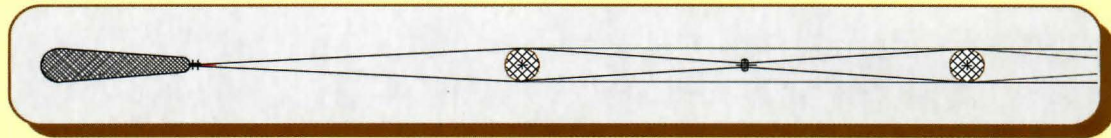
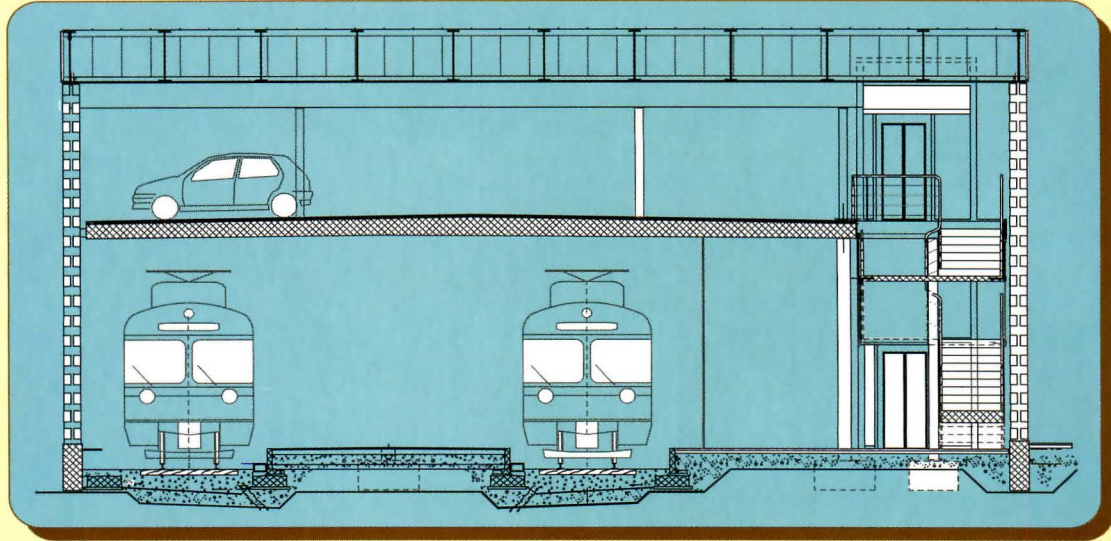
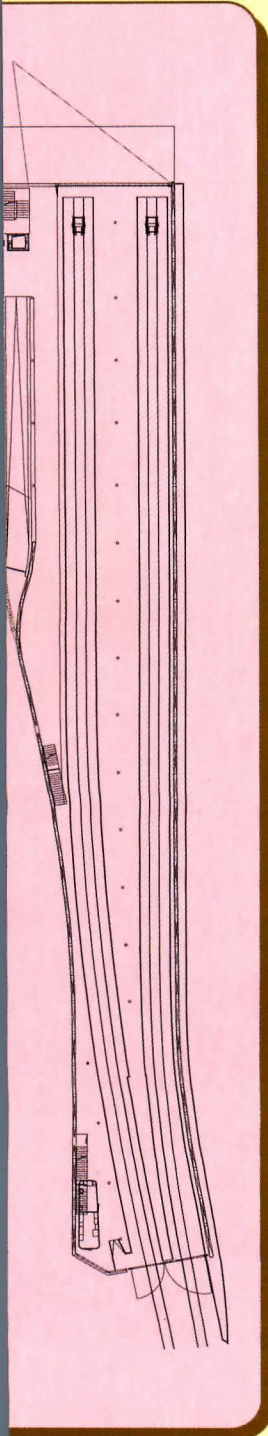
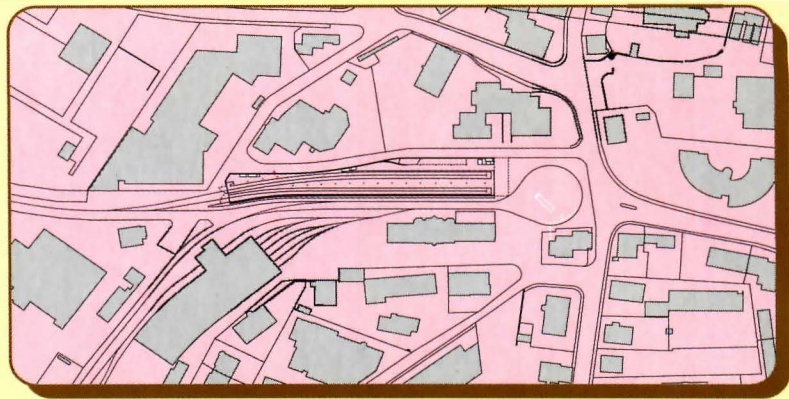


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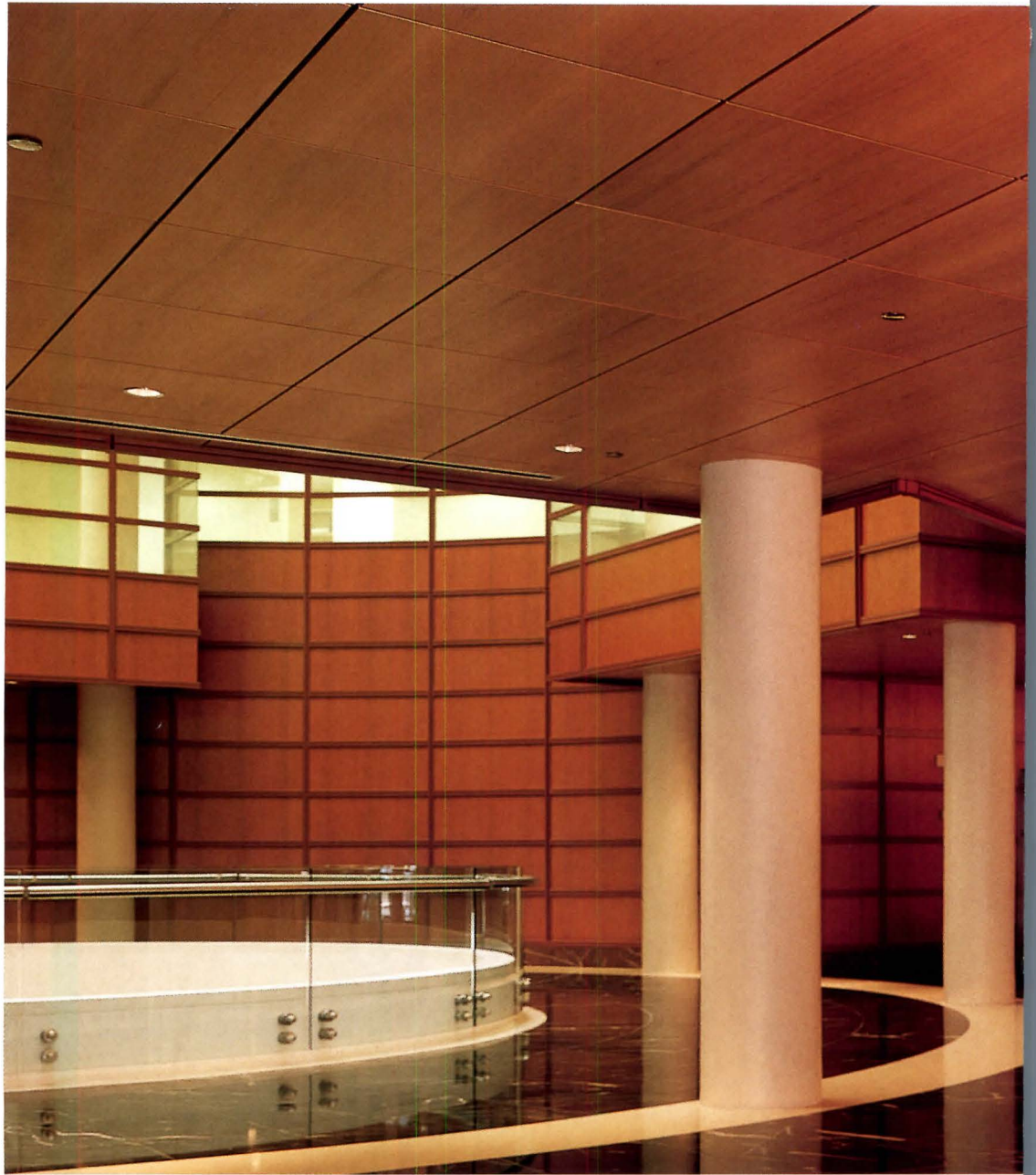
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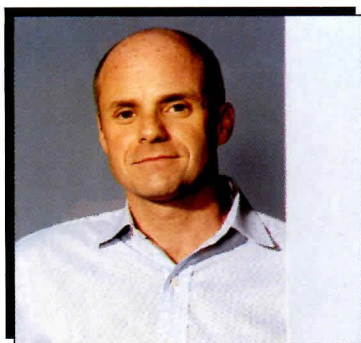
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IN SEARCH OF ORNAMENT

BY C.C. SULLIVAN

Once considered integral to the architectural discipline, ornament has long vanished from mainstream design. Adolph Loos accused it of criminal complicity, but postmodern reductionism did more to damage its reputation. Neotraditionalists have clung to its history more than its progressive advance. Then along came the deconstructivists and blob-makers, wielding chaotic and self-replicating geometries, but thus far they've squandered their opportunity to apply them at a decorative scale. And modernists, content with the staid calm of their minimalized perfections, have bequeathed ornament to the interior designers who dare animate their works.

Our modernist revival ignores its deepest roots. In the new book *The Order of Ornament, the Structure of Style* (Cambridge University Press, 2003), art historian Debra Schafer explains how form and applied ornament might enjoy new creative possibilities if we rediscover the origins of modernism in Central European architecture. Its underpinnings were not about minimalism but rather late-nineteenth-century theories about creating new works using influences from all periods and cultures, and from natural sciences and linguistics. An example: Louis Sullivan, an early modernist, synthesized Islamic ornament, medieval Irish decorative orders, and European art nouveau into his indisputably American works. His aesthetic roots shared an anticlassicizing intent that suited his rejection of the beaux-arts tradition.

Doctrine aside, there's another rationale for ornament: *the human eye and brain need it.* Nikos A. Salingaros, of the applied mathematics department at University of Texas at San Antonio, argues that "the suppression of ornament results in alien forms that generate physiological and psychological distress." Minimalist and randomly designed built forms do this, he contends, "because they inhibit human beings from connecting mentally with a given structure through meaningful information."

Few architects buy into such scientific determinism, and other pro-ornament thinkers offer more compelling justifications. New Haven, Connecticut-based sculptor

and architect Kent Bloomer contends that the purpose of ornament is to "articulate a realm of the imagination." In *The Nature of Ornament* (W.W. Norton, 2000), he explains that ornament is neither mere decoration nor pure "art" (in the contemporary sense of the word), but rather a category unto itself, with its own language. All ornament shares two vital elements, rhythm and metamorphosis, which contribute to placemaking and cityscape, he believes. Purists like Demetri Porphyrios, author of *Classicism Is Not a Style* (St. Martin's Press, 1982), and James Trilling, who just wrote *Ornament: A Modern Perspective* (University of Washington Press, 2003), offer the perennial traditionalist orthodoxy that only better historical awareness of ornament and its craft traditions will lead to new ornamental vocabularies and art forms.

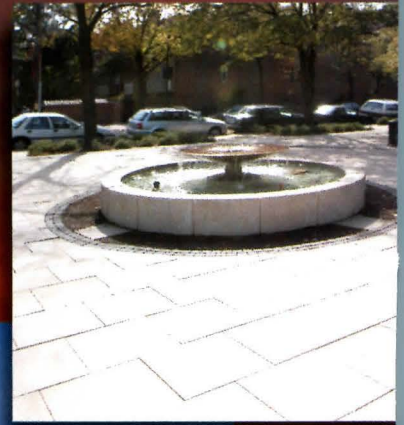
I'm optimistic that's not the case. Instead, we're seeing the stirrings of a new approach to ornament that is productively detached from antiquity. Using new construction techniques, for example, Herzog & de Meuron transform architectural surface in response to historical and social context; for the Eberswalde Technical School's library in Germany (1999), the result was 17 ornamental bands of iconographic images silkscreened on glass and concrete. In Melbourne, Australia, we find a hotbed of ornamental experimentation, albeit at an outsized scale. The firm Lyons, for example, applied optically invigorating simulations of computer-generated space to cladding and sunscreens for a training facility at Victoria University (2001). And Ashton Raggatt McDougall produced the cartographic National Museum of Australia (2001) in Canberra.

These projects share an important trait: the search for a completely original ornamental language, drawn from widespread sources and executed with the latest fabrication and material technologies, in ways that are unequivocally modern. With these tools, architects can distill potent images and forms, extract basic units of ornamentation, and multiply and manipulate them to the visual rhythms of our new millennium.

IS ORNAMENT CRITICAL TO YOUR PROCESS? If your firm is developing ornament as part of its architectural inquiry, we'd like to hear about it. Please send your process brief to me at *Architecture*, 770 Broadway, New York, New York, 10003.

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**The New Architecture:
Kudos and Crits**

I like the new format. Good luck with continuing in this direction.

Kathy Hancock

Santa Barbara, California

I immensely dislike the new format. It now has a trashy look similar to all the free magazines I receive in the mail; you no longer portray drawings and photos in an appropriate manner.

Terrel M. Emmons

*Director, The Architect of the Capitol
Washington, D.C.*

I wish you much luck in your new approach to our "business." The practice of architecture has everything to do with the process of creating buildings, not the worshiping of the end product. Too many magazines focus on the pretty pictures at the end, rather than on how the architect arrived at that solution. Young architects in love with the finished product tend to be frustrated and unhappy, because the journey's end had little to do with its beginning.

Lee Heckendorn

Cherry Hill, New Jersey

Good god. What a disaster! I enjoyed the old format and content. Obviously you are making a dramatic direction shift. The look seems disjointed—not overall, but in execution—and most of the content gets lost among a plethora of garish ads that now seem to be the focus. I understand the economics of magazine publishing, but I came to your publication for content, not ads on carpet squares and door frames.

Ty Jones

Sebastopol, California

I like the new design. Congratulations on the new magazine layout.

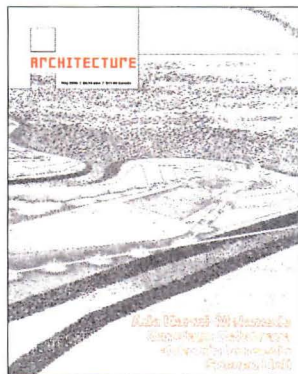
Steve Maher

Nashville

The inside of the May 2003 issue appears to be living up to your usual high standard of quality. The front cover, however, looks like a second-year architectural graphic-design project. Hopefully, next time it will be better.

William Bishop

Jacksonville, Florida



05 | 2003 ↑

I was impressed by your recent editorial, and I am very much looking forward to its promise. I was interested by the Process section.

Andrés M. Duany

Miami

How about a user-friendly feature, which would be numbering more of the pages, if not all? Whenever someone is referred to a continuation of a story, good luck.

Dion Neutra

Los Angeles

The "triumvirate" is a great new backbone, and the structure and the art direction of your May issue are great. Thanks for redefining things. Within our firm, we are motivated by guiding principles that help us to develop our work; I appreciate that you have established a new framework for your publication.

Tony Botta

New York City

I've always considered *Architecture's* content to be its greatest strength, but what a pleasant surprise it was to see the stunning, bold new design of the magazine. I was especially impressed by the revamped organization; even the detail given to the table of contents, which—in addition to its more cutting-edge look—is easier to navigate. Congratulations on bringing the magazine to a new level.

Nicole Anderson

New York City

When your designer copied Dutch/German graphic styles from the 1920s and 1930s, he apparently ignored the readability and legibility standards of those typographic

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styles. Must we wait for yet another redesign in the next few years to read easily the text of your magazine?

Fred Zimmer
Upperville, Virginia

From the editors: Effective last month, our type size has been increased throughout the magazine. We hope the larger text is easier on the eyes.

Tax Credit

In "Bringing Down the House" (May 2003, page 27), Bradford McKee cites a nebulous "dividend tax exemption" in President Bush's fiscal stimulus package, and asserts that it will reduce the incentive for corporations to purchase Low-Income Housing Tax Credits from housing developers. McKee assumes that corporations now freed from the burden of taxes on corporate dividends will be less likely to chase after other tax credits in order to reduce their tax liability. The fundamental problem with this argument is that corporations are not taxed on dividends—individual stockholders are. Corporations pay income taxes prior to distributing dividends to its shareholders. Repeal of the income tax paid by shareholders on dividends will not result in the reduction of corporate tax liability. Furthermore, simply reducing a corporation's tax bill is not by itself a disincentive for corporations to pursue income-tax credits. They will continue to pursue them because tax credits are a commodity—an asset that businesses may buy, hold, or sell to their own particular advantage.

Andrew Gerber
Denver

Judging the Jury

Tim Hartung's critique of the open competitions system in America (May 2003, page 44) is spot-on. Consider six judges, at least half of whom are not professional designers, reaching a consensus on the five best projects out of 400 submissions in just two days. Space, procession, feasibility are thrown out the window, because the 2-D image—the "money shot"—is all they can judge. Jurors need to be prepared better, paid better, or given more time. I've found European competitions to be less frivolous in their selection. The days of juries selecting projects based on 2-D images, hip factor, and what they believe to be their "spider sense" needs to end if we are to save a generation of architects, spaces, and general design dialogue.

L. Aaron Decker
Orlando, Florida

CORRECTIONS

The father of architect Amancio Williams, who inspired Claudio Vekstein's park in Buenos Aires (May 2003, page 84), was Alberto Williams, not Armando Williams.

WE WANT TO HEAR FROM YOU

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NEA FINALLY NAMES DIRECTOR OF DESIGN



The National Endowment for the Arts (NEA) has named a new director of design nearly a year after Mark Robbins left the post. NEA Chairman Dana Gioia announced in June that he had selected Jeff B. Speck, 39, director of town planning at Duany Plater-Zyberg (DPZ), Miami. When Speck takes the helm in mid-August, his job description will include overseeing the agency's design grants, as well as management of the Mayors' Institute on City Design and the Your Town program.

"I have a lot of ideas I'm excited about, but all I can say is, 'Watch this space,'" Speck said the week of his appointment. "There's a lot I could do to bring sensitivity to good design to people making design decisions," he added, noting that the scope of his new position with the NEA involves everything from "products to cities."

The NEA itself, long a politically beleaguered agency even during periods of relative calm, has continued to suffer its share of uncertainty over the past year. An interim chairman, Eileen Mason, tried in mid-2002 to fold the NEA's programs for literature, theater, traditional arts, media, and design arts into the visual arts and museums office (December 2002, page 26). Mason also planned to eliminate the NEA's New Public Works program, which Robbins established in 1999 to help stage design competitions for municipal public projects. Mason's reorganization plan

was scrapped when Gioia took office earlier this year.

Speck worked as a financial analyst in the housing division of First Boston and earned a master's degree in art history at Syracuse University before completing a master's degree in architecture at Harvard. He joined DPZ in 1993, and since then has helped the firm stay at the forefront of the New Urbanism movement it helped to establish. He has managed neighborhood development projects for DPZ in several states, as well as in Canada and Europe.

Gioia showed an interest in the work of DPZ, Speck says, but he adds that his background does not suggest that the NEA plans to establish a New Urbanist agenda, although "it shows a sensitivity to New Urbanist designs." When he appointed Speck, Gioia praised his "innovative planning projects" that show "how good design can improve the quality of life for all Americans." **Bradford McKee**



HADID WINS MIES AWARD



Zaha Hadid's Car Park and Terminus Hoenheim North in Strasbourg, France, has received the European Union Prize for Contemporary Architecture-Mies van der Rohe Award 2003, a biennial honor given by the European Union and the Fundació Mies van der Rohe of Barcelona. The prestigious award includes a cash prize of 50,000 Euros (\$59,000). German architect Jürgen Mayer received a special mention as an emerging architect for his Scharnhäuser Park Town Hall in Ostfildern, Germany. Hadid and Mayer received their prizes on May 28 at the Mies van der Rohe-designed German Pavilion in Barcelona. **Abby Bussel**

CHRYSLER DESIGN AWARDS TERMINATED



After a decade in which design has gained mainstream recognition, one of the champions of this movement, the Chrysler Design Awards, has been terminated. The decision is attributed to a difficult economic climate and disappointing car sales for the Chrysler Group, a division of DaimlerChrysler and sponsor of the awards, according to the *New York Times*. The company failed to find any marketing value in the program: The question was whether, because of the awards, "anybody ever said 'I'd like to buy a Chrysler or a Jeep vehicle,'" Trevor Creed, the company's senior vice president for design, told the *Times*.

However, Leslie Gill, an architect and cochair of the awards program with Chee

Pearlman, suggests that organizers also felt the program had accomplished what it set out to do. "We've gone a long way toward making design something that's topical and thought about. That, combined with the economic environment and Chrysler's need to consolidate its energy into cars—the two things came together. There was a sadness at letting it go, but at the same time, there was a sense that a lot had been achieved."

Beginning with its inception in 1993, the program recognized six recipients each year producing designs for a range of industries—some with an aesthetic aspect (architecture, fashion), others without (telecommunications, aeronautics). The award stood out for its multidisciplinary

purview, which Gill believes will be missed most. "This was the way the design fields found out what was happening in other disciplines," she says.

Chrysler will continue to support a range of design-related programs, notes Vikki Hardy Brown, senior vice president with BBDO, Chrysler's public-relations agency, just not on scale with the awards program, which reportedly cost \$1.5 million for its 10th anniversary celebration last year. One has to wonder, however, what impact this amount really has on the bottom line of a company like DaimlerChrysler, which reported revenues of \$156 billion for 2002.

Emilie W. Sommerhoff

⇒ The Greek government's plans to build a museum designed by Bernard Tschumi at the Acropolis in Athens has been thwarted by a ruling from the country's highest court, which has concerns about antiquities in the area.

⇒ Frank Gehry won a competition to design the University of Connecticut's School of Fine Arts, beating Zaha Hadid and partners Mack Scogin and Merrill Elam.

⇒ In its latest step to remove barriers to government financing for religious organizations, the Bush administration is allowing federal grants to be applied to the renovation of churches and religious sites designated historic landmarks.

⇒ In an agreement with the Port Authority of New York and New Jersey, Studio Daniel Libeskind will write design guidelines for the main transit hall for the World Trade Center site, at least partially answering ongoing questions about the firm's actual role in the project. Meanwhile, the memorial competition for the site drew over 13,000 registrants from all 50 U.S. states, and 94 countries. A final design will be chosen in the fall.

⇒ A shortlist has been released for London's masterplan for the 2012 Olympic bid: Arup, Foster and Partners; EDAW/HOK; Terry Farrell and Partners; MBM Arquitectes; Herzog & de Meuron; and Richard Rogers Partnership/WS Atkins. A decision will be made in late July.

⇒ Niall Kirkwood assumes the position of chair of the landscape architecture department at Harvard Design School this month.

⇒ I.M. Pei's exhibition hall addition for the German Historical Museum in Berlin is open.

⇒ Arquitectonica will design the United Nations memorial to fallen peacekeepers at the organization's New York City headquarters. The firm is reportedly doing the commission pro bono.

⇒ The AIA's May survey of work on the boards showed a modest increase in billings over April.

⇒ Liverpool, England, has been named the European Capital of Culture for 2008.

GEOFFREY BAWA, 1919-2003



Sri Lankan architect Geoffrey Bawa died May 27. He was 83. Winner of the 2001 Aga Khan's Chairman's Award, a lifetime achievement honor, Bawa seamlessly meshed the traditional forms and materials of his native Asia with the open, flowing spaces of the modern movement. Following law school in England, he traveled the world for several years and only came to his life's work in his 30s, graduating from the Architectural Association in 1957. For 40 years, Bawa worked steadily in a regionalist modern idiom

that integrated landscape and built-form, producing lush resort designs, private residences, and educational buildings, and influencing generations of young architects in Sri Lanka and elsewhere in Asia and Europe. Among his Sri Lankan projects are: the Ena De Silva House (1961); Bentota Beach Hotel (1968), the country's first purpose-built resort hotel and the beginning of its reputation as a tourist destination; the parliament building in Kotte (1979); and Ruhunu University (1984-1985). **Abby Bussel**

ENTERTAINMENT RETAIL: THE BIG O?



