He also participated in projects with Eero Saarinen alone, such as national competitions for collegiate facilities at Wheaton, Goucher, and William & Mary, as well as for a new Smithsonian Gallery of Art, placing in the two former and winning the two latter.

Studying at Cranbrook also gave Rapson the opportunity to design a range of decorative objects such as steel flatware and furniture including a bentwood rocking chair he named the Rapson Rapid Rocker.

This period also saw Rapson working with László Moholy-Nagy at the New Bauhaus in Chicago and completing a number of independent projects, including his first manufactured furniture for Hans Knoll. Rapson achieved international recognition when he won a 1944 competition sponsored by the Pan American Union for a Legislative Palace in Ecuador (with Chicago architect Robert Bruce Teague). A year later, John Entenza, editor of *Arts and Architecture* magazine, commissioned him to design Case Study House 4, for which Rapson proposed a uniquely urban scheme with a central courtyard known as the Greenbelt House.

Rapson's fevered output and experimental approach led to an invitation in 1946 from William W. Wurster to teach at the Massachusetts Institute of Technology (MIT),

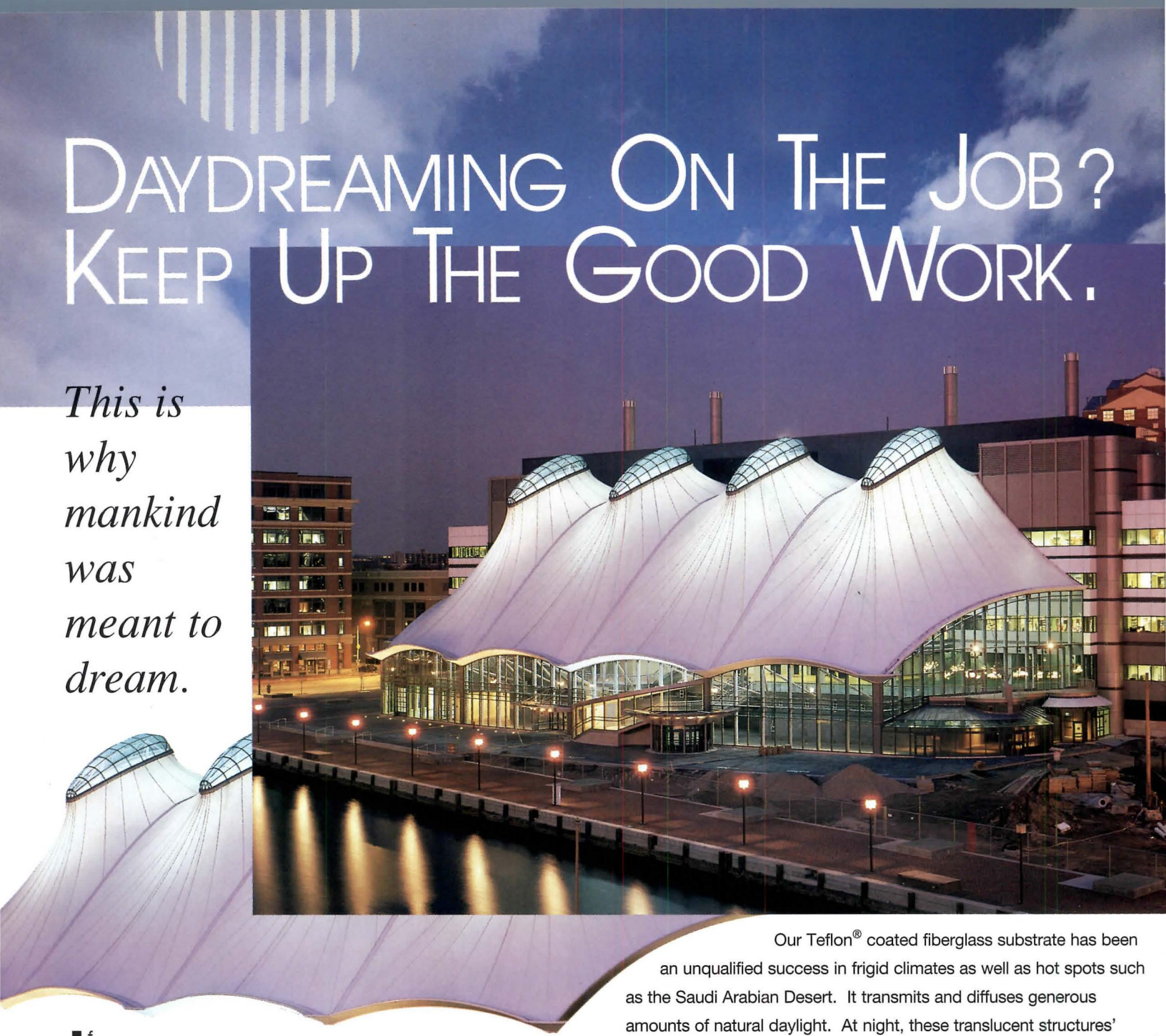


Rapson used dimensions of standard manufacturer's windows to generate overall dimensions of his own **1974 vacation home**.

Cubist art inspired **sculptural interiors** of Rapson's 1963 Pillbury House.

DAYDREAMING ON THE JOB? KEEP UP THE GOOD WORK.

This is why mankind was meant to dream.



If you're tired of the "same old, same old", read on ... we're talking exciting architecture here. And that's the product of a healthy imagination and the inspiration to make creative choices. Birdair Tensioned Membrane can help out. It's the kind of building product that forces you to re-invent your approach to design. In short, it will remind you why people were meant to dream. Imagine Chicago Navy Pier or the New Denver International Airport. Or smaller -- like Chene Park Amphitheater in Detroit. Unlimited shapes, sizes and applications.

Before you get too starry-eyed remember these buildings do a helluva lot more than look dramatic. Tensioned membrane structures are permanent building components. This dynamic use of membrane retains its strength for three decades. It's slippery, so snow slides off. So does the dirt ... rain helps keep the membrane looking new. You can build a Birdair structure anywhere.

Our Teflon® coated fiberglass substrate has been an unqualified success in frigid climates as well as hot spots such as the Saudi Arabian Desert. It transmits and diffuses generous amounts of natural daylight. At night, these translucent structures' luminescence explodes on the horizon ... a spectacular signature of this dramatic architecture.

Push the envelope of architecture. Learn more from our latest brochure featuring hundreds of projects, our technical literature, or design software. Most importantly, keep daydreaming. Use Birdair.

BIRDAIR

A TECHNOLOGICAL VISION THAT WORKS

Birdair, Inc. • 65 Lawrence Bell Drive • Amherst, NY 14221
716-633-9500 • 800-622-2246 • Fax: 716-633-9850 • www.birdair.com

Photo: The Columbus Center, Baltimore, MD.
Architect: Zeidler Roberts Partnership • Engineer: Peter Sheffield and Associates

Circle 93 on information card

which in turn brought Rapson in contact with guest critic Alvar Aalto, whose Baker House dormitory was under construction on campus. Rapson assisted Aalto in teaching, shared an adjacent office, and had lengthy exchanges on architecture, in which Aalto emphasized careful detailing, sensitive proportioning, and a respectful relationship with the environment. It was in Boston that Rapson, as part of a team of MIT faculty, completed the Eastgate apartments on the Charles River. In 1950, as a result of his continuing interest in furniture design, Rapson opened a design store a block from Boston's Copley Square called Rapson-Inc., which promoted everyday modern design, an energetic venture that continued even after Rapson left the United States on another phase of his career.

Through his connection with Knoll, Rapson became involved with the U.S. State Department's Foreign Building Operations (FBO) postwar building program in 1951. Rapson was joined by his Michigan classmate John Van der Meulen at an office first in the Hague, Netherlands, and then in Stockholm, Sweden. Together with the office of Anders Tengbom, they produced such elegant works for the FBO as the Stockholm and Copenhagen embassies of 1953.

Rapson operated outside of a culture of intellectualized design with speculative theoretical underpinnings, instead deriving his architecture from real-world projects and applied professionalism.

Returning to Boston and MIT in late 1953, Rapson was invited to lecture at the University of Minnesota, which turned into a job offer. This career choice ultimately became a dual commitment: Ralph Rapson's combination of teaching and practice evolved into a generation-long professional career. For 30 years he was as much the best-known architect in Minnesota as he was the defining educational presence at the University of Minnesota's architecture school. While other contemporary architects had stints in education (such as William Wurster and Pietro Belluschi at MIT or Paul Rudolph at Yale University), and some had primarily been educators (such as Joseph Hudnut at Harvard University), few had such professional and societal commitment to community. Rapson operated outside of a culture of intellectualized design with speculative theoretical underpinnings, instead deriving his architecture from real-world projects and applied professionalism.

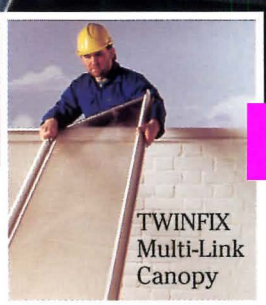
Sadly, two of Rapson's most distinguished works from the height of his career in the early 1960s are now either significantly altered or destroyed: the 1963 projects for the Tyrone Guthrie Theater in Minneapolis and Pillsbury House in Wayzata, Minnesota. The Guthrie Theater was a realization of the thrust-stage, in-the-round theater that had been proposed for the William & Mary competition with Eero Saarinen, transformed internally with a boldly asymmetrical seating layout and a confetti pattern of seats in 10 brilliant colors. The Guthrie's decorative,

With LEXAN® Thermoclear®
...the skies the limit!

- Light weight
- Durable
- Energy Efficient
- Impact Resistance
- UV-Resistant
- High Light Transmission
- Ease of Use

The ideal material for virtually any glazing application... from industrial building glazing to do-it-yourself greenhouse.

www.flex-lex.com


TWINFIX Multi-Link Canopy

GE QUALITY!
GE GUARANTEE!

LEXAN Thermoclear sheet is available in six different sheet structures and a variety of thicknesses and sheet sizes.

Standard colors include Clear, Opal White and Solar Bronze with other colors available upon request.

TWINFIX- the ultimate do-it-yourself Multi-Link panel.

FLEX•LITE

149 E. Mackey Ferry Rd. • P.O. Box 467
Mt. Vernon, IN 47620
1-800-421-0102

Circle 97 on information card

® LEXAN, THERMOCLEAR are Registered Trademarks of General Electric Co.

stucco-covered, plywood, screen-wall facade of random Swiss-cheese cutouts was removed in 1976, and replaced in the early 1990s with a design bearing no relation to the original.

Rapson continued to develop the plan parti of the Pillsbury House—with its articulation of program elements through a process of disassembly—in subsequent projects through the later years of his practice. The sculptural interiors and energetic, volumetric exteriors that made the

Although Rapson retired from full-time teaching more than a decade ago, he continues to visit schools and maintain an active practice.

Pillsbury House famous became Rapson's signature. The house was tragically demolished in 1997. Over the next two decades, Rapson's practice embraced a range of scales, from complex urban environments such as his 1973 "new town in town" housing at Cedar-Riverside near his office in Minneapolis, to more private statements, such as his own Wisconsin weekend retreat, the Glass Cube House of 1974.

Although Rapson retired from full-time teaching more than a decade ago, he continues to visit schools and maintain an active practice. In 1987, he received the Topaz Medallion for excellence in education by the Association of Collegiate Schools of Architecture. Curiously, the AIA Gold Medal has eluded him, although he was twice nominated in the early 1990s. Perhaps the current recognition should cause some reevaluation of Rapson's career, which is notable not only for his serious contributions to the education of a generation of practitioners, but also in its clear and consistent commitment to modernist principles.

Architect Peter C. Papademetriou is a professor of architecture at New Jersey Institute of Technology, the former executive editor of the Journal of Architectural Education, *and was for 20 years a contributor to* Progressive Architecture.

THE CHALLENGE

Create a new generation coating alloy which will outperform the much heralded Follansbee metal roofing products Terne and TCS; meet and exceed all performance and environmental criteria anticipated for the next century; maintain price

THE PLAN

Engage a top team of metallurgical and chemical engineers to develop and independently test hundreds of alloys both in the laboratory and through natural exposure to all conceivable atmospheres

THE OUTCOME:

After seven years of rigorous testing, Follansbee creates a patented ZT® Alloy. Applied to both stainless steel and prime carbon steel, it exceeds all anticipated objectives.

THE RESULT:

Announcing a new generation of Follansbee roofing metals which will meet your highest performance and environmental requirements. We are proud to offer these products under the trade names:

ENVIROMETALS®

TCS II® and Terne II®

Created to meet the increasing demands of an environmentally conscious new century

Visit us on the Website:
folrfg.lbcorp.com

FOLLANSBEE®

Our E-Mail address:
folrfg@lbcorp.com

FOLLANSBEE STEEL • FOLLANSBEE, WV 26037
CALL US TOLL-FREE 1-800-624-6906 or FAX 1-304-527-1269

Circle 43 on information card

Rowhouses on Llewelyn Street (c. 1885, above) are scheduled for demolition. Buyers revitalized similar structures on Barre Circle (right) under city's 1970s-era Urban Homesteading Program.

Less Is Baltimore

Maryland's largest city is trying to rid itself of crime and decay, sacrificing its vernacular architecture in the process. By Michelle Patient

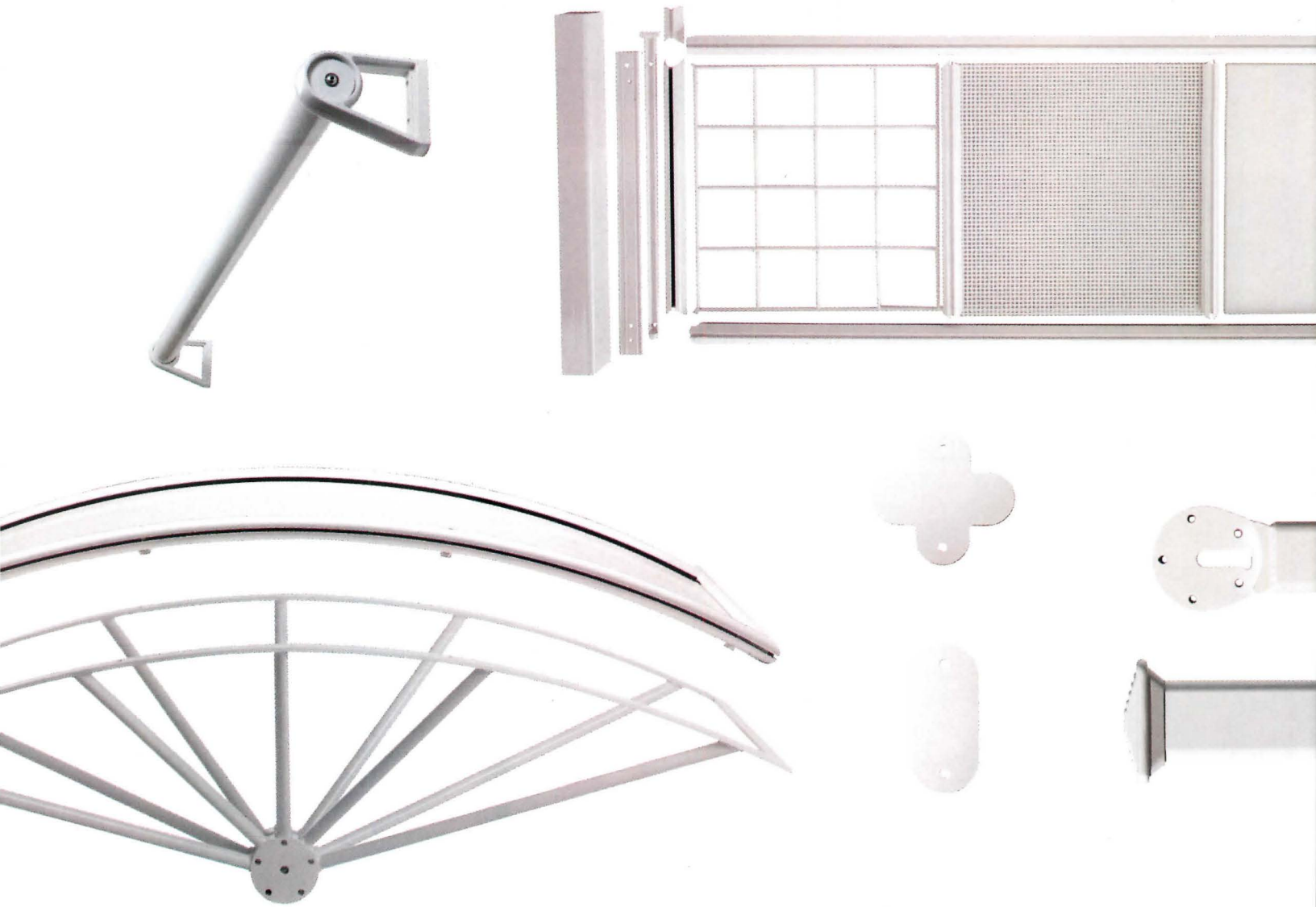
When it comes to preservation, Baltimore has a long history as a golden child among American cities, with such successful adaptive reuse projects as The Can Company, The Power Plant, and Camden Yards. However, still lurking behind these shining singular examples is pervasive urban blight: All over the city, crumbling neighborhoods are riddled with an estimated 40,000 abandoned or decrepit rowhouses, the decaying fabric of earlier settlement periods. After frustrated landlords and banking officials banded together earlier this year to complain about a downward spiral in property values citywide—due in part to drug dealers purchasing whole blocks to use as heroin dens and crack houses—city officials sprung into action with one of the most destructive and misguided urban planning programs conceivable.

In April, the Maryland Legislature passed Bill 1181, or Quick Take. The new law, which takes effect in October, allows the city to seize a building if the owner has *failed to pay taxes* for more than two years and does not claim it after a 10-day public notice. With crime festering in these abandoned houses, the city's attempt to eliminate legal backlog is understandable. Less comprehensible are the city's plans to demolish the rowhouses, which span from Federal to Victorian to Classical Revival in style. Many are eligible for historic listing.

According to Zack Germroth, spokesperson for the Department of Housing & Community Development (DHCD), the city has targeted 19,250 structures that it wants to seize and destroy: 2,000 this year, 2,250 in 2000, and then 2,500 per year until 2006. DHCD claims that the structures are not salvageable because the back taxes and low property values exceed the cost of renovations. When asked for the city's overall plan for the demolition sites, Germroth offered only "parking lots, vegetable gardens, mini-parks, or redevelopment. The more land we accumulate, the more redevelopment we can do." Bill Pancek, president of Baltimore Heritage and deputy director of the Maryland Historical Trust, thinks the city can do better: "Maryland has the nation's best rehabilitation tax incentives, and Baltimore has had some tremendous turnarounds. Now it's like we have amnesia."

City residents have had an impressive array of rehabilitation alternatives from which to choose for years. These include local, state, and federal historic preservation tax credits, which come with 10-year property tax freezes at prerehabilitation levels, and income tax credits of up to to 25 percent of rehab expenditures. During the 1970s, Baltimore's Urban Homesteading Program sold vacant rowhouses—initially slated to be demolished for highways—for $1. The city then assisted potential residents who agreed to rehabilitate the rowhouses with private and federal financing programs. The result was thriving downtown areas like Barre Circle and Otterbein Street.

It would be naive to assume that all of Baltimore's historic rowhouses are worth saving. Many structures are simply irretrievable, and the city's population, which has shrunk by more than 300,000 since 1950, is not suffering a housing crunch like other American cities. But formerly decayed and crime-ridden cities like Newburgh, New York (*Architecture*, September 1998, pages 158-162), demonstrate that successful rehabilitation in low-income areas is achievable. In stark contrast, destroying thousands of historic rowhouses (which displaces the drug problem but doesn't solve it) promotes continued suburban sprawl, depletes the city of its architectural vernacular, and forever blurs its rich historic identity.



think of it as an alphabet

kaleidoscope™

Want to create a new language for outdoor spaces? Kaleidoscope from Landscape Forms is the new, modular wall, canopy and seating system that lets you combine the individual pieces to make it anything you want it to be. Pre-engineered and pre-finished with our proprietary Pangard II® polyester powdercoat process, it's extremely durable and designed to meet U.S.building code requirements.

Call for more information and a catalog. What you do next is up to you.

Kaleidoscope is designed by Robert Chipman, ASLA; Brian Kane, IDSA; and Arno Yurk, AIA, IDSA.

landscapeforms™

www.landscapeforms.com
1.800.430.6201

Circle 105 on information card

architecture

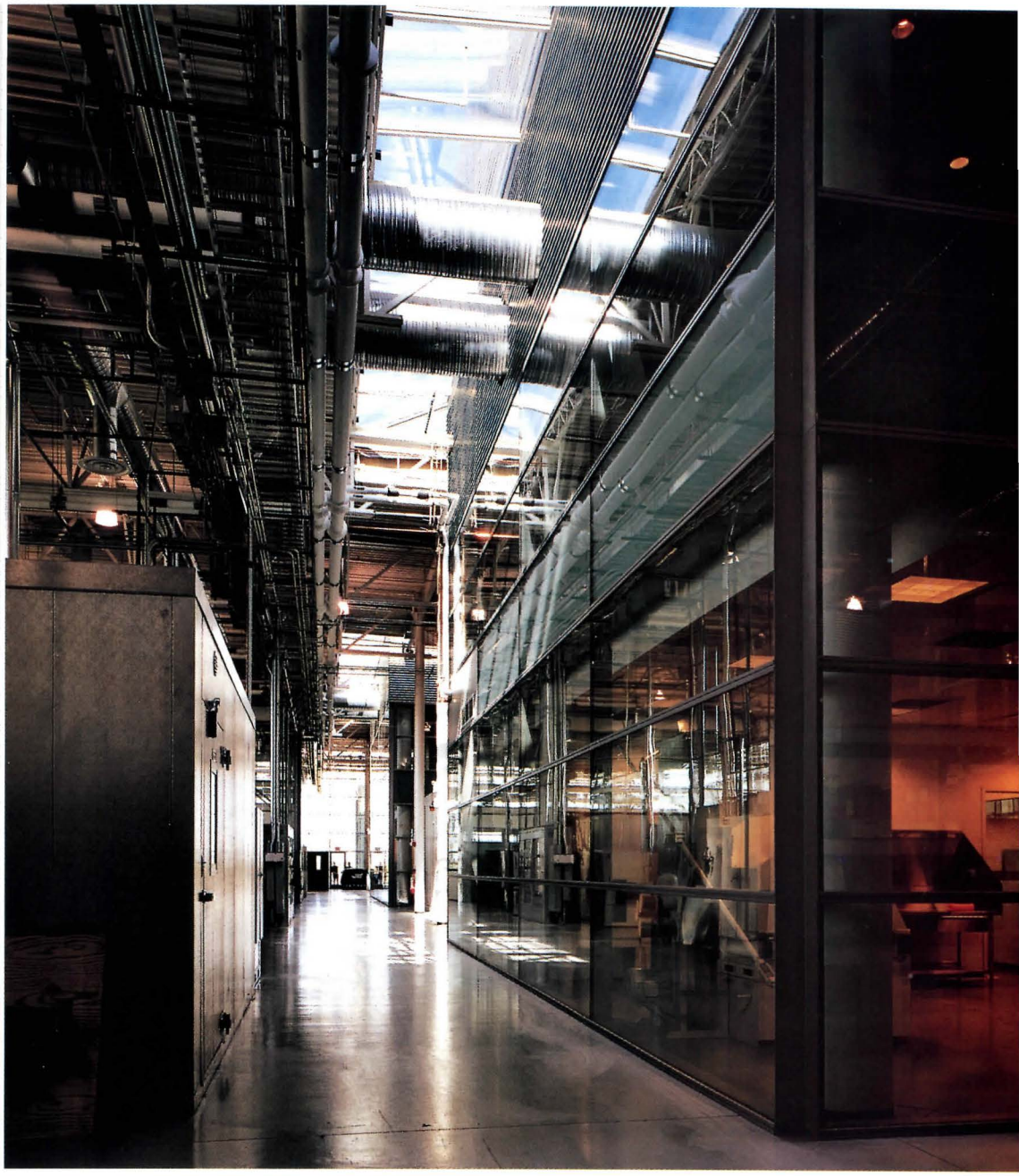
Machine Dreams

Peter Behrens' 1909 AEG Turbine Factory in Berlin (above), simple and solid with more than a hint of classical ordering, was a transformation of the factory from a crude, smoky workshop to a grand edifice in tune with a newly industrialized society. By ennobling the once humble industrial shed, Behrens elevated efficient engineering to the status of architecture and sparked architects' infatuation with industry. That love affair continues to this day.

The machine esthetic now cuts across building types. It finds expression not just in factories and warehouses, but in museums and homes, transforming definitions of domesticity and high culture. With so many possibilities for advancing Behrens' industrial revolution, machine dreams dance through architects' heads.

INDUSTRY UNDER GLASS

The consummate "Machine in the Garden," Valeo Thermal Systems building (facing page) houses design workshops (at left) behind sleek curtain wall. Slender tubular-steel columns support grid of louvers that shade smaller glass box of lobby. Test laboratories (right) occupy enclosed glass blocks at south end of building; neatly organized, exposed building systems fill luminous double-height work area.

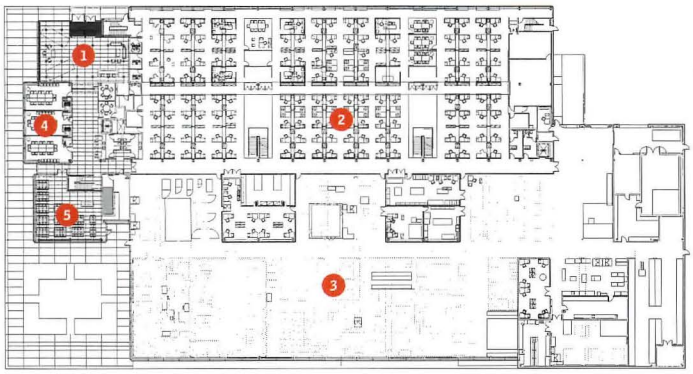


Davis Brody Bond exposes the inner workings of a research lab in suburban Detroit.

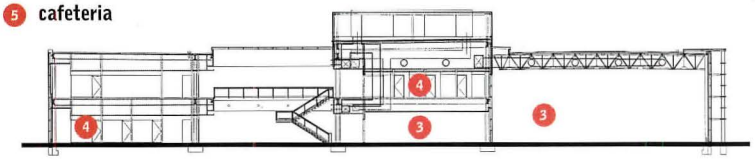
By Steven Litt

West facade (top left) shelters lobby, conference rooms, and employee cafeteria behind skin of clear and sandblasted glass panels. Conference rooms (bottom left) overlook open laboratory area. Canopy of gridded louvers creates grand portico outside lobby (left) and cafeteria (facing page). Louvers also shade airy interiors from strong western sunlight.

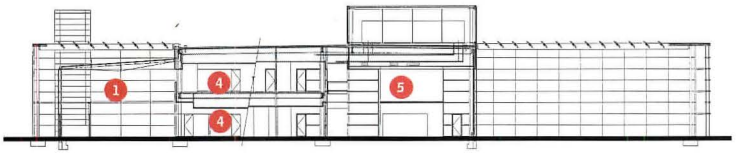
1. lobby
2. offices
3. laboratories
4. conference rooms
5. cafeteria



First-floor plan 46'/14m



North-south section



North-south section 30'/9m

The new technical center for French auto-parts manufacturer Valeo is a glass box on a starvation diet. "It's just skin and bones, no fat," says design architect Frank Michielli, associate partner at Davis Brody Bond in New York City. Of prominent details such as the daringly slim, 8-inch-diameter steel columns that support a louvered sunshade at the west end of the building, Michielli explains, "We tried to get the absolute minimum dimension. We got this light, airy look."

Albert Kahn's automobile factories and Eero Saarinen's 1957 General Motors Technical Center in Warren, Michigan, inspired the building's austere modernism. But Michielli's intent was not to romanticize auto industry architecture. Instead, he calculated a design that projects a perfectionist image for Valeo, whose Thermal Systems division in Auburn Hills, about 15 miles northwest of Detroit, makes automotive parts for nearby Daimler-Chrysler.

Finished in early 1998, the 120,000-square-foot building isn't a factory per se. It's a composite of two buildings: a high-tech, white-collar design workshop and a mechanical laboratory for Valeo's engine-cooling and climate-control groups. The two halves of the building are unified by strong axial views, an orthogonal grid plan with 20-foot structural bays that march from one end of the box to the other, and daylight that floods through the glass curtain walls. The curtain wall wraps most of the building in a taut skin of horizontal, blue-green bands of sandblasted glass, vision glass, and on the north side, spandrels made of the same sandblasted glass. Silver metal panels wrap storage areas and selected labs on the building's eastern end.

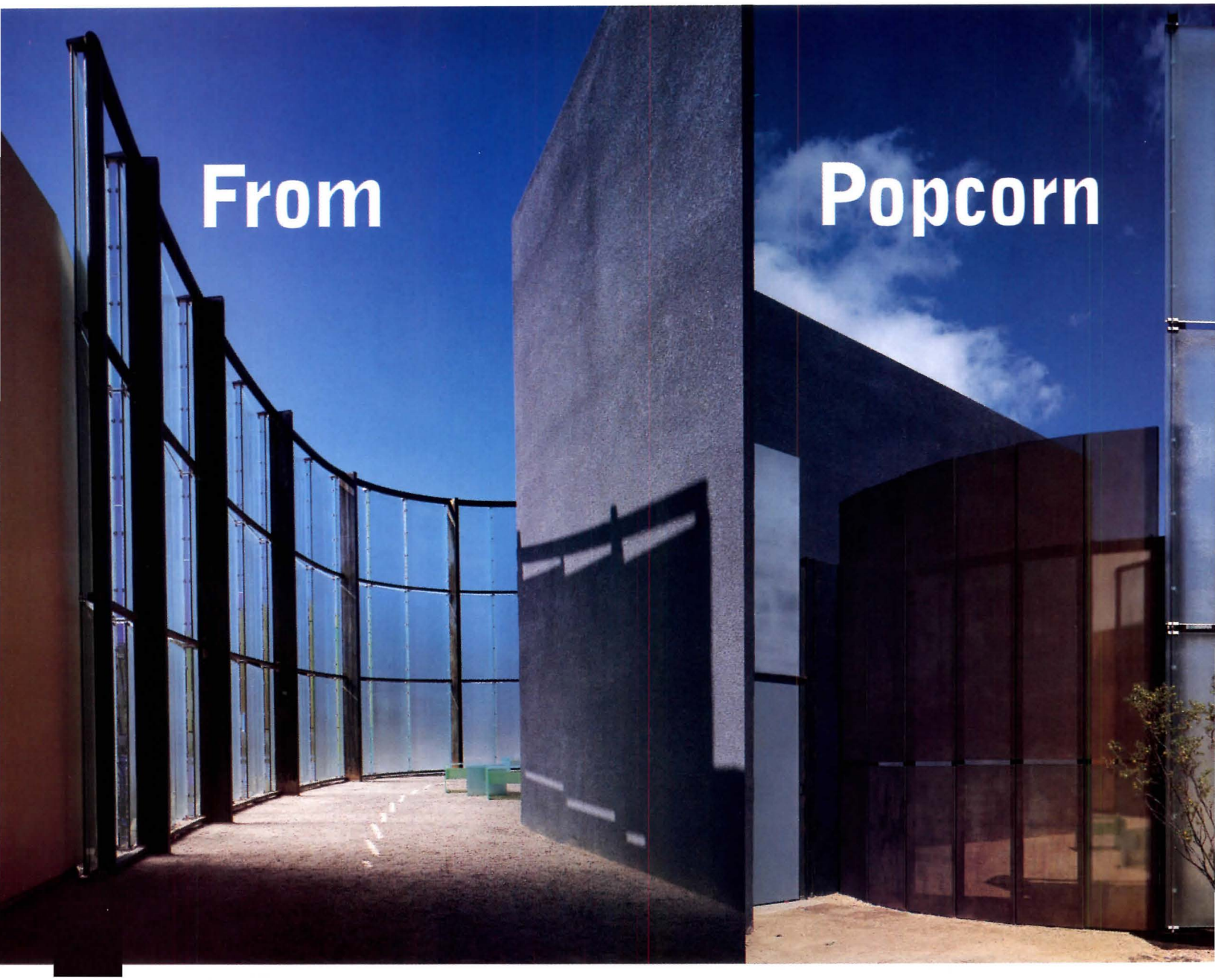
The interior emphasizes transparency, clarity, and instant legibility. Stand opposite any of the axial vistas, and you can see virtually from one end of the building to the other. The intention is to facilitate communication and collaboration among Valeo's engineers and their frequently visiting customers.

On the north side of the box, engineers sit at scores of open work stations outfitted with computers and large tables where drawings

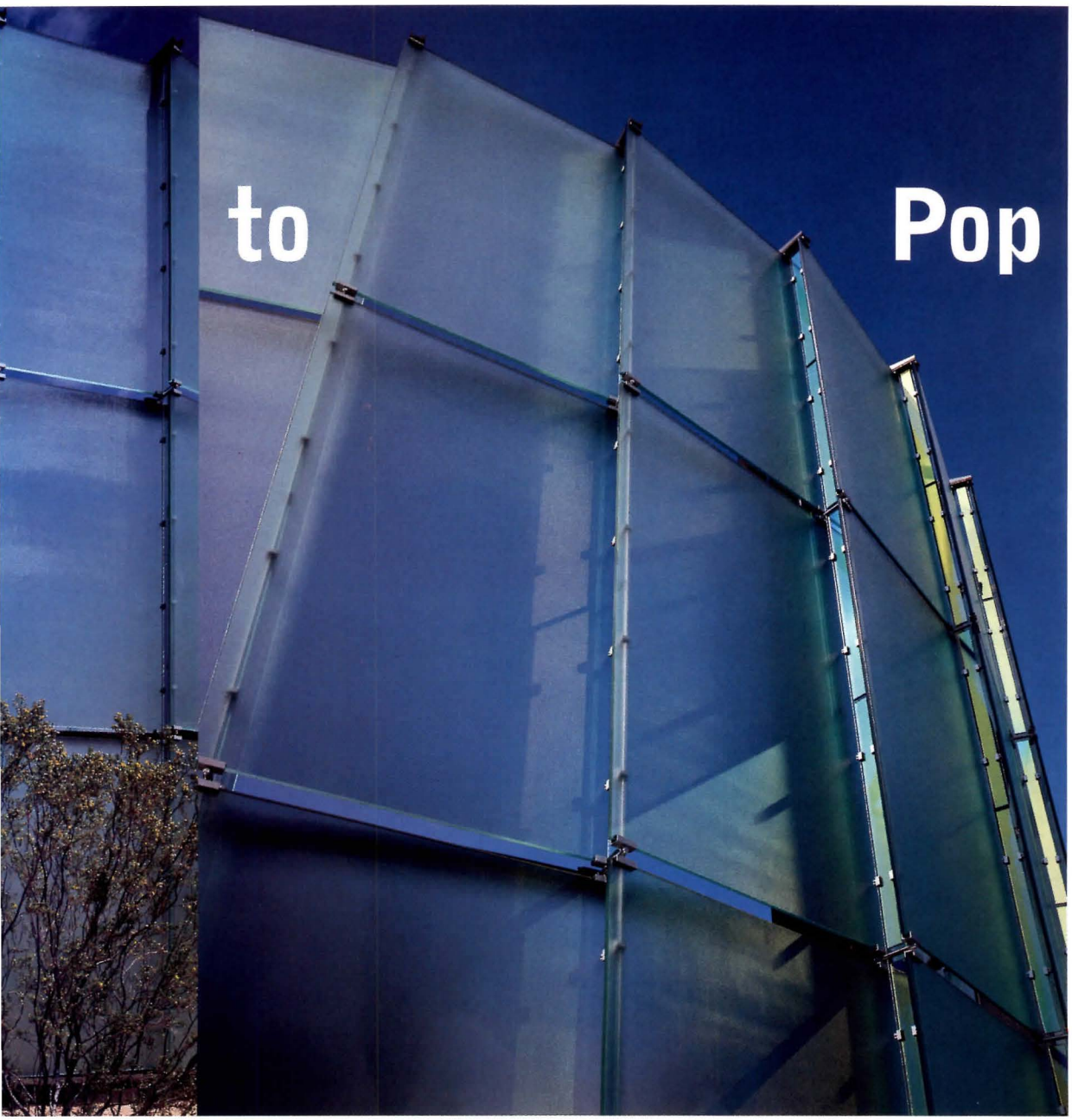
can be unrolled. The building's south side houses a giant, double-height laboratory with separate specialty labs treated as rooms within rooms. In the laboratory, Michielli clustered the exposed utility lines, cable trays, and air ducts in neat, right-angled avenues, with vertical runs down to machinery below.

One problem: Elegant sun louvers that shade the lobby, cafeteria, and much of the south facade failed to block enough light to suit computer users. But fiber mesh sunscreens recently installed under skylights and at eye level across low partitions in the center of the building now lessen the glare. Despite this, the building succeeds as a finely detailed stand-alone object, as a highly flexible work environment that can easily accommodate change, and as an exquisite piece of corporate advertising. That it occupies an utterly banal industrial park only adds to the impression of jewel-like refinement amid a sea of mediocrity. If that's the message Valeo wanted to convey, it comes across loud and clear.

VALEO THERMAL SYSTEMS TECHNICAL CENTER, AUBURN HILLS, MICHIGAN
CLIENT: Valeo **ARCHITECT:** Davis Brody Bond, New York City—Steven M. Davis (partner-in-charge), Frank V. Michielli (associate partner, design), Anthony Louvis (associate partner, management), Carl F. Krebs (interiors/programming), David Manty (project architect), Fred Chomowicz, Cindy Crozier, Christopher K. Grabé, Douglas Wright (project team)
LANDSCAPE ARCHITECT: Weintraub Landscape Architects
ENGINEERS: Weidlinger Associates (structural); Cosentini Associates (mechanical) **CONSULTANT:** Cosentini Lighting (lighting)
GENERAL CONTRACTOR: Campbell Manix
COST: Withheld at owner's request **PHOTOGRAPHER:** Paul Warchol



Will Bruder transforms a Scottsdale, Arizona, cinema into a cultural landmark.



to Pop Art

By Lawrence W. Cheek

New black paint on museum's boxy south elevation (facing page, top) has insinuation of purple, like colors of surrounding mountains' shadowy fissures at twilight. Curving steel screen (facing page, top, at left) conceals loading dock; glass wall at opposite end of building (facing page, top, at right) encloses sculpture garden. Shimmering, galvanized steel addition at west side of former theater (facing page, bottom, and below) contains new entrance to museum. Industrial metal cladding has few precedents in stucco-covered Scottsdale, but takes on artistic polish as it reflects desert light. Indented front door (below) relates to adjoining civic center complex.

Enough Will Bruder buildings are sprinkled around Phoenix, Arizona, that people almost know what to expect from the 52-year-old architect: subtle calligraphy of light, sly manipulations of scale, the exaltation of industrial materials and mechanical giblets. What's unexpected in the Scottsdale Museum of Contemporary Art (SMOCA) is Bruder's role as archaeologist. Here, he has excavated and exhibited the bones of a 25-year-old workaday building as if they were the precious artifacts of a vanished culture.

The building that now houses the 20,000-square-foot museum was a five-box dollar cinema in Scottsdale's downtown civic center complex. The city snapped up the building for $1.5 million and gave Bruder a $3 million design and construction budget, along with an exhausting list of functional demands. "We wanted the building to have a sculptural and architectural presence," explains SMOCA director Robert Knight, "but we also needed to be able to drive a 10-foot cube on a forklift anywhere inside, while maintaining a constant temperature and humidity. Frankly, I didn't expect a lot of architecture."

Bruder kept the old building's concrete block shell and stucco jacket, and also the interior walls that had divided it into five assorted-sized theaters. He transformed the formerly beige stucco with a coat of "Curtain Call" black paint. Inside, Bruder opened up the theater's flimsy 2-by-4 wooden ceiling trusses as if to reveal just how Sun Belt developers did things in the 1970s.

Whether or not museum-goers consciously dig Bruder's archaeology, the galleries provide a welcoming harbor for contemporary art. The nearly 17-foot-high ceilings accommodate large-scale sculpture and contemporary-art quirkiness, such as a wall sculpture of matchsticks and a dynamite fuse that was set on fire at the museum's inaugural show in February. Linking the backs of four galleries, a slightly curving plywood and drywall partition subtly infuses the space with energy. Eleven rectangular skylights above galleries provoked Bruder to enthuse about his memories of magic light in Istanbul, Turkey, and Granada, Spain. "Pragmatism had to drive the horse," he says. "Then we found ways to wrap the poetry into it."

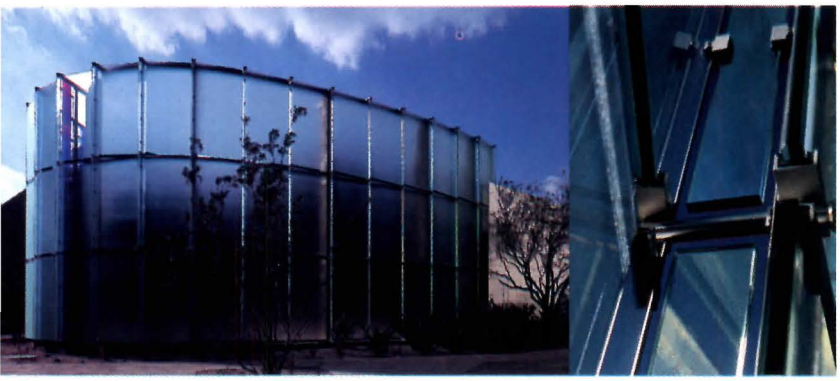
More of that poetry comes in a hot dog bun-shaped addition grafted onto the theater's west side. It incorporates the museum's entrance, an information booth, gift shop, planned cybercafé, sculpture garden, and a sculptural glass wall by artist James Carpenter. It also provides a transition from the lingering ambience of old Scottsdale—the international mecca of high-end cowboy art—into a hip, provocative space.

The bun's exterior is a crust of galvanized steel panels that begins to sip the color of the sky in late afternoons, then virtually vanishes into it. This is classic Bruder—convincing ordinary industrial materials to make artistic gestures. The portal resides in a graceful indent, nodding to the adjacent Scottsdale Civic Center buildings. Inside, space flows fluidly from the information booth through the store to the café, then funnels visitors logically toward the galleries.

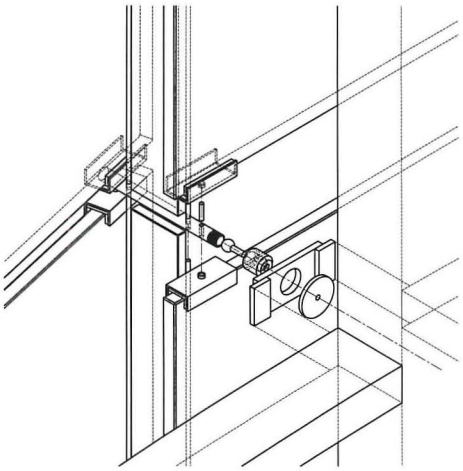
Carpenter's curved glass "Scrim Wall" succeeds in advertising the museum to the street but unfortunately doesn't do enough with the sunlight. Throughout the day, panes of patterned and dichroic glass refract sunlight into spears of color that fall on a nearby earth wall, but with such intense light available, it's disappointing that the show isn't more dramatic. Behind Carpenter's wall is an open sculpture court, which will be a solar oven through the six-month Arizona summer.

Elsewhere in the museum, Bruder's usual attention to detail appears repeatedly. Steel fins soar from the museum store bookshelf dividers. Bruder even bestows a work room with an elegantly curved concrete block wall and a window slit. "If you respect the staff, they do a better job," Bruder insists.

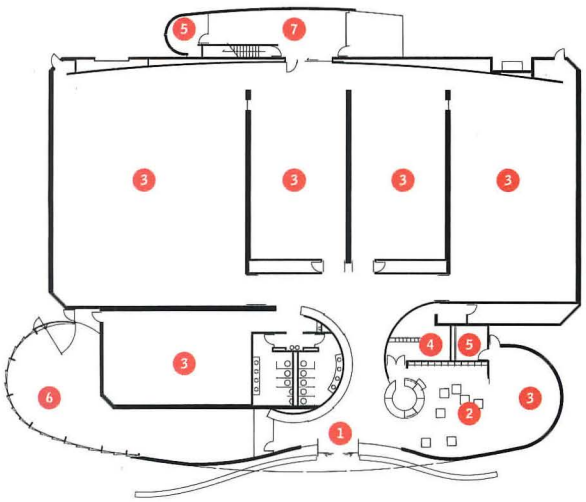
SMOCA is a swirl of old and new, cheap and sophisticated, industrial and artistic; consequently, it reflects the unpredictable and improvisational nature of contemporary American art. You wouldn't hang a Monet here, just as you wouldn't ignite a wall of matches at New York City's Metropolitan Museum of Art. SMOCA isn't a museum for the ages, but an inexpensive and dramatic beachhead for contemporary art. As the opening of this museum proves, Scottsdale is trading in its image as the home of sentimental Western art for that of a sophisticated and progressive city.



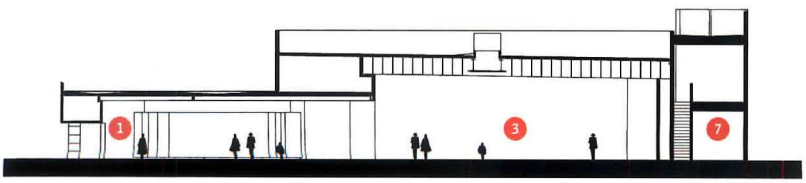
Artist James Carpenter's "Scrim Wall" (above left) encloses open, sun-washed sculpture court that adjoins museum entrance. Steel armature supports individual panes of laminated, patterned glass (above right and detail) that refract sunlight into bright shards of color.



Detail of glass wall assembly



Main-floor plan 22'/7m



East-west section 16'/5m

1. entrance
2. bookstore
3. gallery
4. workroom
5. office
6. sculpture garden
7. holding/ delivery area

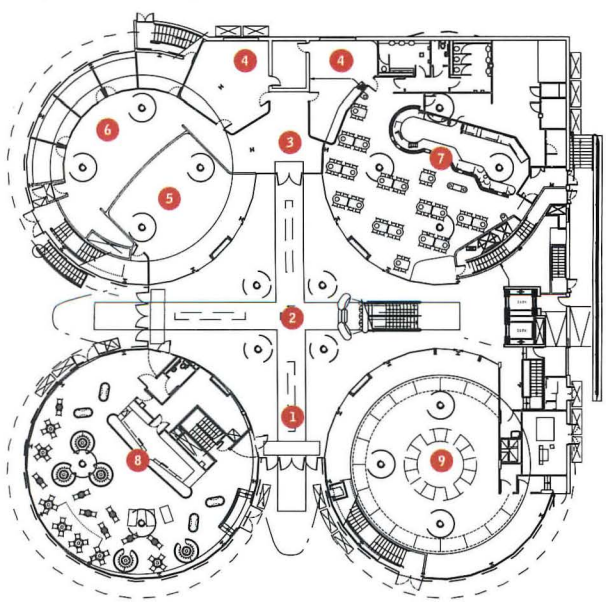
GERARD L. CAFESJIAN PAVILION, SCOTTSDALE MUSEUM OF CONTEMPORARY ART, SCOTTSDALE, ARIZONA
CLIENT: Scottsdale Cultural Council
ARCHITECT: William P. Bruder-Architect, New River, Arizona—Will Bruder (principal), Rob Gaspard (project manager), Donna Barry, Tim Christ, Saskia Harth, Ben Nesbeitt (project team)
LANDSCAPE ARCHITECT: Steve Martino & Associates Design
ENGINEERS: Rudow & Berry (structural); Baltes/Valentino Associates (mechanical, electrical)
CONSULTANTS: Lighting Dynamics (lighting); Wardin-Cockriel & Associates (acoustics); Construction Consultants (cost)
GENERAL CONTRACTOR: Howard S. Wright Construction
COST: $2.1 million
PHOTOGRAPHER: Timothy Hursley

Bruder transformed interior of former cinemas into galleries, maintaining original divisions between theaters and exposing existing 2-by-4 wooden trusses (top left and right). Exposed structure provides support for hanging sculptures above 17-foot-high galleries. Bruder designed colorful fiberglass benches (top left). Curving wall of entrance addition encloses bookstore (above left). Recent exhibit that displayed Bruder's work (above right) included elements of architect's tough-but-sleek material palette.

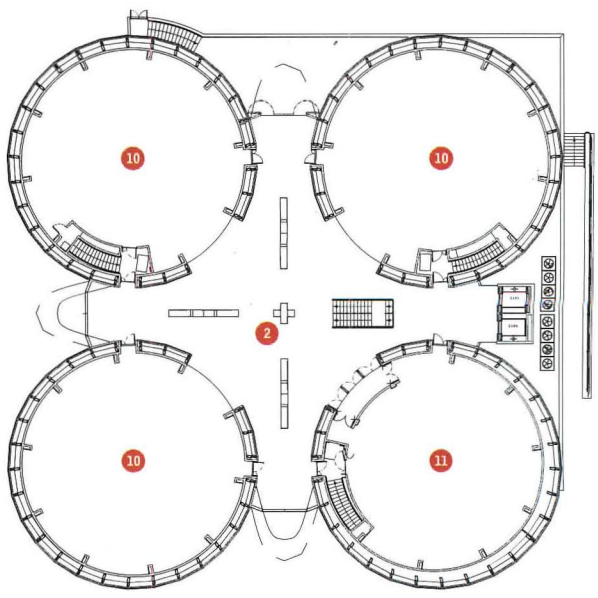
Musical Revolution

In the heart of industrial Sheffield, England's monument to pop music puts a new spin on the museum. By Catherine Slessor

Kettle-shaped, stainless-steel drums of pop music museum (above and facing page, top) peer out from gritty urban landscape of Sheffield's Cultural Industries Quarter. Glass canopy between drums (facing page, bottom left) marks entrance. Stair inside cruciform gallery (facing page, bottom right) connects second-floor exhibits to cafés, classrooms, and gift shop on ground floor.

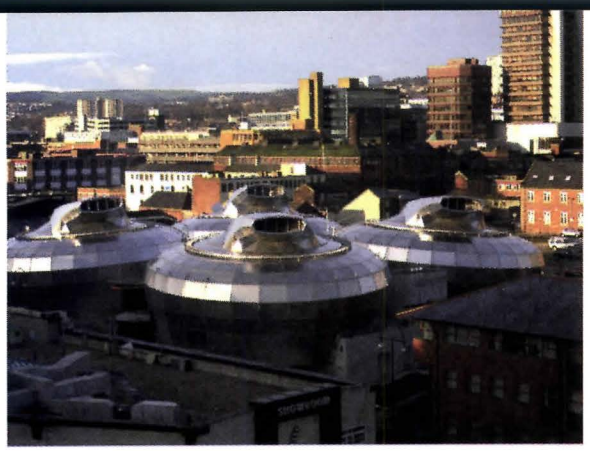


Ground-floor plan 22'/6m

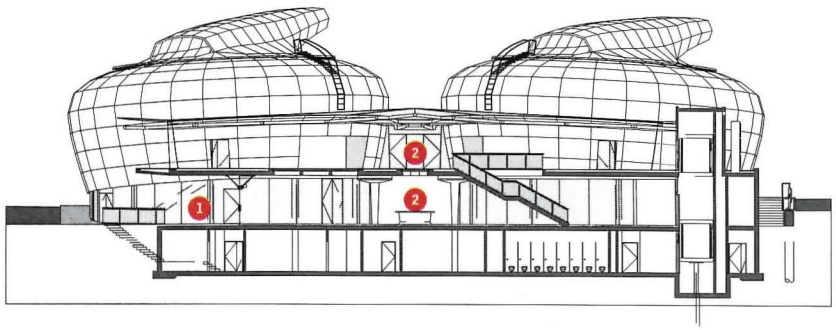


First-floor plan

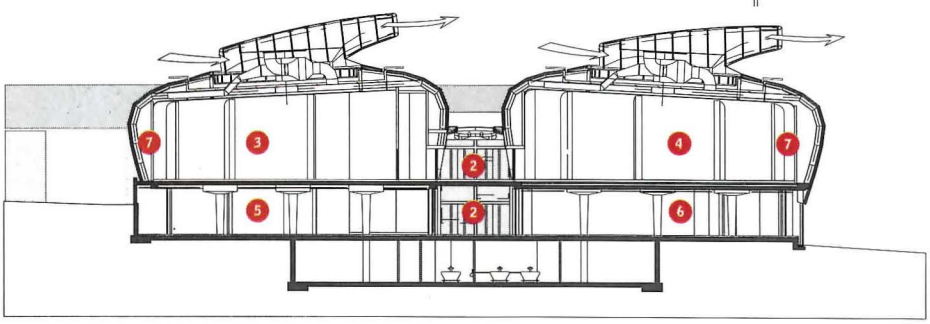
1 entrance
2 concourse
3 reception
4 classroom
5 temporary exhibits
6 offices
7 café
8 bar
9 shop
10 exhibition hall
11 theater



1 entrance
2 concourse
3 exhibition hall
4 theater
5 café
6 shop
7 fresh-air supply plenum



East-west section

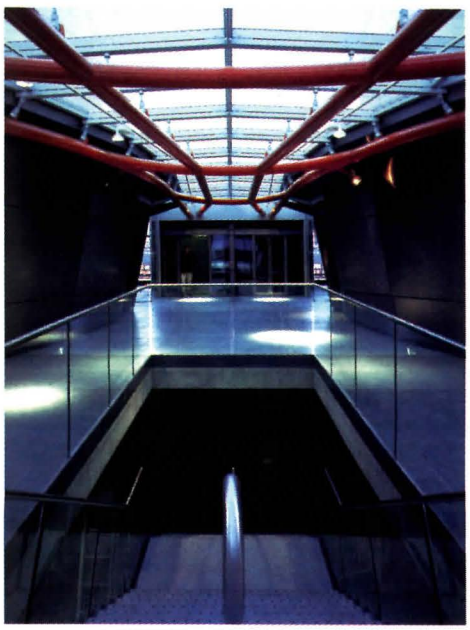


North-south section 18'/5m

When the time came to unveil the cladding on Britain's new National Centre for Popular Music in March, a hip-wiggling group of Elvis impersonators abseiled down the roof, whisking off protective black plastic sheets to reveal the gleaming steel panels beneath. It was a suitably theatrical stunt, worthy both of Elvis, the first real rock star, and Nigel Coates, one of Britain's most radical and rebellious architects. The newest building by his firm, Branson Coates, a $13.7 million homage to pop music and its culture, is part of a visionary plan to regenerate the northern English city of Sheffield. His exploration of a futuristic baroque architecture that alludes to Sheffield's industrial past also marks his eagerly anticipated entry into large-scale work, following a succession of fashionable shops, bars, and restaurants in England and Japan that earned him an admiring, if occasionally lurid, notoriety. Now, although less of a full-time enfant terrible, his edgy work still explores transience, glamour, and the themes and rituals of urban life.