Despite the high cost of oil, destination retail venues—not to mention SUVs—continue to grow in size. In April, for example, a dramatic entertainment and shopping project opened alongside Japan's Tokyo Dome, an air-supported soccer field in the heart of the city. Its LaQua amusement park offers five attractions, including a 262-foot-tall rollercoaster that pierces the heart of a Ferris wheel called "the Big O" (above) and snakes through voids in its host skyscraper's façade. According to developers, LaQua is part of a spa concept intended "to help the people of Japan to relax."

Even more enormous and spectacular, a 1.2 million-square-foot center near Madrid contains Europe's largest indoor ski slope. Built by U.S. developer Mills Corporation and opened last May, the \$300 million complex, "Madrid Xanadu," has 220 shops, a fifteenplex, and an 820-foot-long ski run decorated with 100 fake pine trees.

Not to be outdone, Germany boasts a water-theme park adapted from the surrealistical festooned remains of a nuclear-power plant. In 1995, astute Dutch businessman Henny van der Most bought the abandoned property for about .01 percent of its original cost, apparently envisioning visitors climbing the cooling tower and diving into the reactor core. Just two decades ago on this site, clashes between 50,000 demonstrators and police temporarily halted construction of the 282-megawatt reactor. Today, it's Kernwasser Wunderland—"nuclear-water wonderland"—a charming destination of water slides and bumper cars. **C.C. Sullivan**

IT TOOK SO LONG TO BAKE IT...



Architect-designed cakes and their "structural drawings" were auctioned at a benefit in June to raise money for the Yonkers, New York-based Greyston Foundation, which provides housing, childcare, and health services.

The fund-raising idea was the brainchild of Maya Lin, says David Sweeney, the foundation's president. The bakery will move into a new Lin-designed building this fall. "With the completion of the bakery, architecture

ended up being a theme for this year's fundraiser, but also for the entire year," says Sweeney. The event raised over \$35,000.

Participating architects included Frank Gehry, Steven Holl, Richard Mier, Robert A.M. Stern, and Rafael Viñoly and landscape architect, Edwina von Gal. There were 12 cakes in total. In Sweeney's opinion, the Gehry cake was the toughest to bake/build. Big surprise! **Emilie W. Sommerhoff**

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- ⇒ Construction has kicked off for the permanent home of the Skyscraper Museum, designed by Skidmore, Owings & Merrill, in Manhattan's Battery Park City. Completion is expected in October 2003.
- ⇒ Six firms have been shortlisted for the \$86 million redesign of the Anchorage Museum: David Chipperfield, London; Michael Maltzan, Los Angeles; Saucier + Perrotte, Montreal; Snøhetta, Oslo; Steven Holl, New York City; and Vincent James, Minneapolis, Minnesota. A decision will be finalized this month.
- ⇒ The California College of Arts and Crafts in San Francisco has changed its name to California College of the Arts, to reflect its broad curriculum, the college says.
- ⇒ A year after its search began, the University of Texas at Arlington has appointed Don Gatzke dean of its architecture school.

CUSTOM DESIGNS ON NEW WAGE LAW

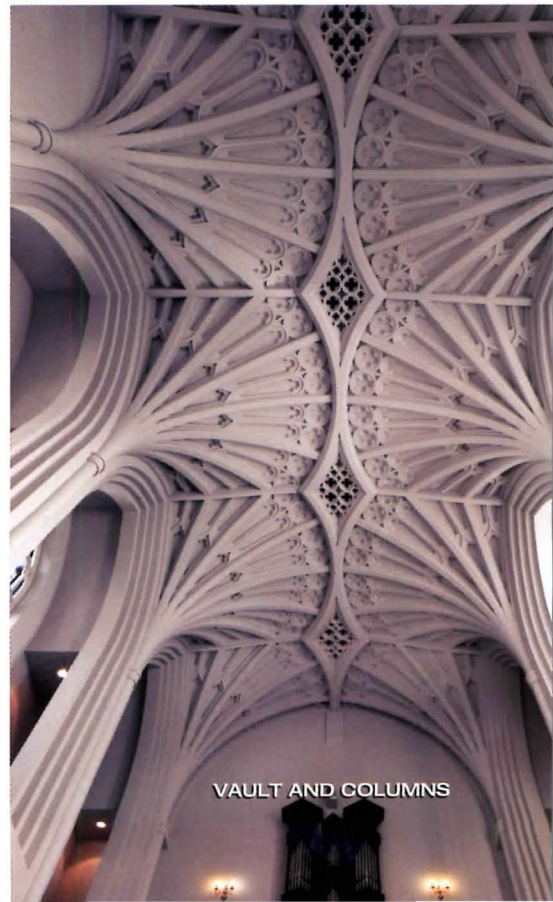


A recent decision by the California Department of Industrial Relations (DIR) requires building-product makers to pay "prevailing wages" if they custom-fabricate products for a state-funded project. The current prevailing-wage system typically means contractors and subcontractors pay employees at a higher scale on public projects, than private; the DIR decision, however, broadens the definition of "subcontracting" to include the prefabrication of work in a manufacturer's factory. Whether an item is produced specifically for a project depends on factors including "whether the item was produced in accordance with the plans and specifications ... or shop drawings based thereon such that the item differs from a standard, generic item." This test impacts a range of building products, when prefabrication, on-demand manufacturing, and CAD/CAM integration of design and fabrication are making customization more commonplace.

Enforcement of the decision is on hold to allow for public comment, and nearly 100 people attended a DIR forum in Los Angeles in June. Labor representatives praised the decision for protecting workers, noting that the policy stemmed from a ruling against a contractor who circumvented prevailing wages by transferring work from a job site to an off-site fabrication shop.

Contractors, manufacturers, and business organizations, conversely, predict chaos in enforcing compliance among multiple tiers of suppliers—some of whom may be located out-of-state or even outside the country. These groups also fear that increased costs would translate into higher taxes or cutbacks in new construction. A manufacturer of prefab classrooms attending the DIR event claimed the decision "would raise the costs of modular units by 52 percent."

The challenge for DIR is to redefine the blurred line between construction and manufacturing, preserving the benefits of prevailing wages while allowing the marketplace advances in manufacturing. Whatever DIR decides, court challenges and political wrangling seem inevitable. Other states will be watching closely. **Michael Chusid**





MIAMI MODERN

In this relatively young city, architects design with a reverence for its history. by Beth Dunlop

Miami architecture has always been driven by dreams and schemes, plans and plots, and it's never quite clear which way the balance is tipping, toward good design or overdevelopment. Lately it seems the latter has taken the lead. With a current population of 2.3 million in Miami-Dade County (the city itself is less than a quarter of that and continues to lose residents to the suburbs), the sprawling metropolitan area has grown out of control, up too high, and spread out too far.

The construction cranes and new condominiums still going up along both the Atlantic Ocean and Biscayne Bay is evidence that the *economic crisis* in the rest of the country is less pronounced here. The luxury apartment market is strong, even if tourism has sagged in Miami and Miami Beach during the past two years. Alas, the other end of the housing market, low-income, gets far less attention.

PRESERVATION AND PROGRESS

Despite what sometimes appears to be unchecked growth, Miami does have a strong and vocal bastion of architects and planners. It is a city where plans, both city-sponsored and private, abound—master plans, town plans, urban design plans, historic preservation plans—resulting in the occasional remarkable building.

Preservationists in Miami Beach have set their sights on preserving the city's postwar resort architecture, more commonly known as Miami modern, or MiMo; but only a small percentage of the structures currently have local landmark protection. In the famed Art Deco District—or South Beach, as it is often called—tensions are mounting as local residents and the preservation commu-

nity join together to fight the deleterious impact of the nightclub industry. Another hotly debated issue, this one dividing preservationists, is a proposed trolley system linking the ever-popular South Beach with downtown Miami.

A COMPANY TOWN

Miami is, of course, both the birthplace of New Urbanism and home to its cofounders Andrés Duany and Elizabeth Plater-Zyberk and their architecture and town-planning firm, DPZ. Though it works worldwide, the firm has deep roots in the city and a growing number of offspring here. Its impact is undeniable; even mega-firm Hellmuth, Obata + Kassabaum established a town-planning practice in Miami and hired DPZ alumnus Oscar Machado to help guide it.

Recent master-planning efforts, undertaken by Miami-Dade County and the city of Miami, respectively, have included the area around the suburban Dadeland Mall and the very urban Biscayne Boulevard corridor, where the county's new performing-arts complex, designed by Cesar Pelli a decade ago, is only now under construction just north of downtown Miami.

With Plater-Zyberk as the dean at the University of Miami School of Architecture since 1995, there is a healthy supply of well-trained young talent to staff the charrettes that have locally become the most well-regarded means of creating urban design plans with a certain measure of community and political support. This spring, Plater-Zyberk ran a community-wide charrette sponsored by the Miami City Planning Department to establish new guidelines for the fast-changing northeastern quadrant of Miami. The timing is



Slated for completion this fall, the Montclair condominium complex designed by Chad Oppenheim is a five-story structure wrapped around an existing two-story apartment building (top). Opened in 2000, Arquitectonica's Miami City Ballet, located on the edge of the city's Art Deco District, is in keeping with the area's prevailing style (above left). Bernard Tschumi's architecture school at Florida International University opened this spring (above right).

key as both developers and gentrifiers, whose agendas are not always the same, are moving into the area simultaneously.

A plan by DPZ for a smaller area—the 20-square-block Miami Design District just north of downtown—was commissioned privately in 1997 by developer Craig Robins, who has spent the last several years buying historic buildings within the struggling district, where furniture showrooms have been a mainstay since the 1920s. Plan in hand, he has begun to effect a notable turnaround within the area, luring artists and art galleries, as well as major furniture showrooms. But the DPZ plan also created a framework for new architecture, such as the introduction of a public street that will run north-south through an area of long-empty lots, creating more street frontage for buildings and cafés. Now on the boards in the district are works by New York City-based Keenen/Riley Architects, including a warehouse-to-restaurant conversion and two Miesian courtyard houses designed in collaboration with Proun Space Studio, also based in New York City (February 2003, page 29). Fellow Manhattan architect Walter Chatham is design-

ing a new skin and signage for an existing 1970s structure, the Newton Building, while two up-and-coming Miami firms, Cure & Penabad Architects and Khoury Vogt Architects, also have interesting projects in the works, including the former's Oak Plaza, a new public park in the heart of the district.

CLASSIC MODERN

Robins's development company, Dacra, has gained a fair amount of attention for another DPZ-planned, architecture-driven project—Aqua, a \$225 million residential development in Miami Beach, to which he has lured a number of modernists, prominent either locally or nationally. Now under construction, with the first residents slated to move in next year, Aqua will have 166 townhouses and midrise apartment units all built on the southern half of an island in the Intracoastal Waterway. Aqua will feature works by such local architects as Alison Spear, Brown Demandt, Suzanne Martinson, and Allan Shulman, along with New Yorkers Chatham, Alexander Gorlin, Emanuela

TOP: COURTESY OPPENHEIM ARCHITECTURE + DESIGN; BOTTOM LEFT: DAN FOKER; BOTTOM RIGHT: PETER MAUS/ISTOCK

Frattini Magnusson, and Gisue and Mojgan Hariri.

The architecture is what one might term “classic-modern,” in that it is conceived as an ode to the years in which Miami Beach was the “it” resort city, from the era of art deco to the years in which Morris Lapidus redefined luxury at such hotels as the Fontainebleau (1954) and the Eden Roc (1955). Aqua’s traditional master plan and modern architecture represent the norm in Miami, where design tends to invoke one or the other—if not both—regional traditions.

UP-AND-COMING

The list of young Miami architects to watch is a long one. Chad Oppenheim, a graduate of Arquitectonica, is making a name for himself with his sleek, well-proportioned “loft” and apartment buildings, as well as a new post-production studio for the company Vapor Post, just south of the Design District. Max Strang, a Floridian who went north for graduate school like many of the city’s architects, recently completed his first projects: two houses in Coconut Grove that echo the area’s Bahamian style and the southern shotgun house. Strang’s houses are part of a larger mandate—a town-gown effort by the private and public sectors in conjunction with the University of Miami—to revive the ailing historic Bahamian neighborhood, beset for years by crime and poverty.

Elsewhere in the city, a number of buildings by high-profile out-of-towners are going up. A recently dedicated architecture school at Florida International University was designed by Bernard Tschumi, and an architecture building for the University of Miami by Leon Krier began construction this spring. Ground has just been broken for a condominium featuring interiors by Philippe Starck, whose Miami debut was the Delano Hotel. An office building in the Brickell financial district by Kohn Pedersen Fox is nearing completion. And Frank Gehry has just agreed to create a concept (not a building necessarily) for an experimental music space for the New World Symphony.

But most eyes here stay focused on local talent—the more mature work of DPZ and Arquitectonica and the emerging skills of younger architects. And if there’s sometimes despair over the dominance of developers and the ever-diminishing horizon line as buildings usurp the long views of a flat Florida landscape, that is counterbalanced by the city’s new and proposed architecture. Miami has a diversity and a kind of plurality not seen in other cities where ever-vigilant efforts to plan well sometimes result in a less-buoyant built environment.

Beth Dunlop is the architecture critic for the *Miami Herald* and a contributor to *House & Garden*. She is the author of numerous books, including the forthcoming *Too Big* (Bloomsbury, 2004).

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SMART GROWTH?

Antisprawl developments are getting mixed reviews. by Mark Alden Branch

While urban sprawl in America is far from being tamed, it is heartening to realize that not long ago, mixed-use, higher-density, and pedestrian-friendly developments were seen as novelties at best, and pie-in-the-sky dream worlds at worst. But now, several factors—the evangelism of New Urbanism promoters, the increased appeal of urban living, and the dire need for relief from the effects of sprawl—have made such development normative, if not yet dominant.

Particularly in the western United States, new mass-transit systems are providing the impetus for high-density, mixed-use development at or near transit stations. In Dallas alone, \$800 million in development occurred along that city's new light-rail system between 1996 and 2001. Denver, Seattle, Portland, Oregon, and several cities in California are all actively promoting transit-oriented development and increased density along public transportation lines.

All well and good, says architect and planner Stefanos Polyzoides, but just how urban are some of these developments? "I'm discouraged by the suburban developers who come into cities and put in density without any serious interest in urban character," he says. A cofounder of the Congress for New Urbanism (CNU), Polyzoides is adamant that just increasing density and mixing uses is not enough: Design—and architectural style—are critical, he says.

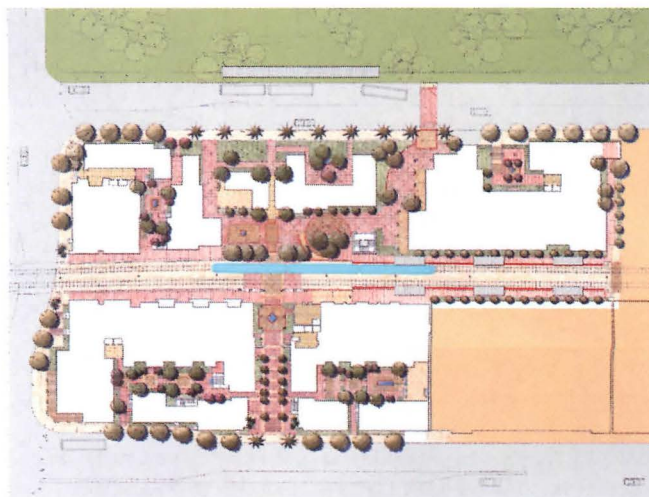
FITTING IN

Polyzoides points to two projects by his own Pasadena, California-based firm, Moule & Polyzoides, that are currently in development along the Gold Line light-rail corridor that runs from Los Angeles to Pasadena. Mission Station in South Pasadena is a 1.65-acre, half-block development with 67 condominiums and 5,000 square feet of retail space. It lies adjacent to a transit station and between a community center and a neighborhood of bungalows. The residential units, which resemble single-family houses, attempt to fit into the local context, though at a higher density than their neighbors.

Del Mar Station, on the edge of downtown Pasadena, surrounds a Gold Line station with 347 housing units, 20,000 square feet of retail, and an underground parking garage for 1,200 cars. Here, the station is the centerpiece of a denser urban project. A public plaza with a campanile and retail shops sits at the station stop and acts as a "gateway to the city," the architects say. On one side of this space are multistory apartment buildings with retail space at plaza level; on the other side, between the plaza and a public park, are smaller-scale Mediterranean-style retail buildings.

"The point is that not all transit stops are the same, and there is no one-size-fits-all solution," says Polyzoides. "The goal is to see what is there and what could be there. Transit-oriented development is nothing more than appropriate urban development. It can be at a variety of scales."

Although projects like those in Pasadena are easier to realize than before, advocates of transit-oriented development (TOD)—



With a light-rail station and 347 housing units, Moule & Polyzoides's Del Mar Station, a transit-oriented development on the edge of downtown Pasadena, California, is the centerpiece of a denser urban project.

that is, new development near bus or rail stations that is designed to be pedestrian-friendly and reduce car trips—are still frustrated that the idea hasn't taken off more quickly. Such development has been part of the discourse in architectural and planning circles for more than 15 years, but finding a way to make TODs happen has been difficult, according to Hank Dittmar, president of the advocacy group Reconnecting America and chair of the CNU board of directors. Dittmar cites two reasons for this: First, promoting TOD is "nobody's business"—or, at least, nobody's primary business. Even its biggest promoters, transit agencies, have more pressing issues to deal with. Second and more important, there is not yet a body of knowledge about proper densities and other factors that planners and developers need to build with confidence. "We've had a decade of experimentation, some more successful than others," says Dittmar. "We now have enough on the ground to start to put together data on what works best, so we can create performance standards that you can count on."

LEGAL MOTIVATIONS

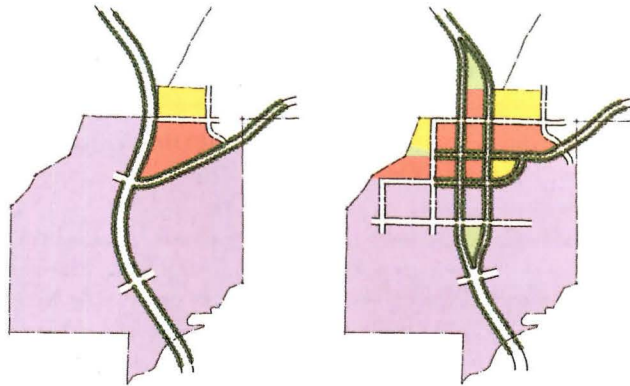
While transit-oriented development is the most talked-about generator of increased urban density, government actions also come into play. In suburban Seattle, a mixed-use project called Issaquah Highlands is rising without a rail line in sight. There, the incentive for a density that is "not downtown but more than a suburban office park" is a state-mandated "growth boundary," according to CNU cofounder Peter Calthorpe, whose Berkeley, California-based urban design firm Calthorpe Associates master planned the development. Washington is one of several states that have enacted laws restricting the extension of urban infrastructure within such boundaries in an effort to tame sprawl. Issaquah Highlands, a 2,000-acre "new town" 17 miles east of Seattle, sits just inside that boundary. "The developers will tell you that they would never be doing this mix or this density without the boundary," says Calthorpe, author of *The Next American Metropolis* (Princeton Architectural Press, 1993).

Anchored by a major new campus for Microsoft that is just about to break ground, Issaquah Highlands will feature a town center with small stores and 3,300 units of housing ranging from apartments and medium-density "cottages" to large-lot single-family houses—a mix that is rare for a greenfield site so far from a city center. "Because of the growth boundary, high-density mixed-use at the margin is feasible," Calthorpe says.

Although Issaquah Highlands is not a transit-oriented development, it does employ a novel strategy for dealing with automobile traffic. A new arterial road that connects the community to Interstate 90 comes directly into the town center, but Calthorpe wanted to avoid having a six-lane thoroughfare invading a pedestrian-oriented area. The solution—which Calthorpe Associates is also employing in other developments—is to turn the road into a "one-way couplet" of parallel streets one block apart. Smaller one-way streets, goes the theory, are less daunting to pedestrians.

"We had to convince the highway department that it would work as well as a traditional intersection," says Calthorpe. "We think it will actually work better, because the traffic lights on one-way streets don't require a left-turn phase."

More than Polyzoides, Calthorpe is optimistic about the degree to which developers and residents are coming around to a more urban mindset. He believes the current popularity of high-density, mixed-use development represents a cultural shift. "All of the



At Issaquah Highlands, Calthorpe Associates rerouted an invasive six-lane highway into a more pedestrian-friendly "one-way couplet" of parallel streets set one block apart.

smart developers have realized that mixed-use is at the center now and not a niche," says Calthorpe. "People want to live in urban environments. Traditional families make up just 24 percent of households. Ozzie and Harriet are no longer driving the train."

Mark Alden Branch, executive editor of the *Yale Alumni Magazine*, writes frequently about architecture and design.

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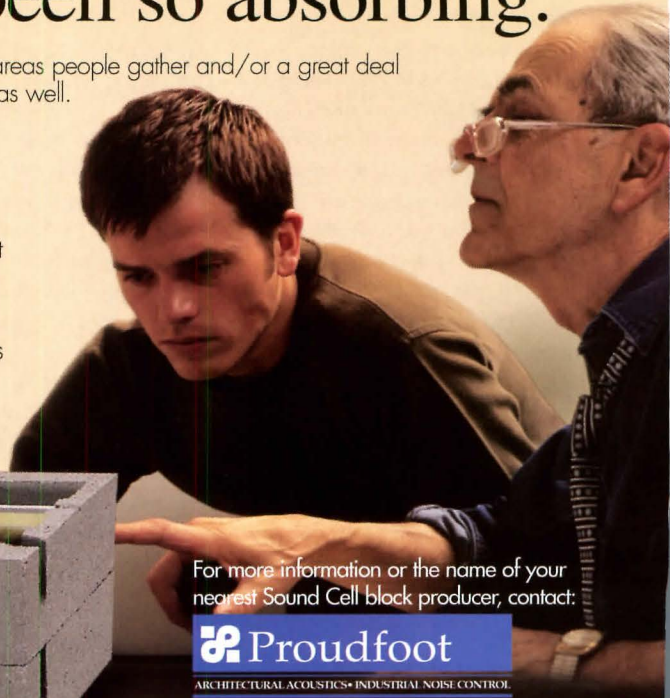
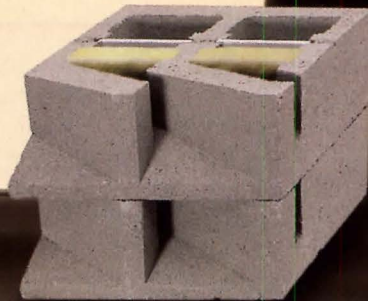
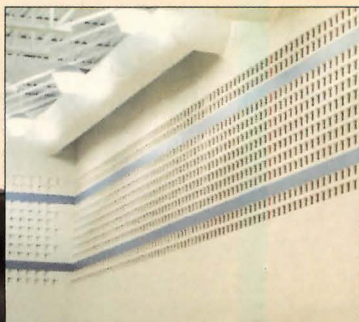
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ECO-FRAUD

"Green buildings" might not be all they're made out to be. by Cathy Lang Ho

The term "greenwashing" is not yet as common in architecture as it is in the corporate and political worlds, though it soon will be. Defined as the deliberate dissemination of disinformation aimed at presenting an environmentally responsible public image, greenwashing is one of the more pernicious by-products of the growing and otherwise heartening general interest in sustainability. Companies, from Shell to Nike to Home Depot, are among the high-profile alleged greenwashers—skewered by watchdog groups, the press, and in lawsuits for promoting eco-friendly images that are at odds with their actual practices. Equally guilty are politicians prone to generating innocuous platitudes or under-achieving legislation in the name of the environment.