Historically devoted to metal bashing of the distinctly unmusical sort, Sheffield grew prosperous in the 19th century as the first great British manufacturing center for heavy steel, cutlery, and tools. Steel processing now employs a fraction of the original workforce, and the city is riven with economic and social decline. Since the mid-1980s, however, Sheffield has been doggedly resuscitating its rundown the city center. To give the regeneration program a more conspicuous public focus, the city council conceived a museum of pop to capitalize on the city's evolving character in an accessible, populist way. Branson Coates' design was selected in a 1996 competition held by Music Heritage, a new organization partially funded by Britain's National Lottery.

Peeking provocatively above the surrounding buildings, Coates' slightly tipsy quartet of stainless steel drums are imme-



diately identifiable, setting up tantalizing vistas in the nondescript cityscape. The 4,000-square-meter museum's muscular, faceted forms are abstractly reminiscent of the great blast furnaces that were once a familiar part of the city's industrial landscape. The lower portions of the two-story drums are glazed like shopfronts, while the upper parts are clad in 2-millimeter-thick stainless steel panels—forged in Sheffield—that act as a rain screen cavity wall. Each 22-meter-diameter drum is canted outwards at a 4 degree angle from vertical. Each drum is crowned by a sleek ventilation cowl that automatically swivels to take advantage of wind direction, funneling air down into the exhibition spaces inside the drums and later expelling warmed air that circulates up through them. The omnidirectional nature of the design gives the building a self-regarding, monumental quality that energizes the featureless context.

Combining disparate functions and experiences—museum, video arcade, auditorium, cinema, diner, and shopping mall—the center is a typological hybrid. Like pop music itself, it embraces the materialist cultures of shopping and clubbing, yet also manifests visible street presence and credibility. Coates' plan embodies an elemental, almost diagrammatic simplicity. The building is loosely organized into four themes—education, celebration, entertainment, and information. The compact quartet of drums surrounds a cross axis of circulation, bringing public space into the heart of the site. The ground floor is open and inviting with two cafés, a shop, classrooms, and temporary exhibition space. Above are the three themed exhibition halls and a theater. The drums' hermetic, black-box interiors are linked by the interstitial cruciform, which is glazed over to create a luminous galleria.

Pop is a rapidly mutating phenomenon, a brash butterfly impossible to pin down, so the character and content of the exhibition spaces will necessarily change over time. Creative Director Tim Strickland anticipates that everything will be replaced over a five-year cycle and Coates' flexible, neutral containers seem eminently capable of adapting to change. "[The building] is about the experience," Coates explains, "not some stuffy idea of eternal principles." Elvis would doubtless have approved.

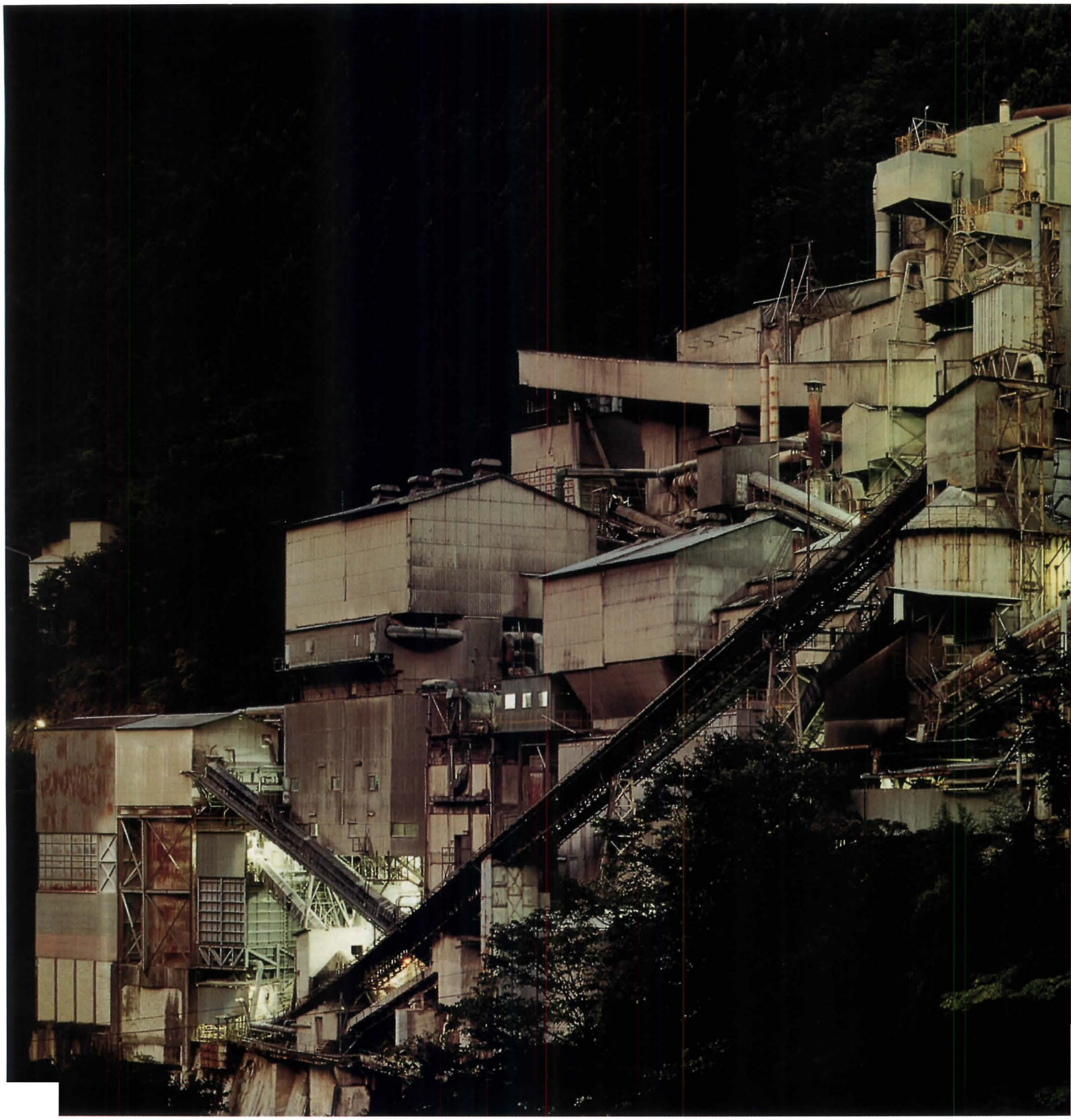
Sinuous network of tubular steel members supports glass roof over interior promenade (these pages). Inside quartet of stainless-steel drums are black-box exhibition spaces and theater.

NATIONAL CENTRE FOR POPULAR MUSIC, SHEFFIELD, ENGLAND
CLIENT: Music Heritage **ARCHITECT:** Branson Coates Architecture, London—Doug Branson, Nigel Coates (principals), Allan Bell (project architect), Guy Dickinson, Dave Hughes, Mick Haley (design team) **ENGINEERS:** Buro Happold (structural); Max Fordham & Partners (mechanical, electrical) **CONSULTANTS:** Paul Gillieron (acoustics) **GENERAL CONTRACTOR:** HBG Higgs & Hill Northern **COST:** $13.7 million **PHOTOGRAPHER:** Graham Gaunt

THE GHOST OF THE MACHINE PHOTOGRAPHS BY NAOYA HATAKEYAMA

Look at the photograph by Bernd and Hilla Becher on the cover of this magazine, and you'll see the origins of modern architecture staring back at you. This German couple has been taking pictures of industrial buildings for three decades: black-and-white mug shots of blast furnaces, water towers, and chiller plants grouped according to building type, like portraits of family members related by form and purpose and the threat of obsolescence. | These are the buildings, or at least the descendants of the buildings, that inspired pioneers of modern architecture such as

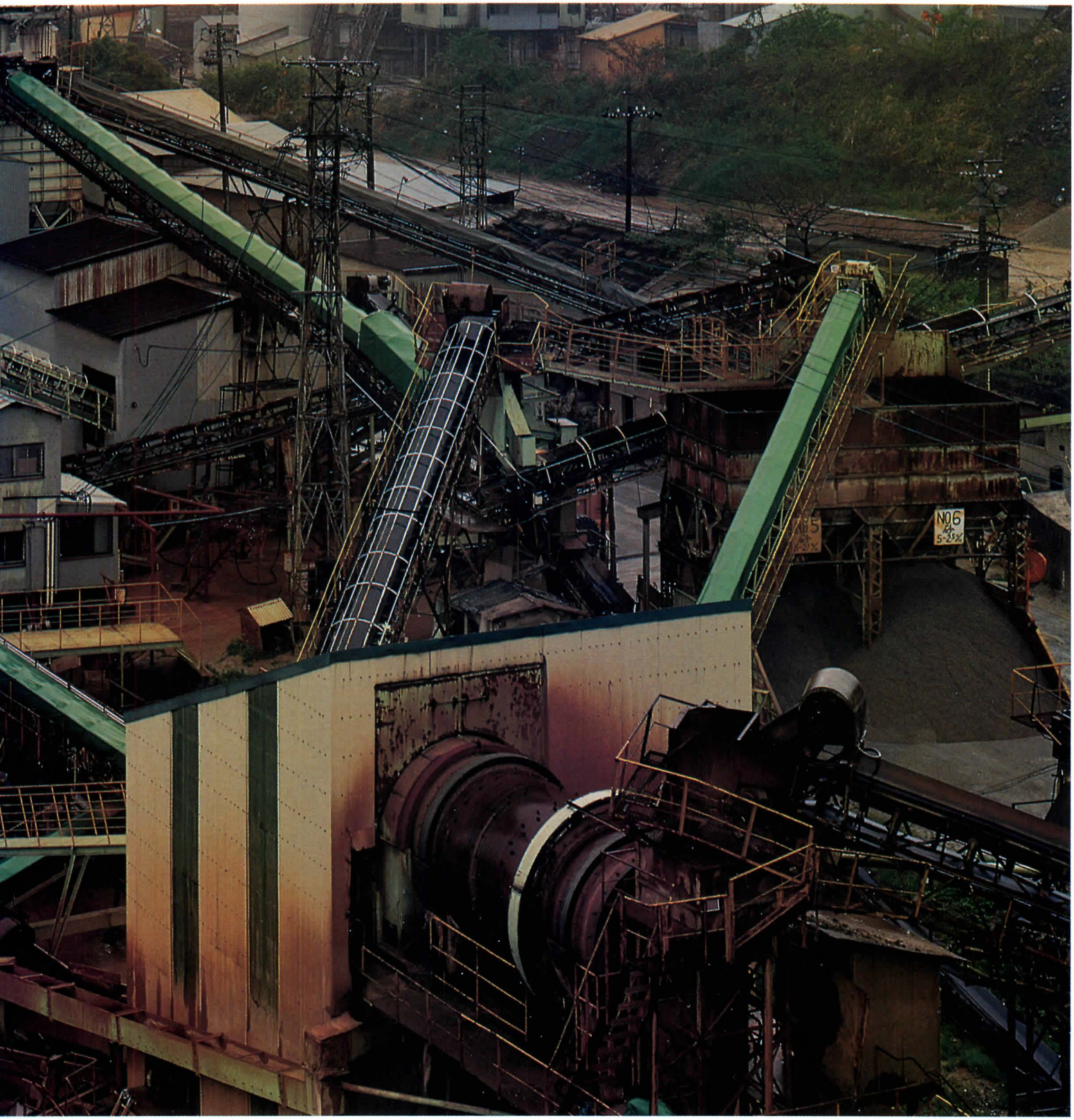
Peter Behrens, Walter Gropius, and Le Corbusier. Their faith in technology and progress was so unshakable that the Italian Futurist Filippo Tomaso Marinetti could make a modern epiphany out of crashing his car into a factory ditch: "Oh beautiful, maternal factory ditch, how greedily I tasted your fortifying mire," he intoned like a latter-day mystic. "When I emerged, ragged and sodden from the overturned vehicle, I felt the hot iron of a delicious joy pierce my heart." | The early moderns believed that to adopt industrial production methods, building forms, and building technologies was to embrace modern life, and would lead to the general betterment of mankind. Gropius's Bauhaus school in Dessau, Germany, updated the medieval trade guild to train the cultural craftsmen of the industrial age. Le Corbusier aimed to give workers an



appropriately industrial, affordable place to live through his concept of the house as a machine for living, built of standardized parts. | In his 1960 book *Theory and Design In the First Machine Age*, historian Reyner Banham exposed the fallacies and ultimate failure of the early modern era's adoration of industry. Accordingly, the buildings in the Bechers' photographs no longer represent the spirit of the times. Information technology has supplanted manufacturing as America's economic impetus, and architects who want to capture the 21st-century zeitgeist explore the formal and intellectual potential of the computer. Such sweeping cultural, social, and economic changes are what distinguish the Bechers' work from, say, Le Corbusier's photographs of Midwestern grain silos in *Vers une Architecture* (1923). Not only are the Bechers' photographs art,

as opposed to illustration, they are also, inversely, representations of what has come to be considered artwork—the factories themselves. Instead of Tony Garnier's optimistic, utopian *Une Cité Industrielle* (1918) or William Morris's reactionary novel *News From Nowhere* (1891), which wishfully described a future without machines, we're left with the pure, estheticized forms of industry, with the Bechers presenting blast furnaces as sculpture. | To look industrial no longer necessarily connotes, or even relates to, industry. Contemporary industrial buildings to which architects apply a straightforward modernist esthetic, such as Herzog & de Meuron's 1993 factory and warehouse for Ricola in Mulhouse-Brunnstatt, France, are virtually indistinguishable from museums that employ that esthetic as well. Having shipped most of the

actual functions of industry to developing countries, Americans in particular now elevate their remaining industrial buildings to the status of romantic ruins. SoHo lofts in New York City, cleared of sewing machines and child laborers, are now models of hip domesticity. And curators consider retrofitted factories and warehouses such as Bruner/Cott & Associates' new Massachusetts Museum of Contemporary Art, which occupies a 19th-century mill complex in North Adams, to be ideal settings for art. | Japanese photographer Naoya Hatakeyama's pictures of limestone quarries exult in the beauty of industry, but they don't obsess over the totemic quality of historic industrial building types the way the Bechers' work does. Hatakeyama leaves the history and social politics implicit in the Becher's work behind—he has exorcised the ghost



from the machine. His photographs are near abstractions of criss-crossed conveyor belts and pipes that demonstrate a raw formal appreciation of the esthetics of industry. Importantly, too, Hatakeyama subtly portrays the quarries as living places, not industrial memento mori: The workers have all left, but the plants, illuminated in the early dark of winter, carry on with their own mechanistic vitality. | Architects, too, grasp the continued vitality of industry. In some sense they have to, having inherited methods of construction that are largely unchanged from the industrial age. Even architects who design with computers still rely on, and largely delight in, the poetry of steel and concrete. They may not draw buildings like they used to, but they still build them that way. It is their medium, and they see the power of it. And that may be enough. —NED CRAMER

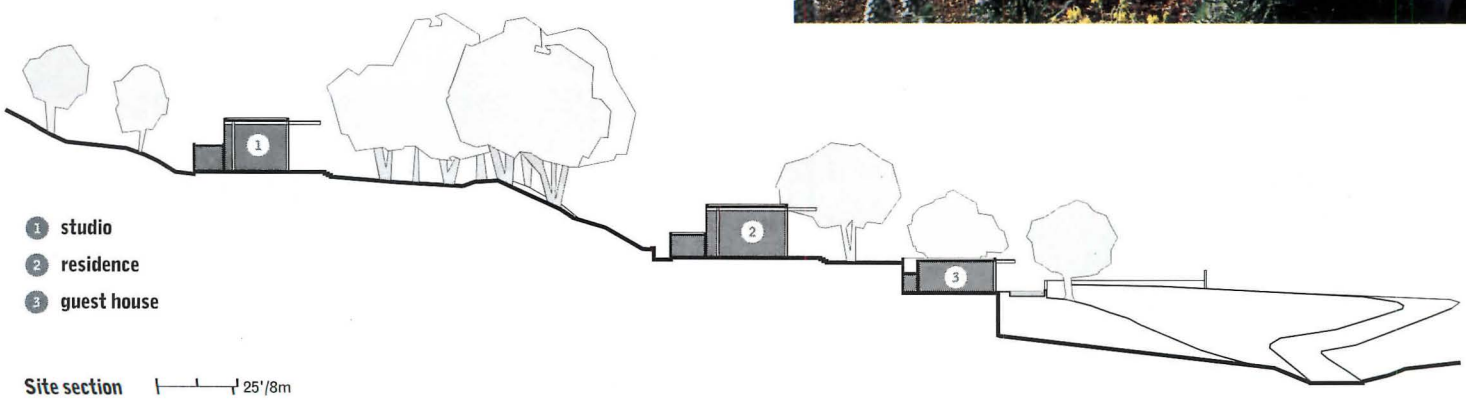
Customizing the Ready-made

A hillside retreat by Barton Myers

draws on multiple traditions of the postwar metal house. By Joseph Giovannini

Fire-resistant rolling shutters enclose studio pavilion (these pages). Shorter servant volume (at right) is finished in stucco; taller served volume (at left) is made of steel and glass.

Planes of water atop roofs of main house (above and top right) protect structures from wildfires. Large cantilevers shade glazed south facade (top right). Long reservoir pool (facing page) serves guest house (below right), lowest of three hillside pavilions.

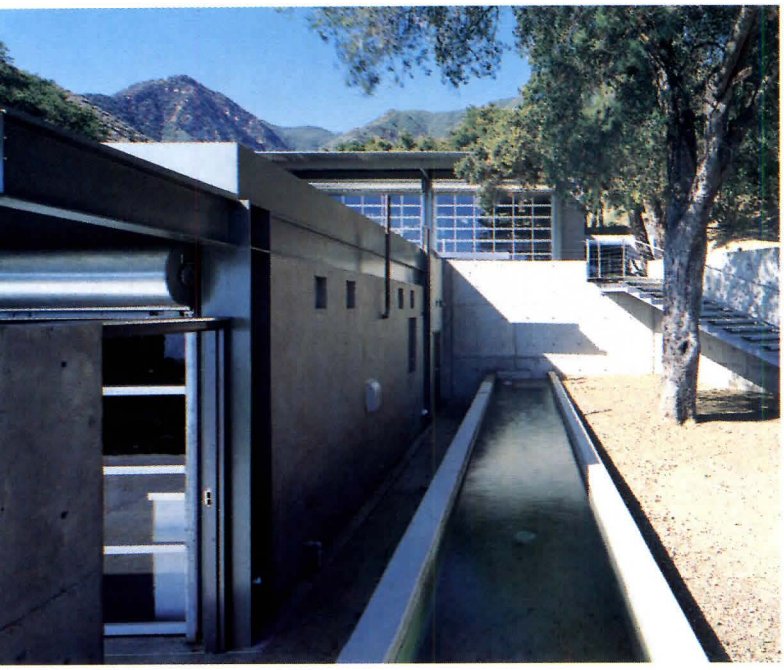


1 studio
2 residence
3 guest house

Site section 25'/8m

Louis Kahn asked a brick what it wanted to be ("an arch," it responded), but the master who was so faithful to masonry never queried steel about its aspirations. Speaking for Kahn answering for steel, Los Angeles architect Barton Myers recently offered an answer: "It wants to be light—you pay for steel by the pound." Myers, who studied with Kahn at the University of Pennsylvania and worked in his office, had to ask the question, because in a declarative return to his modernist roots, he designed his own steel vacation house in a canyon north of Carpinteria, California, in Santa Barbara County. Myers completed the house last fall.

Few building types have had greater resonance since World War II than the steel house. Ludwig Mies van der Rohe designed the Farnsworth House in the late 1940s at about the same time that both Charles Eames and Pierre Koenig were planning their own metal houses in Southern California. Myers' house addresses these precedents, as well as one from his own past: In the 1970s, Myers built a steel townhouse for himself in Toronto, inspired by Charles Eames's off-the-shelf approach to architecture. Myers again took up the Eames precedent in Carpinteria, working with off-the-shelf products out of context. Nonetheless, he proceeded to critique his inspiration to edge it onto new ground.



Myers' sloping site comprises 40 oak-studded acres on the slopes of a canyon overlooking the Pacific, which invites an open relationship with the interior. To mitigate the impact of nearly 6,000 square feet of structure on the site, Myers created three pavilions—house, studio above, and guest house below—which he dispersed on existing pads set among the live oaks. He built each roof as a permanent shallow pool and, together, the half dozen roofs step down the hillside like terraced reflecting ponds.

Myers also factored another overlooked steel precedent into his complex design equation. Inspired by the crisp, clean Mobil stations designed and built several decades ago by Eliot Noyes, Myers fronted his pavilions with monumental, 19-by-14-foot glazed garage doors. Above each, he placed steel shutters—like Renaissance window cornices—that could be rolled down in case of fire or when the Myers are away.

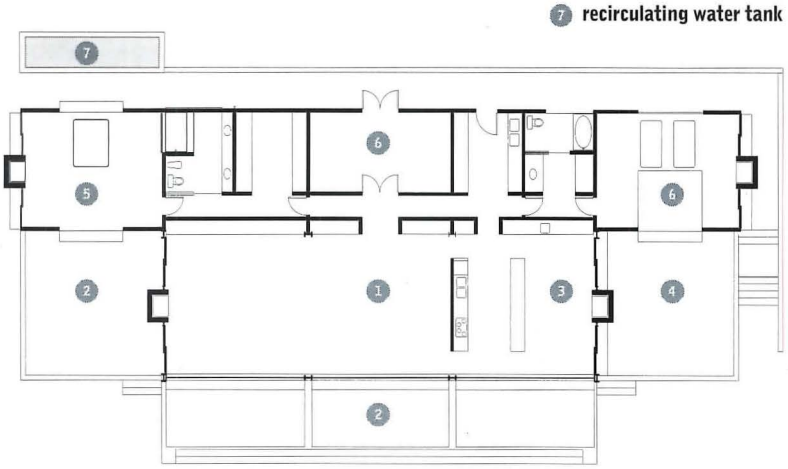
Myers turned to steel, he says, "in a reasonable, rationalist way, striving for lightness, looking to connect the pieces." But he organized the entire parti according to principles learned from Kahn, who characteristically separated buildings into served and servant spaces. Thus, the principal interior space of each pavilion is an open, column-free loft, backed by a smaller volume attached to the rear. In the main house, three bedrooms and three bathrooms form a 100-foot-long, 10-foot-high, stucco-clad bar that stretches beyond the 60-foot-long main room to capture ocean views for the bedrooms. Myers kept the main space clear, placing only an 8-foot-high kitchen wall to one side of the 17-foot-tall room to subdivide the loft into a large space and a more intimate sitting area. The main volumes of Myers' pavilions are served by the shorter structures, and these major and minor volumes themselves are served by exterior chimneys that house fireplaces and heat pumps.

Myers' details are expedient rather than idealized, more like informal industrial sheds than Mies's godly structures. "Mies buried the structure and refaced the steel, so you only see stylized coverings," observes Myers. "I'm showing how the building was assembled. I wasn't striving for purity."

The architect's reinterpretration of the steel house, however, is robust rather than warmed over, the result of successive hybridizations. One reason is scale: Folding the Mobil stations into his thought process resulted in much bigger volumes than the fragile and domestic designs by Mies and Eames. Myers also achieved vigor by separating the bedrooms from the steel living volumes; the served-and-servant strategy of juxtaposed, short and tall volumes allows him to join the typologies of loft and house. The architect then splices that blend into the tradition of the steel house, which had evolved before the concept of lofts rooted in contemporary life. Myers' design thus is a multiple hybrid of Eames and Kahn; open and conventional plans; and loft, house, and gas station.

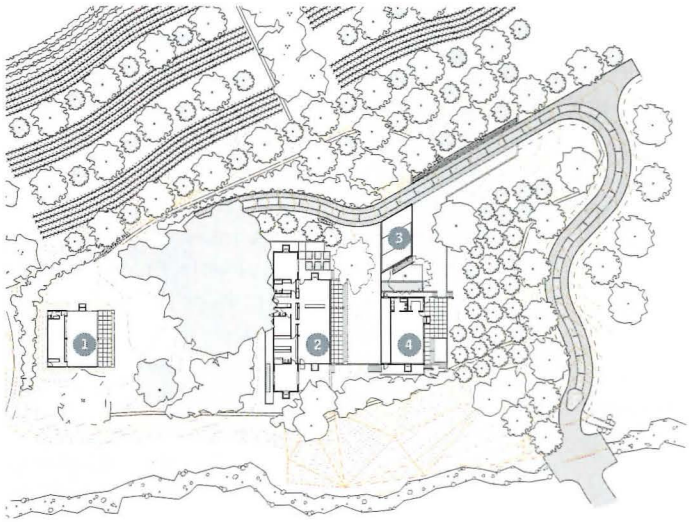
With this new home, Myers has added a new precedent to the edifice of steel architecture. In what would seem to be a tradition already crowded by modernist masters, the very literate Myers has succeeded through a process of commentary, reference, and cross-fertilization in writing a sequel chapter in steel house design. Contrary to first impressions, it is a book that remains suggestively open.