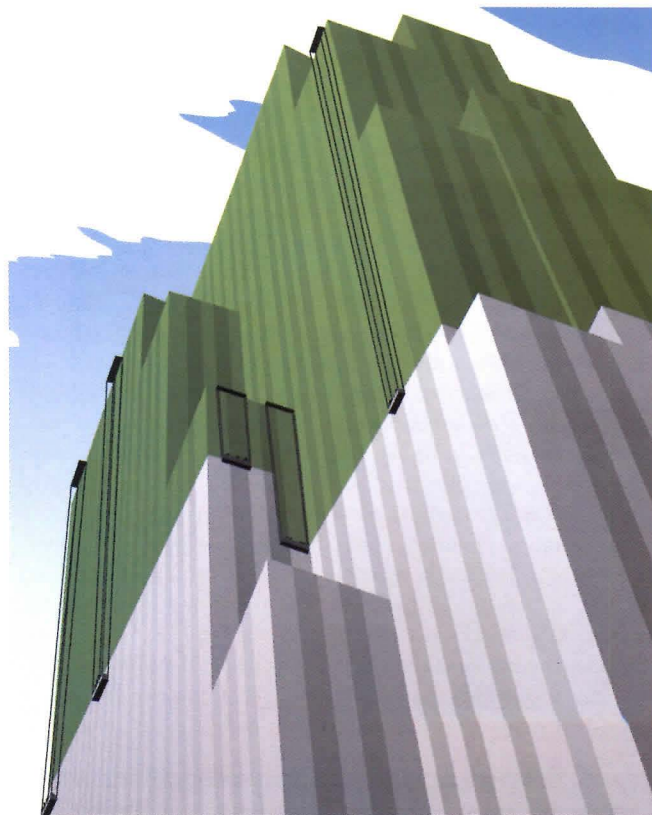
Environmental responsibility is fashionable. These days, it's rare to find a new building or product that doesn't make claim to eco-friendliness. Lacking clear definitions, "green building" or "sustainable architecture" are easily manipulated by architects, whose success hinges on publicity. The media, meanwhile, are complicit in the greenwashing problem. Looking for fresh stories, journalists give attention to projects without verifying their green claims.

Despite its complexity, sustainable architecture is routinely reduced to a few buzzwords or ideas (efficient, solar, healthy, passive, reuse, recycled), and here the problem begins. "It's easy for architects to select a few products through GreenSpec and then call what they do 'green,'" remarks Greg Kiss of Brooklyn, New York-based Kiss + Cathcart, referring to the online products directory. The checklist mentality is greenwashing's prime instrument—and good design's main obstacle. "Though many supposed green buildings might be well-intentioned, they often miss the larger point," says Kiss, who has been exploring sustainable design strategies for almost 20 years. "Sustainability is just one input, along with program, client needs, site, budget, experience, beauty, and so on. For example, if green features don't make good economic sense, the design is a failure." In short, we are far from the point where good architecture is green architecture.

"We see lots of projects that make environmental claims, but in most cases, there's not enough information to judge their validity," says Nadav Malin, senior editor of the journal *Environmental Building News*, which is published by the creator of GreenSpec. He cites the highly publicized Commerzbank in Frankfurt by Foster and Partners. "I tried to figure out the building's energy use per square meter, but the owners didn't want to share that information. In fact, I've never seen any data about the building published anywhere."

TAKING THE LEED

To help standardize what qualifies as green architecture, the Washington, D.C.-based industry group U.S. Green Building Council (USGBC) created the Leadership in Energy and Environmental Design (LEED) Green-Building Rating System, a vol-



untary, point-driven certification program that assesses building performance. Both architects and clients recognize the public-relations value of a high LEED rating.

LEED is a positive starting place, but the system is far from perfect. "We're still learning about what it is we're measuring," says Malin. Furthermore, while accordance to USGBC's standards is desirable, many LEED-rated buildings can hardly be considered exemplars of sustainable architecture. Colin Cathcart of Kiss + Cathcart remarks about a coastal California building recently awarded the group's highest rating, Platinum: "It met all the LEED requirements, but it had no connection with the ocean, and just looked like a regular building that could have been anywhere." He adds, "It was also expensive because almost all the environmental aspects were change orders." The architects went back and slapped on green features to earn LEED points.

The simplification of green tools, from product catalogs to building ratings, may actually exacerbate the greenwashing problem. "LEED seems geared at generalizing standards and making them universally applicable, but it's wrong to recommend certain so-called green materials or techniques to any situation," says James Wines, of New York City-based architecture firm SITE and a pioneer of green architecture. "Unless a building is designed with the regional context in mind, it cannot be sustainable." So, for example, photovoltaics should be used where there is a lot of sun and windmills where there is wind, but not necessarily vice-versa, despite the fact that each technology earns LEED points for exploiting renewable energy. *Though LEED does reward contextual responses, its blanket approval of other features (materials with recy-*

dled content or certified wood, for example) elides the fact that these might not be the best choices under all circumstances.

Regional significance was one of the criteria that curator David Gissen employed in evaluating projects for the *Big and Green* exhibition, a review of large commercial projects at the National Building Museum. He also considered expressiveness and historical meaning, in addition to operating performance. The regional and historical filters allowed Gissen to include buildings boasting accomplishments that might be seem piddling against current standards, but remain notable as "firsts." New York City's Four Times Square, for example, was groundbreaking as a large-scale, speculative urban office building using fuel cells in the 1990s (although the project has been accused of greenwashing). In one sense, Gissen's relativist standards emphasize an important aspect of green architecture: It is in constant flux. Acknowledging this, USGBC is working to launch a post-occupancy recertification program for previously LEED-rated buildings, as well as a program to certify existing buildings.

A theoretical project designed by Kiss + Cathcart and included in *Big and Green*, is an example of how unstable presumptions about sustainability can be. In light of the growing malleability and affordability of photovoltaics, a building's skin can be a valuable energy-producing system, suggesting that it may be wise to maximize a building's skin-to-floor ratio. This could overturn the notion that minimizing the skin-to-floor ratio is environmentally

kinder because it conserves resources. Any strategy that has been regarded as eco-friendly must be continually revised. "Architects must constantly update their awareness of not only what technologies are out there, but how to use them," says Cathcart.

MODERN IDEAL

Greenwashing is keeping the bar low—not just for sustainable architecture but for architecture in general. "It becomes harder to recognize where the real green developments are happening," says Malin. "Those who claim to do green things without having proven it create unrealistic expectations about what actually can be done within a certain time frame and budget."

Interestingly, the checklist approach that characterizes most sustainable architecture today echoes the beginnings of modernist architecture, which was codified to a set of industrial materials and systems—and an "efficient" imagery to match. Observes Wines, "At the end of the 1800s, everyone was claiming to be a modernist, but a lot of the work was still stuck in nineteenth-century practice. It wasn't until the 1930s when you saw a bursting out, a real expression and understanding of what modernism was about. That's happening now with sustainable architecture."

Cathy Lang Ho also writes for *Dwell* and *ID*. She coauthored *House: American Houses for the New Century* (Universe, 2001).

MOLD: THE NEW ASBESTOS?

Just as asbestos-related lawsuits became a cottage industry for lawyers in the 1970s, so threatens mold today. In 2002, insurance companies paid \$2.5 billion in mold claims, according to the Insurance Information Institute. Health problems allegedly connected to mold have included fatal pulmonary hemorrhaging, asthma, and allergic conditions.

The crisis has been attributed to water intrusion caused by an increase in faulty ventilation systems or by airtight buildings. "Hermetically sealed buildings that do not have an air gap to equalize air pressure drive water into the building," explains Jack Kemp, an architect with Weir/Andrewson Associates in San Raphael, California, which specializes in forensic architecture.

Architects need to know how to ensure that their designs minimize the occurrence of mold, and how they can protect themselves from liability if it is discovered. According to Kemp, architects should consult a technical expert, submit construction documents with accurate details, and specify the most appropriate waterproofing products. In addition, they should avoid specifying incompatible materials; for example, certain sealants used with vinyl windows may fail, allowing for leakage.

They should also hope for good luck. Many insurers are now either limiting, excluding, or making coverage for mold problems prohibitively expensive for building owners and contractors; thus, architects and engineers are next on the food chain for those looking for someone to sue. As insurance companies are rewriting policies to exclude mold coverage, architects should understand how they are covered and what limitations and exclusions apply.

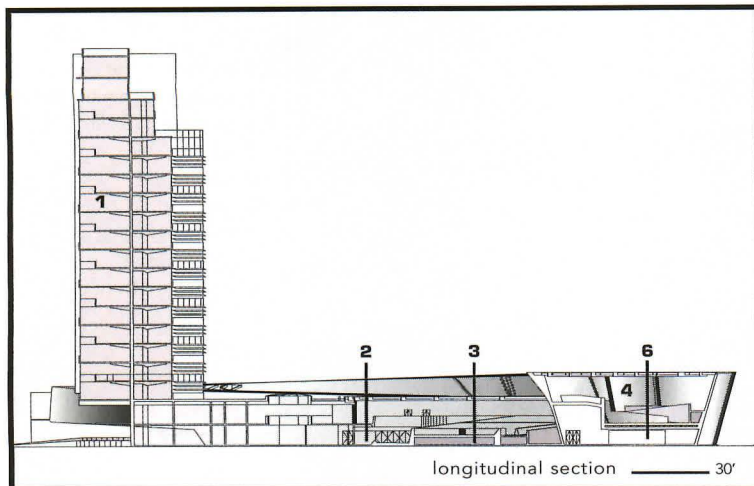
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Beyond simply being covered, the best way for architects to mitigate risk is to address mold issues when drawing up a contract, says Judy Lanehart Mendoza, a senior risk-management specialist with Victor O. Schinnerer & Company, which manages the country's largest professional liability insurance program for architects and engineers. She recommends that architects "negotiate contractual protections such as a waiver of damages, a limitation of liability, and/or an indemnification for claims not related to your sole negligence."

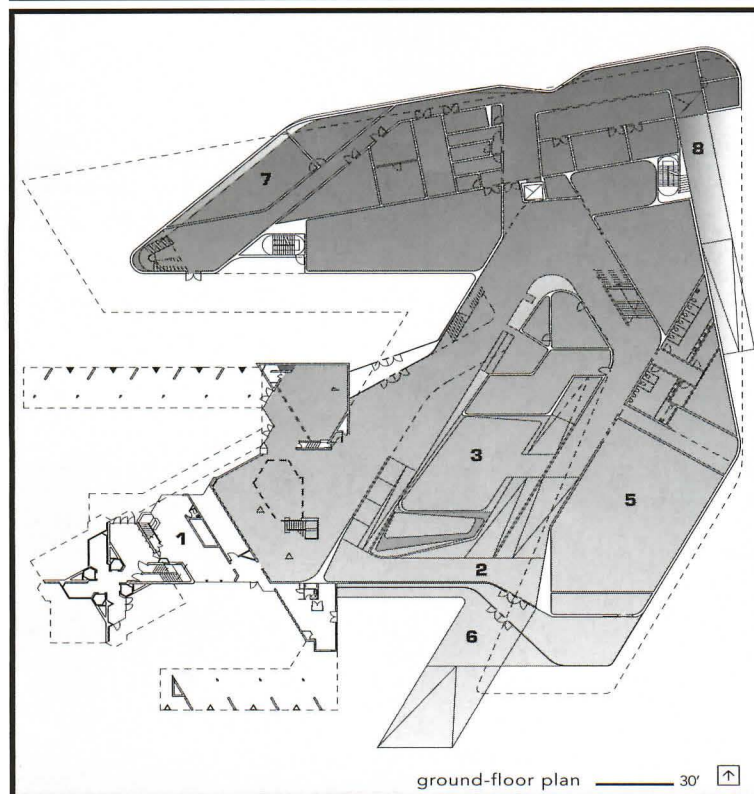
Architects have less exposure than contractors do. Because they are professionals, negligence has to be proven. Failure to meet the architect's "standard of care" (a cryptic term that means an architect should do what another design professional would do in a similar project, in the same geographic location, and at the same time) must be proven by a court. Moreover, there haven't been a significant number of claims filed by or against architects. "At present, mold claims represent less than 2 percent of our total inventory of claims against design professionals," says Mendoza. While some professional-liability insurers for architects now exclude mold, Schinnerer has no plans to do so.

After several multimillion dollar claims in 2001, things may be calming down, believes Attorney William Peters of Gordon & Rees in San Francisco, who specializes in mold cases. Last year brought a spate of verdicts for the defense, because of the ambiguous science behind claims, he explains.

"[Mold claims] may all go away in three years if there are no more deep pockets," reminds Mendoza. **Bay Brown**



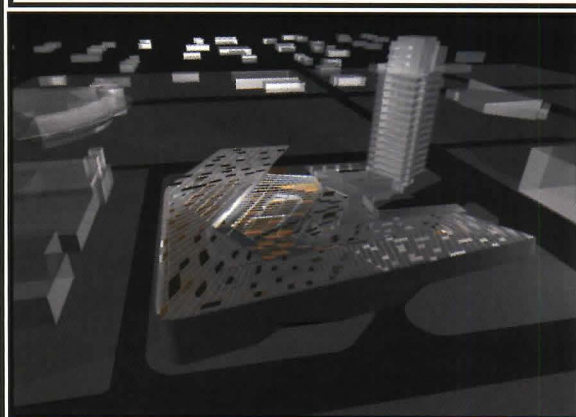
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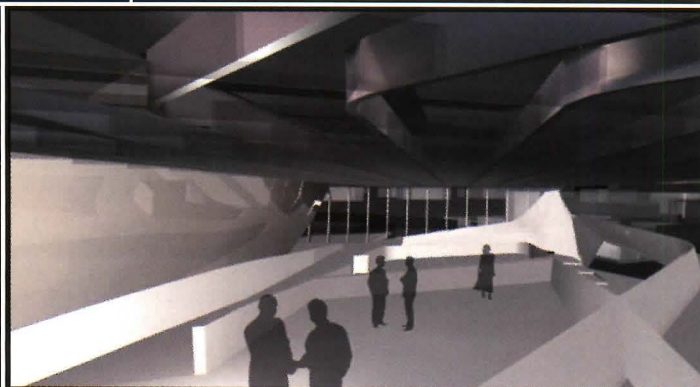
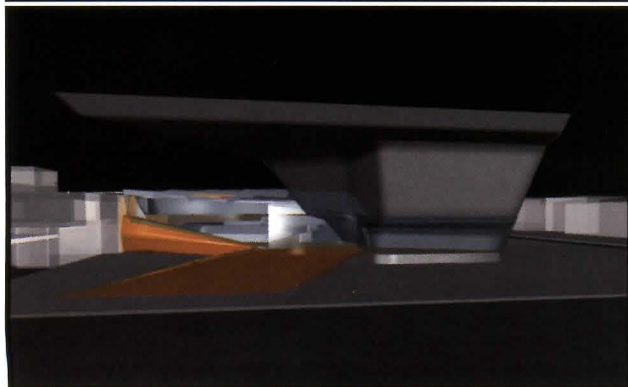
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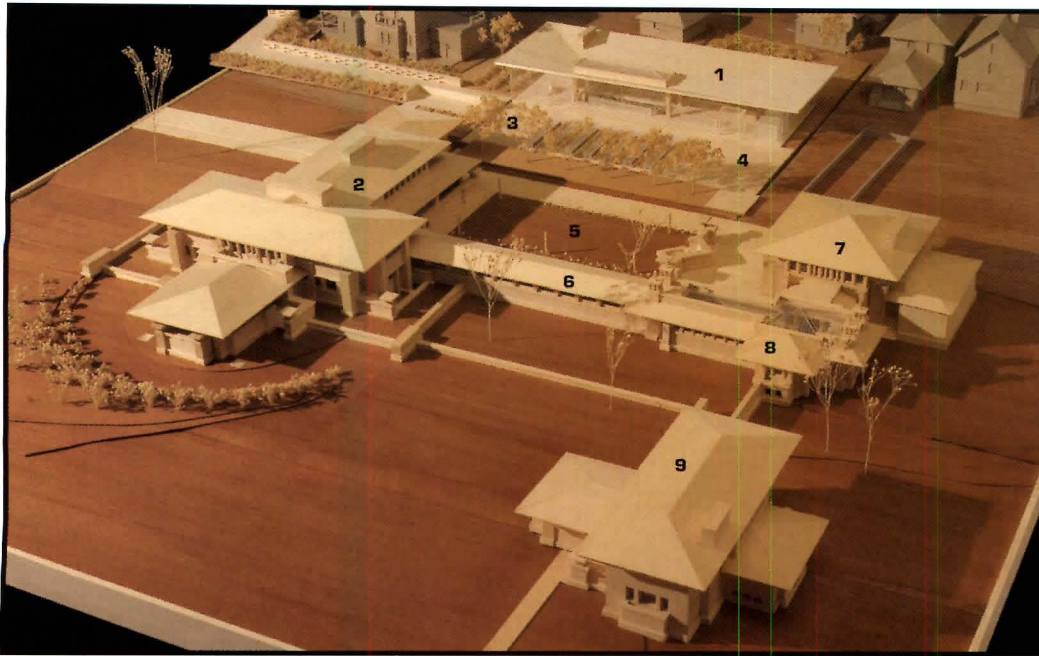
**ZAHA HADID ARCHITECTS | PRICE TOWER
ARTS CENTER | BARTLESVILLE, OKLAHOMA**

Zaha Hadid's second commission in the United States, hot on the heels of her recently completed Center for Contemporary Art in Cincinnati, is a 58,000-square-foot addition to Frank Lloyd Wright's only built high-rise, the 1956 Price Tower, which currently doubles as art center and hotel. Her low-rise design for the Price Tower Arts Center—housing an architecture study center, three galleries, a theater, education rooms, and administrative offices in a flowing and ramped interior—sweeps across the full-block site, creating a public plaza that connects the addition to a nearby performing-arts complex, and joins the existing tower at its unadorned rear wall. Hadid's design engages Wright's as much as it does the larger context of the site: Her plan geometry riffs on an overlay of the Bartlesville street grid with the angular plan of Wright's building; so, too, the art center's angled and cantilevered glass-roofed entrance plays off the cantilevered floors and deeply faceted façades of the 19-story skyscraper. **Abby Bussel**

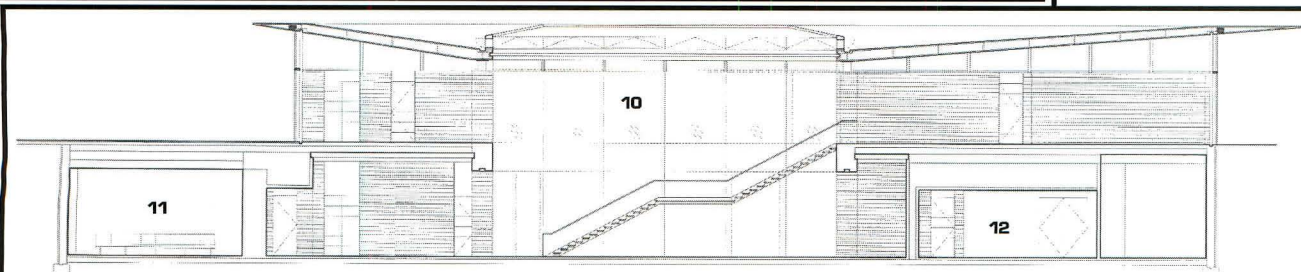


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| 1 Price Tower | 5 multipurpose room |
| 2 lobby | 6 main entrance |
| 3 tour station | 7 storage |
| 4 permanent gallery | 8 loading dock |





- 1 visitors center
- 2 Darwin Martin house
- 3 orientation court
- 4 garden court
- 5 garden
- 6 pergola
- 7 carriage house
- 8 conservatory
- 9 Barton guest house
- 10 gallery
- 11 theater
- 12 classroom



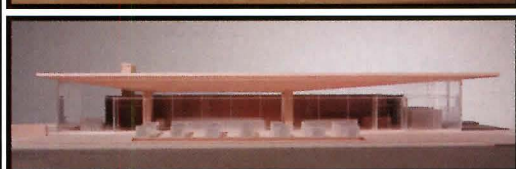
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➔ **TOSHIKO MORI | DARWIN MARTIN HOUSE VISITORS CENTER | BUFFALO, NEW YORK**

Conceived as a garden pavilion, Toshiko Mori's addition to Frank Lloyd Wright's 1904 residential complex for Buffalo businessman Darwin D. Martin sits on a parcel to the west of the original multibuilding estate. The two-story, 15,000-square-foot masonry and glass structure will serve as the new start point for visiting the house and grounds, in operation as a museum since 1992. The program provides for above- and below-grade gallery spaces, a shop, and a theater.

Wright's organic principles and cues from the Martin House itself served as Mori's foundation for the conceptual development of the project. Employing his vocabulary of column groupings as spatial definers and service areas, Mori frames the large skylight of the 4,100-square-foot ground-floor gallery space with four columns. The skylight acts as both a natural light source and stack ventilator for the gallery space below. Water run-off from the roof is collected and transferred within the columns to a storage tank for garden irrigation. Different glazing systems are used to reflect light at the southern and western elevations and to funnel light to the gallery space below. An inverted hip roof, which is designed to harness the insulating properties from collected snow, also integrates environmental building technologies with the architecture.

Slated for completion in 2005, the visitors center is part of an overhaul program that includes reconstruction of the conservatory, carriage house, and pergola, all demolished 40 years ago. Hamilton Houston Lownie of Buffalo will serve as the restoration architect for the project. **Elizabeth Donoff**



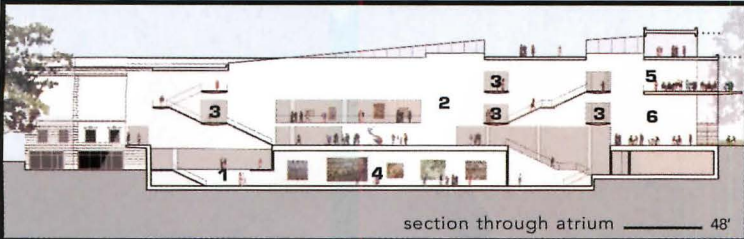


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Designing and building the \$430 million Seattle Seahawks Stadium project was definitely an exercise in teamwork. Not only did the project span 2,000 sheets of drawings, but it required collaboration among a host of suppliers, contractors, and specialists—from food service to A/V, from telecom to turf design. So how did Ellerbe Becket keep everyone reading from the same playbook?

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section through atrium 48'

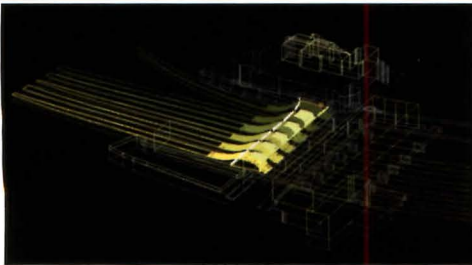
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|-------------------------------|----------------------|
| 1 lobby | 4 exhibition gallery |
| 2 atrium | 5 restaurant |
| 3 bridge connecting galleries | 6 café |

➔ **RICK MATHER + SMBW | VIRGINIA MUSEUM OF FINE ARTS | RICHMOND, VIRGINIA**

Disorientation often seems part of the museum-goers' experience; the addition to the Virginia Museum of Fine Arts (VMFA), however, resists this tendency, using glass elements to orient visitors "both inside the museum and in relation to the surrounding historic neighborhood," says London-based architect Rick Mather.

Near the original 1930s structure's east-facing main entrance, a 40-foot-high window re-establishes VMFA's orientation toward one of Richmond's main streets. A west-facing window looks into the new sculpture garden, which the architects created by moving 3.5 acres of surface parking to a three-level deck under a landscaped roof. On the north side, a glass beacon, announcing the museum's acronym, draws crowds to the new entrance.

Inside the 100,000-square-foot addition, the entry hall empties into an atrium. Naturally lit by a glass roof, the space joins the new facility to the old and ties the east window wall and its view of the boulevard at one end to the west window and sculpture garden at the other. The addition's layout establishes circulation axes that connect the new and existing buildings on gallery levels, enabling visitors to circulate without retracing steps. These routes traverse the atrium as glass-sided bridges, providing a chance for visitors to position themselves within the museum and in relationship to VMFA's campus and the city. **Emilie W. Sommerhoff**



➔ **SMARCH | BERN WEST TRAIN STATION | BERN, SWITZERLAND**

Smarch principals Beat Mathys and Ursula Stücheli celebrate the Swiss fascination with rail travel in a building that elevates the experience of arrival and departure. They exploit concrete and titanium's tectonic possibilities, providing both a practical and aesthetic solution for a twenty-first-century train station.

As a result of new longer train cars, the Swiss Federal Railroad required that the architects create a new passenger-flow system for this busy train station. In order to reduce the distance between the six below-grade tracks and the street level, a combination of stair and elevator cores at each train platform allows passengers direct access to street level. A 328-foot-long "connecting bridge" above the open-air platforms allows access between the platforms and provides space for additional programmatic requirements, including coffee bars and a restaurant.

The rolling profile of the station's titanium-clad roofs expresses the architect's basic premise for the project: movement. The curvilinear form of the canopies marks the cityscape and creates a transition between the linear aspects of the train tracks, the rectangular street grid of Bern, and the nearby 1960s postal building. **Elizabeth Donoff**



BEING BRUDER

Will Bruder's new Nevada Museum of Art, like his 1995 central library in Phoenix, cuts a paradoxical figure: Both buildings have conceptual origins in the geological formations of the Southwest. Both appear to have erupted from beneath their sites. But they also share an alien quality, as though they've landed fully realized from an otherworldly place.

In Phoenix, sheets of corrugated copper cladding wrap what appears to be a mesa rising from the middle of the sprawling city. Great glazed façades to the north and south open the building to the rugged Arizona landscape. While in Reno, where his latest design opened in May to much local fanfare, Bruder has mined shapes and textures from the nearby Carson Range (a spur of the Sierra Nevada) and its rocky desert floor. For the people of Phoenix, the architect located the main reading room on the top floor of his library; in Reno, he gives over prime rooftop real estate to a sculpture garden, providing views of the city and its mountainous backdrop.

Bruder's forms can be awkward—ungainly even—in their overt effort to reference context, but in doing so, they remind us of our debt to mother nature; they also simultaneously promote the building arts through unexpected material juxtapositions, manipulated views, lighting effects, and spatial complexities. His intentions are literally in the right place.



THE MYTH OF BLACK ROCK

A GEOLOGICAL ICON OF THE NEARBY DESERT ECHOES THROUGH WILL BRUDER'S NEVADA ART MUSEUM.

BY C.C. SULLIVAN | PHOTOGRAPHS BY GRANT MUDFORD

Reno's newest museum projects an alien image as it straddles a commercial center and a residential neighborhood (this page). Its main façade is a curving, canted expanse of charcoal-colored zinc with slits of fenestration; the vertiginous atrium features a cantilevered stair of sandblasted, perforated steel (following pages).

around two huge annual events: a month-long arts festival called Artown and the renowned Coeur d'Alene Art Auction of cowboy objets d'art. Underneath it all, and towering on every horizon, is that dark, basaltic ore.

Set on a rise just south of downtown Reno and within earshot of the often-boisterous Truckee River is the NMA's new black rock. Enigmatic and seemingly impenetrable, Bruder's outcropping cleaves to a very real urban-suburban edge. Its prominent northwest-facing corner offers an unfussy sculpture garden and a perceptibly torqued, raked wall of dark wrinkled metal to a neighborhood of 1930s bungalows; to the east, it bumps up against nine stories of banal brick offices that announce Reno's mid-rise financial center. The mute boulder of a building seems to teeter and warp on this boundary, cantilevered over a glazed lobby area on a luminous prop of amber plastic.

ALIEN EDGE

Early on, the majestically curved and twisting western façade, which echoes the sweep of the Carson Range to the west, became critical to Bruder's conception of the museum. The dark, rough expanse suggested a Norwegian slate skin, but a visit to a near-Arctic quarry with museum director and CEO Steven High proved the stone too dear, possibly hiking the \$16 million budget by 10 percent. Instead, Bruder works a charcoal-colored zinc skin into a banded collage of standing seams, reveals, and corrugations, its panels converging acutely into window slits for administration, library, and meeting zones (see "The Western Edge," page 48). The warped curve has a *life of its own*, changing with the viewer's movement by car or on foot (increasingly the mode of downtown transport in this very walkable university town with a budding riverfront). The subtly distorted geometry and handcrafted cladding—and the eroded edges at the roofline and at grade—help lighten the alien structure's apparent mass.

It is a complex and astonishing piece of architecture, one that invites comparison with Frank Lloyd Wright's Guggenheim. Driven by material associations and a disciplined plan geometry, Bruder presents museum-goers with ever-changing views and no two identical conditions. Moving through its cavernous, slightly disorienting atrium, one senses the drama of forced perspective, the heroism of a cantilevered sandblasted-steel stair, the mystery of its varied crevices, skylights, and slit windows, as well as an *overall material kinesis*—now steel, now glass, now gypsum, now stone. Inside and outside, the building's finished surfaces are meticulously worked over, cropped, pasted, polished, and patched. (The composition suggests a challenging atonal symphony, perhaps, or a collage by Kurt Schwitters: Bruder's effort and thumbprints are evident on the black and white backdrop, affixed capriciously with swatches of bent metal, shards of glass, patches of terrazzo, and bands of window film.) Peripheral views change constantly, as if the building were tweaking the visitor's subconscious, cautioning us to stay awake and not take anything for granted. In many zones, we enjoy carefully framed vistas of the sierra's peaks.

Might such dynamism detract from installed art? "A museum experience is a multifaceted one," says High. "You can't just build serene, tranquil gallery spaces; it's also a social experience, an exploratory experience, and it's individually directed."



High above the plain, in the direction of our road, a black, bare mountain reared its head.

—ALONZO DELANO (EARLY CALIFORNIA SETTLER), 1859

Here in Reno, Nevada, Black Rock is an especially evocative phrase. It's a desert, a prominent rise, and a connotation of edge: wilderness, frontier, even counterculture. (A group called Black Rock City stages the annual "Burning Man" event nearby.) It's an icon of the Old West that recalls the hardy people who tamed this mile-high bowl ringed by rugged, snow-capped peaks. And while the image of Black Rock may have inspired Will Bruder's daring new Nevada Museum of Art (NMA), it also helped assure its embrace by the burgeoning arts community in this misunderstood, architecturally rich city. No longer a redoubt of gambling and divorce, Reno brims with \$50 million in new cultural projects—satellites soon to revolve







A view of the installation gallery, a triangular room for miniatures, and a collection space titled “The Altered Landscape” shows the museum’s varied program. Much artwork inside the Nevada Museum of Art fixates on the arid plains and rocky bluffs of the Black Rock Desert, starting in the late 1800s with works by landscape painters such as Frederick Schafer, and more recent photographic works by John Pfahl, Jim Sanborn, and artists from the 1970s New Topographics movement.

On a functional level, the museum layout does well to mediate art-viewing respites and unstructured socializing zones. Glass partitions separate the atrium from gallery spaces, which line the east half of the deformed donut plan; along the western curved wall are meeting and research areas, many with views of the horizon. Bruder calls the interiors “choreographed spaces marking your journey into art”—journeys that end at the NMA in quirky and unexpected ways. Discounting a claustrophobic triangular wedge on the second floor, which hosts the museum’s miniatures collection, the surprises are pleasant: A polygonal installation room culminates in a triangular skylight shaft; an exposed steel deck and a corner window energize the contemporary gallery; the largest space, 7,000 square feet for traveling exhibitions on the third floor, has an accordion ceiling and a leaning wall that echoes the main façade’s cant and curl.

BACKDROP? NOT QUITE

Bruder isn’t being disingenuous when he tells NMA visitors that

“art museums are to be backdrops for art,” but with this, his first ground-up museum building, he slips his own sculptural work into the self-guided tour. This incursion—like the project’s stealthy and dramatic impact on Reno—seemed inevitable from the start. Even before he was hired, Bruder convinced the museum’s board to rethink its modest plans to expand on top of its 15,000-square-foot previous home, the windowless tilt-up offices of a title company. Bruder broke ranks from the short list (which initially had included Swiss duo Herzog & de Meuron and San Francisco’s Stanley Saitowitz, but two weeks later became just Bruder and Mark Mack of Venice, California) and proposed an entirely new, customized container for the museum’s collections on the same site. Demolition would cost only 10 percent of their budget to remodel the original space, he reasoned, as he offered a first design that cantilevered aggressively into the middle of the site’s main drag, West Liberty Street. The gamble paid off, and NMA planned more fundraising and bought an adjacent lot to accom-



Beyond its dramatically cramped, bright-red entry, the 186-seat theater is comfortable and intimate, opening into plasterboard ceilings and walls that invert the shape of the exterior's curved and straight façades. A suspended backdrop wall floats a few inches above the stage; handrails emerge from the floor and follow gentle but irregular curves. Random seating colors and materials (fabric, leather, velour) help "populate" the theater when used by smaller groups.

moderate an expanded, 60,000-square-foot program.

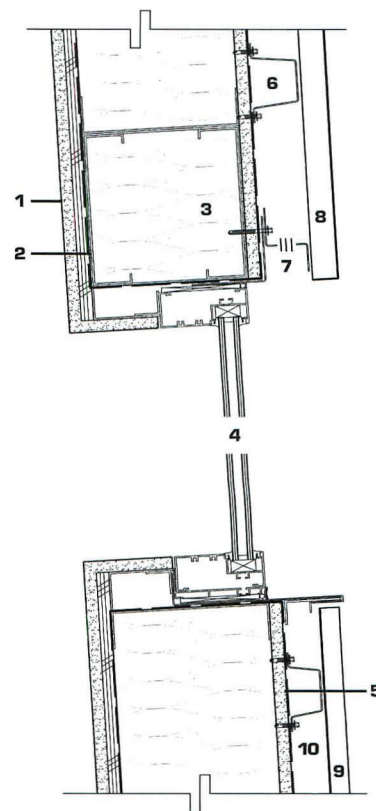
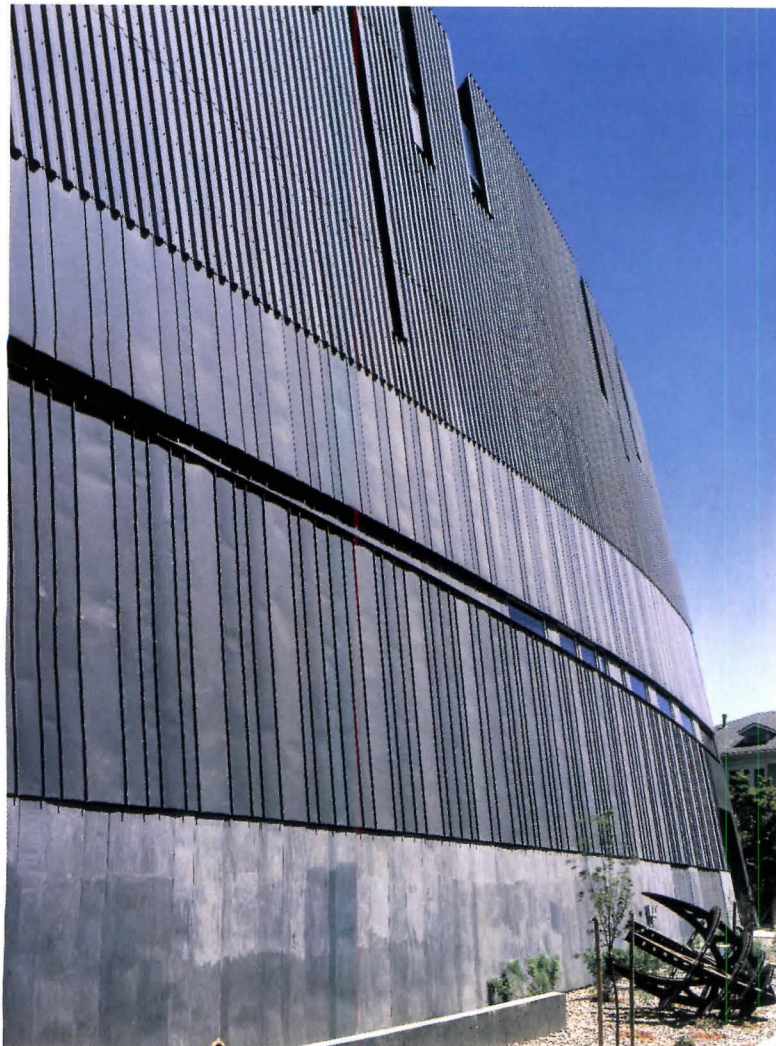
While sheer audacity might partially explain Bruder's iconoclasm, much can be attributed to his influences. Early in his career Bruder worked with Paolo Soleri and Gunnar Birkerts. Today, he may be the only world-class architect carrying on the legacy of Bruce Goff (1904–1982)—and by implication, of Wright—through the investigation of organic forms and materiality. Equal parts sculptor and placemaker, Bruder pushes boundaries not solely for his own enjoyment, but for the benefit of users and viewers. Deferring to natural forces, he translates oblique notions of client and place into inventive armature, sweeping curves, and sensual assemblage.

For the Reno museum, it wouldn't have worked without a sensitive client and an industrious builder. High explains that just a week after retaining the architect, NMA hired its general contractor, Las Vegas-based Clark & Sullivan, for a collaborative "design-assist" delivery to speed construction and "eliminate all change orders," he adds with a chuckle. "Of course, we didn't cut out all change orders, but we knew

the museum was constructable and that we could pay for it." The budget changed daily during 12 months of construction. To keep costs in line, Bruder was forced to scale back some of his pricier moves: Popped angled windows fell flush to the walls; elliptical cone skylights became smaller, flat, and squared off. Most disappointing might be the dark stucco finish that now graces secondary façades.

These are but quibbles. The bottom line is that for about \$203 per square foot, Reno has landed a sculptural landmark to anchor a budding cultural and commercial nexus. Inside, visitors find at least four memorably whimsical spaces: the quirky, cavernous atrium, the subtly distorted large gallery, a meticulously detailed theater, and a large rooftop sculpture garden with drop-dead mountain vistas. NMA is arguably one of the most valuable experiments in museum space-making built on American soil in a decade. Reno's new chapter in the legend of Black Rock not only holds an urban edge, it yields an edge for a city on the frontier of the art world. ■

The Western Edge



zinc façade section detail ——— 3.5"

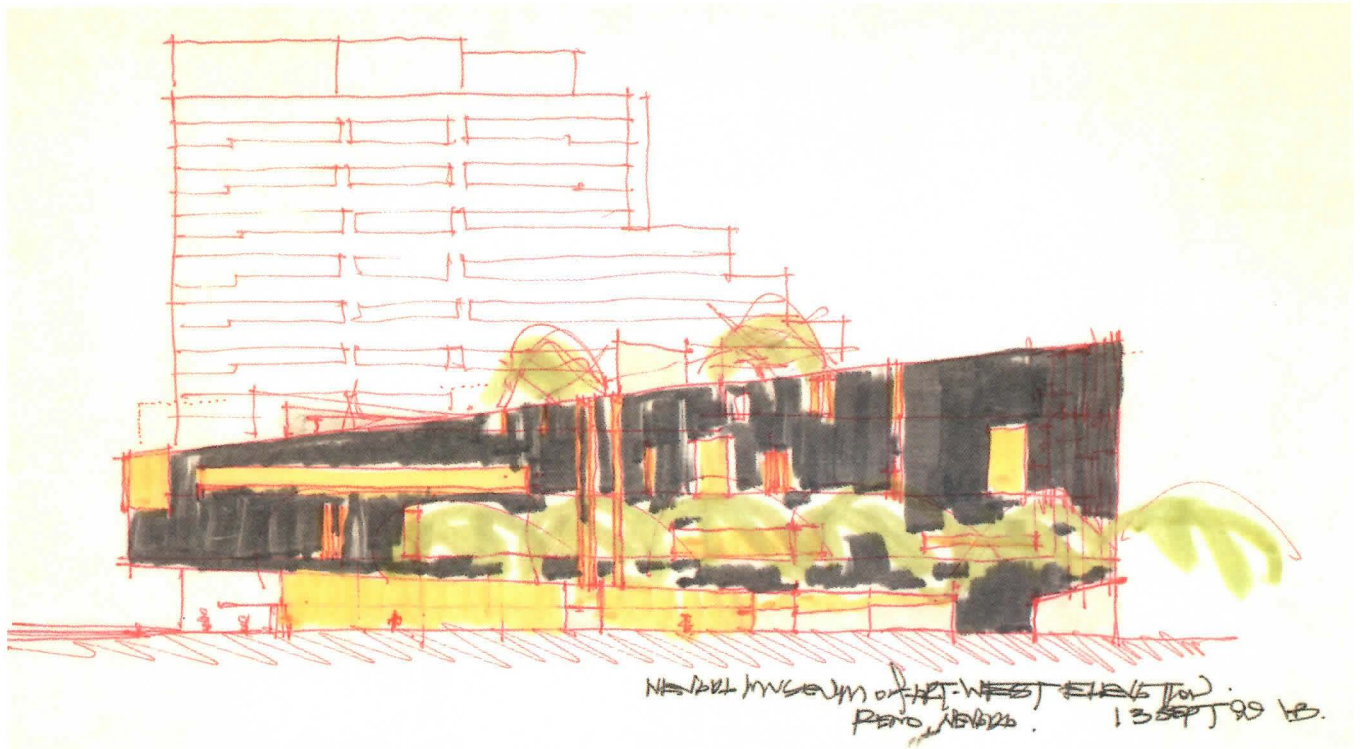
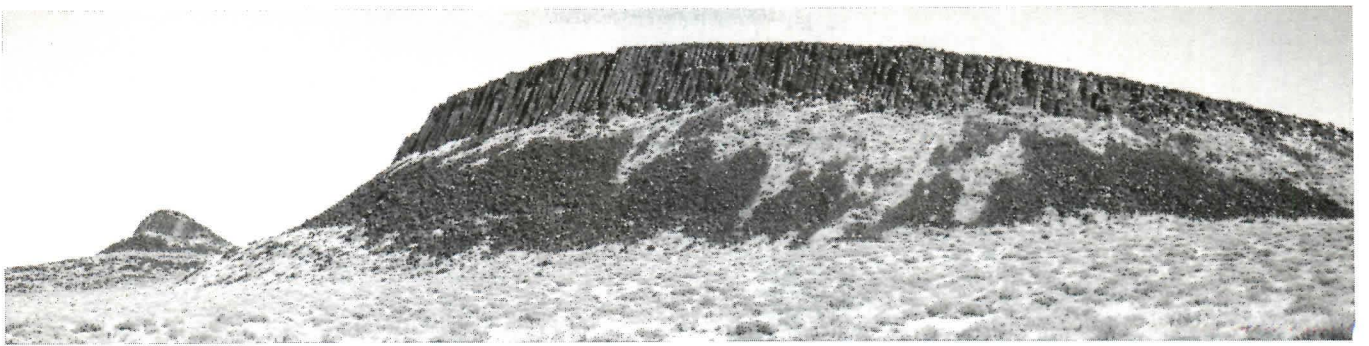
- | | |
|--|----------------------------|
| 1 gypsum board over fire-treated plywood | 6 furring channel |
| 2 vapor barrier | 7 perforated zinc flashing |
| 3 16-gauge metal stud | 8 box-rib zinc panel |
| 4 aluminum window with insulated glass | 9 interlocking zinc panel |
| 5 air barrier over gypsum sheathing | 10 air space |

Seen from the northwest, Reno's Donald W. Reynolds Center for the Visual Arts/E.L. Wiegand Gallery, home of the Nevada Museum of Art, is a subtly curving, canted wall patched with swaths of dark zinc cladding. The metal gives the building a brutal, earthy appeal; the complex 250-foot-long torqued façade, broken by random crenellations at the 68-foot-high roofline and a silvery entry appendage at the base, helps mitigate the museum's mass.

The curve is complex. At each of four floor plates, a unique twisting radius describes the smoothly bowed, leaning perimeter. The resulting plane tilts from between 5 and 12 degrees, up to 12 feet out of plumb over the rise. The design team at Will Bruder Architects, Phoenix, resisted the contractor's suggestion to segment the wall, which came midway through construction documentation. The change might have eased construction and perhaps cut costs by as much as \$750,000; however, using 1/4-inch-scale façade models to replicate lighting conditions, the architects convinced the museum's directors that the planar surfaces would have compromised the appearance and intent of this highly visible elevation.

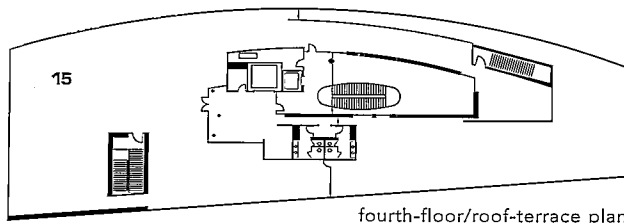
While structurally straightforward—a steel frame braces staggered metal studs, 16 inches on center—the final design required more than 600 pages of steel details. And while it was geologically inspired, the exterior features neither slate nor another costly stone, but rather an unusual metal cladding: preweathered black zinc. Inherently very malleable—an advantage for designers but a challenge for fabricators, especially in cold-weather applications—the zinc sheets easily took on the striations that Bruder envisioned, by means of corrugations, reveals, and standing seams. The final design combines sections of all three panel types.

Technically an alloy, the black zinc has minute traces of copper and titanium, and it weathers to a velvety charcoal color with subtle imperfections in hue and texture. Development of its patina "heals" scratches and stains on the finished surface. To accommodate the high thermal expansion of the metal, sliding clips as well as fixed clips hold the panels to furring strips set on a barrier membrane. Because zinc is most vulnerable to corrosion from its underside, the well-ventilated airspace is critical to the envelope design. In addition, zinc is not compatible with copper or nongalvanized steel, but it can accept contact with aluminum, stainless steel, and galvanized steel.



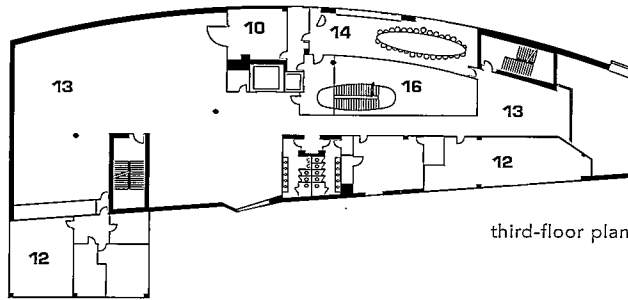
An image of a black-rock mound by the Santa Fe-based artist, Joan Myers, suggests the topography that might have inspired the museum's form (top). A sketch by Bruder shows a revised conception of the museum developed between the competition submission and the final design (above). The resulting form alludes to the organic landscape, with a palette of zinc cladding, insulating glass, and synthetic stucco set on a modest sculpture plaza (below).