1. living/dining area
2. terrace
3. kitchen
4. garden
5. main bedroom
6. guest bedroom
7. recirculating water tank

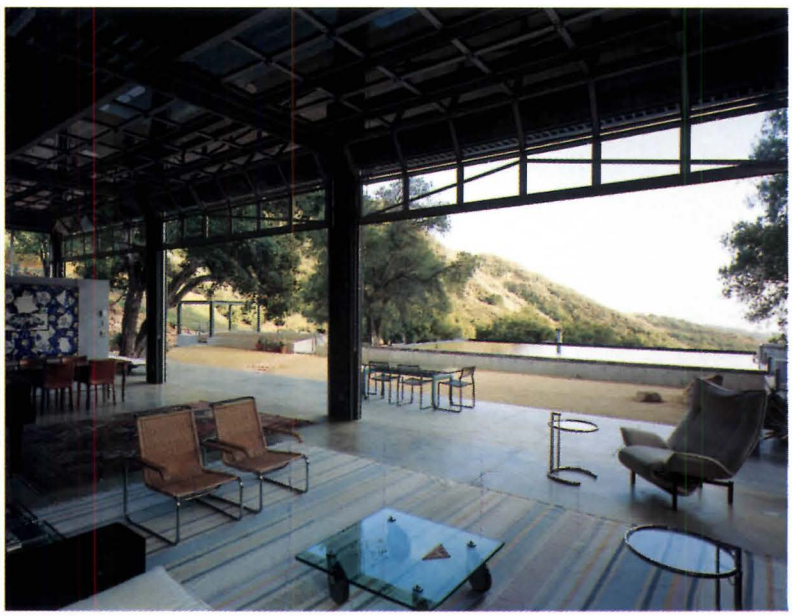


Ground-floor plan of residence 11'/3m

1. studio
2. residence
3. garage
4. guest house

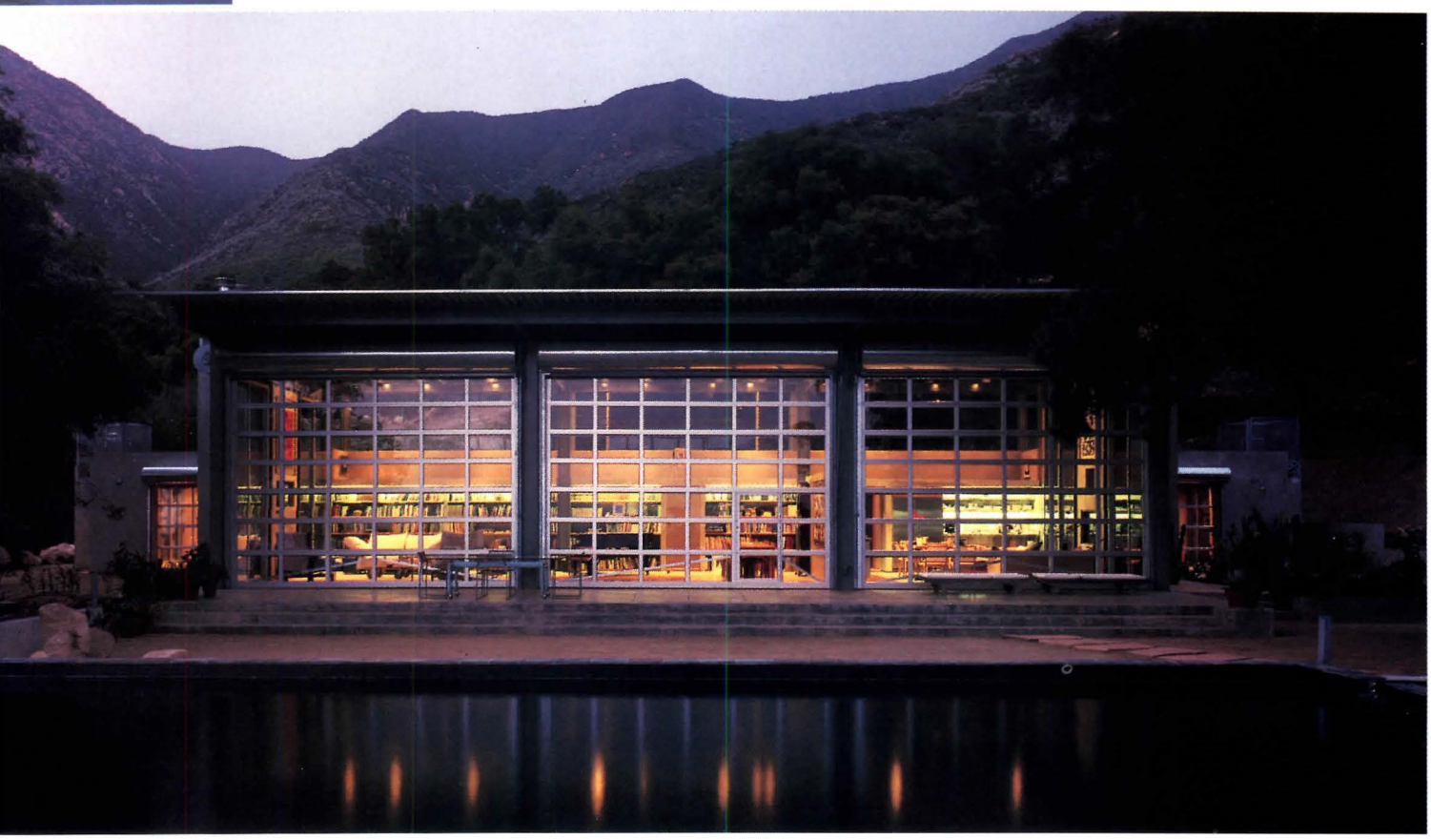


Site plan 60'/18m



949 TORO CANYON HOUSE, SANTA BARBARA COUNTY, CALIFORNIA
CLIENT: Barton and Victoria Myers **ARCHITECT:** Barton Myers Associates, Beverly Hills, California—Barton Myers (principal-in-charge), Clint Wallace (project architect), Don Mills (project coordinator), Cal Smith (construction coordinator), Aaron Campbell, David Karp, Stuart Royalty, Will Shepphird (project team) **LANDSCAPE ARCHITECT:** D.G. Richardson; Victoria Myers **ENGINEERS:** Epstein / Francis & Associates (structural); Ove Arup & Partners (mechanical); Barton Myers Associates (electrical); Norman H. Caldwell (civil); Pacific Materials Laboratory (soils) **CONSULTANTS:** Frank Bacchilega (construction supervisor); Adamson & Associates (cost); Finish Hardware Technology (hardware) **GENERAL CONTRACTOR:** R.H. Coffin **COST:** Withheld at owners' request **PHOTOGRAPHER:** Grant Mudford

Rolling, glazed garage doors that enclose main house's south facade (above and below) open onto patio with lap pool. Living and dining area (facing page, left and right) is conceived like loft, with large, open room divided only by low kitchen wall.



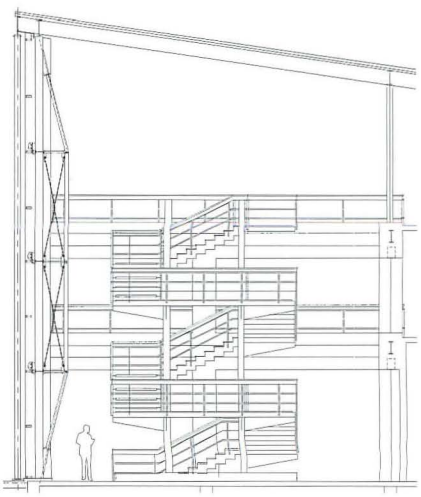
To illuminate 350,000-square-foot factory floor, Booth Hansen raised roof in six places, creating clerestories (this page). Steel-frame structure stands free of ribbon-window and corrugated-steel south facade (facing page).

Booth Hansen infuses a window manufacturer's assembly line with civic grandeur. By Edward Keegan

window box

"It's a five-minute design problem," says architect Larry Booth of his $25 million building for Republic Windows and Doors, which opened last June just two miles northwest of Chicago's Loop. While Booth, design principal of Booth Hansen Associates, initially thought the straightforward program called for a big box, his client, Republic's Executive Vice President Rich Gillman, was looking for a bit more. "I wanted it to go like this," Gillman explains, holding his hands six inches apart—one parallel to the ground, the other at a slight angle. Booth recognized this notion's potential to enliven the box, and today the company occupies a 350,000-square-foot, metal-clad plant on Goose Island in the Chicago River that evokes Gillman's gesture.

Booth disavows any direct inspiration from the factories of the early modernists, and instead cites the work of Ludwig Mies van der Rohe as his esthetic model. His solution is,



Section through entrance hall 8'/2m

appropriately, elemental in its simplicity. The building's steel-framed structure effects a 40-foot-square grid. Most of the plant, where 700 employees manufacture and sell vinyl windows, comprises a 24-foot-tall, single-story space; on the building's south edge, three floors of offices stack beneath the splayed roof.

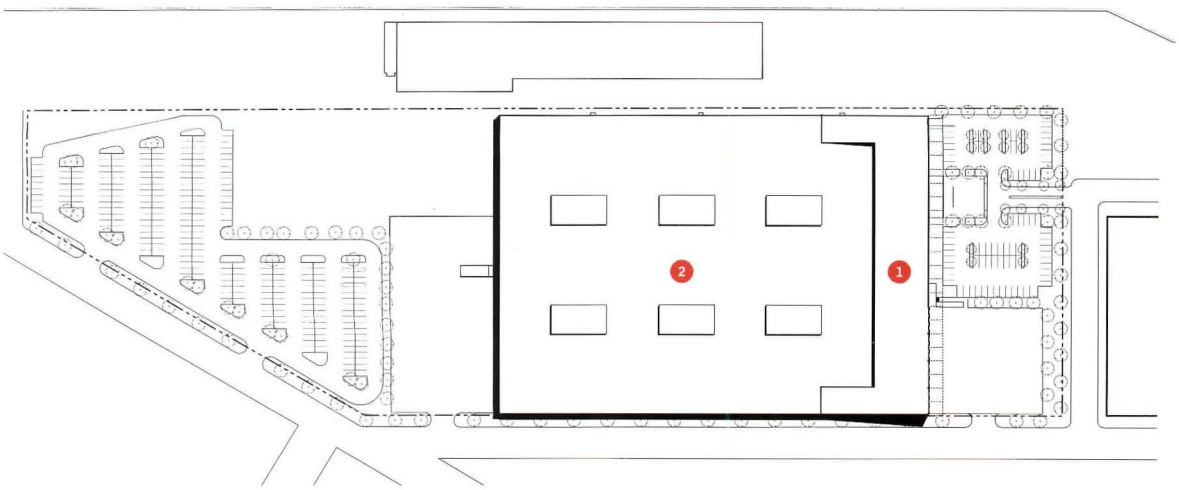
"Mies jumped from a diagram of an idea to a detail," notes Booth. Like Mies, Booth's plan diagram is simply the grid—extruded to meet his client's specific space needs—and his essential detail is a stock steel *W*-section that he uses for columns on the building's facades. Booth separated these exterior columns from the facade and allowed the horizontals of ribbon windows and corrugated siding to slide behind the columns, effecting a compelling pattern of light and shadow.

The south facade, nearly twice the height of the rest of the building, features Republic's corporate entrance, monumentalized by Booth's one rhetorical flourish: A 50-foot-tall colonnade supports a sunscreen, inclined to match the slope of the roof. This potentially gratuitous gesture (it is of no practical import) imbues the structure with what Booth terms "a civilized presence."

Mies van der Rohe considered the grid a universal solution applicable to residential, commercial, and industrial buildings. Booth's appropriation of this precedent allows him to manufacture a rationale to fit his structure's needs—he considers the building's gridded organization a metaphor of the activities within. "It relates to people on the assembly line doing repetitive tasks and the guys in the office adding up numbers," he explains. Mies's influence waned because his severe brand of simplicity could be banal just as often as it was elegant. Booth walks this thin line with aplomb; he develops steel details that recall but don't directly mimic Mies and deploys them with careful attention to the proportions between the detail and the whole. These critical subtleties elevate what could have been just a simplistic box into a well-reasoned building that has learned its modernist lessons well.

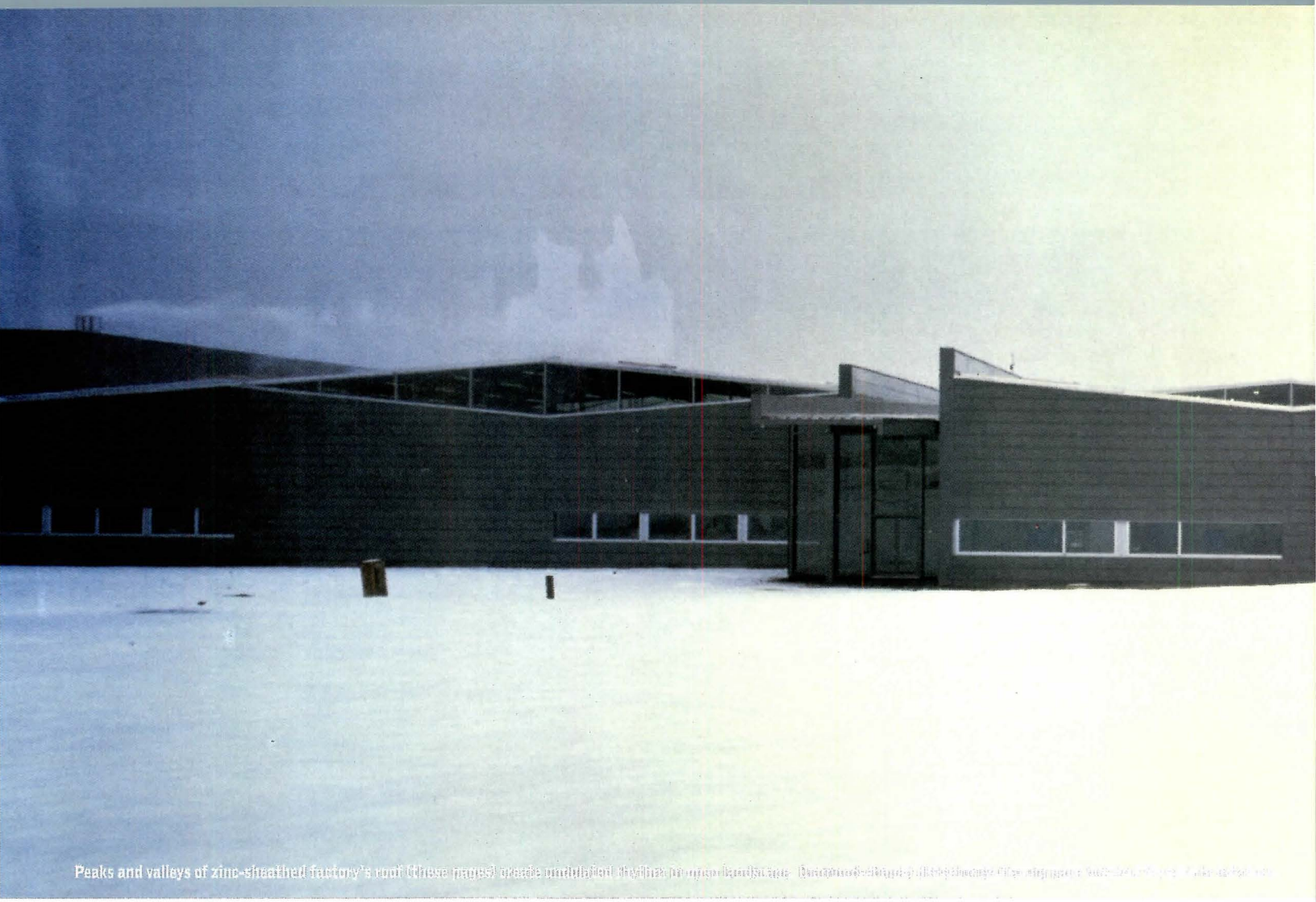
Miesian steel colonnade fronts main entrance and three stories of offices (above) as well as loading docks (facing page, top). Offices overlook entrance hall (facing page, bottom right), and are connected by cantilevered steel stair (facing page, bottom left).

REPUBLIC WINDOWS AND DOORS, CHICAGO
CLIENT: Republic—Ron Spielman (president), Rich Gillman (executive vice president)
ARCHITECT: Booth Hansen Associates, Chicago—Laurence Booth (design principal), William Ketcham (project manager), David Mann (project architect), Richard Fost, Kerl Lajeune (project team)
LANDSCAPE ARCHITECT: Wolff / Clements & Associates
ENGINEERS: TT-CBM (structural); Advance Mechanical (mechanical); Metro Design (electrical); SDI Consultants (civil)
CONSULTANTS: Hendler Design (interiors)
GENERAL CONTRACTOR: Wooten Construction
COST: $25 million
PHOTOGRAPHER: Greg Murphey



1 office wing
2 factory floor

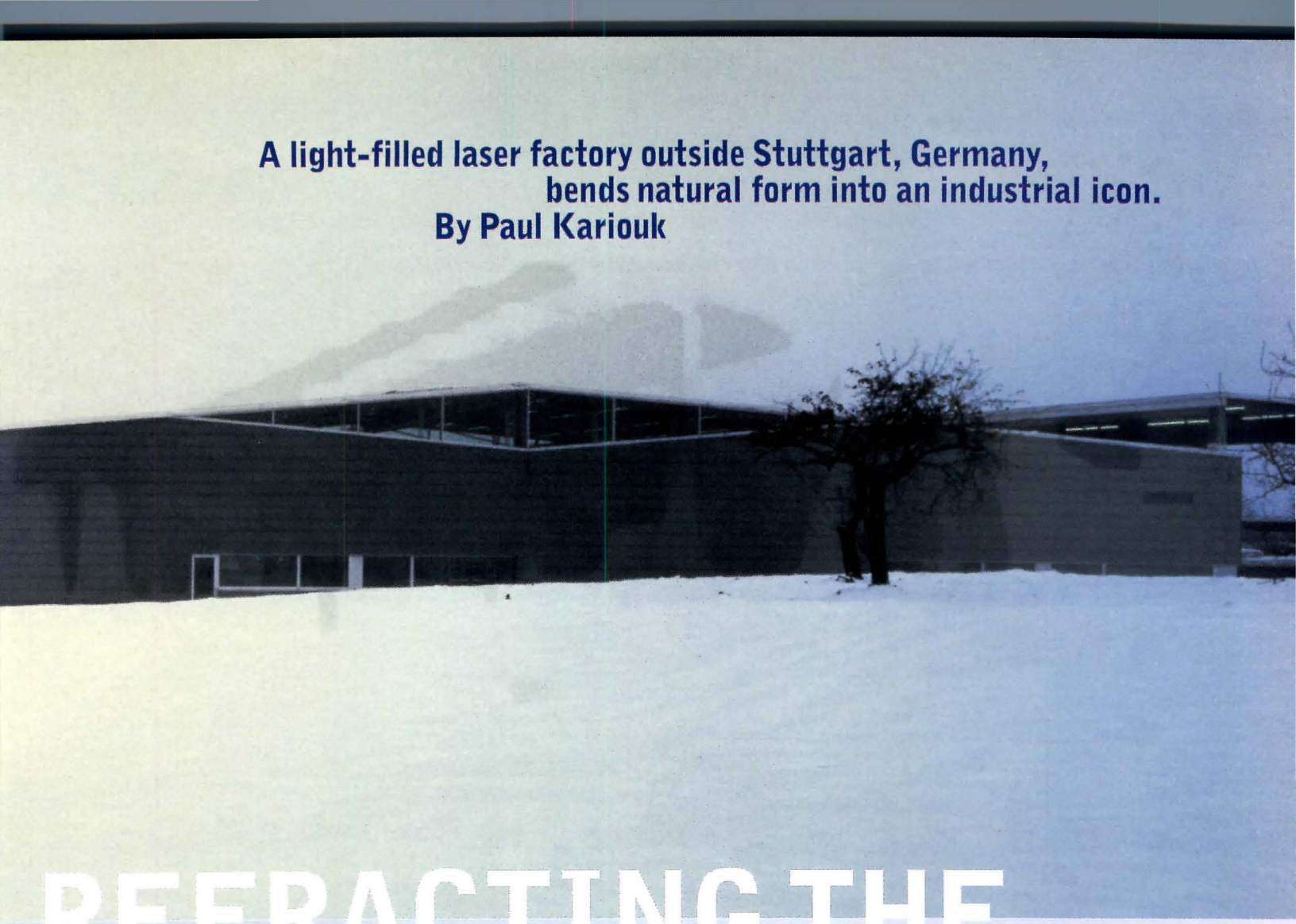
Site plan 55'/17m



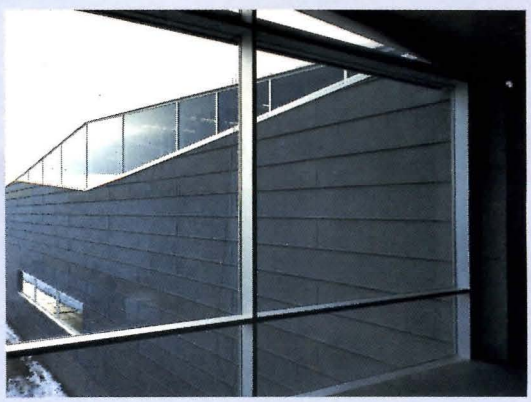
Peaks and valleys of zinc-sheathed factory's roof (these pages) create undulant skyline in miniature.

A light-filled laser factory outside Stuttgart, Germany, bends natural form into an industrial icon.

By Paul Kariouk



REFRACTING THE LANDSCAPE



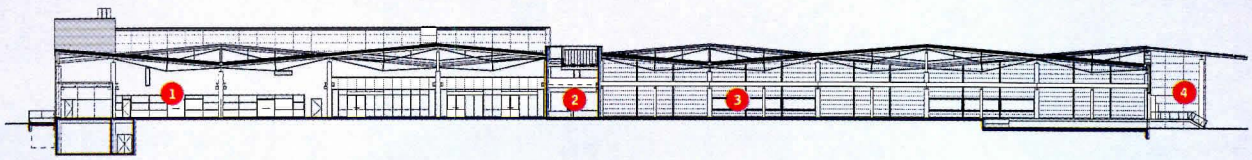
Large metal canopy (top) shelters loading dock that services storage hall at south end of factory. Horizontal bands of zinc clad shedlike structure. Inside storage area (above), gently folding planes of standing-seam aluminum roof create diamond-shaped clerestories that fill vast interiors with daylight. Site plan (facing page) reveals pattern of offset, staggered bays of factory addition, which echoes patchwork of surrounding farms. Tunnel beneath access road connects existing campus to east with new annex. Future expansion will fill open space to west. *Autobahn* is south of factory.

Nature has not figured prominently in the ongoing dialogue between modernism and industry. Die-hard modernists might draw formal inspiration from an engine assembly, but rarely from a rolling, bucolic landscape. It was vegetable fields, however, that drove Berlin-based Barkow Leibinger Architects' design of a factory for high-tech manufacturer Trumpf, near Stuttgart, Germany. The flexibility the architects observed in the plot system of surrounding farmland proved the ideal model for master planning Trumpf's new facilities, which called for adaptability for unknown future needs. Formally, Barkow Leibinger's buildings at once seem to grow from the landscape and recede into it.

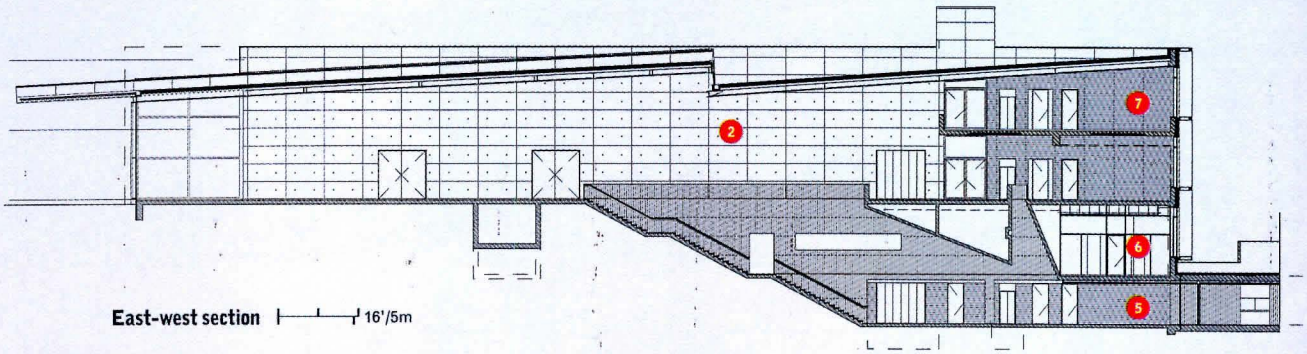
Trumpf, which provides machinery to the automotive and aerospace industries, develops advanced metal, glass, and plastic cutting equipment; it was their growing laser division that provided the catalyst for a $20 million, 160,000-square-foot expansion of its production and storage facilities. The company challenged the American-German firm (*Architecture*, April 1998, pages 90-91) to orchestrate a master plan that would meet its long-term needs and address Trumpf's existing campus, a collection of 1970s and 1980s corporate-boredom style structures that offered little design guidance.