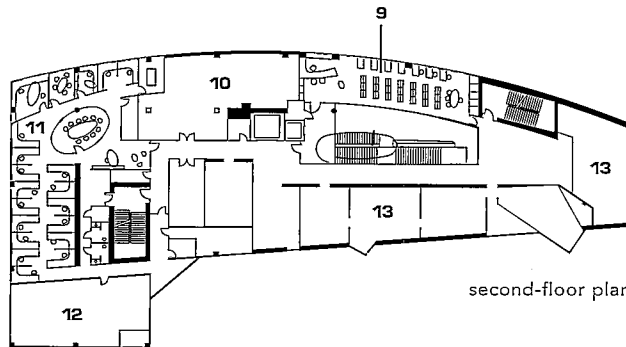


fourth-floor/roof-terrace plan

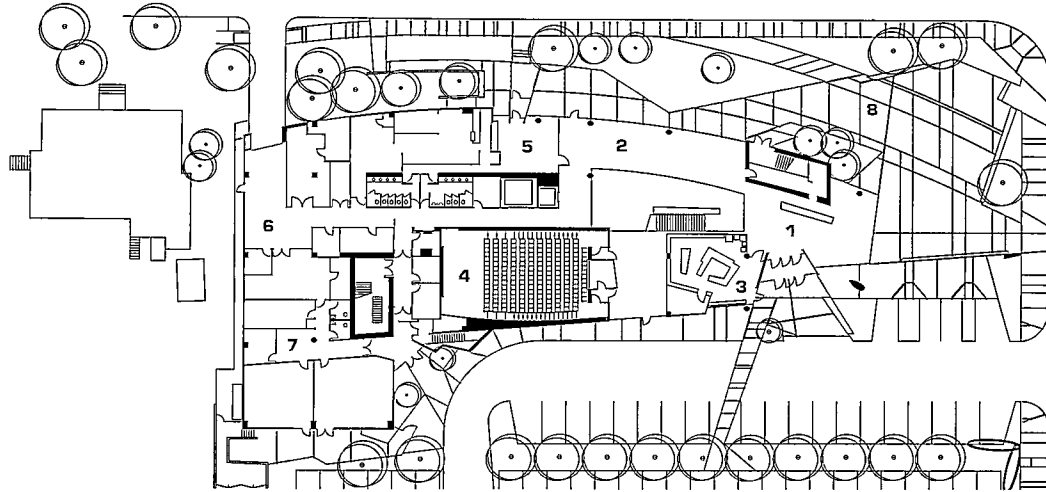
- 1 entry
- 2 reception
- 3 museum store
- 4 theater
- 5 café
- 6 loading dock
- 7 museum school
- 8 sculpture plaza
- 9 library
- 10 art storage
- 11 administrative
- 12 mechanical
- 13 gallery
- 14 founders' room
- 15 rooftop garden
- 16 atrium



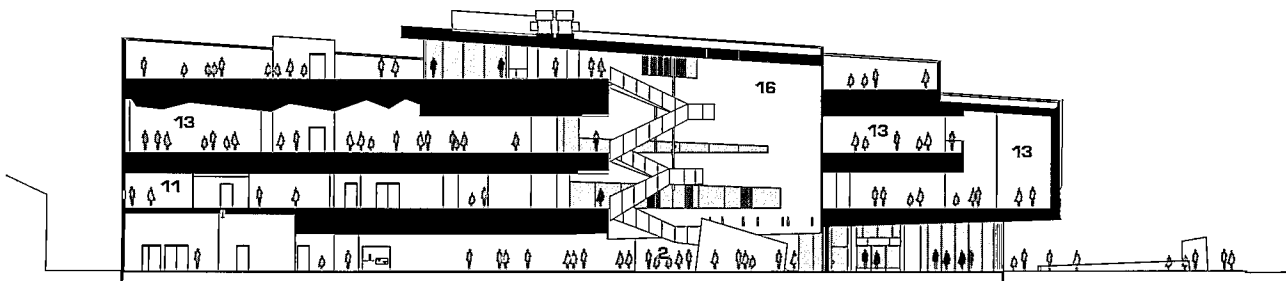
third-floor plan



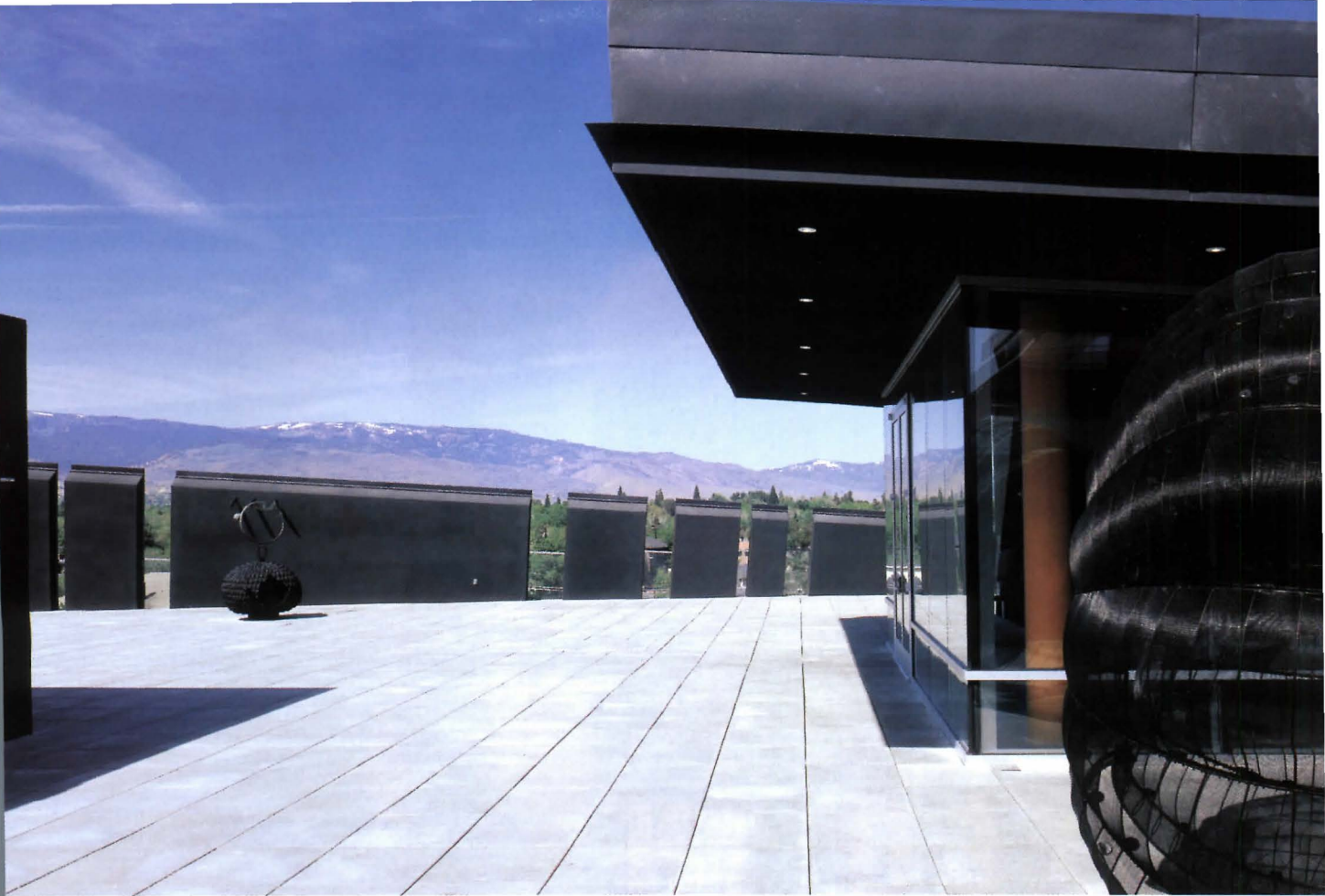
second-floor plan



site/ground-floor plan ——— 30' →



north-south section ——— 20'



The museum's crenellated parapet frames views of the vast and mountainous landscape for visitors to the rooftop sculpture terrace.

Donald W. Reynolds Center for the Visual Arts/E.L. Wiegand Gallery, Reno, Nevada

client | Nevada Museum of Art **owner's representative** | Jeff Erickson **architect/interior architect** | Will Bruder Architects, Phoenix—Will Bruder (lead designer); Rob Gaspard (project architect); Greg Packham (project manager); Ben Nesbeitt, Richard Jensen, Jeff Densic, Tom Cheney, Dominique Price, Eric Weber, John Puhr (project team) **landscape architect** | Stantec Consulting **engineers** | Rudow & Berry (structural); IBE Consulting Engineers (mechanical); Associated Engineering (electrical); Stantec Consulting (civil) **consultants** | Ove Arup & Partners USA (acoustics); Thomas Ricca Associates (food service); Horton Lees Brogden Lighting (lighting); Will Bruder Architects (graphics) **specialty contractors/fabricators** | ASI Sign Systems; Blue Mountain Steel; Burgarello Security; Complete Millwork Services; Custom Architectural Woodwork; Gardner Engineering (mechanical/plumbing); Giroux Glass; Insul-Pro Projects; J/B Enterprises (excavation); J & J Mechanical; Koffler Masonry; Lindell's Painting Service; Lucky Concrete; M&H Building Specialties (EIFS); Network Electric; Omboli Interiors (drywall); Overhead Fire Protection; Peri Landscape; PowerComm (telecommunications); Quantum Audio Visual; Simas Floor; Southam & Associates (metal cladding); Universal Brass (architectural metals/handrails); Western Single Ply (roofing); Reno-Sparks Ready Mix; M-Home (furnishings) **general contractor** | Clark & Sullivan Constructors **area** | 60,810 square feet **cost** | \$12.3 million

Specifications

structural steel | Blue Mountain Steel **exposed concrete** | Lucky Concrete **metal/glass curtain wall** | Kawneer **metals** | Umicore/VM Zinc; AnthraZinc **moisture/thermal control** | DuPont/Tyvek **EIFS** | Sonneborn **single-ply TPO roofing** | Firestone **concrete roof pavers** | Westile **glass** | Milgard Tempering; Firelite TGP; Northwestern Industries **fiberglass glazing** | Lentech **skylights** | CSI **doors** | Curries (metal/fire); Weyerhaeuser (wood); PRL (glass) **sliding-door hardware** | Chase Doors **locksets/hinges/closers/exit devices** | Sargent **cabinet hardware** | Sagutsune **pulls** | Forms + Surfaces **ceiling systems** | Tectum; Armstrong; Hardirock; Hunter Douglas **fiberglass ceiling panels** | Lentech **paints/stains** | Benjamin Moore **flooring** | Armstrong Hartco (wood); DalTile (ceramic-tile); Roppe (resilient) **carpet** | Prince Street **furnishings** | Diade; Kartell; Herman Miller; Montis; Stua; R+D Design; MDF; B&B Italia; Burroughs; Lolah; Ligne Roset; Ducharme; Domus; Light Spot; Oriac Design; Goodmans; Office Pavilion; Functions; Limn **lighting** | B.K. Lighting (interior uplights); Contrast, Indy, Wila, Leucos (interior downlights); Lithonia, Zumtobel Staff, B.K. Lighting (task lighting); Hydrel, Lithonia (exterior); LSI Gallery Lights, Top-S, Bruck Lighting Systems, Translite (specialty); Anta, Artemide (decorative fixtures); Douglas Lighting Controls, Lutron Grafik Eye (lighting controls); LSI (ceiling track system) **elevators** | Schindler **plumbing fixtures** | American Standard; Kindred Sinks; Elkay; Grohe Faucets **mechanical systems** | Price Air Distribution **HVAC** | Trane **electrical systems** | GE; Powersmith Transformer



BOXED IN

With cement board and plywood, the Galante Architecture Studio turns a limited budget to advantage at a municipal recreation center in Massachusetts. BY MAX PAGE

A good, tough box. That's something towns need more often than architects would like to believe. The town of Falmouth, Massachusetts, needed one for its growing adult sports and youth recreation programs and called on the Galante Architecture Studio of Cambridge to provide it. Challenged by the words of one Falmouth official, who said, "We have enough money for a cinderblock box with tar paper on top," principal Theodore Galante reimagined this most basic of buildings.

Working with a bare-bones budget—about \$166 per square foot—Galante created a spare, two-story addition to an existing recreation center that stands with dignity at the back of a parking lot, facing onto several sports fields. On the lower level are generous locker rooms, showers, and storage areas for home and visiting teams; a fitness center, recreation room, computer room, café, and a large lounge and game room occupy the floor above. The gathering spaces were the idea of local teens, who had ardently petitioned the town for somewhere to meet after school.

BUILDING BLOCKS

Lots of program and little money is enough of a design problem. Compounding the complexity of the project was another of the town's demands: The 9,000-square-foot addition had to be

contextually responsive to the original Gus Cauty Recreation Center. Designed by the local firm of Keenan & Kenny Architects in 1988, the building is classic 1980s pomo: a steel-framed building with a brick veneer, topped off with a few peaked roofs, circular vents as clichéd ornament, and blunt capitals on brick columns.

Philosophically disturbed by what he calls the "fibs" of the earlier building's design, Galante decided to be contextual through a subtle and convincing critique. He borrowed the rhythm of the faux-bricks on the old building, but exaggerated their scale, using 4-by-8-foot panels of fiber-reinforced cement. These panels create a thin but tactile sheathing, broken only by windows that appear to be sliced out with a very sharp knife. The structure of the building is displayed proudly, with steel beams and ducts visible through the windows and inside the building. The walls are finished—or intentionally unfinished—in plywood. And each metal fastener holding the fiber-reinforced concrete panels to the steel skeleton is proudly made visible. Shadows highlight the subtle irregularities in each panel and the places where they overlap. This alluring cladding gives a sense of strength to the building. And because of the size of each panel, which required two construction workers to install, they serve as a reminder of the teamwork that makes the building—and most sports—possible.



Most impressive, and least visible by its very nature, are the energy-saving strategies of the building. Encouraged by town administrators, who hope to convert all municipal buildings to renewable energy sources, Galante employed waterless urinals, solar hot-water panels, and photovoltaic panels for electricity. (The photovoltaic system was placed on a canopy roof of the original recreation center—clearly visible from the street—as a political move, to show the public the results of their \$50,000 investment.) Computers in the study room on the north side will be installed *with software that allows teenagers to chart the changing production and use of energy in the building.*

HOW BUILDINGS TEACH AND LEARN

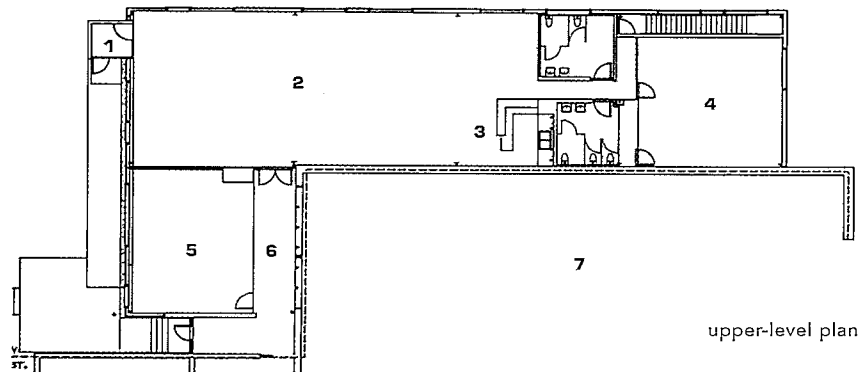
Galante hopes that the building will be a “vehicle for learning” about architecture and natural processes. While PlayStation joysticks presently litter the study-room tables and a flat-screen TV dominates the lounge area, Galante nonetheless hopes that young people will be inspired by the overt display of the building’s guts to think about what it takes to make a building serve its function.

In creating a foil to the original building, Galante has at times gone overboard in his effort to “do the honest thing.” For example, diagonal trusses run across windows, allowing passersby to see

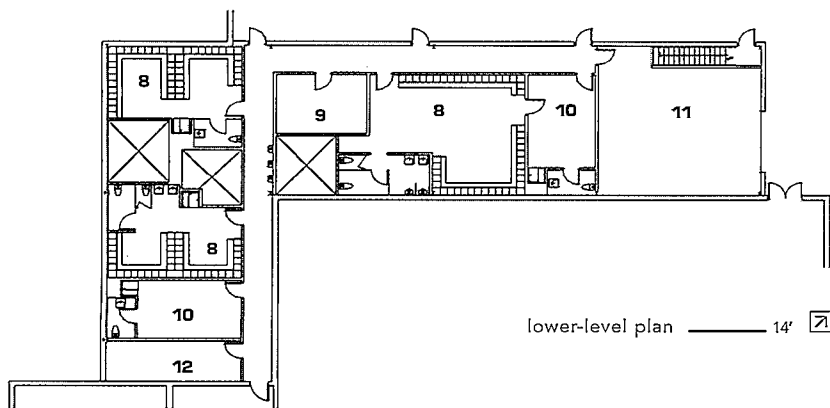
the steel holding up the building. And indeed, it is striking how clearly the construction of this building is visible from the outside. But once inside, the placement of the trusses blocks a good portion of the view out to the sports fields, undermining his effort to provide an interior viewing place for the “Hillies”—the locals who used to sit on the hill where the building now stands.

On a recent visit, just months after the building opened, Galante shook his head in dismay that in the main lounge room, someone at the recreation center had painted the walls white and had begun decorating them with glazed tiles made by local high school students. I confess I found it comforting. A rabbi once urged his congregation not to get hung up on keeping their yarmulkes and prayer shawls so clean. “Stains are the sign that you are putting them to good use,” he said. These alterations, disrespectful as they may seem to the designer, are signs of something quite wonderful: This good, tough box is on its way to being a home away from home.

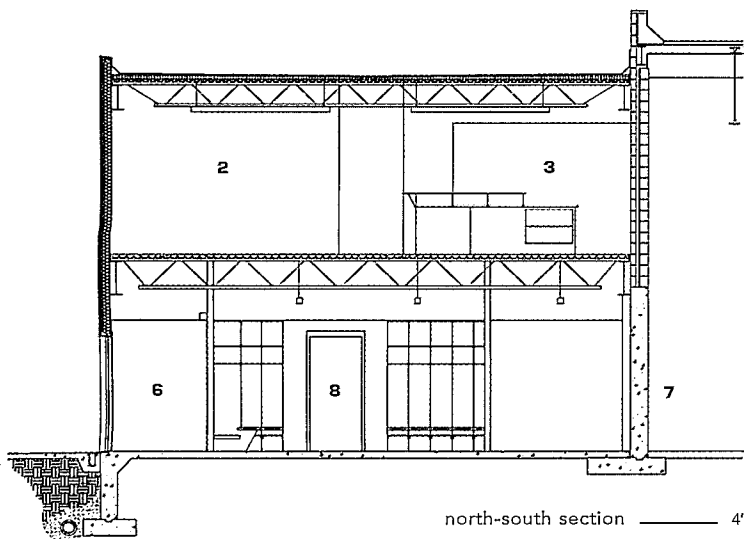
Max Page, associate professor of architecture and history at the University of Massachusetts in Amherst, is a 2003 Guggenheim Fellow and coauthor of *Building the Nation: Americans Write about Their Architecture, Their Cities, and Their Landscape* (University of Pennsylvania Press, 2003).



upper-level plan



lower-level plan 14'



north-south section 4'

Rough materials and exposed structure dominate the recreation center. It is faced with an unfinished rain screen of fiber-reinforced cement board on its main façades and sheets of red copper on an entry cube (facing page, top and bottom left). Raw plywood lines the interior (facing page, bottom right). Joists, ducts, and hardware are exposed—as are structural steel members—setting off finished items, such as drinking fountains, epoxied floors, and the glass partitions of the "sports corridor" (facing page, lower middle). The new center wraps a corner of an existing building and employs photovoltaic panels and a solar hot-water system.

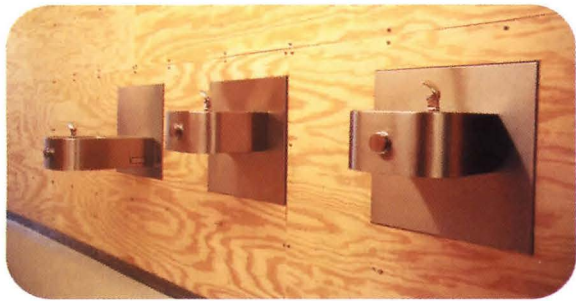
- 1 vestibule
- 2 recreation center
- 3 café
- 4 computer center
- 5 fitness center
- 6 corridor
- 7 existing gymnasium
- 8 locker room
- 9 training room
- 10 coach's office
- 11 storage
- 12 solar thermal room

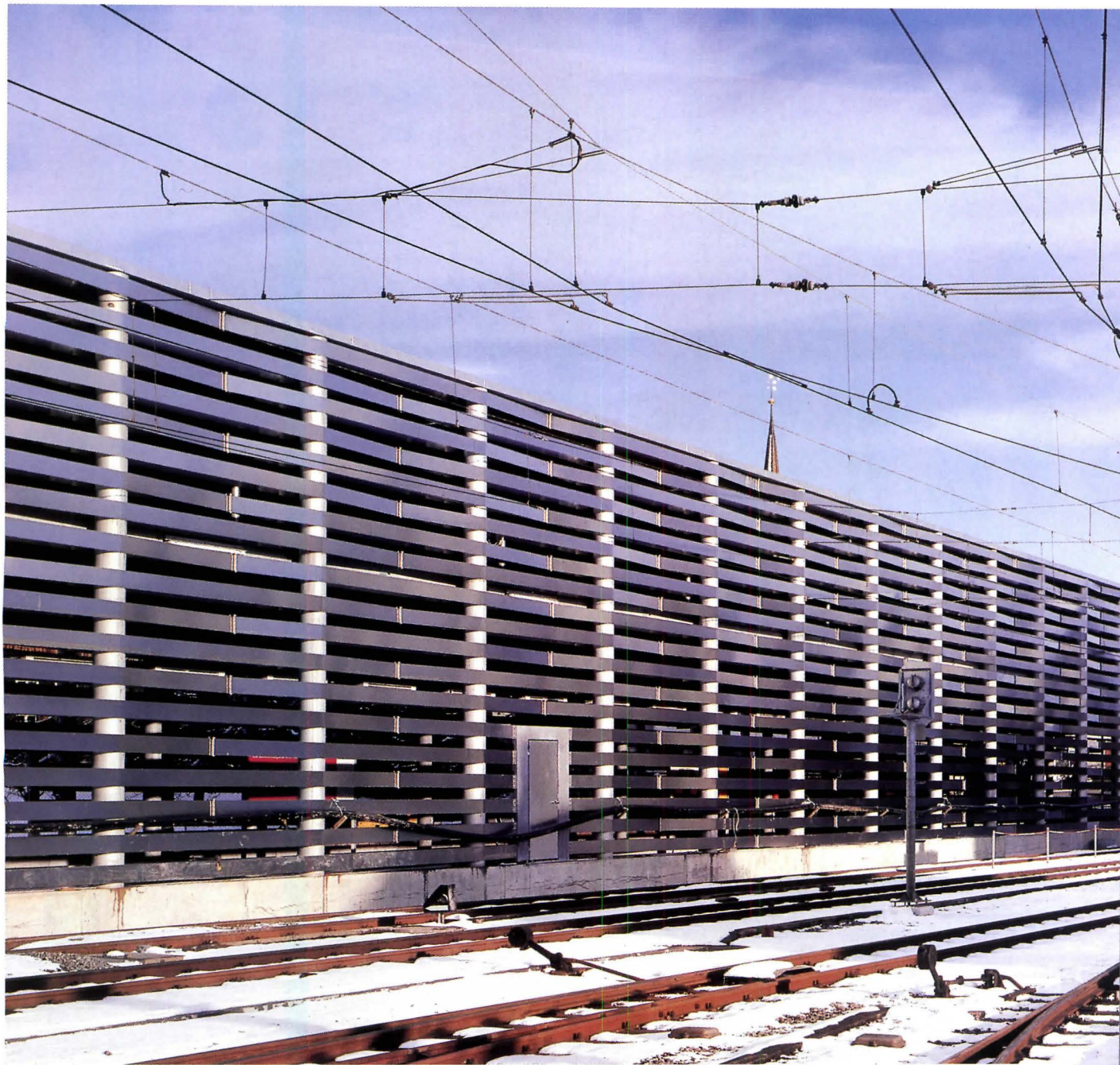
Gus Cauty Recreation Center, Falmouth, Massachusetts
 client | Town of Falmouth architect | Galante Architecture Studio, Cambridge, Massachusetts—Theodore Galante (design principal); Joel Fisher, Nancy Clapp Kerber, John McLaughlin, Reem Rihani, Will Stevens (project team) engineers | MacLeod Consulting (structural); C.A. Crowley Engineering (M/E/P); BSS Design (civil) consultants | Zapotec Energy (photovoltaic design) construction manager | W.W. Reich—Chris Lopes (project manager) general contractor | MHD Construction—Jon Phillips (project manager) area | 9,000 square feet cost | \$1.4 million

photographs by Theodore Galante, Chris Lopes, and Joel Fisher

Specifications

plywood | Georgia-Pacific metal/glass curtain wall | Kawneer 20-ounce red copper cladding | Revere Copper cement board | CemBonit/Cement Board Fabricators EPDM membrane roofing | Firestone locksets/hinges | Sargent closers | LCN exit devices | Von Duprin cabinet hardware/door pulls | D-Line ceiling systems | Armstrong paints/stains | Sherwin-Williams flooring | Garland (epoxy resin); Armstrong (VCT tile) cold-rolled steel baseboard | Heritage Iron Works interior ambient/task lighting | Lightolier exterior lighting | Hubbell plumbing fixtures | Eljer HVAC | Trane photovoltaic systems | Solar Works solar panels | Evergreen





working on the railroad

A Swiss train station is crafted on site by local steel workers. by Nina Rappaport | photographs by Dominique Uldry





The infrastructure for rail transit in Switzerland is a well-integrated network linking small towns to cities and cities to surrounding countries in a smooth flow of movement. Design is an essential consideration in these public places of passage. Demonstrating this commitment to public design is a new station for the regional train line that connects the capital, Bern, to Worb, a traditional Swiss suburb of pitched roofs and shuttered windows.

The young Bern-based firm Smarch designed the Worb station as a striking 425-foot-long jewel box of undulating stainless-steel ribbons. The Bern-Solothurn regional train authority and the local park-and-ride company awarded the commission to the firm following a 1999 competition. Principals Beat Mathys and Ursula Stücheli, graduates of the Swiss Federal Institute of Technology in Zurich, have benefited from the competition system in Europe since opening their office in 1993. The firm has also won a competition for a new station in Bern (see page 38).

HYBRID VARIETY

At Worb, a hybrid program uniting three functions—a terminal train depot, a parking lot, and bicycle storage—spurred the architects to conceive a distinctive structure that gracefully accommodates the flow of trains through a dense urban situation. Their idea to place an 80-car parking deck above the tracks and electric lines clinched the competition, which Smarch entered with engineers Conzett, Bronzini, Gartmann. The elevated parking deck minimizes the station's footprint and, from the village center, allows an unobstructed view of the trains as they exit the front of the station, which resembles an airplane hangar. Bicycle parking is housed at the base of a stair and elevator core on the east side of the ground floor. When train service stops at midnight, metal gates secure the station.

Visually, the station gives the illusion of a woven façade, with stainless-steel ribbons pulled from column to column to form an undulating surface. The slits between the metal bands allow sunlight to permeate and animate the interior. Light also reflects off the bands, transforming the surface from a silver reflecting plane to a glowing golden box and creating a striking effect when lights flicker across the structure as trains enter the station.

WHAT IS A WALL?