The architects found stronger ideas from reading the site. The five acres Trumpf acquired for their expansion

1. laser production hall
2. corridor
3. storage hall
4. loading area
5. tunnel
6. employee entrance
7. conference room

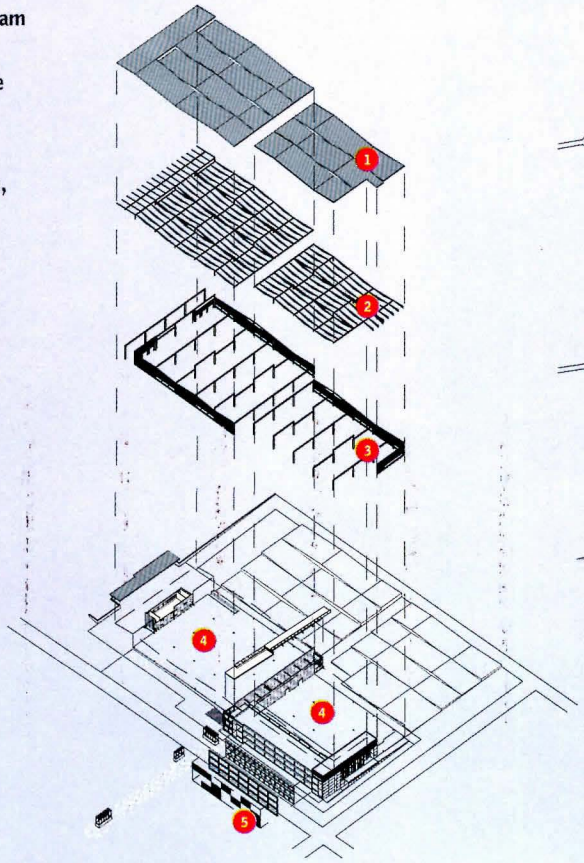


North-south section 33'/10m

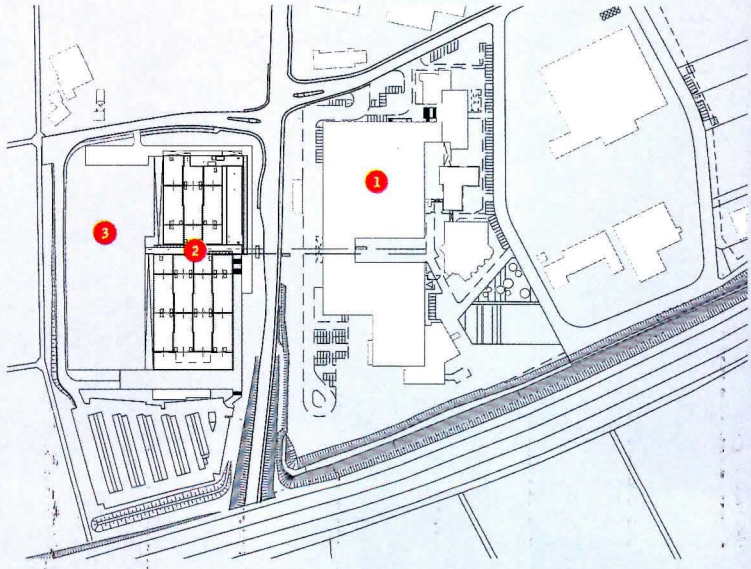


East-west section 16'/5m

1. folded standing-seam aluminum roof
2. steel roof structure
3. zinc cladding and concrete columns
4. offices, production, and logistics halls
5. tunnel and light chimneys



Exploded axonometric



Site plan 150'/45m

1. existing campus
2. new factory
3. future expansion

Circulation spine lined with offices (facing page, left inset) and central corridor (facing page, right inset) demonstrate play of light on concrete. Stair (facing page) leads to underground passage that connects new factory to existing campus. Elegantly restrained exterior of entrance lobby and office wing (above) is Barkow Leibinger's sole note of formality: Aluminum-framed brise-soleils, stainless-steel mesh screens, and operable, exterior louvers complement precast concrete and glass curtain wall.

Debut

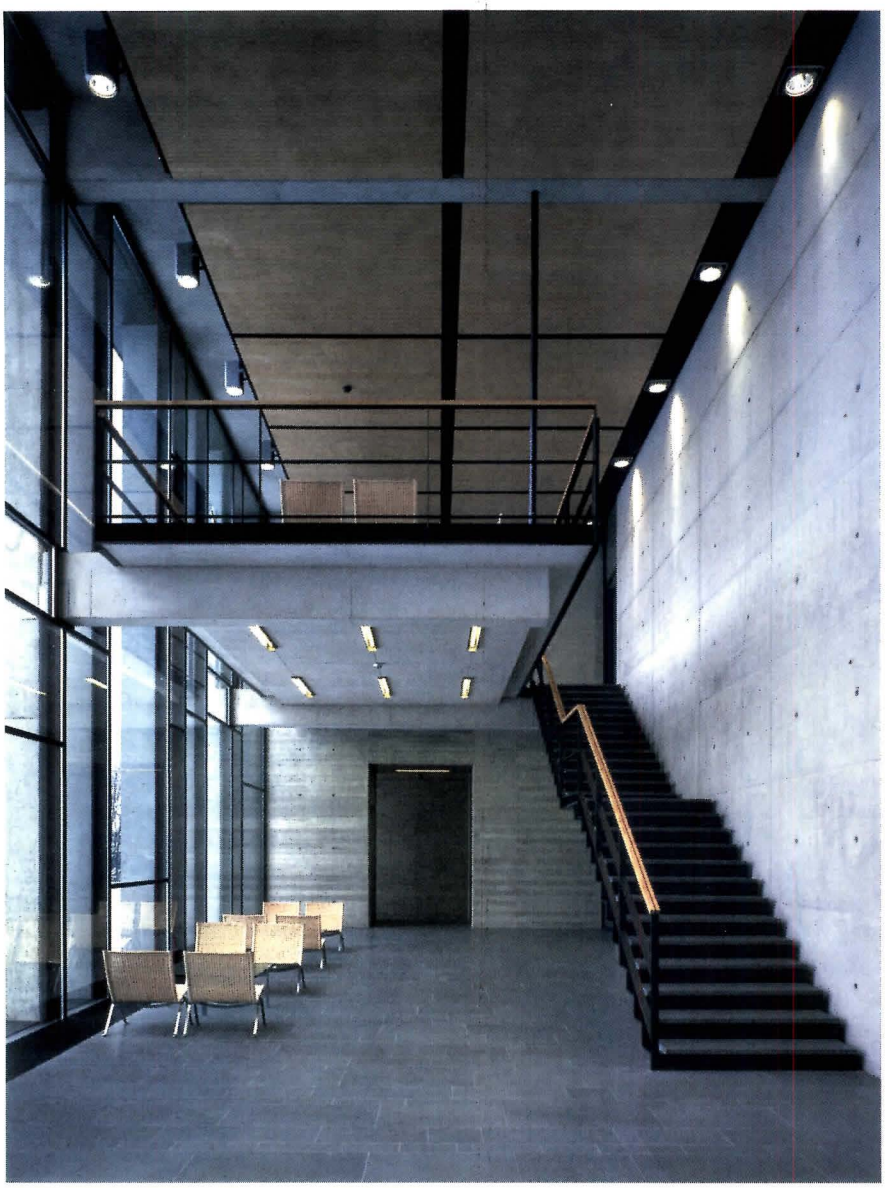
Barkow Leibinger Architects

Founded: 1992
Location: Berlin, Germany
Staff: eight architects, one assistant, one intern
Principals:
Frank Barkow,
Regine Leibinger

Barkow Leibinger is designing 36,000-square-foot training facility (above) for Trumpf's North American operations.

Frank Barkow and Regine Leibinger met as students at Harvard University's Graduate School of Design in 1989. In 1992, a friend in Stuttgart asked the couple to codesign an apartment building in Berlin. The fall of the Berlin Wall soon after provided further opportunities for the young firm, which began renovating Soviet-era apartment buildings in the former East Germany.

In 1998, Barkow Leibinger earned a P/A Awards citation for a kindergarten and youth center, designed with New York City-based Douglas Gauthier Architect (*Architecture*, April 1998, pages 90-91). "The kindergarten and youth center project allowed us to explore building in wood—something quite new in Berlin," explains Barkow. In the same year, they won an invited competition for the American Pavilion at Expo 2000 in Hannover, Germany, controversially succeeding New York City's SITE (*Architecture*, February 1999, page 57). The firm currently has several industrial design and renovation projects under way in Germany and the United States, including a 60,000-square-foot biosphere in Potsdam, Germany, and a Trumpf America training center in Farmington, Connecticut. *Samuel W. Barry*



Austere yet polished double-height entrance lobby on northeast corner of building (above) is formal gateway to new facility. Underground passage (facing page) that connects annex to original Trumpf campus is de facto pedestrian entrance to new facility. Opalescent glass light chimney washes concrete walls of tunnel, creating luminous passage.

TRUMPF LASER AND LOGISTICAL CENTER, STUTTGART, GERMANY
CLIENT: Trumpf **ARCHITECT:** Barkow Leibinger Architects, Berlin—Frank Barkow, Regine Leibinger (principals), Josephine von Hasselbach, Katja Pfeiffer (project architects), Jeremy Carvalho, Joel Cichowski, Michel Obladen, Susan Ross (project team) **LANDSCAPE ARCHITECT:** Büro Luz **ENGINEERS:** Hans Lück (structural); M+M (mechanical) **CONSULTANTS:** Wolfgang Sauer (construction); Karl Maier (interiors); Tinka von Hasselbach (artist) **GENERAL CONTRACTOR:** Harms & Partner; Klaus Weigel **COST:** $20 million **PHOTOGRAPHER:** Margherita Spiluttini

is a patchwork of small, discrete plots of farmland. Barkow Leibinger emulated the staggered tracts in the organization of their master plan, conceiving the site as woven from individual "parcels" measuring up to 45,000 square feet, which could be built on or left open. The parcels are offset from each other like plots on the neighboring farm; and like their agricultural counterparts, which yield a single crop, each of Barkow Leibinger's parcels contains a single function: production or storage areas, offices, or outdoor space.

The production and storage spaces are a series of staggered shed-blocks. Seen at a distance, their prismatic roofs and broad, horizontal masses mimic the hills around them. Separating the buildings are interstitial spaces that accommodate open-air egress routes and loading areas, as well as enclosed circulation, offices, and service spaces. Larger gaps that measure up to 45 feet in width are conceived as fallow areas, which will soon yield outdoor recreation facilities.

In the vast halls that contain production and storage areas—by far the factory's most dramatic spaces—light flows in through diamond-shaped clerestories that mark the junction of ridges and valleys in the folded aluminum roof. Rainwater is channeled from the roof into cisterns and later used to cool laser equipment inside the factory. The large scale and luminous atmosphere of the work areas make them feel more like outdoor spaces than industrial sheds.

Barkow Leibinger elevates the factory beyond the workaday through a restrained choreography of light and simple materials. In offices and hallways, for instance, daylight brings out subtle changes in the texture and grain of poured-in-place concrete surfaces. A series of steel and opalescent-glass light chimneys illuminate the underground link to the original headquarters. Exquisitely crafted details are scaled to the human body rather than to machinery: The most frequently touched elements, such as stair rails and door pulls, are made of finely joined woods.

According to design principal Frank Barkow, the Trumpf factory describes a change in attitude toward the binds between modernism and industry. Modernist architects in the 1920s "appropriated industrial building types," notes Barkow. "In the late 20th century, this dialectic has been reversed: The lessons of modernism are now applied to industrial architecture."

Barkow Leibinger's industrial landscape is maturing rapidly: Two blocks of the complex are now complete, a third is under construction, and a fourth is on the boards. As the facility expands westward into a rising hill, the architects will have to berm future buildings into the hillside to keep floor levels uniform throughout the complex—a fact that will yield a stronger, if more literal, link between building and site. As their elegant, folded roofs merge into the landscape, the structures that seem to grow out of farmland will ultimately return to it.

Paul Kariouk teaches architecture at the University of Florida, and is partner in The Office of Architecture Et Al.

Common Good

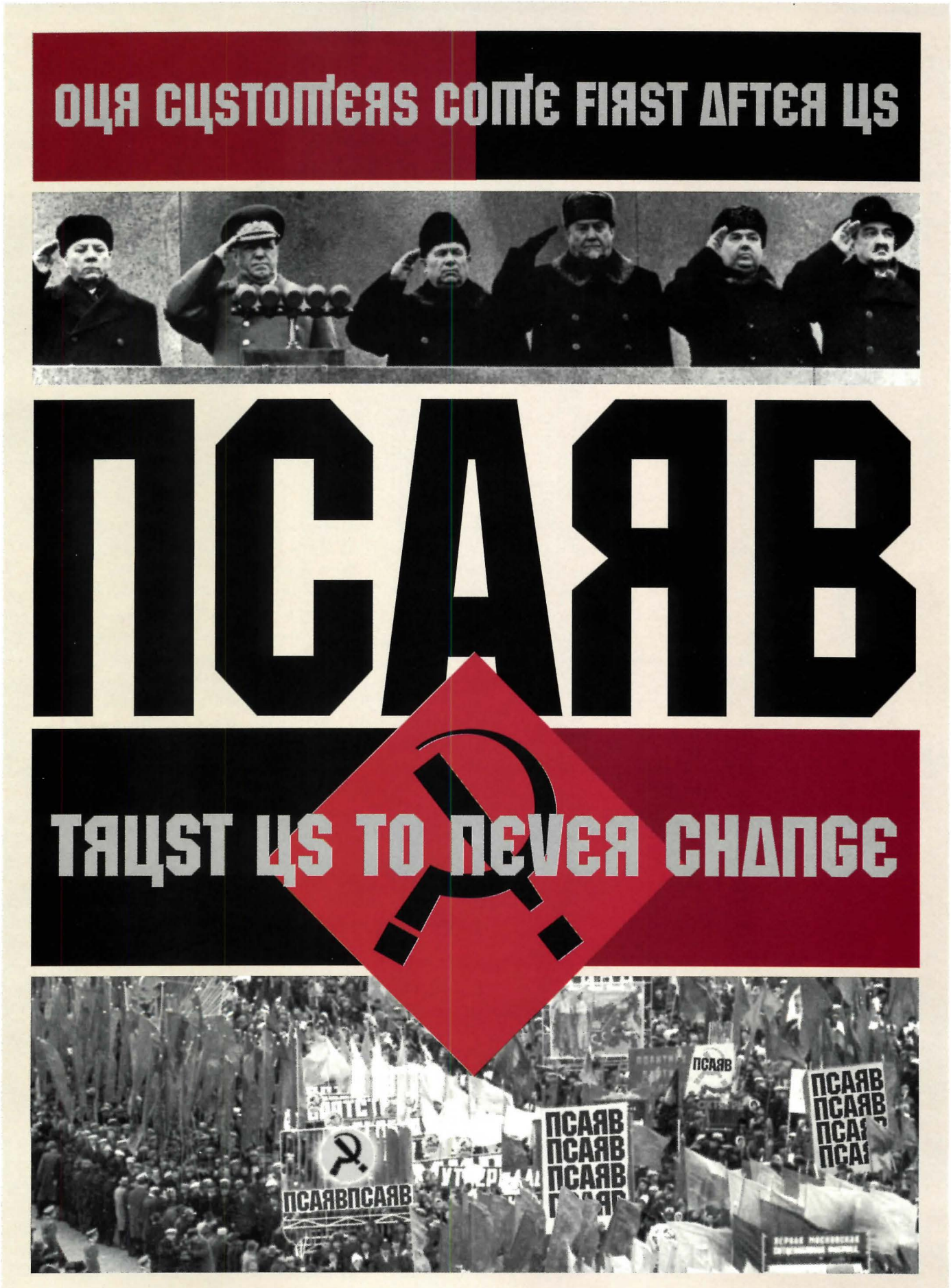
NCARB—an organization carried on the backs of state agencies and registered architects—operates in a secretive, undemocratic, and often less than sensible manner.
By Eric Adams

To many, the National Council of Architectural Registration Boards (NCARB) is a distinctly undemocratic institution. "At about the time the Soviet Union was falling apart a decade ago," recalls Chicago architect and long-time NCARB observer John Hartray, of Nagle Hartray & Associates, "I was talking to an architecture dean in Moscow. After I described the licensing process here in the United States, he suggested that NCARB was going to be the only Soviet agency still in existence. It's that complicated and convoluted."

NCARB boasts a long, and at times distinguished history, but it is marred by secrecy and bad decision-making. Its place in the architectural community is at once clearly defined and mysterious. "The clarity comes from NCARB's three main responsibilities: managing the labyrinthine Intern Development Program (IDP); administering the costly Architect Registration Exam (ARE) under the flag of "public health, safety, and welfare" (*Architecture*, May 1999, pages 150-154); and regulating reciprocity certificates for multistate registration (for which architects pay NCARB $100 per year until they quit practicing).

But of the organization itself (who runs it, how well it operates, and what it spends its money on), very little is known by the general architectural community. The trickle of information that emanates from NCARB is directed mostly to the 55 U.S., U.S. territorial, and Canadian member boards (state-appointed registration panels) that the organization supports, in the form of a single-page fax every two weeks and the occasional, often incomprehensible financial audit. The general architectural community gets considerably less attention. Architects, who, as reciprocity certificate holders, contribute more than $3 million of NCARB's $8 million annual budget (the rest comes from state board dues of $3,000, IDP fees, monograph sales, and exam fees), receive little more than annual dues invoices and a twice-yearly newsletter. On a public relations level, NCARB's Web site is filled with information about how NCARB can serve architects—or rather, what architects must do to be served by NCARB—but nowhere is there any description about how NCARB operates or what its various committees are. There certainly isn't a staff directory or list of board members on the Web site. Considering that NCARB has influence over nearly every architect's career—from their registration exam up through their ability to practice architecture in more than one state—this is woefully insufficient.

It isn't that NCARB isn't trying. The organization's widely respected executive director, Lenore Lucey, has worked hard to improve the Washington, D.C.-based organization's performance in the two years since she took over from 25-year director Samuel Balen. Her efforts


ΟЦЯ CЦSTOMƐЯS COMƐ FIЯST ΔFTƐЯ ЦS
ПСΔЯВ
TЯЦST ЦS TO ПƐVƐЯ CHΔПGƐ
ПСΔЯВПСΔЯВ
ПСΔЯВ
ПСΔЯВ
ПСΔЯВ
ПСΔЯВ
ПСΔЯВ

The picture that emerges is one of an intended to support, member boards, private corporation or overlord that

include restructuring the 55-person staff, buying new computers, cutting costs, and focusing on customer service. "There definitely was a general perception that NCARB was unreachable and that there was a serious lack of timeliness," Lucey says. "We have hired an outside consultant to train people internally in customer service techniques for member boards, architects, and interns. This is an ongoing process that looks at how we do everything to see if we can do it better."

Many architects and member boards, however, still insist that NCARB has serious faults that will take considerably more effort to remedy. First and foremost, they have concerns about accountability. "NCARB is in financial trouble," claims Robert Longway, program administrator for the Colorado State Board of Architect Examiners. "When challenged with financial questions, they become vague and speak in generalities, or use figures that may not accurately represent the topic under discussion." As a result, Longway continues, there is little trust between NCARB and the member boards, and there is a very clear, widely held perception that NCARB does not share fundamental policy and finance information. "This creates a lot of suspicion among member boards. What are they trying to hide?" Longway asks. "NCARB administration and management have gotten themselves into a defensive and adversarial role with the membership. This cannot be good for NCARB's long-term health."

The picture that emerges is one of an organization partially financed by, and intended to support, member boards, but that behaves more like a mysterious private corporation or overlord that answers to no one. When you add in the current hot buttons of fiscal responsibility and fair state representation in NCARB decisions—currently, small states have the same vote as larger states with many more architects—things begin to look even more sinister, like a badly mismanaged government that claims to look after its people's interests but instead dispenses only propaganda, solicitations for product purchases, and demands for money. Most information about the organization's operations or finances seems to be presented either in self-defense against criticism, such as when NCARB comes under fire during member-attended meetings, or, most recently, within a plea for higher dues.

Fair representation

One of the first things one notices about the NCARB debate is a relatively clear division between camps. Virtually without fail, the states with the most architects—California, New York, and Texas—voice the greatest opposition to NCARB, arguing that the organization only looks after the interests of small states. Conversely, the states with the fewest architects voice the most support. The imbalance in numbers of architects is also at the heart of a serious debate about representation within NCARB. "The governance of that organization is crazy," John Hartray grouses, "because each state has only one vote. It's totally undemocratic."

Bill Martin, executive director of New York's Board for Architecture, agrees: "Right now, it's one state, one vote. So that means the Northern Mariana Islands have the same vote as California," he complains. This creates myriad problems, Martin explains, not the least of which is cronyism. "NCARB has been diligent in looking after the needs of the smaller states to the point where those states have just accepted everything the organization proposes. But larger states have different problems, and right now we're forced to struggle along on our own." Those problems, he explains, range from more complex state legislatures to different cultural and practice issues to bigger budgets.

Another key complaint is NCARB's requirement that an architect have a professional degree to receive a reciprocity certificate. New York, Texas, and California, however, do not require a professional degree for licensure, so while their architects can become registered, reciprocal licensing in other states is impossible. Because larger states are home to more foreign-trained and educated architects, this issue is much more important to them. Any vote to change NCARB's policy, the large states contend, is blocked by the smaller states who are not as

organization partially financed by, and but that behaves more like a mysterious answers to no one.

affected by it and are reluctant to entertain notions of eliminating the degree requirement for fear of offending the national organization.

The smaller states aggressively oppose the idea of numbers-based representation. "If they did change the representation, the votes of three or four states would rule the entire organization," says Alabama Board for Registration of Architects Administrator Cindy Gainey. "And based on what I know about the wacky legislative and administrative environments in those states, I certainly wouldn't want that to happen."

Her argument is echoed by directors from numerous other states, but none of them can raise any other objections to registrant-based representation. However, the fact is that 30 percent of the nation's registered architects (and, because of reciprocity, 20 percent of state licenses—not a majority in either case, but a significant presence) hail from Texas, California, and New York, so their complaints about fair representation bear meaningful consideration. Any change would be difficult to enact because it must be voted on by the member boards. That vote, of course, would come out 52 to 3.

Business acumen

Another complaint against NCARB targets its questionable financial self-control. Until two years ago, this was exemplified by NCARB's policy that allowed board members and their spouses to travel first-class to exotic meeting locations. Such extravagances ended—under pressure from state boards—when Lucey took over, but the focus on fiscal responsibility has merely shifted to another area: expenses related to the computerized ARE. NCARB loses $1.5 million a year on the exam, and its inability to explain why or offer a reasonable plan for recovering the funds is a source of continuing friction between NCARB and its member boards. NCARB claims it is trying to encourage more candidates to take the exam; cutting operating costs dramatically across the board to help compensate; and working to sell more educational monographs to increase income—but only one of those elements, cost cutting, is within their control. And how any of the proposals will add up to $1.5 million is questionable, to say the least.

What would help, NCARB argues, is more cash from the member boards: twice as much, to be exact. But when NCARB recently proposed increasing member dues from $3,000 to between $5,000 and $32,000, depending on the state's number of registrants and including a per-registrant surcharge (ironic, given NCARB's refusal to allow representational voting), the reception was frostier than a North Dakota winter. The so-called Fair Share Plan distributed to the boards argued that their dues didn't come anywhere close to covering NCARB's expenses in providing direct services to the boards, which allegedly include, among other things, attorney services, information systems support, and the preparation and distribution of various reports. Not surprisingly, the member boards almost unanimously rejected the Fair Share Plan during regional meetings before it even came up for a national vote, arguing that they already had a hard time explaining to their state legislatures what they got for their dues. A 70 percent or more increase would be out of the question—especially because NCARB provided no information on how the increase amount was determined and what other options were available.

Another sore point is the breadth of NCARB's responsibilities also rankles. In particular, the question of international reciprocity raises red flags among some boards. NCARB is now working to establish reciprocity with China, which, if successful, has the potential to benefit only a tiny group of architects. (NCARB's president, first vice president, and second vice president went on a seven-day trip to China in late April at the expense of China's National Administration Board of Architectural Registration.) "It may be good to get involved in other areas, but those should be minimized until the core responsibilities are adequately met—and certainly while NCARB's finances are in bad shape," says Stephen Sands, executive officer of the California Board of Architectural Examiners, who suggests

The complaint with NCARB is rooted in pure frustration—knowing there's a problem somewhere, but not knowing specifically what it is or how to fix it.

that reciprocity with China is more of a practice issue than a public health, safety, and welfare issue.

Part of Sands' complaint with NCARB is rooted in pure frustration—knowing there's a problem somewhere, but not knowing specifically what it is or how to fix it. This, Sands explains, is largely because member boards know so little about NCARB's internal operations. As a result, he feels that, in spite of Lucey's efforts, an overhaul of some sort is becoming critical. "Member boards are confused about what services they get for being a member of NCARB, and they're not sure how much money is going to various segments of the operation," Sands says. "When you combine that with organizational inertia, you're faced with a situation where somebody needs to conduct an independent review."

Sands and his board recently recommended that NCARB hire a consultant to execute a complete analysis of the organization's management structure, financial operations, and program costs. He cites as proof of the proposal's potential his own experiences at the California Board: "I legitimately felt we were doing everything right, but when we brought in an outside person, we learned we were spending a lot of time on unimportant activities. Every organization would feel reluctant to do this because it would look like the organization wasn't doing its job. But it's not just a matter of changing the executive vice president. Its spending some money in the short term to save millions in the long term."

Communication, customer service

Architects and member boards—which, incidentally, are composed largely of architects—also complain about NCARB's unresponsiveness. They tell of slothlike responses to requests and a long history of secrecy—allegations supported by the member boards' approval last year of an open-books policy for the parent organization. "The information disseminated to member boards often is followed up with requests to NCARB to reformat or expand it in specific categories," says architect Alan Baldwin, the Charlotte, North Carolina-based vice-chair of NCARB's Southern Conference. "But that can be difficult to obtain and, when not forwarded on request, the explanation characteristically is that this is confidential information that is only shared on a 'right-to-know' basis."

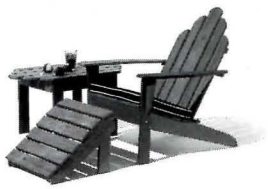
California's Sands says that even if NCARB were working marvelously both operationally and financially, the states would never know it. "They may be putting their resources where the core missions are, but the members can't see this," Sands explains, "because to date they've been unable to provide the member boards with the fiscal and operational data that shows where the money comes from and where it goes. NCARB now provides member boards with reams of financial information, but it's not in a format that the member boards can understand."

NCARB's Lucey says the council's focus since she took over has been to improve relations with boards and certificate holders. The council, she explains, now has a quality assurance manager whose job is to track customer relations to ensure requests are answered and monitor customer satisfaction.

Some member boards—typically those of the smaller states—argue that customer satisfaction is, in fact, high. Others even argue, astonishingly, that there hasn't ever even been a problem: "NCARB has always communicated very well with its member boards," says William Wilcox, executive director of the Ohio State Board of Examiners of Architects. "Personally, I have always received any information that was requested, financial or otherwise." In the face of almost insurmountable evidence to the contrary, Wilcox suggests that "NCARB has always been a fiscally sound organization with strong management skills and has employed upper-echelon people with experienced backgrounds."