Smarch relates the stainless-steel ribbon wall to late nineteenth-century German architect Gottfried Semper's idea of *Bekleidungstheorie*, which emphasized that patterns evolve from weaving and thus come before structure, leading to Semper's conclusion that ornament can be more primary than structure. For Mathys, "it asks the question, 'What is a wall?'" so that form follows the construction of the assemblage." The station's wall provides containment, but dissolves when viewed from an acute angle, playing with notions of surface, pattern, and structure.

The station at Worb is a rational structure that is enlivening the town with its flamboyant envelope. As it slices through the town center, the station visually contrasts with its urban context, while connecting with it through the apparent movement of the undulating wall. The successful integration of an innovative structure with place underscores the critical role of design of public infrastructure in our built culture.

Publications editor at the Yale School of Architecture, Nina Rappaport recently curated *The Swiss Section*, a traveling exhibition, for the Van Alen Institute in New York City.



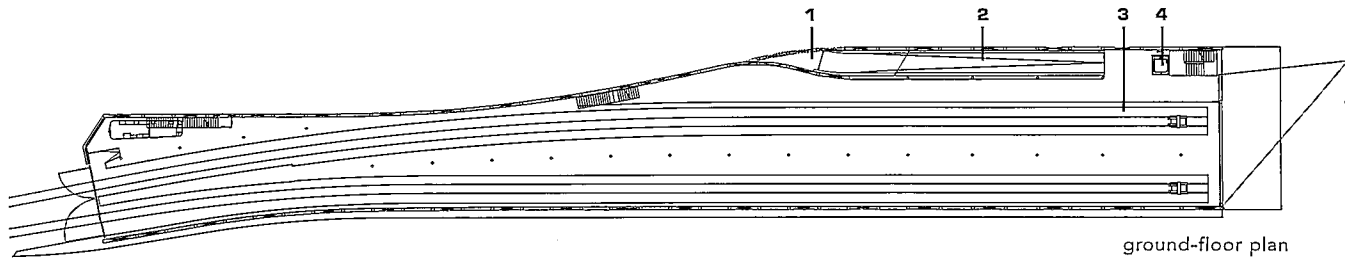
Smarch's woven stainless-steel wall filters vertical strips of light into the otherwise dark train station (top). When train service stops at midnight, metal gates secure the station, completing its function as a terminus (above).

RBS Train Station, Worb, Switzerland

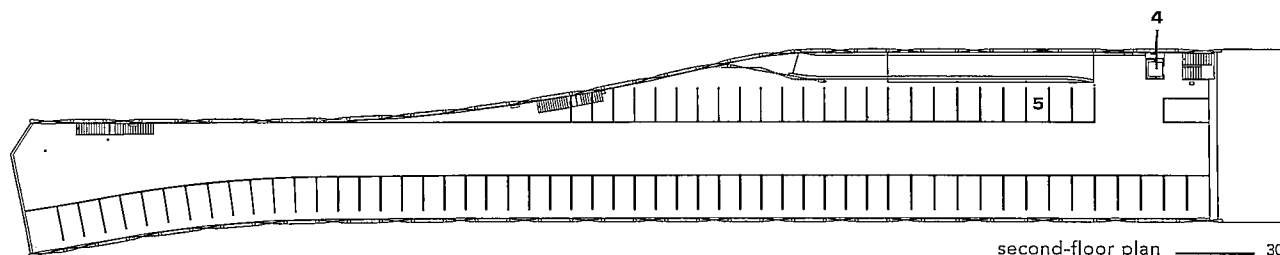
client | RBS—Regional Transit Bern Solothurn **architect** | Smarch—Beat Mathys and Ursula Stücheli (principals); Andreas Affolter, Benjamin Dodel, Daria Eser, Thomas Schmid (project team) **engineer** | Conzett, Bronzini, Gartmann **construction manager** | Ursula Stücheli **area** | 42,400 square feet **cost** | \$3 million

Specifications

concrete | Burn & Kuenzi; Adelboden (pillars, ceiling, floor) **stainless-steel cladding** | Prometall; Laupen **stainless-steel roof** | Bernhard; Langenthal (front eave) **lighting** | Regent **elevator** | Schindler

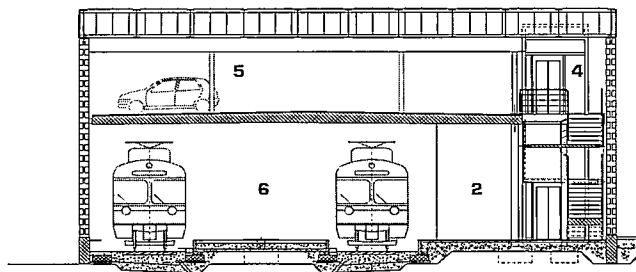


ground-floor plan

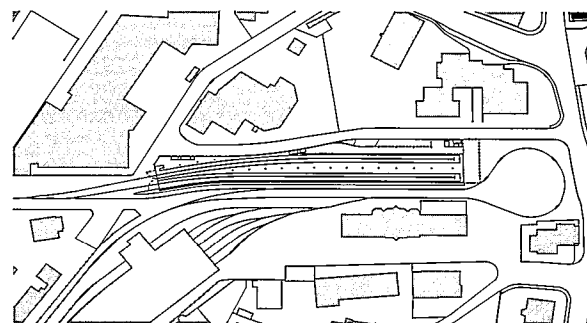


second-floor plan — 30'

- | | |
|-------------------|------------------|
| 1 parking ramp | 4 elevator |
| 2 bicycle storage | 5 parking |
| 3 train tracks | 6 train platform |



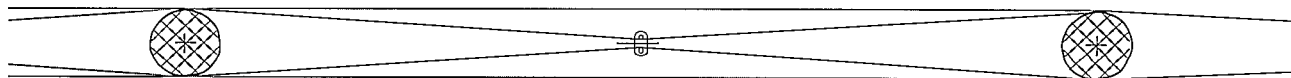
section — 9'



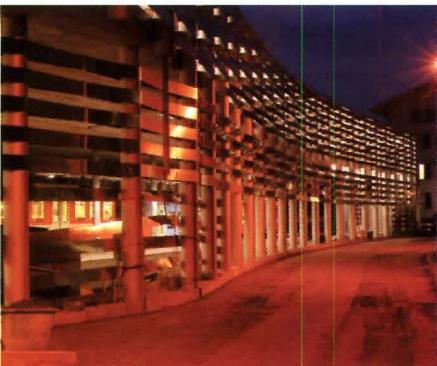
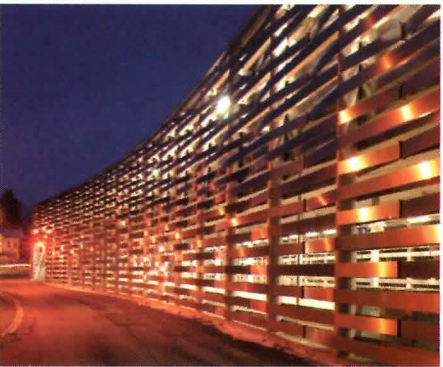
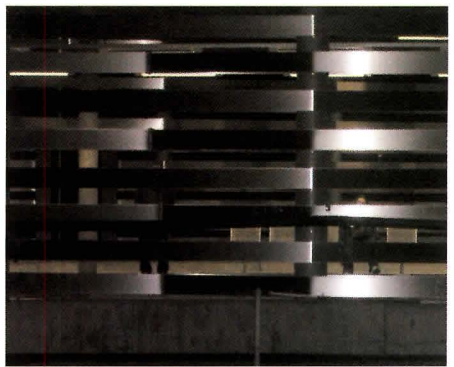
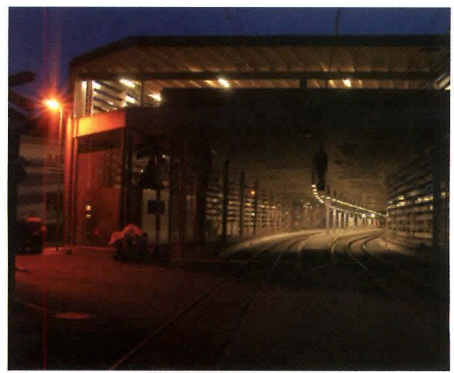
site plan — 115' 

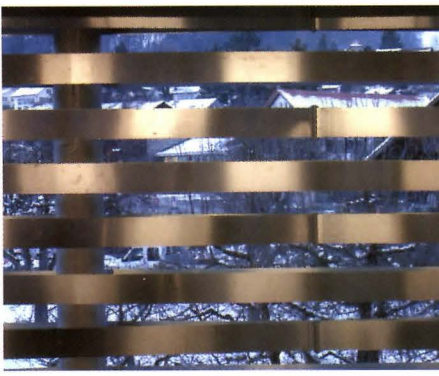
Form Follows Form

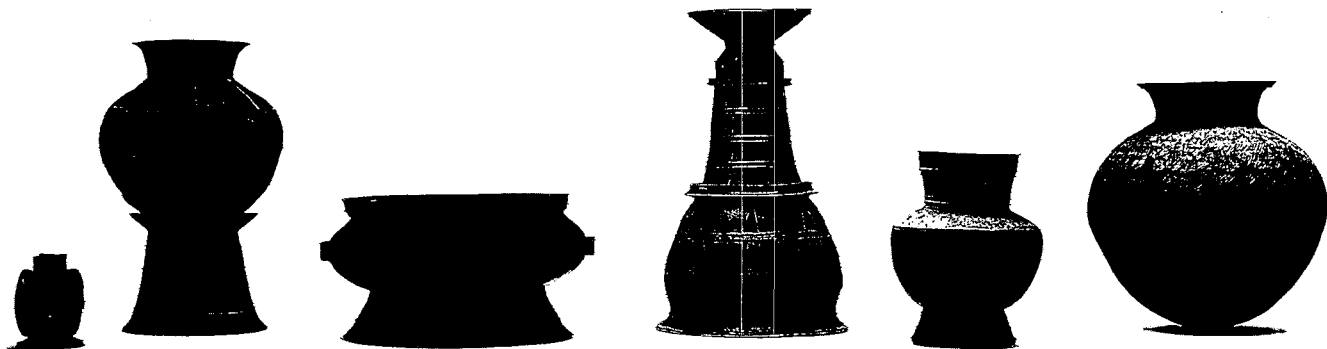
Construction of the Worb station was an intensive collaboration between the architects and the engineering firm Conzett, Bronzini, Gartmann, which developed the assemblage system for the structure. Steel workers came from nearby mountain villages to hand-craft the super-thin, stainless-steel bands into a fence-like wall. They pulled each steel ribbon taut—like guitar strings—one per day, around each side of the stainless-steel-clad concrete columns. They fixed the bands with steel clasps at the central point between the concrete columns, forming an undulating surface. The spacing of 10 feet between each column related not to the structural needs of the parking deck and the wood roof with its projecting metal eave, but rather to accommodating the spacing required to form the pretensioned steel ribbons into desired angles. The engineers placed columns for the 14-foot-high parking deck and 28-foot-high wood roof in relationship to the wall's surface as much as to the wall's structure. An inner row of columns between the tracks supplements the outer columns, and an intermediary 5-inch-square steel box connects the concrete parking deck to the columns. It is a pragmatic system, but one where the façade is as strong as the structure itself; thus, to Mathys, it is a bit antimodern: "In modernism, the distance of the columns would relate to the façade's structure. Here," he explains, "the image of the façade is as important as the structural framework. It is not a minimal system."



wall-detail plan — 1'







Cultural Chemistry

A beaux-arts library becomes a modern museum of Asian art in the hands of Italian architect Gae Aulenti.

BY SALLY B. WOODBRIDGE

Gae Aulenti, the Italian architect best known for converting a Parisian train station into the Musée d'Orsay, recently completed her first commission on this side of the Atlantic: the rehabilitation of San Francisco's former main public library as the Asian Art Museum (AAM). Because the 1917 building is part of the civic center's beaux-arts historic district, Aulenti's freedom to remodel was restricted. The protected main façades—and the successive interior spaces that lead from the entrance lobby up the grand staircase to a 42-foot-high card-catalog and book-delivery room—consume much of the building's functional space.

To create new public spaces, she carved out interior light courts by enclosing two dreary light wells that separated the building's north and south wings from the central tooth of its E-shaped plan. The light courts have V-shaped skylights with steel frames painted pale green, a color that Aulenti associates with the color of the sky—not, as might be assumed, with the familiar hue of Chinese celadon. The skylights, with a metal-framed escalator that ascends 115 feet from the south court to the third floor, introduce structural drama into what might otherwise have been matter-of-fact interiors. The spectacular forms both attract the visitor's gaze and allow light to bounce off the walls above and below. The ground floor became a piazza, as she calls it: an all-purpose meeting place and starting point for tours.

With these dramatic interventions Aulenti has met her primary goal: to create cultural continuity through her work and to build in a personal yet contemporary way. She and a team, including Hellmuth, Obata + Kassabaum, LDA Architects, and Robert Wong Architect, have revitalized a prosaic example of beaux-arts classicism and given it some traction in the field of contemporary design.

A BUDDHIST PATH

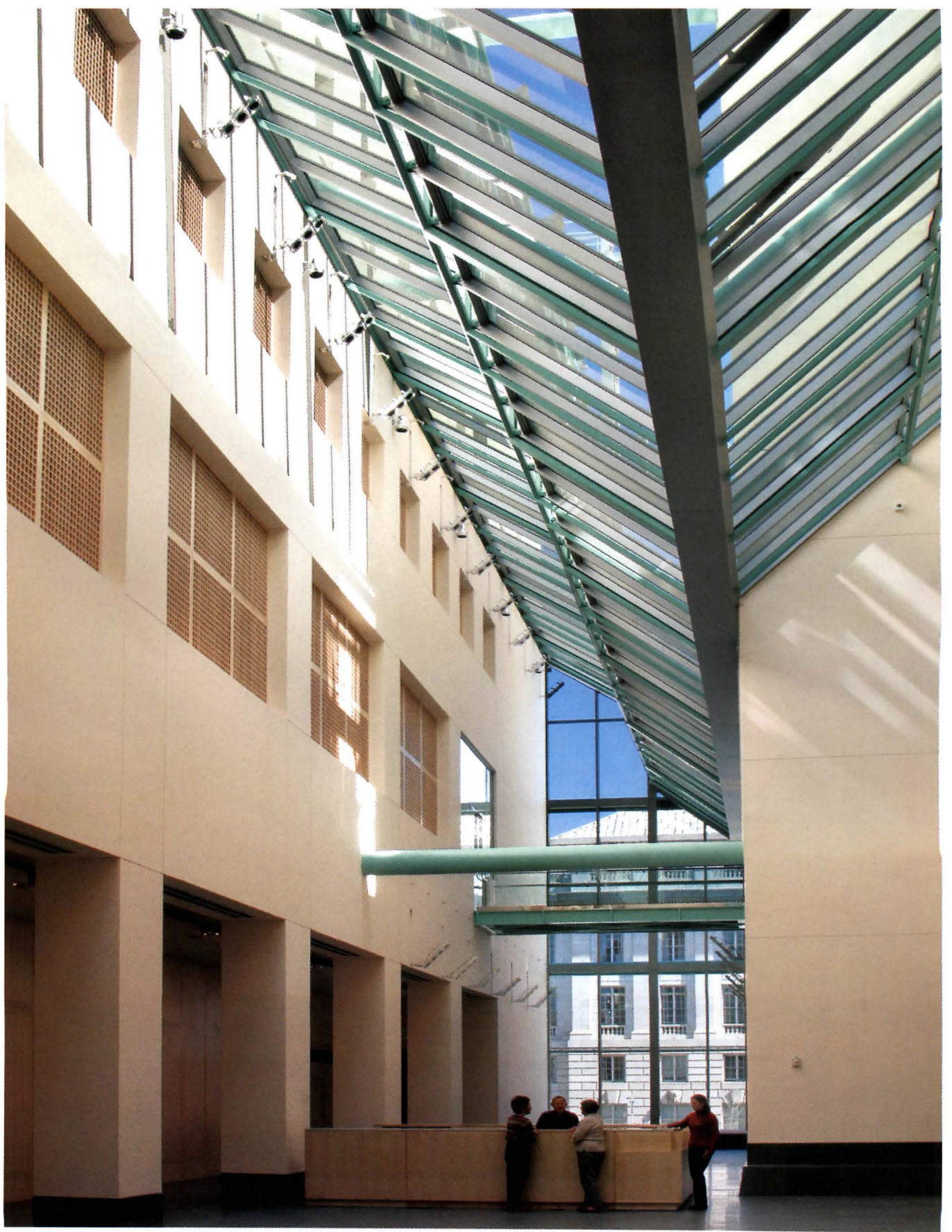
Two contracts were awarded for the design of the AAM: one for the building and one for exhibition spaces to hold 2,500 of the museum's 14,000 objects. In the AAM's previous location in a wing off the de Young Museum in Golden Gate Park, exhibition space was severely limited. The new building has 29,000 square feet apportioned in 33 galleries on the second and third levels around its perimeter. The 34-foot-high former reading rooms on the south and west sides were sliced in half to make two floors; the stacks on the north side were remodeled to match.

The design reflects director Emily Sano's commitment to educating the public about Asian art and culture. Visitors are directed along a route that begins in the entrance lobby, where a ticketing desk opposite the entrance allows a view up the grand stairway to Samsung Hall, but blocks immediate access to the stairway. Instead, visitors are encouraged to enter the piazza and take the escalator to the third floor, where a glazed corridor permits views of the city to the east while leading into the galleries. Stepping inside the first gallery, where the collection is previewed, is like entering a theater. The dim lighting focused on art objects in showcases suggests a world outside this time and place.

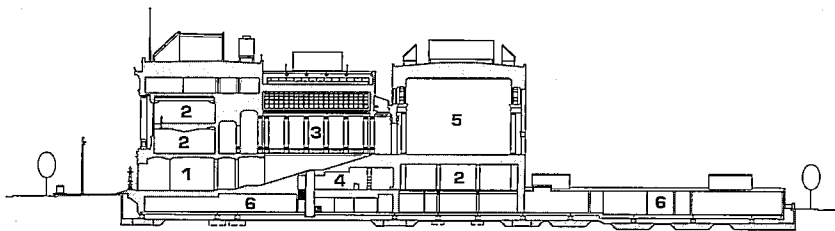
Exhibition designer George Sexton worked with the curators to create a didactic path through the galleries that follows the theme of the spread of Buddhism (from India to Southeast Asia and the Himalayas, China, Korea, and Japan), described by Sano as "the only really important cultural factor that permeated every part of Asia." Unschooled visitors will undoubtedly benefit from total immersion in this prescribed path. Still, the relentless procession of illuminated artworks, mainly set in imposing cases that mask the real building walls, creates a kind of *horror-vacui* that may numb the mind and encourage early departure.

One option for those who want to vary the course of their visit is to cross Aulenti's steel bridge into Samsung Hall, a special-events space that serves as the climax of the historic spine of the building and includes the lobby and the grand stairway with its loggia and vaulted ceiling. While its original surfaces, stained from decades of tobacco smoke, have been cleaned, the greatest benefit of the restoration of the stair hall was the removal of brick walls between the engaged piers supporting the ceiling vault. Paintings by a well-known local painter, Gottardo Piazzoni, had been affixed to the walls as early as the 1930s. When these infill walls were found to be structurally weak and unlikely to withstand demolition work elsewhere in the building, the paintings were removed and put in storage. The stairway, now wonderfully suffused with daylight, is a pleasure to ascend.

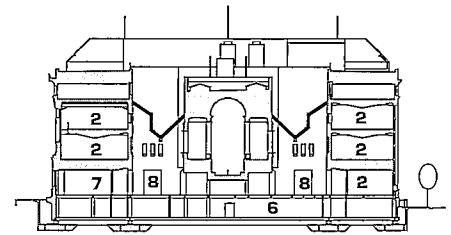
Sally B. Woodbridge, a contributor to *Architectural Digest* and *Landscape Architecture*, is author of numerous books, including *John Galen Howard and the University of California* (University of California Press, 2002).



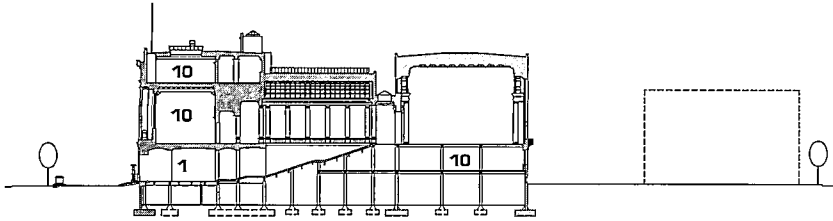
V-shaped skylights and glazed end walls transform the once-dismal open wells of this beaux-arts building into light-filled courts.



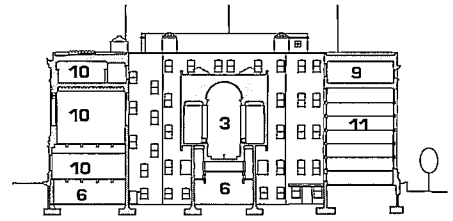
new museum, east-west section



new museum, north-south section



existing library, east-west section

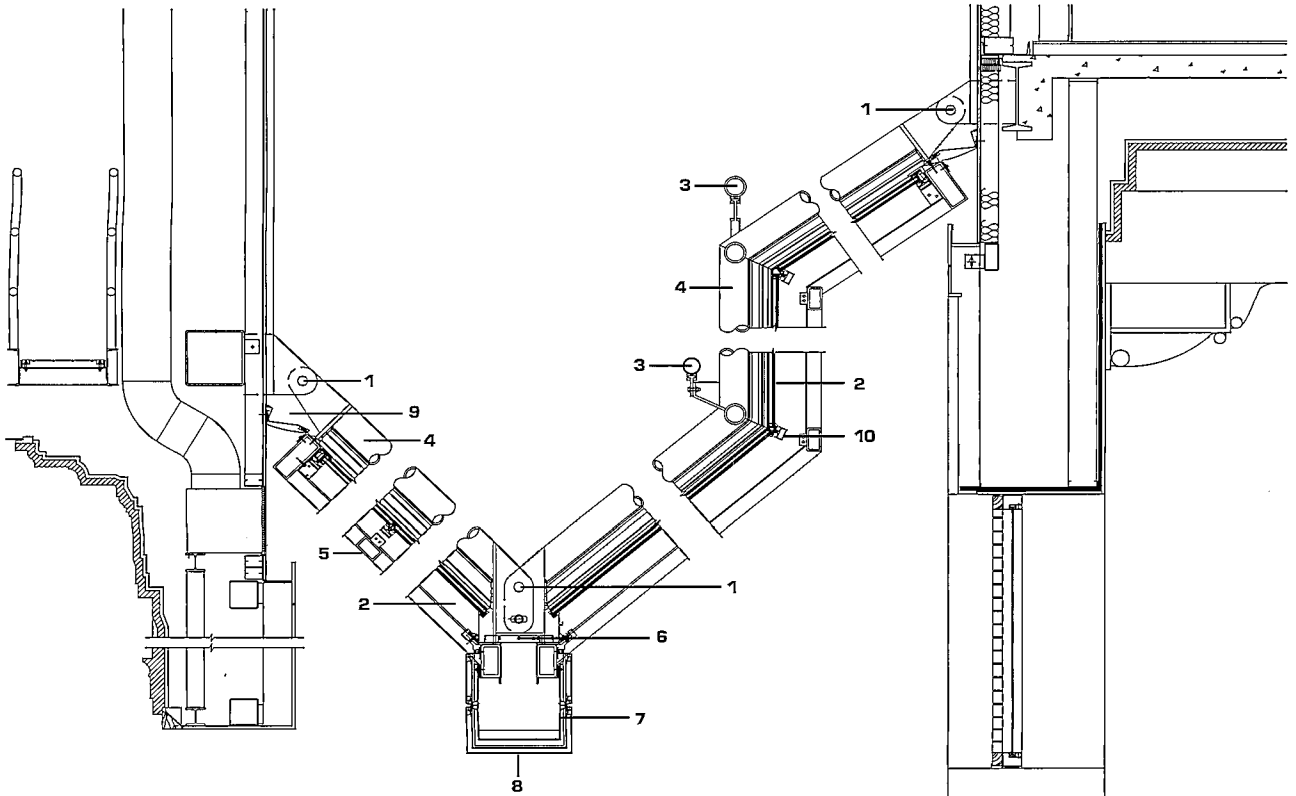


existing library, north-south section 30'