Plenty of others would scoff at such a rose-tinted view, if not laugh at it outright. Their objections aren't merely the cranky complaints of large states either. They are the concerns of 30 percent of the architects registered in the United States—or more. That may not be a majority, but in a democracy, at least, their voices would be heard.

A PLACE IN THE SUN Our resort furniture for the trade takes its inspiration from around the world and across the decades—English Victorian parks and gardens, French seaside towns, Italian lake towns, and good ol' American porches and mountain retreats. Although of disparate origins, all favor ergonomics over style for its own sake—and are fluent in the universal language of comfort.



ADIRONDACK CHAIR, FOOTREST, AND TABLE

MARKET UMBRELLA

DUNE CHAISE

STEAMER CHAIR

RATTAN SUNROOM CHAIR AND TABLE

Smith & Hawken

FURNITURE FOR THE TRADE

To see our newest product offerings, call **(415) 389-8300** for our summer catalog to the trade.

Please mention code A99.

Circle 113 on information card

Without the aid of sky hooks, New York City architects and engineers find innovative solutions to vertical expansion.

Nowhere to Go But Up

By Sara Hart

Rooftop additions present idiosyncratic design and engineering challenges: The condition of the existing structure—whether it has adequately maintained its original load capacity and is capable of carrying additional loads—determines whether architects and engineers will be able to fulfill additional program requirements. Two recent but very different projects in New York City illustrate the complexities that govern this type of construction, which is becoming more common in dense metropolises around the world.

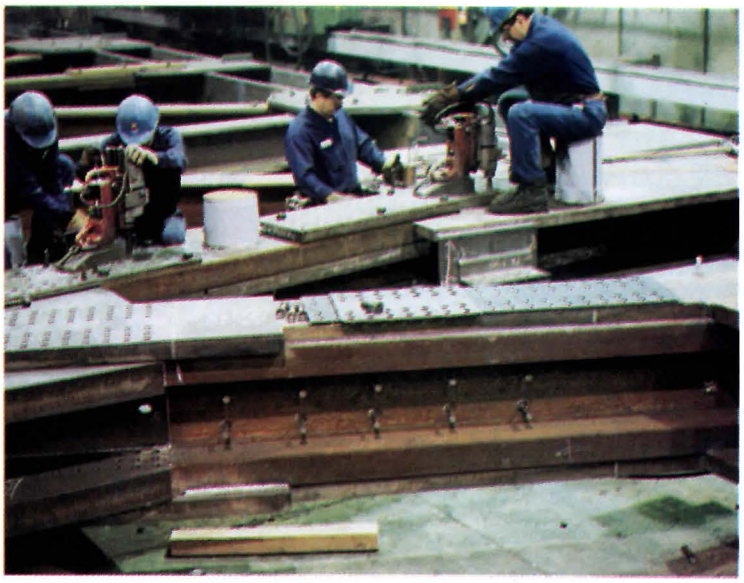
The big table

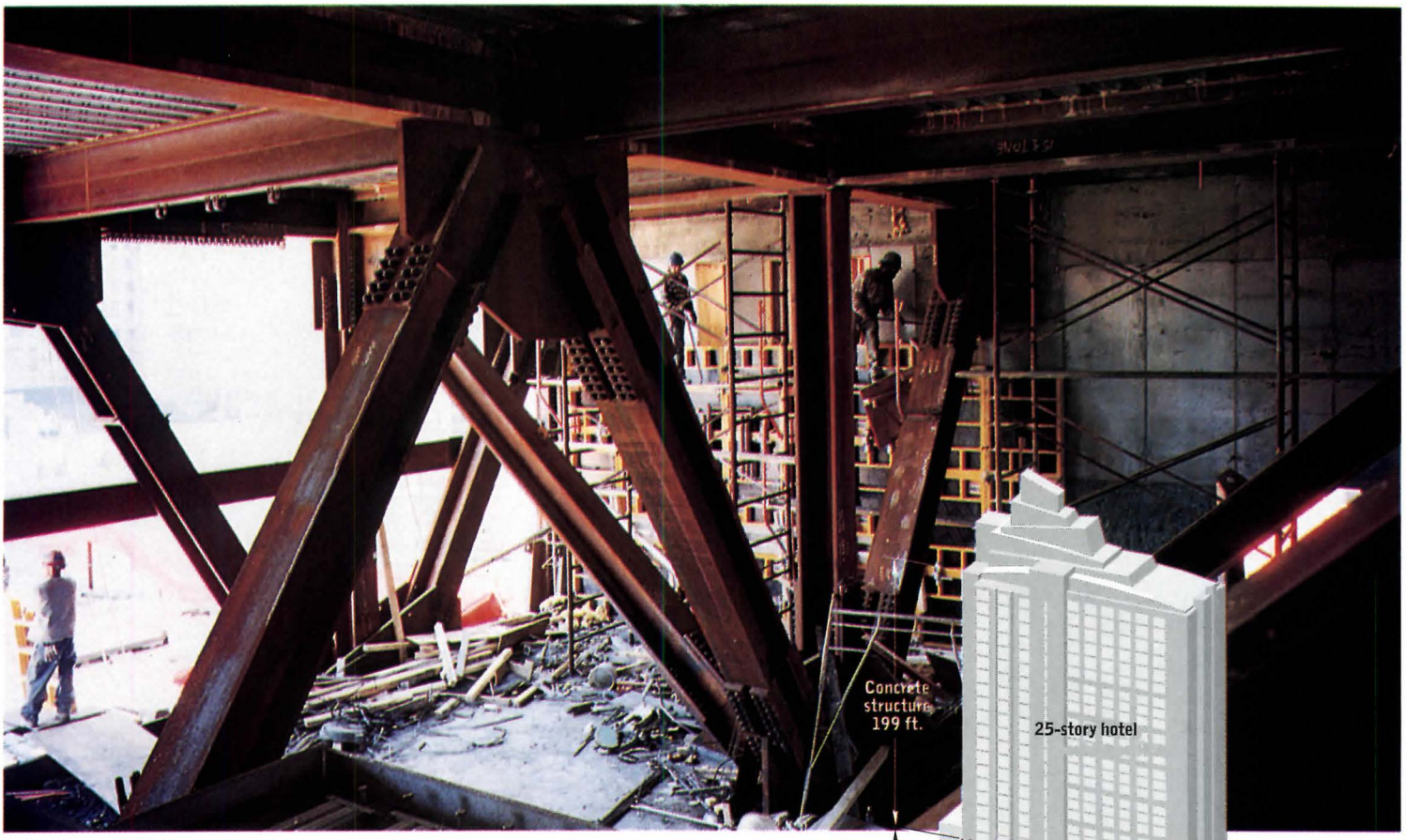
Brooklyn, New York-based Forest City Ratner Companies is building one new structure on top of another new one in midtown Manhattan. The company commissioned local architects Beyer Blinder Belle to design a 300,000-square-foot retail and entertainment complex on an infill site in the Times Square area, bordered by a parking lot on the west and commercial buildings on the east. The $290 million project called for incorporating two existing historic theaters and adding another 26 theaters for the motion picture exhibitor, AMC Amusement.

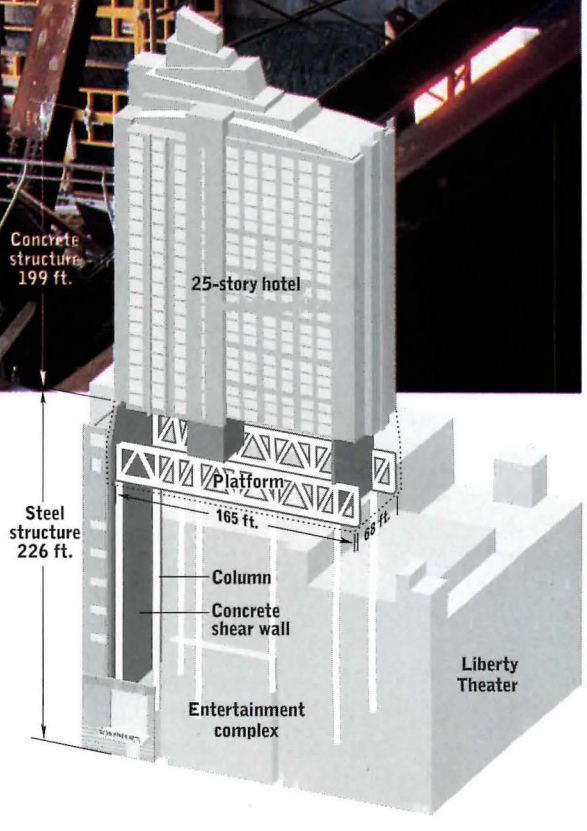
A host of peculiarities and unusual requirements early on in the project augured larger challenges down the road. The historic 1912 Empire theater was moved 180 feet to the western boundary of the 42nd Street site. The Liberty Theater on 41st Street, also an historic structure, stayed in its original place. Project Manager Jeffrey Smilow of Ysrael Seinuk Structural Engineers describes the myriad challenges. "Moving the Empire allowed us to provide it with new foundations, but the Liberty stayed on its old foundations so we had to be careful not to damage it. We designed a 20-foot-deep truss to support the AMC theaters, which spans over the Liberty at about 60 feet above the sidewalk," he explained. "If we had attempted to make the Liberty part of the new base building, we would have had to upgrade the foundations in order to comply with New York City's new seismic codes."

Having solved these problems, the architect and consultants were stunned when the owners told them that financing was available for a 25-story, 455-room hotel on top of the theater complex. Although construction hadn't begun on the theaters, the design was complete. "This is not the suburbs," Smilow explains. "The new theaters were stacked and no two floors were alike. It was impossible to transfer any loads through the theaters' columns. We had to find a way to introduce additional columns for the hotel without encroaching on the new theaters. We added eight columns, which, to a large extent, rise around the Liberty." The columns are 24-by-36-inch, solid billet boxes made up of laminated steel plates and weigh 2,000 pounds per linear foot. They sit on concrete footings of varying sizes, the largest two being a 40-foot-long wall footing on the north side of the Liberty and a 70-foot-long footing under the west shear wall. All footings are 3 or 4 feet wide and reach to the sturdy bedrock (only 15 feet below grade). "Then we designed a series of trusses, 25 feet deep," Smilow continues, "to rest on the columns and support the hotel. We call it the world's biggest table."

The engineers figured that if they designed the hotel as a steel structure, it would be lighter and work well with the trusses. However, hotels are typically reinforced concrete







Contractors installed **main trusses** (top left) on top of 14-story entertainment complex to support hotel above. Truss chords and diagonal members are wide flange steel sections that weigh as much as 730 pounds per linear foot. Steel fabricator Canron Construction rehearsed **truss assembly** (top right) at its factory in Toronto. Five-inch-thick gusset plates required dozens of bolts to connect heavily loaded truss members. Workmen complete installation of 25-foot-deep trusses (above) 200 feet above sidewalk. Illustration (right) shows truss system supported by eight **solid steel columns** and braced on west boundary by continuous concrete shear wall.

The 1,500-ton truss system, which covers the 165-by-65-foot footprint, will distribute the Times Square hotel's 60 million pounds onto the eight enormous columns, each weighing 2,000 pounds per linear foot.

slab construction with a central corridor, as concrete has a faster erection schedule than steel, and is thus more economical. The giant truss sits atop the eight columns on the 14th level and will be occupied by mechanical and electrical services for both the base building and the hotel. The hotel's 15th-floor sky lobby and 16th-floor conference level will be steel-framed to accommodate large, open spaces. Concrete slab construction then begins on the 17th floor and continues through 10 guest room floors.

The 1,500-ton truss system, which covers the 165-by-65-foot hotel footprint, will distribute the hotel's 60 million pounds onto the eight enormous columns. Richard Cramer of Toronto-based steel fabricator, Canron Construction, breaks the system down into its components. "There are actually 15 individual trusses," he explains. "Two large ones run east-west over the Liberty, while 13 lighter ones run north-south." At its Toronto factory, Canron rehearsed assembly of a truss system with 34,000 bolts that range in length from 5 to 14 inches and hundreds of 5-inch gusset plates required to erect it. The rehearsal was necessary to verify all the connections, because field corrections on such a massive structure would have been impossible. On the west side of the site, a concrete shear wall extends from the foundations below grade to the top of the hotel; its initial thickness is about 18 inches and tapers to 12 inches at the hotel. An eastern shear wall begins at the 14th floor and sits on the truss.

Between classes

On the Upper East Side of Manhattan, the New York City-based firm Butler Rogers Baskett (BRB) has become something of an authority in expanding schools upward: The firm has designed roof additions on four Manhattan private schools. One of the most challenging was St. Bernard's, a private kindergarten to 12th-grade boys' school located in a turn-of-the-century brick building. The program called for adding three levels on top of the structure to house a new gymnasium and four classrooms.

School additions come with unique challenges, including safety standards stiffer than those of most commercial buildings. BRB partner Daniel Kearin explains, "I tell clients that there are three components of any project: budget, design, and schedule. You can maintain the objectives of any two, but never all three." Because it was necessary to maintain operations during the regular school year, the administrators at St. Bernard's considered scheduling their top priority.

Bent steel **roofing system** (below) provides framework for future gymnasium's roof and walls atop St. Bernard's School.

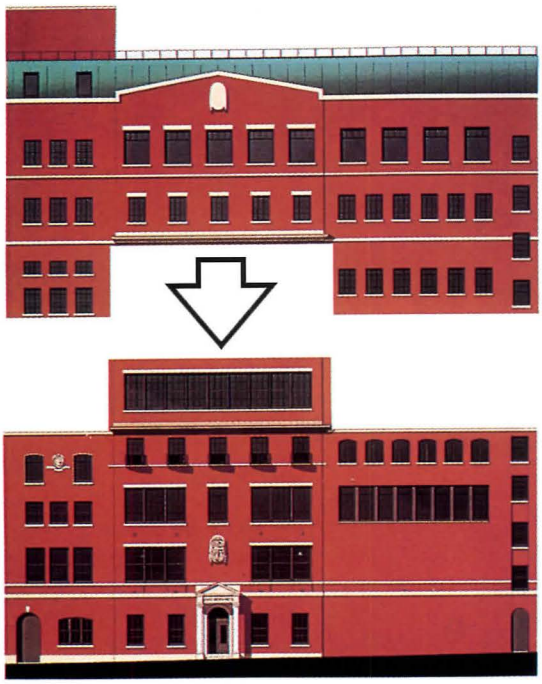


Illustration shows Butler Rogers Baskett's three-story **addition** (above left) to roof of St. Bernard's School in New York City. **Scaffolding** with aluminum and translucent panels (above center) protected existing school's top floor from elements when contractors removed roof. Two-story **Vierendeel truss** system (above right) supports rooftop addition.

The scheduling challenge led the architects and engineers to work during spring break. They excavated around the columns to determine the existing structure's condition. They found it was in good shape, but some of the columns and footings needed reinforcing. The easiest way to do this was to weld steel channels to the webs of the existing columns, fit a reinforcing cage around the assembly, and pour concrete into a surrounding form.

They also had to protect the school's interior after they removed the roof from the top floor. The construction manager, Lehrer McGovern Bovis, suggested covering the entire structure with a scaffolding system that would serve a dual purpose. First, the scaffolding would form a retractable roof with corrugated metal and translucent plastic panels for weather protection. Second, it would perform as typical scaffolding during construction.

All work that intruded on the existing school interior had to be completed during summer break between the middle of June and the first week in September. The steel, having already been cut off-site, was ready for delivery. Carlos Dobryn, president of DeSimone Chaplin & Dobryn Consulting Engineers, made a clever and time-saving move by determining that steel erection could begin before the columns and footings were reinforced, because analysis showed that the existing structure was designed to carry at least another floor.

Dobryn designed a series of Vierendeel trusses for St. Bernard's. This type of truss spans the same distances as triangular trusses but doesn't require diagonal bracing. In the school's case, diagonal members would have severely restricted the location of walls and doors for the new classrooms. Vierendeels instead relied on deeper wide-flange chords and vertical web members; the chords in the St. Bernard's Vierendeels are either 24 or 30 inches deep. The vertical posts require moment connections to resist rotation. Because the system is monolithic and continuous and Dobryn's calculations determined that its strength exceeded any predictable lateral loads, the system required no shear walls or additional bracing.

View from the top

There are at least two reasons why adding structures to the top of buildings is more feasible today. According to Principal Lawrence Marner, who has worked on these types of additions at BRB, steel is about 15 to 20 percent stronger than it was in first half of century. "Whereas office buildings before the 1960s were required to accommodate a 60 pounds per square inch (psi) live load, now it's only 50 psi. Schools have even more flexibility, because requirements are now tailored to program. Classrooms can be designed to 70 to 90 percent of live-load capacity unlike equipment-laden spaces such as laboratories." The other reason, as shown in the St. Bernard project, is that in the early part of the century before analytical computer programs made for efficient engineering, buildings were often overstructured, with beams sized to carry as much as 400 pounds per square foot. When this is the case, expensive structural upgrades aren't needed.

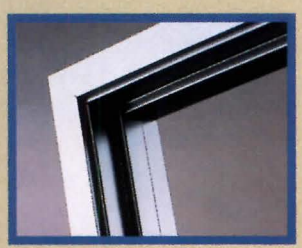
Additions constructed today often preclude any future construction. Engineering precision reduces margins of error, and budget or program requirements often dictate that the longest spans end up where there are no expectations for future growth—roofs. The BRB philosophy doesn't make such assumptions about the future. In their last rooftop addition, they overstructured the new roof just in case the school develops higher expectations.

Stretch your imagination with Timely door frames.

Going to CSI '99 Los Angeles?
Register for Timely's FREE Technical Tour on June 23. Earn AIA/CES program units. Call: (800) 247-6242, Ext. 613 or sign up at www.timelyframes.com.

TA-30 Colonial Steel Casing
The warm "look of home" is offered with this new Colonial Steel Casing which is ideal for interior designs in senior housing, hotels, motels, offices, apartments and homes.
Now featuring the new TA-31N corner piece.

TA-35 PVC Colonial Casing
This extruded PVC molding is manufactured to apply quickly to Timely's clip system.
Available painted or in wood grain finishes.



TA-23 Aluminum Casing
The economy and strength of a steel frame is combined with the crisp lines of an aluminum trim which leaves a 1/4" reveal.

TA-28 Aluminum Casing
All the benefits of a sturdy steel frame. This full width *aluminum* casing is available without a reveal.

TA-8 Standard Steel Casing
Our Standard Casing features a classic profile suitable for both commercial and residential applications.

Timely prefinished steel door frames have the flexibility to go wherever your imagination takes you in color coordination and interior design.

Choose from seven stocking or 28 custom colors of durable baked on polyester coatings. We'll also match any color you wish. So you avoid the additional expense, disruption and shoddy workmanship that often go with jobsite painting.

We widen your creative horizons even more with prefinished steel frames featuring "snap-lock" casings in five versatile profiles of steel, aluminum and PVC. Even wood trims supplied by others can be easily fastened to our basic steel frame.

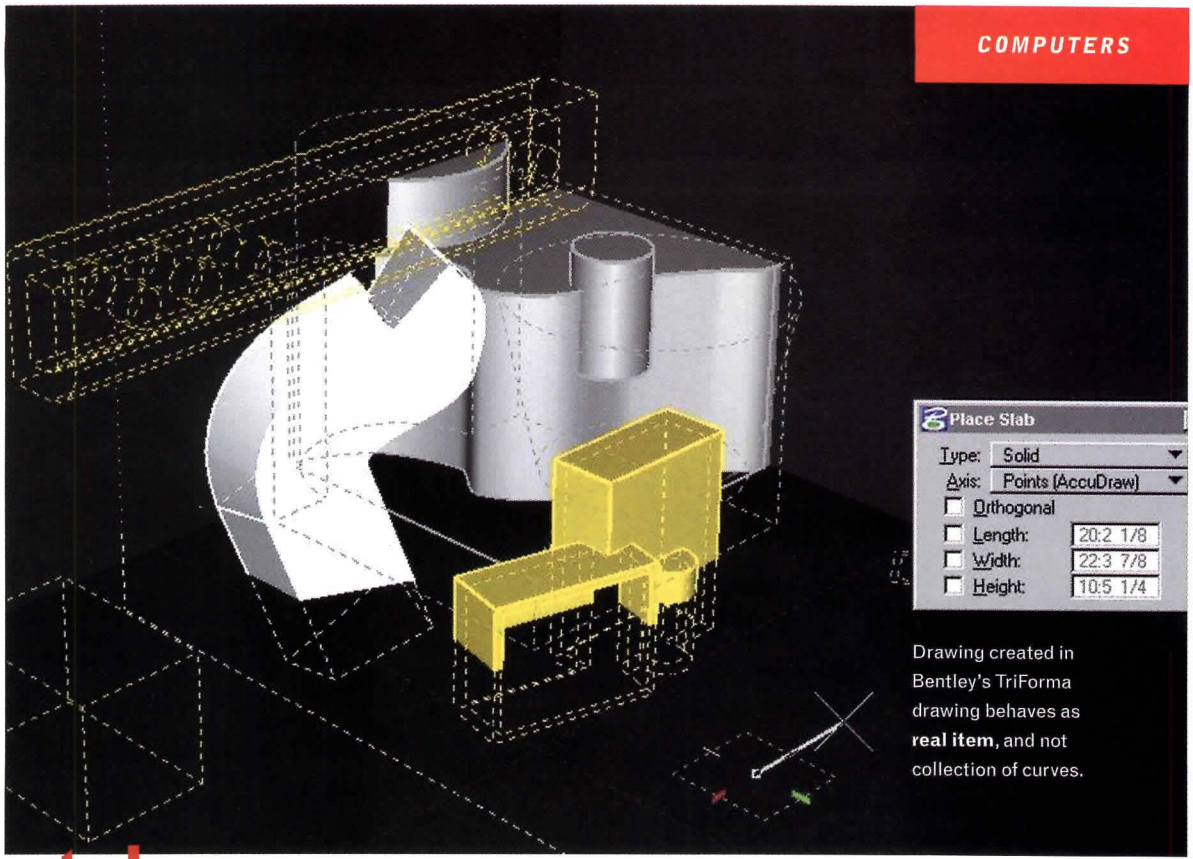
With Timely's flexibility comes unmatched quality and performance. Our sturdy, full perimeter anchoring system offers strength and integrity not possible with wood. There's also Timely's casing corner piece for perfect miter joints, optional corrosion-resistant steel frames, available 90-minute fire rating and fast, easy installation.

For over 25 years, Timely has offered prefinished steel frame systems for interior drywall in senior housing, hotels, motels, offices, homes and apartments – in both wood and steel construction. Your Timely sales representative and our Marketing Services Department have full details. Call either one today, or see our web page on the internet: www.timelyframes.com. It's no stretch of the imagination to see how you *and your clients* benefit from our flexibility.

TIMELY®
PREFINISHED STEEL DOOR FRAMES
A DIVISION OF S.D.S. INDUSTRIES, INC.

Timely Corporate Offices: 10241 Norris Ave., Pacoima, CA 91331-2292
818-896-3094 / 800-247-6242 / Fax 818-899-2677
Eastern Distribution Center: 9782 Interocean Drive, Cincinnati, OH 45246
513-682-9600 / 800-346-4395 / Fax 513-682-4102
Internet: www.timelyframes.com

Circle 115 on information card



Drawing created in Bentley's TriForma drawing behaves as **real item**, and not collection of curves.

Object Lessons

A pivotal development in CAD software is turning dumb lines into smart objects. By Steven S. Ross

The CAD world is abuzz over what vendors are now hyping as software that transforms drawings into collections of three-dimensional "smart objects." The emergence of so-called object-oriented technology signals a defining moment in the evolution of CAD-generated documents, from generic collections of lines to drawings in which those lines are identified as walls, doors, or windows.

In the early 1990s, CAD technology shifted from two-dimensional drafting to three, and objects became more important. Vendors began developing add-on software for AutoCAD, DataCAD, Architrion, ArchiCAD, and others, which allowed drafters to draw a wall, for example, as a single block and then punch holes in it for windows and doors. If the user drew vertical lines inside a wall or floor, the software designated these lines as studs or joists.

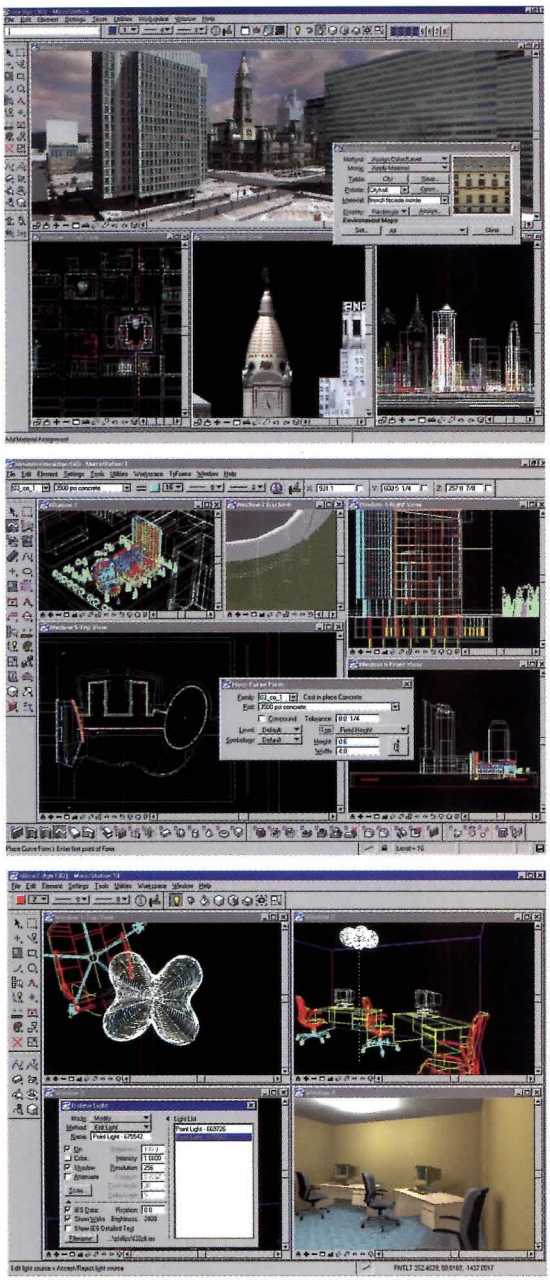
Software manufacturer Visio stayed with 2-D drafting, but provided users with hundreds of objects or symbols from doors to trees to swimming pools. Each symbol had a certain amount of data attached. Users could add more and more data to each shape. Architectural professionals tend to view moving store-bought shapes around the screen as cheating, but facilities managers, interior decorators, and even non-architectural kitchen contractors loved the convenience. Autodesk now has its own Visio-like product, Actrix, which aligns new objects automatically with existing ones.

At the same time, the biggest suppliers of add-on software for AutoCAD—ASG, Arch-T, Eagle Point, and Softdesk— began producing packages of "smart details" and near-automatic drawing systems for such items as dormers, stairs, and roofs. Suppliers such as Steelcase, Andersen Windows, and Marvin Windows offered architects their product symbols with vendor data attached.

The vision thing

What if the water heater or a window in a CAD drawing "told" the drawing about necessary clearances, manufacturers' maintenance manuals, incompatibilities (maybe a certain window frame would not work with a certain wall cladding, for example), code-compliance problems, or even information needed by the construction contractors? Drawings would more likely be drawn correctly the first time, and there would be less chance of miscommunication among the architect, builder, and client.

Because manufacturing is so precise, prefabricated building components are rarely inspected. It followed then that manufacturers' CAD objects, also precisely constructed, would help designers save time and avoid



Bentley's Interactive MicroStation computer model (top) was confined to exterior shells of buildings in Philadelphia. As data is added, each building and each piece of building becomes an object, allowing **detailed analyses** of everything from water and sewage needs to traffic. MicroStation/J drawing (center) "knows" that 3,500 psi concrete will be poured. Illumination Engineering Society (bottom) makes modeling of light sources easy, with **standardized description language** and simple file structure to define lighting objects' brightness.

the costly overdesign that architects use as a defense against construction errors.

Autodesk was the major force behind what is now called the International Alliance for Interoperability (IAI), which is now totally independent of Autodesk. IAI writes standards that guide software vendors in object implemention. In the software business, these standards are called Industry Foundation Classes (IFCs), which define all the items an object must contain to meet the standard. The most important goal is object development that improves communication between architects and builders. The danger is that smaller developers of add-on software will define extra items they create in such a way that they cannot be fully translated when the add-on is not present. Some vendors, particularly smaller vendors who produce highly specialized packages, see object technology as a way to expand their market beyond a few hundred customers. By restricting what people can see in drawings produced with their software, they hope to sell copies to those who view the drawings as well as to those who drew them.

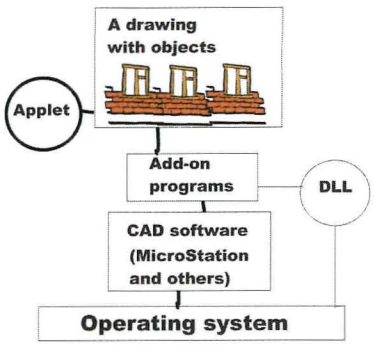
Help is only another program away

After a decade of trials and errors, the vision of smart drawings is finally coming to fruition. AutoCAD R14 and its Softdesk add-on (now packaged as AutoCAD Architectural Desktop) showed what objects can do. Doors, for example, can be associated with light switches. Move the door's hinge or change the swing and the light switch moves, too. Complex objects are easier to draw. For example, a user can add an entire stair or dormer to a drawing by specifying a few basic parameters. The software draws the stair or dormer automatically. The result is more accurate, and the drawing knows that this collection of lines is a stair.

A drawing must also know what to do when there are multiple occurrences, called instances, of the same object in one drawing. Autodesk tackles the problem with separate helper programs, such as ObjectARX. Microsoft Windows helper programs usually come in the form of Dynamic Link Libraries (DLLs), but they can't be run independently of AutoCAD. Bentley Systems (the vendor closest to matching Autodesk's technology) puts much of the intelligence inside the drawing itself. This makes the drawing files as much as 50 or 100 times larger. But it does simplify the task of running versions of Bentley MicroStation on different types of computers; AutoCAD only works with Windows.

Autodesk's ObjectARX has been around longer than any competing object technologies, although Autodesk squandered much of its head start with the buggy, slow AutoCAD Release 13, in which ObjectARX was first used. Bentley has started to duplicate some of the the advantages of ObjectARX by adding small Java-based programs (commonly called applets, or small applications) to drawings. Programs written in Java can theoretically be run on any computer, as long as someone has written a Java Virtual Machine for that computer. Bentley modified its version of Java (called JMDL) to suit its technical needs and supplies its own virtual machine with various versions of MicroStation/J.

Other competitors, including Visio's IntelliCAD and IMSI's TurboCAD Professional, have counted on Microsoft's languages, particularly Visual Basic, to do the job. The advantage is that many programming houses outside the architectural CAD community have created building blocks in Visual Basic, or in languages such as C++ and J++ that can be made compatible with Visual Basic. This simplifies the programming tasks for vendors who don't have the resources of Autodesk or Bentley. Ultimately, it also has the potential to make drawings



created in these vendors' CAD programs easier to translate from one file format to another.

Today and tomorrow

AutoCAD R14 with Architectural Desktop has ObjectARX technology, but it's more expensive than the version without Architectural Desktop. Autodesk makes a free program, Object Enabler, available as a download from the Autodesk Web site, that allows objects from Architectural Desktop to be handled in AutoCAD R14. A door, for instance, and its associated wall switch can be moved together to AutoCAD, but the door object itself cannot be edited without the full Architectural Desktop software. It only works with ARX objects generated by Architectural Desktop and Softdesk's S8 Architectural Professional.

Users should investigate how objects created in one add-on program behave when viewed without the program. MicroStation TriForma, for example, has the same file structure as plain MicroStation, but the entities created in TriForma can be "tagged" or identified as walls, floors, and so forth. These entities are objects that can be forced to obey rules as they relate to one another. Editing the entities in plain MicroStation can introduce errors when the file comes back into TriForma. Bentley's ProjectBank software, due to be built into MicroStation/J, can flag possible errors.

The technology is not yet so advanced that typical architects can create their own intelligent objects. Autodesk and IMSI make development kits available, but they're really tools for professional programmers, and, therefore, unlikely to used by CAD operators in an architectural office. Suppliers of building materials, however, are realizing the potential for making objects themselves. Nemetschek manufactures add-on software under the Palladio X brand-name that produces objects within AutoCAD (*www.palladiox.com*). Objects Online (*www.objectsonline.com*) sells objects for Graphisoft's ArchiCAD users from their Web site.

The trend toward objects in drawings could take another interesting turn. An entire drawing could be an object, for instance. This would allow a drawing file created in one vendor's software to be edited in another's without translation and, thus, without translation errors. As computers get more powerful, we might see a utility that loads a MicroStation drawing into AutoCAD, for instance, and allows it to be edited.

Architects cannot afford to ignore technology that reduces construction costs and design errors. Clients are learning this from insurers, code officials, and building contractors. Objects also make drawings easier to produce; the technology will save money after the transition to all object-oriented tools. AutoCAD 14 has quite a bit of object intelligence built in for users who also have Architectural Desktop or the Softdesk add-on (Architect 8). Those using R14 without an object-oriented add-on will have to update their symbol library. Some architects are cleverly using the same 3-D symbol but attaching more data. For example, one window drawing will refer to a specific type of window, and another to a different type that looks the same but might have a different finish—one drawing symbol becomes 100 or more drawing objects.

As computers get more powerful, we might see a utility that loads a MicroStation drawing into AutoCAD, for instance, and allows it to be edited.

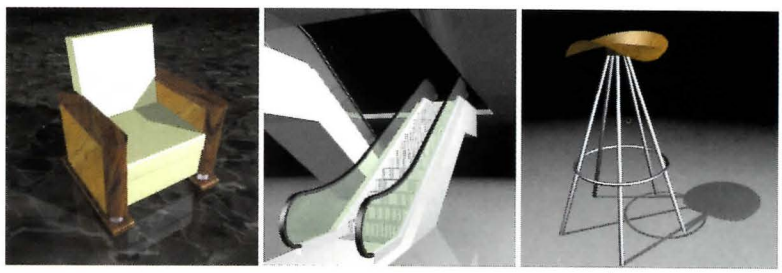
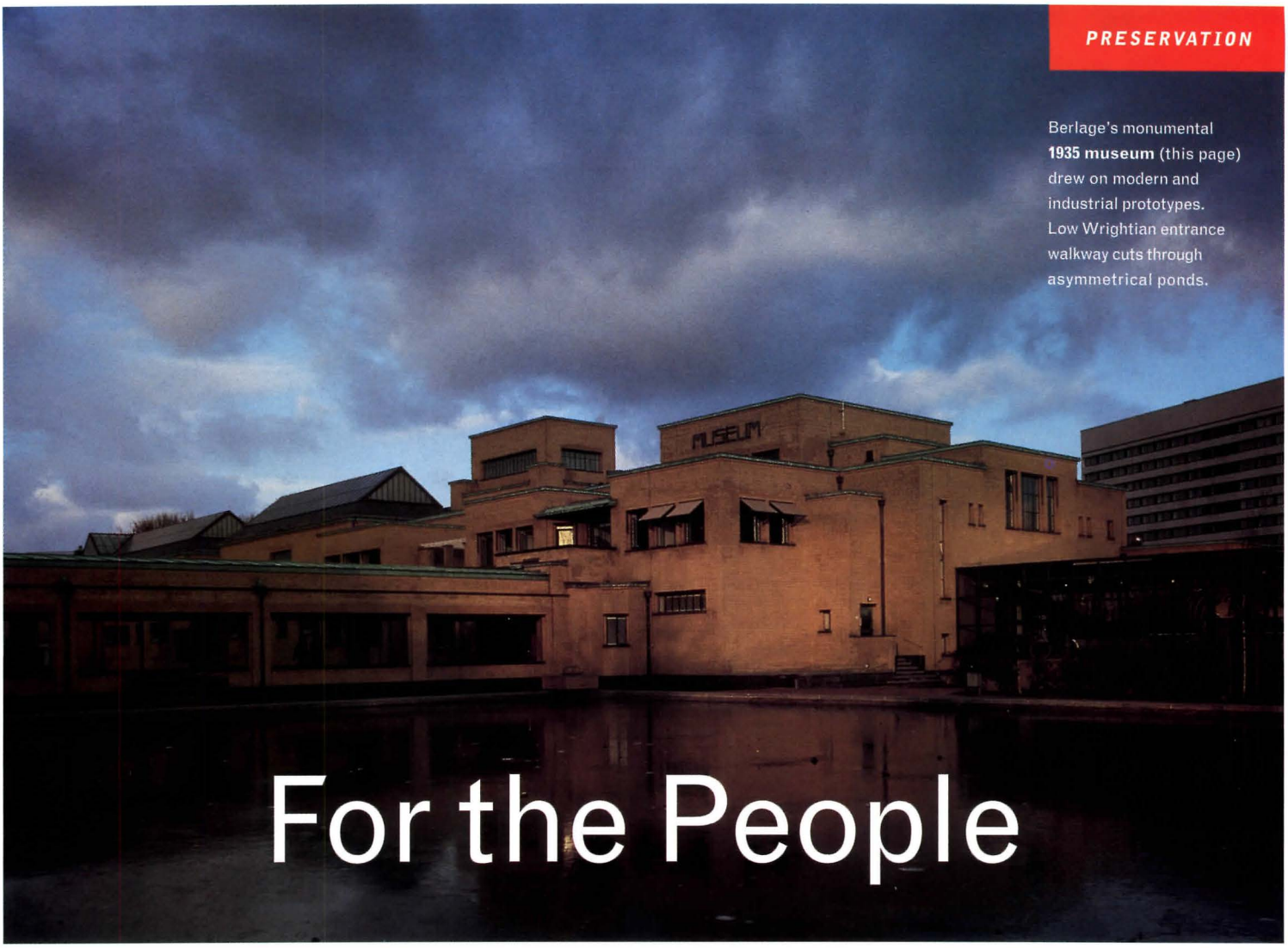


Diagram (top left) shows that Bentley puts **object intelligence** inside drawing itself, and uses modified version of Java to write software. Drawing must be large enough to hold Java-based applets. By contrast, intelligence in AutoCAD ObjectARX is tied to newest versions of AutoCAD itself and to "helper" programs called DLLs, which offer flexibility. Objects Online **sells objects** (above) for Graphisoft's ArchiCAD users, such as furniture and escalators.

With technological advances come ethical dilemmas. If a drawing contains mainly supplier-generated objects for windows, doors, and so forth, is it the architect's design? Or will new technologies make it possible for non-architects to combine objects and create their own building designs? Reality hasn't changed: A drawing is not a building. A building is a complex arrangement of interrelated, almost organically integrated parts. Object technology can only assure that elements added to a drawing will work together, and that the structure will meet applicable building codes. Object technology will never replace the creative and trained mind.

Steven S. Ross is an associate professor at Columbia University's Graduate School of Journalism. A physicist by training, he is the author of Construction Disasters: Design Failures, Causes and Prevention *(1984).*



Berlage's monumental **1935 museum** (this page) drew on modern and industrial prototypes. Low Wrightian entrance walkway cuts through asymmetrical ponds.

For the People

Dutch architect Braaksma & Roos's intelligent and sensitive restoration of Hendrik Berlage's Gemeentemuseum clarifies the connection between art, architecture, and people. By Joseph Giovannini

The Gemeentemuseum in the Hague, Holland—a state museum of modern art housed in Dutch architect Hendrik Berlage's last building—was unfairly exiled from architectural history after its completion in 1935, a victim of bad timing and anachronistic interpretation. When it opened, De Stijl avant-gardists complained that the concrete-frame museum—its central massing and interiors influenced by Frank Lloyd Wright's Unity Temple—was not modern enough. Traditionalists found the asymmetrical, factory-inspired design of the galleries too modern: In their eyes, a truly civic museum needed classical posture—monumentalized symmetry, axes, and rhetoric.

After operating for about six years, the museum closed during World War II and suffered bomb damage. After the war, the building was unsympathetically restored, mostly because of persistent material shortages. Through the 1970s, successive directors neutralized its character, recasting it as a white-walled contemporary art gallery with suppressed details. Only in 1985 did the perception of this masterwork change when the director of the museum, Theo van Velzen, listed the building on the museum's inventory of art holdings.

But by that date, time and misuse had further compromised the structure. Many of the windows in a museum that was once a tour de force of natural lighting had been walled over to increase display space. The roof, skylight, and brick exterior needed repairs, and the climate control systems needed updating. Insulation was insufficient. Offices for an expanding staff had nibbled away at the galleries, altering Berlage's circulation system, and the museum needed additional exhibition space for new programs—especially galleries for one of the world's largest costume collections. The combination of deferred maintenance and new programs necessitated a building-wide overhaul, not patching, and given the building's new status as a designated work of art, the overhaul meant a thor-

The natural ventilation system Berlage devised did not provide air conditioning and humidity control and had to be retrofitted into what proved a resistant building fabric.

Museum (above) originally featured **extensive daylighting** from multiple sources, including skylight sheds and windows, which have been restored.

ough restoration requiring a substantial budget. The Hague architectural firm Braaksma & Roos started the restoration in 1995 and completed it in late 1998 at a cost of $25.3 million—about $10 million less than the price recently paid for artist Piet Mondrian's *Broadway Boogie-Woogie*, now permanently on display in the museum.

A new typology

When it was built, the Gemeentemuseum may have fallen between stylistic camps. But in the context of Dutch architectural history, the design represents the most evolved and modern work done by the most important forerunner of modernism in Holland. An early student of the Chicago School's clean American architecture, Berlage moved away from 19th-century eclecticism and applied decoration as he promoted planar surfaces, an integral use of materials, and exteriors that reflected interior plans. Though he was influenced by the English Arts and Crafts movement, he rationalized and unified designs by using geometric systems as the basis for plans, sections, and elevations. The museum's undecorated brick walls and flat roofs emphasize the building's complex play of masses, especially in the Wrightian entrance pavilion.

As a museum, the design exemplified what was then a new typology. Berlage and the original director, H.E. van Gelder, were fellow socialists who wanted to avoid the typically monumental rooms of 19th-century museums, where people were less important than the art, and the art less important than the building. The two translated their democratic impulse into a new type: a compact museum at human scale. They programmed the ground floor for showing everyday things, like household objects, and placed the more inspired art—painting and sculpture—on the second floor, with a layered skylight system admitting light from above. "The two were concerned about bringing art to the common man," says Job Roos, the project architect.

Programmatic innovations

Berlage varied the shape and size of the galleries to counteract museum fatigue, and designed skylights that create high, oblique light to avoid reflections. Light through windows on corridors that overlook the courtyard filtered into the tall adjoining galleries. "It was this mixture of compact museum, different programs on two floors, and varied natural lighting from above and the side that we wanted to maintain," says Roos. "But how could we continue that quality of light today when museums demand a diminished amount of lighting? Preserving the original qualities of Berlage's building was the main issue." The architects also wanted to retain the museum's compactness while expanding its square footage for the large costume gallery.

What distinguishes the museum's design is Berlage's use of industrial sheds—complete with skylights, sash windows, flat roofs, and concrete construction—in the ring of galleries off the main entrance and office area. Ironically, restoring an industrial structure was in some ways more difficult than a handmade building would have been because the restoration architects had to recreate the manufacturing methods of the 1930s that produced, for example, the colorful interior tiles and the yellow-brick cladding: With seven to 10 tones, the green stair tiles, for example, required about 140 samples.

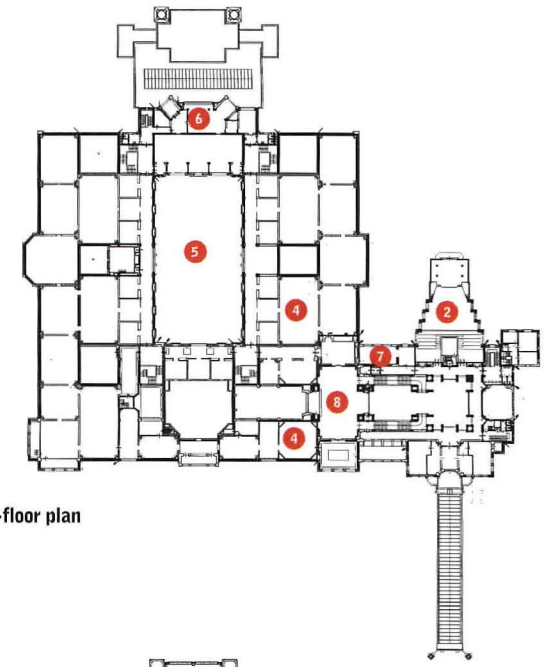
In the gray, interpretative areas frequent in restorations, the architects also had to extrapolate from Berlage. "We didn't bring back things like the rubber floors and the wainscotting in the galleries that were demolished over the past 50 to 60 years, because we wanted to adapt the museum to the new period—for the sake of the Kandinskys and Mondrians, " says Roos. "The galleries now look more minimal and sharp."

Reconditioning and illumination

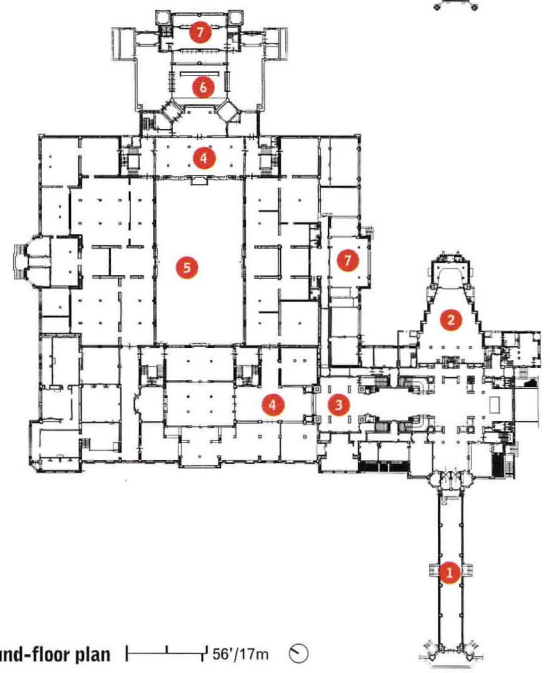
No part of the building was left untouched, even the basement storage. The architects stripped the plaster off all museum walls. They reinvented slender bronze window frames throughout, thinly, with triple-glazing. Those doors without the museum's typical brass frames were retrofitted to match the others. To better articulate the building's stepped, cubic massing, the architect restored and cleaned the yellow brick cladding by blowing fine sand and warm water under low pressure.

Very much the functionalist, Berlage had installed the most up-to-date building systems in the museum, which presented difficult preservation issues. The architect essentially reused the radiant heat built into ceilings, but the natural ventilation system Berlage devised, hidden behind walls and on the roof, did not provide air conditioning and humidity control and had to be retrofitted into what proved a resistant building fabric.

"Berlage's museum, which is very nuanced in its details, is built on a very precise system of 11 centimeters that doesn't tolerate shafts in many places," says Roos. Ingeniously, the architects used the ground floor as a plenum: Air blown into galleries is then extracted to the roof, where it is conditioned again and blown back into the

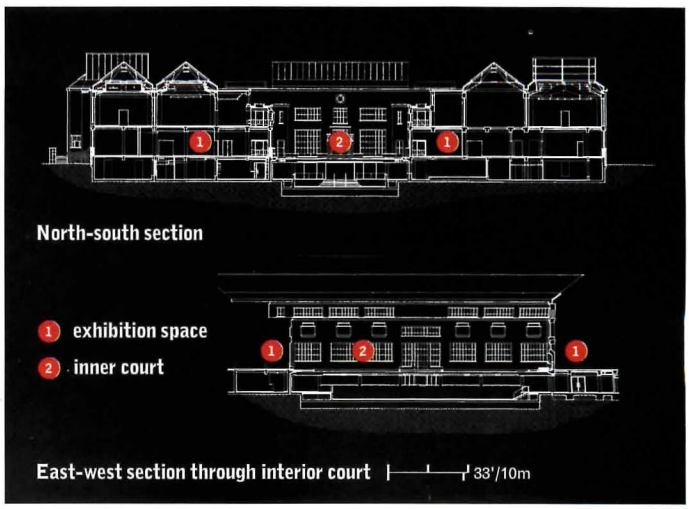


First-floor plan



Ground-floor plan 56'/17m

1 entrance
2 court
3 main hall
4 exhibition space
5 inner court
6 workshop
7 offices
8 honor hall



Inside the galleries, the building achieves a remarkable transparency, assertive only in negotiating the introduction between visitor and painting.

second floor through narrow slots created where the glass ceiling planes are lifted slightly to allow for air flow. "The effect is a complete ventilation system without adding any infrastructure," says Roos.

Berlage's method of filtering daylight involved installing adjustable louvers in a triple layer of glass skylights (backed up by artificial lighting set between the panes). The louvers could be altered in the individual galleries, and at night, artificial light reflected off the louvers' opaque white surfaces. The architect rebuilt Berlage's steel skylight frames in aluminum, and increased the louvers to eight or 10 layers for better insulation and protection against ultraviolet rays. "We restored the louvers and put them on a computer system to balance between daylight and artificial light," says Roos.

Underground art

Perhaps the most dramatic intervention is the addition of a large costume gallery underneath the garden courtyard, which would not bloat the museum beyond its intentionally compact dimensions. However, the water table is a mere 2 meters below the site's surface. To claim basement space, the architects first built the walls of what was effectively a tub by digging very close to the existing foundation around the courtyard, using "silent pillar" walls—that is, steel walls pressed into the ground without vibration, so as not to disturb the existing foundation. A liquid injected between the new walls and the foundation bonded with sand and hardened into a sandstone designed to keep water out.

The architects then dug down about 6 meters below ground level, creating a "swimming pool" several meters deep, into which divers poured a 0.8-meter-thick layer of underwater concrete to counteract the hydrostatic pressure once the contractor pumped out the water (otherwise, the concrete basin would have floated like a boat). The resulting concrete box houses the costume gallery, which is topped by a thin concrete roof, prestressed to maximize

HAGUE GEMEENTEMUSEUM, THE HAGUE, THE NETHERLANDS
CLIENT: Gemeente the Hague / City Management
ARCHITECT: Braaksma & Roos Architects, the Hague—Job Roos (project architect), Gerard Vreugdenhil (project leader), Edwin Ames, Suzy Lemmens, Arie Vreugdenhil (project team)
ENGINEERS: A.M. Van Essen Consultants; De Vries Construction (structural); Ketel Advising Engineers (mechanical, electrical); Kropman (mechanical); Steegman Electrical (electrical)
CONSULTANTS: Lite (lighting)
GENERAL CONTRACTOR: Hillen & Roosen
COST: $27.6 million
PHOTOGRAPHER: Frans Strous, except as noted

To meet contemporary art standards, architects restored but did not precisely reproduce **original finishes in halls** (far left, above and below) and galleries (left).

Architect inserted new **costume gallery** (above) beneath garden court, south of original building.

interior height. The main floor of the finished gallery is a meter deeper than the perimeter promenade, which allows visitors who walk on the promenade a preview of costumes on the main floor. The costumes are arrayed in glass vitrines specially designed by Braaksma & Roos.

Today, for the first time in nearly 60 years, the Gemeentemuseum exists in the state in which it was conceived. Visitors walk down a long, low Wrightian entrance flanked by two reflecting pools to a foyer that leads to a tiled, two-story ceramic waterfall of color opening to the more austere galleries beyond. The complex massing at the entrance, corners, and breaks in the long facade signals the mastery of the hand that designed the building. But the virtuosity of form cedes inside to another form of virtuosity—a self-effacing architecture concerned with the less tangible environmental qualities of light, space, and air.

Inside the galleries, the building achieves a remarkable transparency, assertive only in negotiating the introduction between visitor and painting. Although the interiors were, and remain, "architectural," with frequent windows, an expanding-contracting play of room sizes, and visible columns that always reveal the skeletal structure, the building charms the viewer into a relationship with the art by awakening the senses. The open relationship of the interiors with numerous windows helps patrons find their way through a museum free of the heavy-handed axes that usually direct visitors. The changeable light enlivens the galleries.

Unfortunately, the costume gallery the architects carved out beneath the courtyard does not succeed as a separate environment equal to Berlage's. Understandably, there is no natural light in this hypersensitive arena of fragile costumes, so the space seems dull by comparison, but the architects make no compensatory moves. This big open room exhibits none of the intimacy and sense of discovery prevailing in the rest of the museum.

If they erred on the side of modesty in the costume hall, the architects did get the commission right where it mattered most, in the restoration of a signal building designed by the most important innovator of 20th-century Dutch architecture. The structure is a link to Dutch history, to the intersection of American and European early 20th-century architecture, and to the very paintings on the walls. ■

Nothing

will ever be

the same.