- 1 entry lobby
- 2 gallery
- 3 stair loggia
- 4 museum store

- 5 great hall
- 6 storage
- 7 classroom
- 8 court

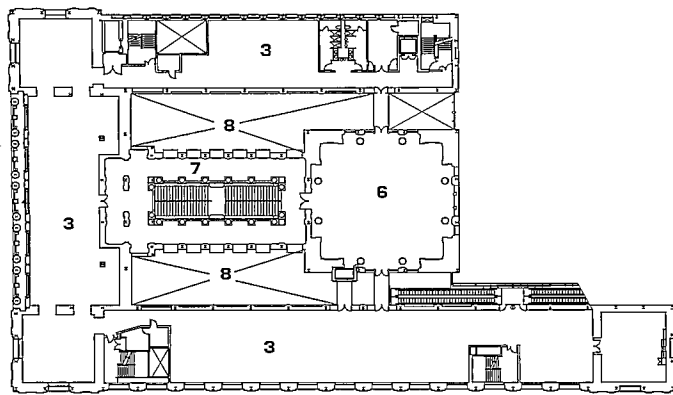
- 5 administration
- 10 reading room
- 11 book stacks



section detail through skylight 1.5'

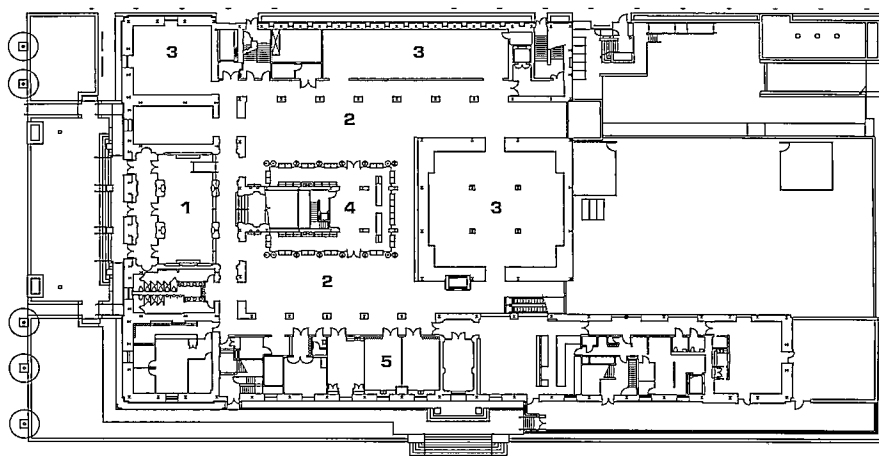
- 1 hinge-pin connection
- 2 insulated glass
- 3 structural support for window-washing rolling ladder
- 4 skylight structural frame
- 5 lateral skylight support frame

- 6 metal grating
- 7 stainless-steel gutter liner
- 8 anodized aluminum-clad panels
- 9 anodized aluminum flashing over EPDM membrane
- 10 anodized aluminum glazing-frame assembly



second-floor plan

- 1 entry lobby
- 2 central court
- 3 gallery
- 4 museum store
- 5 classroom
- 6 great hall
- 7 stair loggia
- 8 open to below



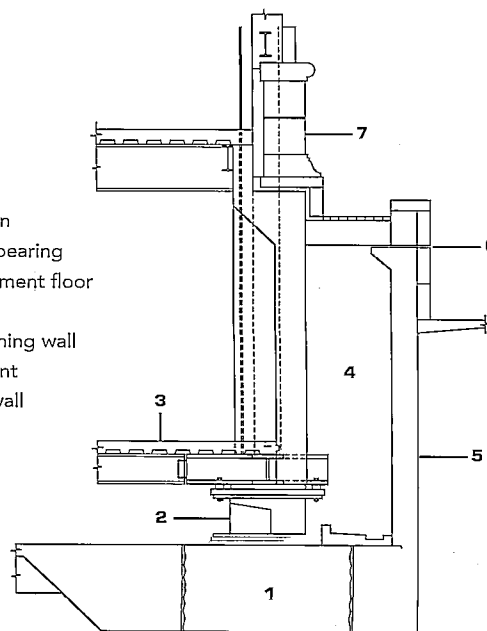
ground-floor plan ——— 50'

The Art of Base Isolation

The structural system of the 1917 San Francisco library, which consisted of a steel frame infilled with unreinforced masonry walls, was far below the standards of the 1995 San Francisco building code. At the very least, the code required replacing the infill walls with epoxy-resin anchors attached to structural tubes and adding concrete shear walls to the building's corners. Moreover, the value of the museum's collection put the building in an especially stringent category of protection. Base isolation was chosen, despite its high cost, because it was the least invasive way of protecting both the building and the collection.

Approximately 250 base isolators were set on a reinforced foundation system below the existing slab-on-grade. A new basement floor was constructed above the bearings, and new reinforced-concrete shear walls were built to provide a lateral load path for all sections of the building. Evidence of the base isolation treatment is visible outside the building, where a rammed-earth path traces the moat encircling the building. Within this cavity, the building can move 30 inches in all directions during an earthquake.

- 1 foundation
- 2 isolation bearing
- 3 new basement floor
- 4 moat
- 5 new retaining wall
- 6 sliding joint
- 7 existing wall



perimeter wall section ——— 4'

Gae Aulenti on Context and History

Gae Aulenti studied architecture at the Milan Polytechnic, graduating in 1954 and spending the next decade on the editorial staff of the Milan-based magazine, Casabella-Continuità. The designer of the much-acclaimed 1986 Musée d'Orsay in Paris, the 1985 Palazzo Grassi in Venice, and many other projects, products, and theater designs, spoke with John A. Loomis this spring.

What is your design process?

There are three phases to the way in which I work. I generally begin by working from an analysis of references. Whether it is an existing work of architecture or new, it is important to establish these references, the conceptual and physical characteristics of the place. I am very much interested in context because I believe that a building, especially if one is working in a city, must respect all the connections to that city, whether they are visible or invisible. The second phase is to synthesize and define the issues that are most valid. It is important not to lose oneself in issues of style. The third phase is one that I call prophetic, in the sense that we receive the past, we are in the present, and we must construct for the future. We engage in a dialectic with history.

And because I believe this, I am very much against certain architecture that is made today, all distorted, discontinuous. Look at the [World Trade Center] competition, the project of Daniel Libeskind; I don't know why the law of gravity is not recognized anymore. I feel that for many, architecture has become a game. We have passed through a very ambiguous period with postmodernism and

▣ Tradition is not something that is inherited but something you construct day after day.

deconstructivism. It takes great energy to deny these movements of style, and to recognize that tradition is not something that is inherited but something you construct day after day.

San Francisco's old library was a façade, nothing more. There was no correspondence between interior and exterior. The heart of the building consisted of a lobby, a grand stair, a loggia, and a great hall. My idea of reusing an old building—not exactly antique, but old—is to conserve the historic identity while creating a contemporary identity for the new intervention, in such a way that the two identities reflect each other and are not in opposition. [In San Francisco], there were two lateral courts, like prisons, covered in sad-looking brickwork. From the point of view of architecture, the possibility was this: to bring together the grand stair and the two lateral courts to expand the space, not just in the physical sense—because this you can do only on the ground floor—but also in the upper floors in such a way that the expansion of the space with the two great skylights carry inside the light of San Francisco, which was previously excluded.

You are an accomplished designer of objects, interiors, industrial design, and theater sets. How has that variety affected your design approach?

There was a period during the 1970s when there was more talk about the representation of architecture than about architecture. Magazines throughout the world were full of marvelous designs of things that would never be constructed. Well, I am a person with a very curious nature. I like to go around and look at things, study

how they are. The issues of "style" in this period, I preferred to study in depth and within various functions and contexts.

If I make an object, I know that it exists within a space. So I studied the making of objects for design markets, always being aware of the relationship between the object that you use and the space that you occupy, because these things are integrated. I also did many interiors, but much of this was because I was a woman and could not get other work [laughs]. Theater gave me great pleasure in terms of representation. I learned what is meant by permanence and impermanence. The ephemeral is something wonderful, which you can engage in the theater, but not in architecture.

Can you tell us about your formation as an architect and perhaps reflect upon those who influenced you?

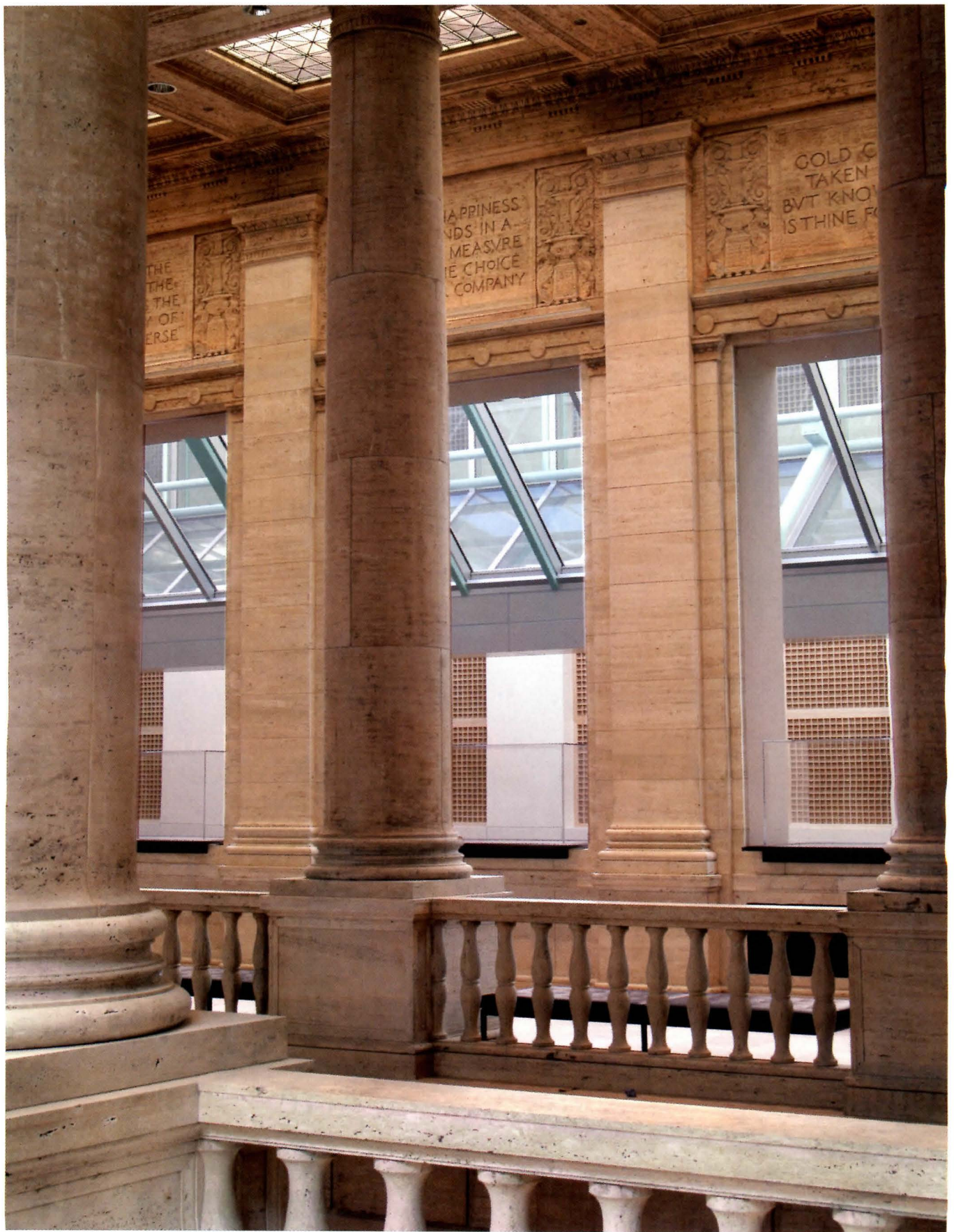
I worked with Ernesto Rogers for 10 years, until his death, while he was teaching at the Politécnico and when I was at *Casabella*, where he was editor. He taught me how to be international within the province of Italy, and that to be provincial means to be curious and open. He instilled in me an intellectual passion that is very strong. He was a defender of the modern movement. For Rogers, it was important to understand from where and out of what context the movement had been born. He was careful not to ask or expect any of his students or assistants to produce work that was like his own. Quite the opposite; in different ways, he helped us become, not "Rogers's group," but self-sufficient people. And look who we were: Aldo Rossi, Vittorio Gregotti, Aldo Aymonino, and me.

Chong-Moon Lee Center for Asian Art and Culture, San Francisco client | Asian Art Museum Commission & Foundation architect | HOK/LDA/RWA, a joint venture of Hellmuth, Obata + Kassabaum, LDA Architects, and Robert Wong Architect in association with Gae Aulenti—Gae Aulenti (design principal); Mark Otsea (project director); Mark Piaia (project architect); Lou Williams (specifications); Vittoria Massa, Milena Archetti, Andres Grechi, Ben Wong, Roumel Butiong, Monica Szu-Whitney, Seiya Okata, Pam Lee, Heather Hart, Shoshana Signer, Hank Weaver, James Fong, Ken Loretto, David Hawthorne (project team) historic preservation architect | Page & Turnbull engineers | Forell Elesser Engineers, Olmm Structural, Tennebaum-Manheim Engineers (structural); Mazzetti Associates, Mechanical Design Studio, POLA Electrical Engineers (M/E/P); AGS (civil) consultants | Antonia Bava Landscape Architects (landscape); Auerbach+Glasow (lighting); George Sexton Associates (exhibition design) construction manager | LEM/DPR area | 180,000 square feet

photographs by Kaz Tsuruta

Specifications

structural metal | Bostrom Bergen, Olson & Co. Steel cladding | Sierra White, Cold Springs Granite (stone); Dryvit Systems (EIFS) roofing | VM Zinc (metal screen); American Hydrotech (monolithic membrane) glazing | Viracon hardware | Schlage (locksets); Hager (hinges); LCN (closers); Von Duprin (exit devices) ceilings | USG cabinetwork/custom woodwork | ISEC paints/stains | Kelly Moore & ICI Paints wallcoverings | Innovations in Wallcoverings flooring | Gammapar (wood); Basaltina (stone); Forbo Industries (resilient) carpeting | Bolyu lighting | Elliptipar (exterior skylight); Lightolier (gallery); B-K Lighting (exterior building); Litelab (custom) elevators | ThyssenKrupp plumbing fixtures | American Standard



Classical ornament viewed from across the original grand stairway is enhanced by light diffused through Aulenti's new skylights.

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SKY LAWN

Green roofs are providing an energy-efficient, scenic solution in unexpected places.

by Tess Taylor

Many people in downtown Chicago work in view of some of the twentieth century's most famed buildings: Mies van der Rohe's Lake Shore Drive apartments, Helmut Jahn's Illinois State office building, and Bertrand Goldberg's Marina City towers. This year, between these landmarks, it is possible to glimpse an equally pleasing, if less monumental, movement in architecture: the prairie grass and wildflower roof that crowns Chicago's city hall. The small ecosystem, built in 2001, has already become a destination for migrating warblers, yellow swallowtails, and monarch butterflies.

The roof, however, was not designed for the birds. "The new roof is a symbol of Mayor Richard M. Daley's commitment to reduce the urban heat island and to improve the city's air quality," says Commissioner Marcia Jimenez of Chicago's Department of Environment. So far, the grass seems to be doing its job well. While the column of air above the tar roof of an adjacent county building reached temperatures close to 165 degrees last summer, the air above city hall hovered at a comfortable 95. "We found that we cut cooling costs within our building," Jimenez adds. The roof, which is not open to the public, is planted with drought-resistant natives that require little maintenance. "We have a backup irrigation system, and a few people do basic gardening once or twice a year," says Jimenez.

The roof retains storm water to irrigate its own plants. This might not seem like a big deal, but according to Heidi Kooi, also with the Department of Environment, it helps the city solve a large problem. "After summer storms, we have enormous runoff," she says. "Our drainage systems flood with bacterial water, the sewers overflow into the lake, and we



Chicago's city hall may have one of the most visible green roofs in the country (above) but many smaller projects are using the same systems. Tom Lipton, a landscape architect overseeing a green roof initiative for Portland, Oregon, patched a leak in his garage roof by installing grass over it (right). "All told, it cost me about \$60," Lipton says. The garage hasn't leaked since, and Lipton has seen some hyacinths bloom on it.



have to close down city beaches. We're trying to demonstrate that green roofs can help us."

ROOFING REVOLUTION

Chicago's movement to create rooftop oases reflects what might be described as a growing trend nationwide. Cities across the country are studying the benefits of green roofs to curb energy costs, cool and improve urban air, and manage runoff. Green roofs have cropped up on health-care facilities, automobile factories, and high-end apartment complexes. There's talk of a green roof on Cleveland's city hall and a grass-covered band shell in San Francisco's Golden Gate Park.

The new technology is more expensive up front, costing two to three times more than its conventional counterparts, but green roofs offer long-term benefits. Colin Cheney, of New York City's Earth Pledge Foundation, notes that they have twice the life expectancy of conventional roofs. "The soil and plant layers offer excellent protec-

tion against thermal loading, or the degradation of a roof membrane from daily and seasonal changes in temperature," Cheney explains. "They also help keep hot upper floors cool."

Kyle Glenn of Gordon H. Chong and Partners, whose San Francisco firm is working with Renzo Piano on a green-roofed redesign of the California Academy of Sciences, notes that although his clients were ready to make the initial investment in green roofing, they needed to be reassured that the roof would be easy to maintain. "People need to hear that their roof will look good," he says, adding that as of now, his firm is planning a low-maintenance roof of native plants. "It can take a while to catch on," agrees Chicago's Kooi, who admits that responses to the city hall have been mixed. "I think some people have been saying, 'Why spend so much money on plants?' So you have to educate them."

Cheney hopes that this reluctance is just a function of time. "We know that

Heavenly Perch

Each green roof presents unique design challenges. In designing the rooftop garden for the Church of Latter-day Saints Conference Center in Salt Lake City (August 2001, page 102), for example, Zimmer Gunsul Frasca, KPFF Engineers, and Olin Partnership Landscape Architects had to cover a colossal six acres of roof, atop a 20,000-seat, clear-span auditorium, with an alpine meadow and garden designed to mirror native vegetation.

To insure that the structure could support a veritable forest (1,400 trees, several pools, and a 67-foot waterfall) on its roof, the landscape architects and structural engineers devised lightweight support systems for the vegetation. The soil mixture is a light, **expanded-shale aggregate**. While the trees require a deeper soil bed, a virtually weightless **polystyrene** is used as filler beneath the topsoil in open, grassy areas. A drainage system equipped to handle large amounts of water captures and stores runoff from the infrequent but torrential downpours typical to the area. For drainage in the meadow area, the designers devised a set of **concrete baffles with drainage channels** that both keep soil from sloughing off the sloped roof and send water laterally across it to storm drains.

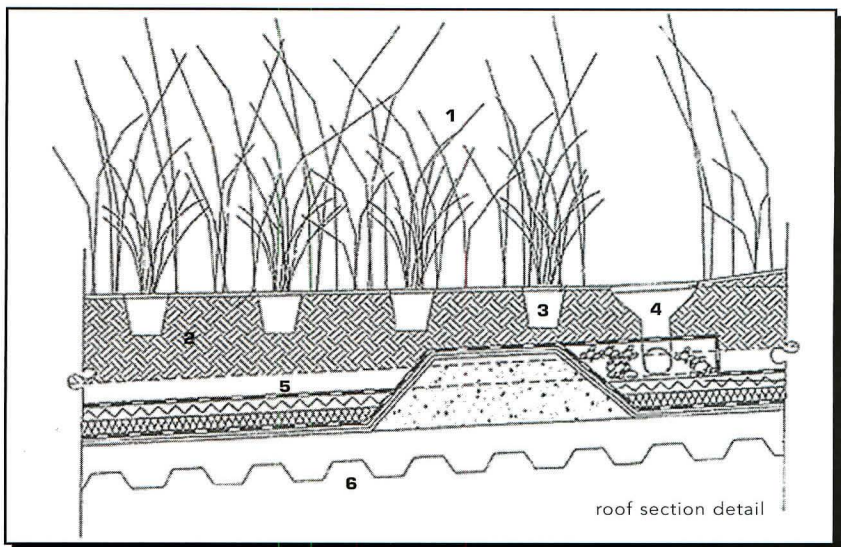
The project won a Green Roofs for Healthy Cities award of excellence at the Toronto-based organization's inaugural conference last month. With the church's congregation expanding by 300,000 new members worldwide each year, lessons from this large-scale roof garden may influence future developments. **Julia Mandell**

Church of Jesus Christ of Latter-day Saints Conference Center, Salt Lake City

client | Church of Jesus Christ of Latter-day Saints **architect** | Zimmer Gunsul Frasca Partnership, Portland, Oregon—Robert Frasca (design partner); Robert Packard III (partner-in-charge); Joseph Collins (project manager); John Thompson, Bill Williams (senior designers) **consulting architect** | Gillies Stransky Brems Smith Architects, Salt Lake City **theater and media facilities design** | Auerbach + Associates **landscape architect** | Olin Partnership **engineers** | KPFF Consulting Engineers (structural); CHP & Associates (M/E/P); Stantech Consulting (civil) **general contractor** | Legacy Constructors **consultants** | Jaffe Holden Acoustics (acoustics); Auerbach + Glasgow (lighting); Sparling (telecommunications); National TeleConsultants (broadcast audio/visual) **area** | 1.5 million square feet



The conference center's roof garden was designed to mirror native plants at progressive elevations.



- | | |
|---------------------------------------|-----------------------|
| 1 meadow grass and seeded wildflowers | 4 cleanout/area drain |
| 2 planting soil | 5 drainage system |
| 3 meadow wildflower plugs | 6 structural decking |

green roofs insulate buildings and cool their top floors," he says. "But now we're working to really quantify those benefits."

While Cheney contemplates the incentives, an ever-wider group of architects and landscape architects are contemplating form. Diana Balmori, whose firm is

designing several green roofs in and around New York City, is intrigued and excited by the design possibilities they offer. "We are bringing plants into the structure of a building, and building walls out of plants. We break down that rigid boundary between the outdoors and

indoors. We are unsealing the building," she says, "and I see this as the future of architecture."

Tess Taylor writes frequently on architectural subjects, and contributes to *Metropolis*.

WHITE CITY REDUX

Jean-Paul Viguier, with Teng & Associates | Sofitel Chicago

by C.C. Sullivan

Earning a commission from the Sofitel hotel chain seemed a natural step for Paris-based architect Jean-Paul Viguier, whose elegant corporate work—offices for France Television and Unibail, and headquarters for Esso, Bristol-Myers Squibb, Alstom, and AstraZeneca—seemed to position him uniquely for the chain's "landmark executive hotel" concept. Moreover, his refined and rational machine-age designs seem a fitting complement to work by Chicago's functional modernists: Mies van der Rohe, Helmut Jahn, Kohn Pedersen Fox.

Yet, Viguier's 350,000-square-foot solution defies norms, and is plainly devoid of any referential or regional accent. His cosmopolitan wedge tower just west of Michigan Avenue's famous Water Tower fractures the city's stultifying grid, and carves an elliptical plaza from the street plane to **expose the lobby program** and draw in passersby. The composition reflects the "contemporary French classical tradition," says Viguier, "while allowing us to mentally recompose the elementary city block."

GLAZED SUBTRACTIONS

The design **exploits the corner parcel's** two prominent elevations (he adds a third with the prismatic tower) for visibility of the public areas and as a way to bring sun inside. Its shimmering white and silver glass façades are punched with an irregular pattern of windows; where the plaza's conically extruded, imaginary ellipse intersects the masses, the resulting **walls are peeled open** with delicate and highly transparent glazing. Unlike many of Viguier's projects, Sofitel Chicago presents an upscale shimmer without any apparent structural logic.

On Chestnut Street, the large elliptical indentation is geometrically pure, while



An imaginary elliptical cone cuts into the rectilinear masses of the Sofitel Chicago, leaving curving, canted sections of curtain wall with insulating glass and hidden mullions. The windows allow views at the end of each corridor of guestrooms.



being composed of irregular sections of curved, canted glass. According to Alfredo Marr of Chicago's Teng & Associates, which served as architect and multidisciplinary engineer in a joint venture with Viguier, "No two pieces of glass are the same size or shape on the conical wall." To fabricate the aluminum curtain wall, the designers located the mullions by computer, and an engineer confirmed the math with **longhand calculations**. The hand-picked curtain-wall contractor, HKL Cladding Systems of West St. Paul, Minnesota, custom-detailed and extruded the framing members and glass sections from Teng's **3-D coordinate points**.