CORTERRA™ Fibers will forever change your perception of what carpet can be.
Call 1-888-267-8377. Internet: ***www.corterra.com***

CORTERRA™
Fibers

The very fiber of performance.

Circle 119 on information card

Green Building Advisor

A new CD-ROM gives architects a practical tool for sustainable design.

By Jen Seal-Uncapher

The Energy Resource Center in Downey, California, a GBA **case study**, contains re-bar made from confiscated guns.

The deluge of *green* building conferences, publications, and studies is daunting. There are hundreds of Web sites, scores of books published annually, and dozens of conferences this year in the United States alone. The Green Building Advisor (GBA), a new interactive CD-ROM, offers a one-stop, straightforward approach to sustainable design with an array of green building strategies. No software can substitute for an integrated design process, but GBA can help team members choose more environmentally appropriate solutions.

The philosophy of GBA stresses the importance of whole-systems thinking and integrated design. Whole-systems thinking describes a process in which all of a project's systems are actively considered simultaneously. Integrated design considers the interaction between design, construction, and operations in order to optimize energy and environmental performance.

GBA's simple interface features three key buttons: Enter a New Project; Open a Saved Project; and Browse Case Studies (18 new construction and renovation projects) and Reference Libraries (GBA strategies, publications, online references, and products). For example, an architect hired to renovate a 35,000-square-foot, 1959 Chicago office building with an eye toward green design might enter project details, such as the age of the building's heating system, its roof condition, and insulation. The CD-ROM retrieves strategies in an index form within five key environmental impact categories: Site & Ecosystems; Energy Use; Water Use; Resources & Materials; and Indoor Environment. In this hypothetical case, the Site & Ecosystems strategy would advise consideration of green-roof technology, explaining that this system helps to control runoff by keeping rainwater on site. The Energy-Use strategy recommends enthalpic heat recovery ventilation (HRV), which transfers heat and moisture from an exhaust air stream to a supply air stream or vice versa. The report also explains that this system would reduce the new cooling system's size. Included in each impact category is the Strategic Logic section, which ranks the recommendations according to information the software has evaluated. Also included is a Building Phases & Cost Difficulties section, which provides a range of costs for each strategy so the user can weigh first-cost versus lifetime-cost implications.

The reality is, of course, that no software can anticipate the extenuating circumstances that every architectural project encounters. The GBA allows users to address particular constraints with the use of filters. If, for instance, a client's budget restricts the architect to low-cost design features, the first-cost filter will limit recommendations to those with a low initial investment. If the architect's role does not involve all phases of design, another filter will customize strategies to those phases for which the architect is contracted.

Finally, the CD-ROM lists 1,300 green building materials searchable by product name, the Construction Specification Institute/Masterspec format, or manufacturer. The Green Building Advisor was produced by the Center for Renewable Energy and Sustainable Technology, creators of educational multimedia CD-ROMs; E. Build, publishers of *Environmental Building News*; and Design Harmony, an architectural and environmental consulting firm. GBA costs $179 and can be ordered online at *www.crest.org/software-central/gba* or by calling 1-888-442-7378.

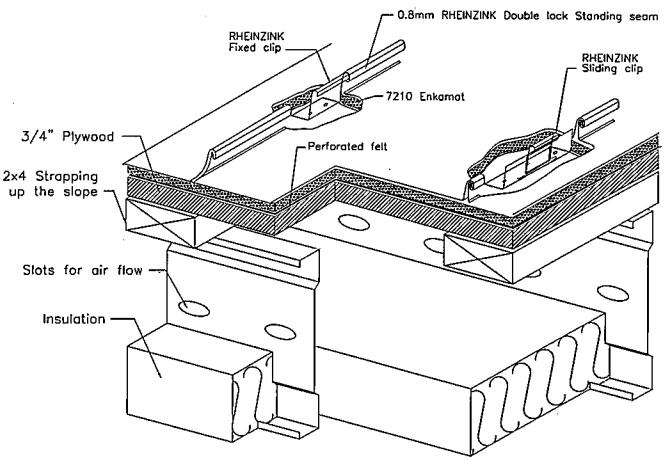
Jen Seal-Uncapher is a research associate with Rocky Mountain Institute's Green Development Services.

SPECIFICATIONS

Metallic Luster

High-tech titanium and zinc are changing the face of architectural cladding. By Chris Santilli

As it shows up on building facades worldwide, a new generation of high-tech metals is beginning to turn architect's heads. Two in particular stand out as especially durable and attractive options: Titanium, an abundant natural element that is a favorite of the aircraft industry, is now finding a home in building construction because specifiers like its lightweight strength and contemporary look; and zinc, which was used frequently in construction up until a century ago, is making a comeback because of its unique corrosion resistance. For architects interested in specifying these hot products, the challenge isn't just balancing costs, but rather learning about titanium and zinc and convincing contractors to use these new materials without raising prices.



Arup Associates specified **titanium batten roof** for Hong Kong's Mass Transit Railway Corporation (facing page). Detail (above) illustrates roofing and insulation assembly.

Titanium shines

These days, titanium often summons images of a person, not a metal: Frank Gehry clad his Guggenheim Museum in Bilbao, Spain, with titanium in 1997, and he's all but single-handedly credited with the metal's revival. The shimmery reflections of titanium's golds, pinks, and blues give it an expensive look. "Just say the word [titanium] and contractors instantly bump up the price, but that's primarily because the industry is unfamiliar with titanium," says James Lenhart, senior associate at Brad Adams Walker architecture in Denver. He estimates that titanium installed costs only one dollar more per square foot than the cost of copper.

Installing the unusual metal is no different from installing more standard varieties; it just requires simple stainless-steel connections. "The sheet metal crew [for Lenhart's CITGO headquarters in Corpus Christi, Texas] was pleasantly surprised at how easy it is to work with," the architect says. "They were able to get sharp edges easily."

Titanium's physical attributes stack up positively. The metal's low coefficient of thermal expansion is half that of stainless steel and copper, one third that of aluminum, and virtually equal to glass and concrete. Titanium's specific gravity is 60 percent that of steel, half that of copper, and 1.7 times that of aluminum—making it a lightweight material. Its tensile strength is equivalent to steel, but it is a more flexible metal. It is available in coil, sheets, and composite panels in a variety of natural finishes or anodized colors. Lenhart's preliminary design for CITGO envisioned copper cladding, but tests showed that byproducts from a nearby refinery would turn copper black. Titanium proved resistant to such effects, and its manufacturer, Timet, guarantees the product for 100 years against through-wall corrosion. "That 100-year, corrosion-proof warranty was good enough for CITGO," Lenhart says.

Atilla Demeter, of Atilla Demeter Architects in Chicago, chose titanium for a new seven-story building in Chicago (to be clad in fall 1999) for its beauty, but "beauty is not enough," he says. Demeter's project had a tight budget, and he feared a heavier cladding system would necessitate expensive caisson supports. Lightweight titanium made the difference, and without the caissons taking up space, the architect was able to design a standard basement as well. "Gauge is an important consideration for specifiers," Lenhart says. "Using 0.016 millimeters gives the titanium a paper look, like a piece of foil or skin." He likes the ripple effect caused by wind passing over the surface that he likens to the scales of a fish. A heavier 0.024 millimeters makes the titanium appear more faceted around curves, he notes.

Titanium is currently available only in a limited number of thicknesses because it's still not commonly used for building cladding. The rolls come in 3- or 4-foot widths, with 3 feet being the most common. Demeter recommends setting up designs for those dimensions and ordering the material a couple months in advance, as three- to four-month delays in production are not uncommon. He chose a 2-by-3-foot panel for the Chicago high-rise so he could use either size rolls if one size couldn't be ordered quickly. Because titanium is new to most contractors, Lenhart recommends selecting a fabricator who can also serve as the sheet metal contractor so that no one can point fingers if there's an installation problem.

Berthy House (1966, above) in Seattle, Washington, features curved, **corrosion-resistant roof** of pure zinc.

Zinc lasts

A metal's appearance usually betrays its identity. Not so with zinc, which is often mistaken for tin. Zinc's soft pewter luster makes it a highly desirable cladding material in its reintroduction to the market; zinc has always been available in the United States, but it has historically rarely been used because of designer awareness. Its corrosion resistance in a ventilated wall and its reasonable price add to its benefits.

To design the Alaska Sealife Center in Resurrection Bay, Alaska, architect Tom Livingston, principal of Livingston Slone Architects in Anchorage, needed a cladding that would resist the ocean's salt spray and the area's high seismic action. "Coated steel was an option, but it doesn't have as long a life in such a corrosive environment. Zinc was almost the only material we could use, and it was cheaper than copper," Livingston says, adding that masonry or concrete walls would have been too brittle and would have had to have been quite thick for the seismic conditions, and thus too costly.

Gary Davis, director of technical services at manufacturer Rheinzink Canada in Burnaby, British Columbia, says zinc claddings are price-competitive with stainless steel on ventilated buildings. A simple zinc curved roof might be $20 to $22 per square foot for the total job, with the product costing about $3 per square foot. Zinc comes in coils, sheets, or shingles at any desired size.

Zinc is specified more on roofs than walls, but the wall market is starting to grow. Davis recommends double-lock standing seams for roofs because they are the most water-resistant design. Rheinzink offers five standard gauges of 24- to 16-gauge zinc. The Alaska project used 24-gauge sheeting in a standing seam panel design using concealed clip fastening. Copings and trims were from 22-gauge zinc. Livingston employed EMCO, a Sacramento, California-based specialty subcontractor, to fabricate the weathered zinc panels, which had an annealed finish. "The back side [of the zinc wall] has to breathe," Livingston says, explaining that trapped moisture creates a mild acid called zinc hydroxide, which if not ventilated will destroy the cladding. The ventilated air space takes the humidity out of the wall.

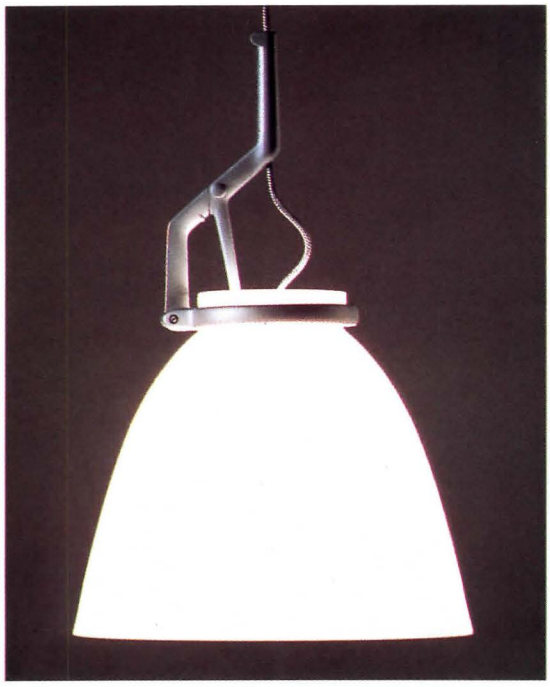
The challenge for some architects is adding the ventilation while producing desirable esthetics. Davis works closely with architects to help them design the look they want. With an insulated barrier, Davis recommends about a 1/4- to 1/2-inch-wide air space behind the zinc cladding. Without a barrier, he recommends a 1- to 1 1/2-inch-wide air space. "The number-one tip is to have a good installer," Davis says, "but the architect should draw the roof and understand the seams so they aren't buffaloed by the contractor into doing it another way to make installation easier on themselves."

Manufacturer handholding

Manufacturers of new metal cladding products are hustling to win contracts right now, so they are offering extensive assistance through the specification and installation process. Many are willing to recommend every detail of the design if asked. Designers can determine the look, and the manufacturers help make sure it happens. Using the manufacturer's recommendations to specify titanium and zinc claddings ensures an end-product that lasts and looks good. ■

Chris Santilli is a Villa Park, Illinois-based freelance writer.

True Form



CLOCKWISE FROM TOP LEFT: **Boxed In** CLIC, designed by German-based Burkhardt Leitner, is an exhibition system formed from hollow aluminum rods with magnetic plug-in connectors that lock the pieces in place. These lightweight modules create two- or three-dimensional spaces that present information in a clean and direct manner using scrims, display shelves, and low-voltage lighting. The rods are easily disassembled and fit into a suitcase. *Circle 297 on information card.* **Suspended Design** USG introduces a drywall suspension system that enables designers to create curved and serpentine soffits quickly and easily. Designers can choose from a selection of 22 standard preengineered components that snap together, reducing the time one would spend measuring, bending, cutting, and connecting for hat channel or black iron suspension systems. This system can be integrated with acoustical ceilings and lighting for total system support. *Circle 298 on information card.* **Glulam Beam** Willamette Industries introduces Premier and Premier Plus to their Classic line of glulam beams. The new components are designed for applications where supporting beams must match the depths of *I*-joist framing. The Premier and Premier Plus glulams are manufactured to match nominal 4-, 6-, and 8-inch wall framing. These alternative glulams eliminate the need to fasten two or more pieces to make a beam or header. Both are manufactured in framing-grade appearance for concealed applications. *Circle 299 on information card.* **Flexible Fixture** Luceplan introduces Glassglass, a family of lamps designed by Paolo Rizzatto. A metal collar with a stirrup-type handle secures the circular opening of the diffuser to a power cord that is wrapped in a steel mesh sheath. The unique armature allows the lamp to be either a pendant or a sconce. Diffusers are available in brick red, blue, amber, opal, or frosted white with the support finished in matte silver, gold, or polished chrome. *Circle 300 on information card.*

Compiled by Joelle Byrer

Erickson's Diversified Corporation, Hudson, WI
Architects and Engineers: Boarman•Kroos•Pfister•Vogel & Associates, Mpls., MN
Contractor: Watson, Forsberg Company, St. Louis Park, MN
Interior Design: Design Syndicate, Inc., Mpls., MN
Fenestration: Andersen® Flexiframe® and Awning Windows with green-tinted tempered Low-e Glass.

SAFLEX
Call us for more information on our laminated architectural glazing. **Circle No. 92**

SAN JOSE DEPARTMENT OF PUBLIC WORKS
Division manager, architectural engineering, contact us for more information. **Circle No. 76**

SCHOTT CORPORATION
AMIRAN® anti-reflective architectural glass—contact us for information. **Circle No. 114**

SHELL CORPORATION
CORTERRA™ fibers will forever change your perception of what carpet can be. **Circle No. 82**

SIMPSON STRONG-TIE COMPANY
To get well connected, call or visit our Web site at www.strongtie.com. **Circle No. 102**

SLOAN VALVE COMPANY
Contact us for complete information on our flushometers. **Circle No. 132**

SMITH & HAWKEN
To see our newest product offerings, call for our spring catalog. **Circle No. 110**

SOLUTIA™
Let us tell you more—contact us for information. **Circle No. 50**

SONY
Nobody knows more about home entertainment than Sony—call for a location in your area. **Circle No. 14**

SPI LIGHTING
A collection of fixtures with timeless appeal, contact us for more information. **Circle No. 106**

STERNBERG VINTAGE LIGHTING
If you'd like more information, call and request our 80-page color catalog. **Circle No. 146**

SUBARU
Call for complete details or visit your nearest Subaru dealer. **Circle No. 100**

SUPERIOR CONCRETE PRODUCTS
Contact us for more information on our precast concrete screening, perimeter and sound walls. **Circle No. 88**

US ALUMINUM
Call us for complete information and specifications. **Circle No. 72**

VON DUPRIN
For the toughest, most durable exit systems—contact us for more information. **Circle No. 62**

WAUSAU METALS
Contact us for more information on our architectural windows and wall systems. **Circle No. 116**

WAUSAU TILE
Precast concrete, terrazzo tile—contact us for information. **Circle No. 38**

WAUSAU TILE
Terra-form concrete signs and custom precast terrazzo—contact us for information. **Circle Nos. 40, 42, 44**

WIREMOLD COMPANY
Call us for more information on the new Walker® RC3 series poke-thru. **Circle No. 80**

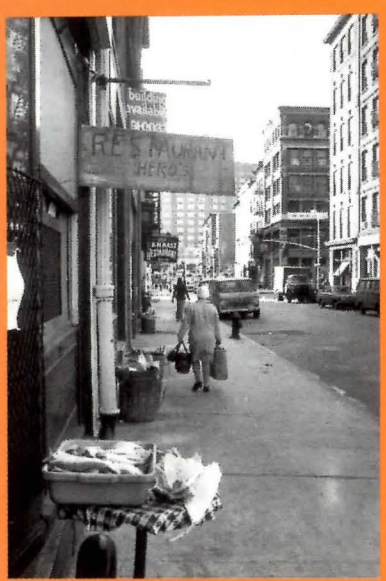
Art: The Vanguard of Real Estate

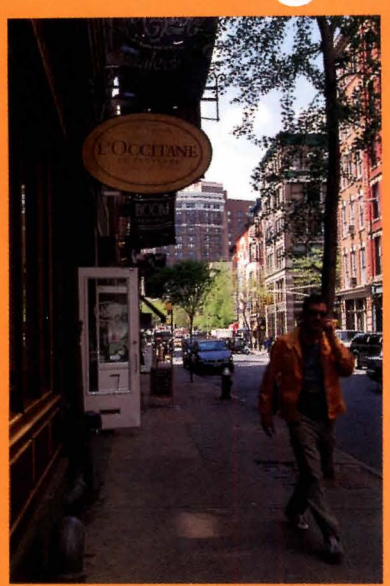
Developers are buying up the nation's artists' communities and replacing them with pale imitations of bohemian chic.
By Andrei Codrescu

These days, it is fashionable for urban planners to praise artists for revitalizing old neighborhoods, but there are very few cities where artists' communities are protected against real estate speculators. For a short time, New Orleans' lower Magazine Street became a thriving scene of small theaters, guerrilla publishers, music studios, art galleries, and coffee shops. Speculators moved in before a cohesive community emerged, however, and turned the area into an upper-middle-class haven. In search of cheaper rents, the artists scattered.

The process of using art as a wedge for development is already three decades old in most cities—hardly a new phenomenon. What is new is the speed with which the displacement occurs. What was once allowed, mostly through sloth and inefficiency, to flourish until it acquired character, is now devoured in bud. If speculators as much as catch a whiff of an emerging arts community, they move in like sharks smelling blood. Art has become the vanguard of real estate.

I lived in New York City in the late 1960s when artists lived in SoHo illegally, though openly, and with a growing sense of community. A dwindling number of buildings were still being used as small factories and warehouses. The rest had been occupied and transformed by artists. The fierce battles with the city bureaucracy that led to the creation of SoHo's art district are now legendary, but what is less evident is that those battles took a long time. Artists had almost a decade to organize, attract businesses to serve them, get the word out in the media, develop a sense of community, and, above all, make art. Needless to say, few artists had the foresight to buy their lofts when zoning made it possible—and are thus not still living there. Since no young artists can afford to live there now, the area has stopped producing art and became just another "artsy" tourist attraction.





SoHo's Spring Street, looking toward West Broadway, New York City, 1975 (above left) and today (above)

The "art look" of many revitalized central areas of American cities, such as Denver's LoDo, Portland's downtown, Seattle's Pioneer Square, or New Orleans' "art district" is a sure sign that no living artists work or live there. In most cities, tourism is a higher priority than art, and real estate supersedes both of these considerations. Occasionally, a brilliant match of business and art does occur, as when Mario Botta's new San Francisco Museum of Modern Art (SFMOMA, 1994) moved into the artist-occupied area of lower Market Street and cast over it a protective though ambiguous shadow. The ambiguity is that, while SFMOMA anchors existing artists' spaces, it contributes to the relentless upward spiral of rents.

There is a fundamental reason why living art communities must take precedence over profit in the next century. Artists use the available materials of an area, including its past, present, and future, to fashion a city's identity. This identity is an evolving collaboration between the past of the buildings where they work, the present of available technology, and the esthetic of the future. Urban planners, no matter how enlightened or forward-looking, cannot map the future without artists. What urban planners can do is collaborate with artists to protect cheap-rent areas from indiscriminate developers.

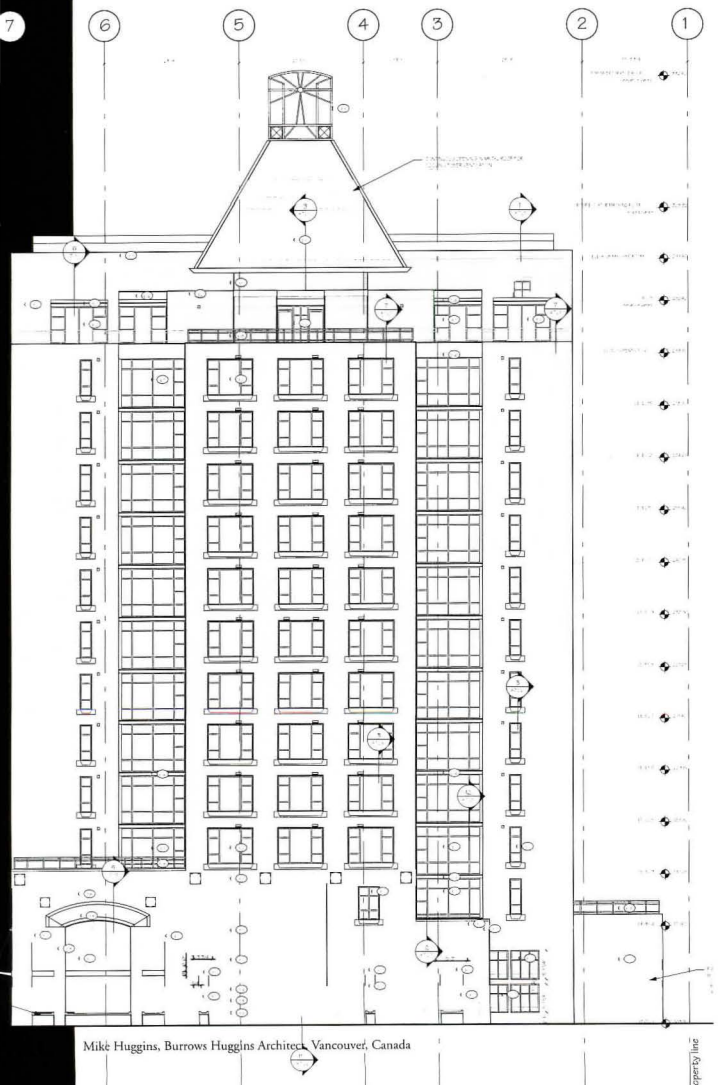
Bronskill & Co., Rendered with RenderWorks

www.diehlgraphsoft.com

After 14 years of constant research and development, Diehl Graphsoft is proud to introduce VectorWorks—the next generation of MiniCAD. VectorWorks improves MiniCAD's proven CAD technology and merges new state of the art Object-Based design philosophy. This integration makes you more productive without sacrificing flexibility and control.

Introducing VectorWorks

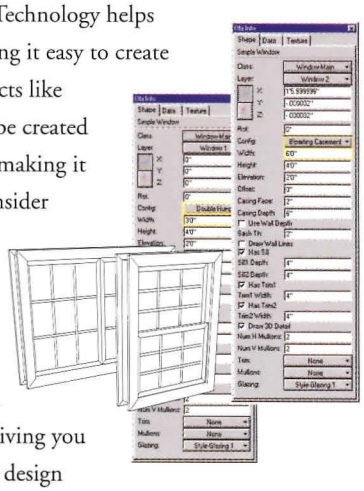
The Next Generation of MiniCAD



Mike Huggins, Burrows Huggins Architects, Vancouver, Canada

Increased Productivity with Object-Based Design

VectorWorks' state of the art Object Technology helps streamline the design process by making it easy to create common design elements. Now, Objects like doors, windows, roofs and stairs, can be created and edited with a click of the mouse, making it easy to explore design alternatives, consider "what if" scenarios, and handle last-minute client changes.



The Strength of a Proven CAD Technology

VectorWorks offers a solid foundation based on proven CAD technology—giving you the power and flexibility to tackle any design problem. New features such as Workgroup Referencing, DWG (v.14), Round Walls, Multiple Undo/Redo and an improved scripting language, strengthen VectorWorks' core CAD capabilities. And, with RenderWorks, VectorWorks' new photo-realistic rendering plug-in, you can bring your designs to life with textures, shadows and dramatic lighting.

The VectorWorks Advantage

With VectorWorks, you get it all—the flexibility and control of proven CAD technology and the productivity benefits of Object-Based design. VectorWorks ships FREE solutions for Architecture, Landscape Design, DTM and HVAC among others. Best of all, you aren't limited to the solutions we provide. VectorWorks is completely customizable allowing you to create your own custom business solutions.

Special Offer to Readers of *Architecture Magazine*

Save $279 by purchasing VectorWorks with photorealistic rendering direct for $820 or, without rendering for only $595. Includes **FREE** Tech Support and a 90-Day Money-Back Guarantee.

Diehl Graphsoft Inc

Software for Today's Professional

1-888-646-4223

Circle 129 on information card

NOW GET ABUSE RESISTANCE WITHOUT THE HEAVY INSTALLATION COST.

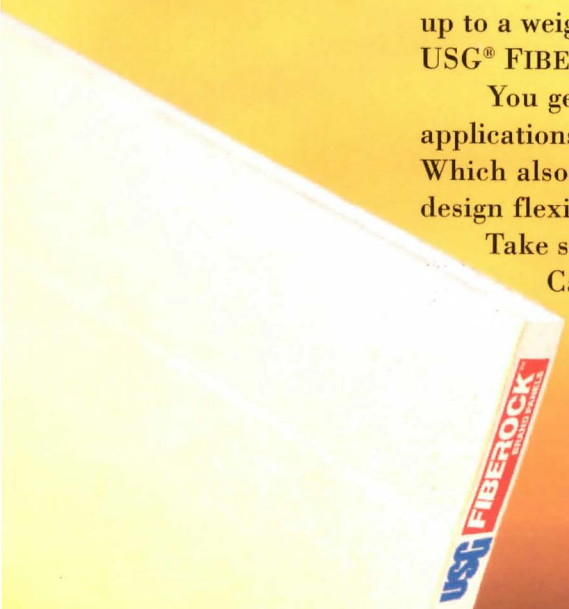
The time, labor and expense of masonry construction can add up to a weighty load. That's why more builders are switching to USG® FIBEROCK™ Brand Abuse-Resistant Panels.

You get all the abuse resistance required for institutional applications, with panels that install over conventional framing. Which also pays off in speedier occupancy and far greater design flexibility.

Take some of the pressure off your next project.

Call 1-800-USG-4YOU today or visit our website:

www.usg.com



USG FIBEROCK™ BRAND
VHI ABUSE-RESISTANT GYPSUM FIBER PANELS

Circle 127 on information card