"Viguier wanted to suggest the conical mass in absence," recalls Marr, so the design team specified a very clear, **low-iron insulating glass**—without the greenish tint associated with much curtain wall—siliconed over hidden mullions. Along Wabash Street, a band of sawtoothed curtain wall opens views into a street-level bar.

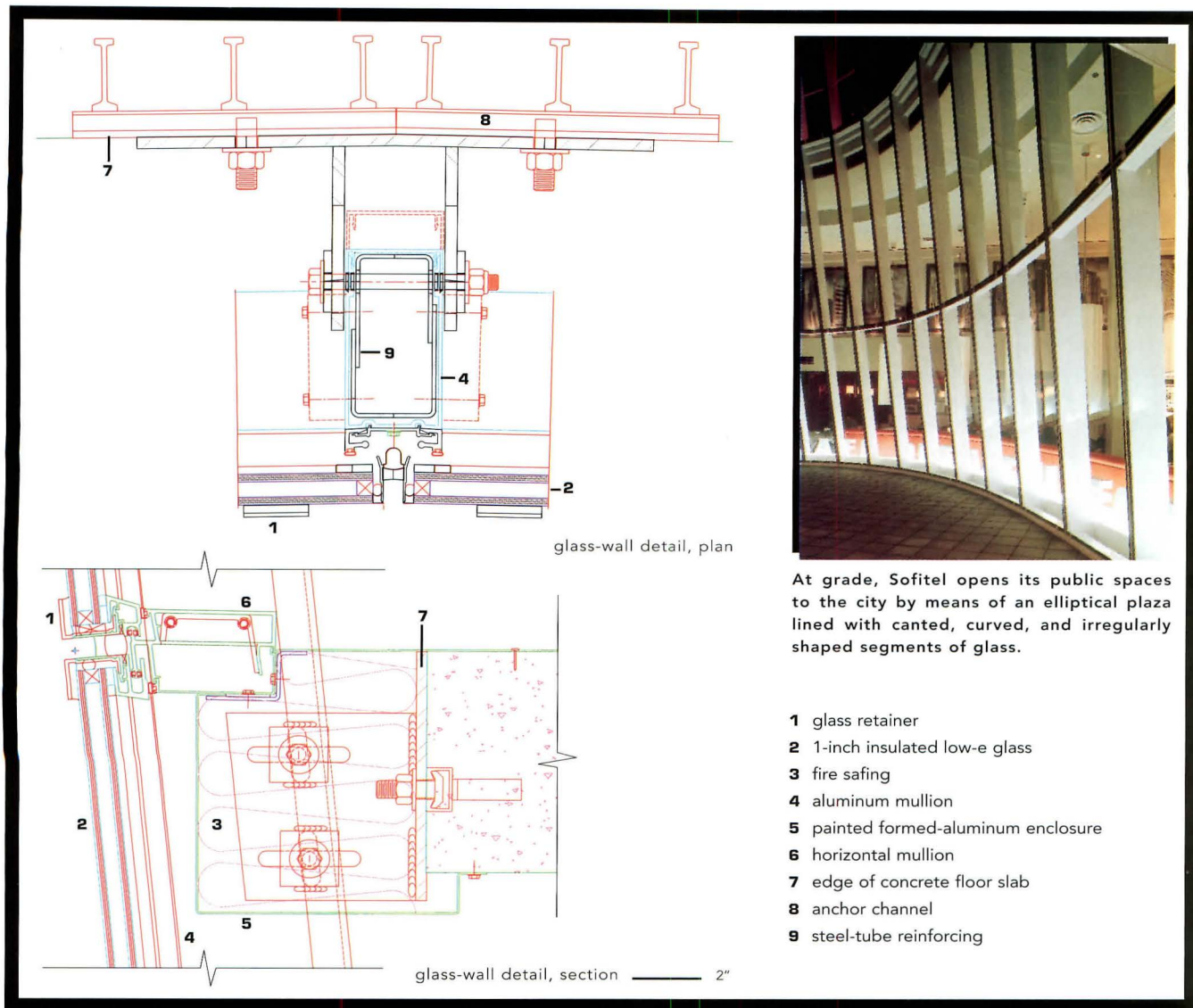
The rest of the façade system is also glazed, with a milky-white ceramic frit applied to spandrel portions, enhancing the prismatic, monolithic quality of the mass. (The designers considered several other options, including precast concrete, crystallized glass-composite panels, and various stones, but none of them were white and pristine enough for Viguier's tastes.) Rather than simply stacking repetitive fenestration, Viguier provides **six window modules per guestroom**, varying the placement of vision and translucent panels.

EFFICIENT GUESTROOM FLOORS

The triangular tower of guest rooms mirrors a sliver of park across the street. Below, an airy column-free lobby is contained within a five-story plinth that fills the site. To support the tower without intrusive piers in the public areas, large **reinforced-concrete transfer beams** located under the sixth floor—up to 8 feet deep and 6 feet wide—carry the tower load to the base and caissons below. (Two levels of concrete parking deck are crammed in below grade, the foundation retained by braced beams and inclined struts to limit sidewall movement in Chicago's soft clay.) While the engineers had to work out a challenging spatial puzzle to accommodate **electromechanical services** in the interstitial space, Viguier's lobby becomes a theatrical socializing zone, with an elegant glass-treaded stair and the added charge of a light show projected inside the walls of a full-height shaft of white glass.

For the 412 guestrooms above, the triangular floor plan is unexpectedly efficient. Each floor—and, in fact, each of its 16 rooms—has a unique view of the city skyline. By **staggering the elevator lobbies** and drawing natural light into public zones, the floor plan also minimizes the impression of a double-loaded corridor. Linen storage and other service functions are hidden in the corners of each floor, and the vertical circulation area employs a **scissor stair**—in France, it's an *escalier de Chambord*—for emergency egress, helping to acoustically isolate the guestrooms from elevators and stairs. ■

For project credits and specifications, see page 76.



At grade, Sofitel opens its public spaces to the city by means of an elliptical plaza lined with cantilevered, curved, and irregularly shaped segments of glass.

- 1 glass retainer
- 2 1-inch insulated low-e glass
- 3 fire safing
- 4 aluminum mullion
- 5 painted formed-aluminum enclosure
- 6 horizontal mullion
- 7 edge of concrete floor slab
- 8 anchor channel
- 9 steel-tube reinforcing

Hotel Sofitel Water Tower, Chicago

client | Accor North America **architect** | Viguiier/Teng Joint Venture **design architect** | Jean-Paul Viguiier, S.A. d'Architecture, Paris—Patrick Charoin (project manager); Blin Trincal, Marina Donda, Marie-Hélène Paoli, Frédéric Morel Architectes (project team) **architect/engineer of record/landscape architect** | Teng & Associates, Chicago—Larry Buchman (principal in charge); Edward Wilkas (architect of record); Alfredo Marr (project manager); Louie Sunga, David Tichy, Constance Walker, Michelle Humphrey (project team); R. Shankar Nair (senior structural engineer); Miroslav Sulc (structural engineer); Daniel Fagan (senior M/E/P engineer); George Bouris (mechanical engineer) **interior architect** | Pierre-Yves Rochon, Paris—(interior designer); Perkins and Will (interior architect of record) **engineers** | Teng & Associates (structural, M/E/P); Terra Engineering (civil) **consultants** | PHA Lighting Design (lighting); Lerch Bates (elevator); Clevenger Frable LaVallee (kitchen/laundry); ArchiTech Consulting (specifications); Capri Acoustique, Shiner + Associates (acoustics); RWDI (wind-tunnel testing) **construction manager** | Constructa **general contractor** | AMEC **area** | 350,000 square feet **building cost** | \$72 million

photographs by Nicolas Borel

specifications

caisson foundations | Case reinforced-concrete structure | Tribco architectural metals/entrance canopies | MTH Industries aluminum curtain wall | HKL Cladding Systems **single-ply roofing** | James Mansfield **spandrel glass with ceramic frit and clear-vision glass** | Viracon **stone** | J. Kapscheck; Bourbon Tile & Marble **ceiling systems** | USG Interiors **wall panels** | Parenti & Rafaelli **metal doors** | LaForce **woodwork/wood doors** | Mazur/Parenti & Rafaelli **guestroom shower doors** | Bartlett **paints/stains** | Sherwin-Williams **elevators** | Otis **window-washing equipment** | Tractel

Big Buzz for BIM

Is the latest approach to A/E/C software a revolutionary one or just repackaged technology at a higher price? by Joel Hoekstra

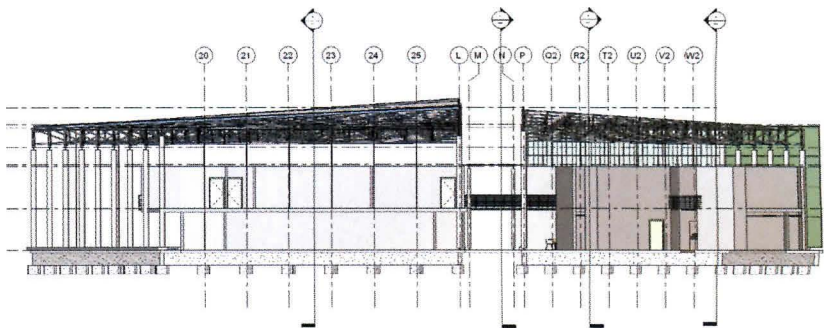
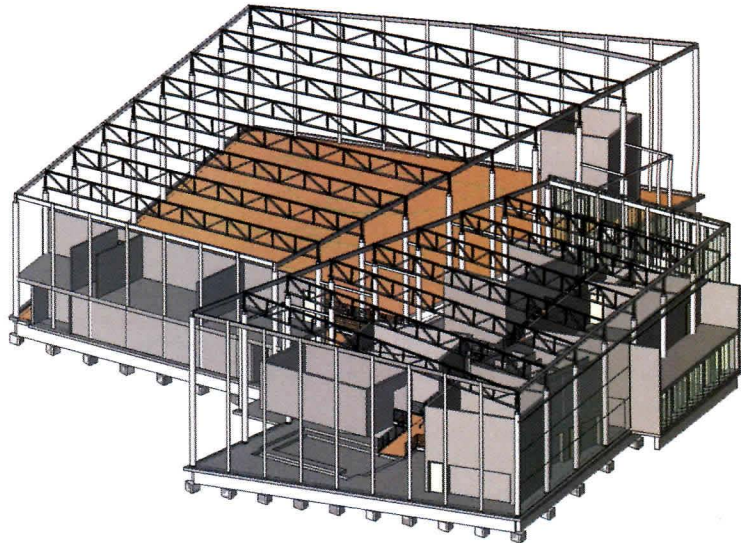
A decade ago, creating models of geometrically complex structures was an exercise in guesswork. But when the Princeton, New Jersey, firm Hillier recently proposed building a community center with hyperbolic paraboloid roofs, a designer worked up a detailed 3-D model, replete with floor plans, sections, and truss angle measurements that seemed to vouch for its accuracy—all in just two days. BIM made this possible.

Building-information modeling, or BIM, has been hailed by many as the biggest advancement in architecture, engineering, and construction (A/E/C) software since the advent of CAD tools in the 1980s. Where CAD mimicked manual drafting on paper—simply transferring activity from sheepskin to screen—and automated some functions of the design process, BIM incorporates those functions, while more fully harnessing the database and information-management capabilities of computers. “It’s basically allowing the process to focus on the information and decisions, rather than the specific microtasks of documenting each decision,” says Huw Roberts, director of building marketing at Bentley Systems. CAD helped architects render a line that represented the size and shape of a wall; BIM tracks and automates additional decisions, ranging from finishes to fire ratings associated with each drawn object.

“This is going to transform our work process,” says Hillier principal James Greenberg. “It’s not like we’ve gone from a black-and-white copier to a color copier. We know this is going to radically change the way we do business with clients and consultants.”

DATA SHARING

One of the primary attributes of BIM software is data sharing. “Information about an enterprise has become highly liquified and can now be piped around electronically,” says Phil Bernstein, vice president



The parametric abilities of Revit, Autodesk’s BIM software, are streamlining the detailing for a truss system for the Breukelen Houses Community Center in Brooklyn, New York. Consisting of two nested trapezoids, the building’s twin roofs ramp up in opposite corners, necessitating pivoting trusses, each at a different angle. In refining the structural system and pinpointing the positions of the trusses, Revit allows Agrest and Gandelsonas, the design architect, and Hillier, the architect of record, to alter the 3-D model and trust that all 2-D views in design and construction drawings will be updated.

of building solutions at Autodesk, which makes Revit, a BIM software launched in 2000. “That’s a big change from even 10 years ago, when the primary mechanism for pushing design information around was FedEx.” BIM programs allow architects, engineers, contractors, owners, and others to access documents simultaneously. Participants can generally access and format information as best fits their particular field. The software is also parametric,

meaning it manages synchronization, implementing changes across the board.

Software makers, after much haggling over terms, have finally agreed to adopt BIM as a universal acronym describing the approach of these next-generation products. But each still naturally touts the benefits of their own proprietary systems.

The potential benefits are numerous.

CONTINUED ON PAGE 80

BIM has markedly increased efficiency at Hillier, allowing one architect to perform the work of three designers in a comparable time span, says Greenberg. (He is unsure, however, whether such efficiencies are applicable to larger projects than his community center.) Estimating costs and square footage is easier and more accurate than with CAD, because updated information from all design team members can be factored in immediately. Automated synchronization of documents improves consistency and reduces errors. Meanwhile, tracking functions in programs that chronicle the history of changes may prove useful in averting litigation.

QUESTIONS UNANSWERED

Proponents are sanguine that the revolution will spread, pointing to the use of BIM software by large corporate firms like CH2M Hill and NBBJ and in the develop-

ment of the Eureka Tower, expected to be the world's tallest residential structure, in Melbourne, Australia. Others are less sure. Martyn Day, editor of the British journals *MCAD* and *AEC Magazine*, takes a dim view of BIM. "The applications that are supposedly BIM products are exactly the same as the ones that were available two to five years ago—Triforma, Revit, Graphisoft, Architectural Desktop, AllPlan," he says. "Nothing is new except the terminology."

Others see social and financial hurdles. Senior managers, who often hold the purse strings, may be reluctant to invest time and dollars in any new technology. And increasing demand for designers with BIM skills, with less emphasis on traditional drafting, may ultimately lead to a shift in firm organizational structures.

"Who is going to compensate the architect for this?" asks architect and industry analyst Jerry Laiserin, noting the premium prices of BIM software. "It's not

yet proven that BIM saves the architect enough time and effort in design and production of construction documents to justify the expense." Jill Rothenberg, chief information officer with ADD, a Cambridge, Massachusetts, firm that is weighing a move to BIM, worries that architects may end up doing part of the contractor's job—without added remuneration: "How do we share information without giving away potential revenue?" asks Rothenberg.

Those issues aside, the real future of BIM depends on performance. Data alone is not enough. "There's a lot of talk about this as an informational model," says Chris Barron, Graphisoft's vice president of sales and marketing. "But at the end of the day, if the architect can't get working drawings done faster, it's irrelevant."

Joel Hoekstra is a freelance writer based in Minneapolis.

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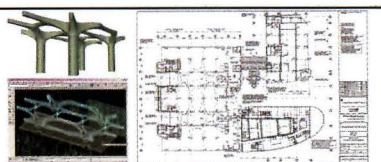
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Does building-information modeling (BIM) actually offer firms new business opportunities? For Whitby Bird & Partners of London, the benefit came in coordinating the restoration of historic Broadcasting House. Using Bentley's **MicroStation** and associated applications, the firm was able to provide full structural, civil, and façade engineering

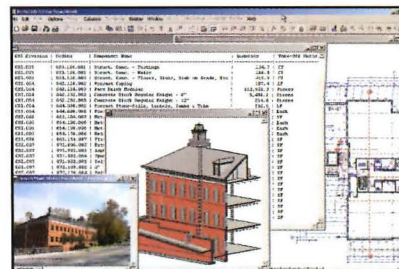


→ MICROSTATION TRIFORMA
→ www.bentley.com

solutions, as well as 3-D laser scanning, and "clash detection."

Another firm, Perrysburg, Ohio-based OneSphere, added "capital-project management services" to its practice, which now integrates design, construction, and management services. Using Graphisoft's **ArchiCAD**, the firm now estimates costs for projects as they are creating designs, says a principal, Kevin Carroll.

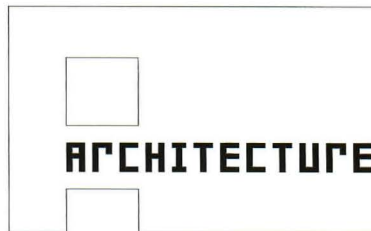
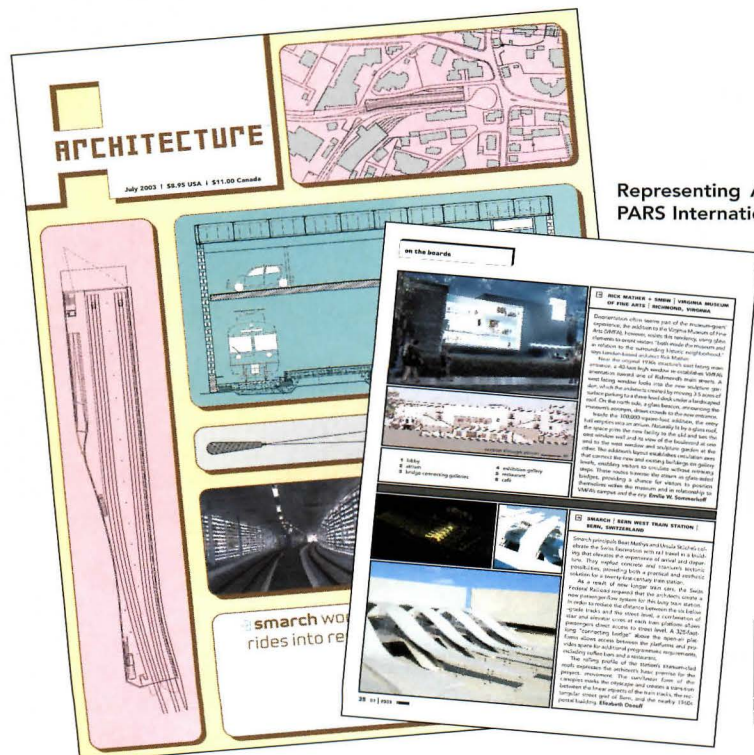
To expand its client services, San



→ ARCHICAD
→ www.graphisoft.com

Francisco-based Huntsman Architectural Group employs Autodesk's **Revit** for its commercial client base, augmenting its core architectural and interiors business with facility-management (FM) services. The firm uses the BIM software not just for core building design, but also to track data and present it in new ways—and as a surrogate for traditional FM software. ■

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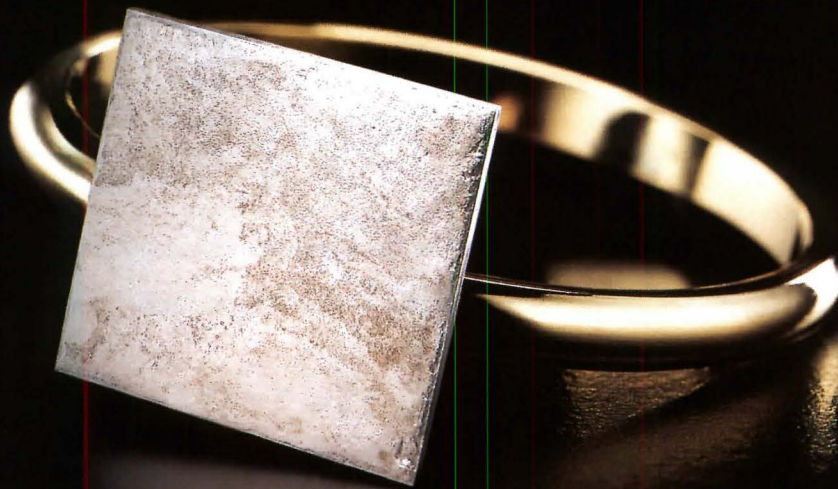
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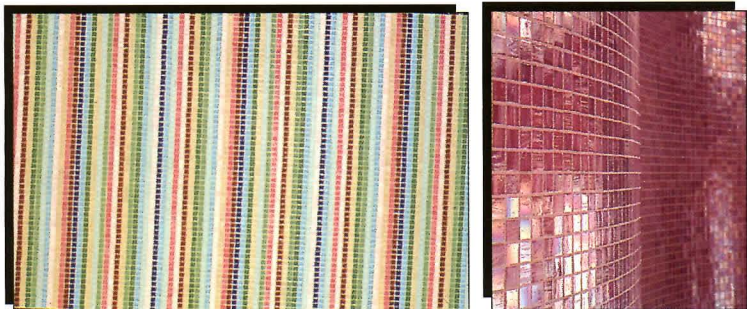
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Ceramic Tiles of Italy is a partner of the project  **Halia**
Life in style

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tile style

- ☒ products: **Stripes, Gloss**
- ☒ manufacturer: **Bisazza**
- ☒ website: **infobisazzausa.com**



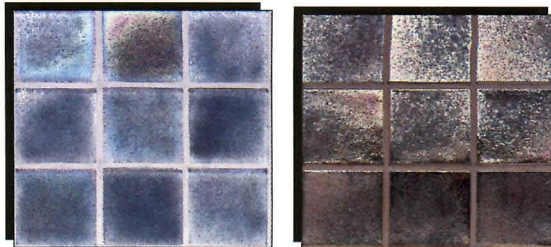
With the help of Italian graphic designer Marco Braga, Bisazza has brought a contemporary, colorful look to its series of programmed mosaic tile patterns. Stripes, formed from 3/8-inch-square tiles, is available in four pattern mixes representing the seasons (Spring is shown), though architects can create a custom color mix. Also from Bisazza, Gloss taps another tile trend: iridescence. The 3/4-inch tiles are available in 12 colors.

- ☒ product: **Cersaie International Exhibition**
- ☒ manufacturers: **various**
- ☒ website: **cersaie.it**



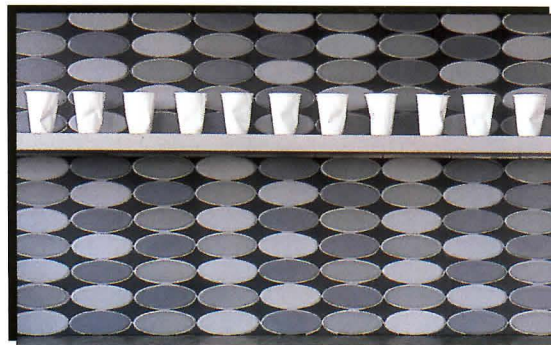
The Italians know what they are doing when it comes to ceramic tiles; and the largest annual trade event in Bologna, Italy, called Cersaie, is a good place to look for the latest in tile trends. The show celebrated its 20th anniversary last October with lively hues—a rich spring green from Italian manufacturer Ceramgres (left), for example—and continued creativity in textural treatments. Maestri Maiolicari's hand-shaped Odissea (right) was arranged with a scalelike effect; other textures resembled linen, gravel, and sisal. Tile collections combining color with retro geometrical motifs, like Optical from Cerdumus (center), presented themselves to the more adventurous designers. Cersaie 2003 will take place September 30 through October 5.

- ☒ product: **Minerali**
- ☒ manufacturer: **Oceanside Glasstile**
- ☒ website: **glasstile.com**



This U.S. company's tiles are 85 percent recycled glass, which is combined with traditional glass ingredients, liquified overnight in gas-fired furnaces, and formed into tiles with a hydraulic press. A metallic mixture is sprayed onto the hot tiles to create an iridescent sheen, an option available with each of its four product lines. The silver and gold glass frit applied to the surface of Minerali creates not only color variations, but a granular, skid-resistant surface ideal for floor applications. Minerali is available in eight earthy colors and a variety of shapes and sizes.

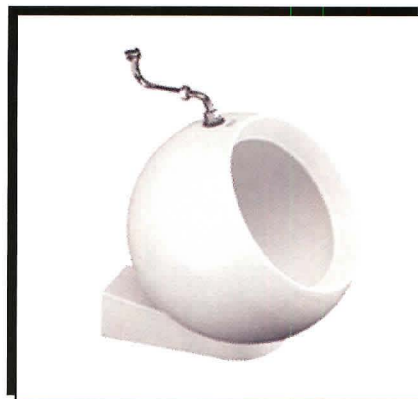
- ☒ product: **Gotham**
- ☒ manufacturer: **Ann Sacks**
- ☒ website: **annsacks.com**



Designed by Adriana Baler, the ceramic tile collection Gotham makes one think the rest of the tile world is a little "square." This line combines star shapes with either oval or rectangular tiles to create a fun, engaging pattern for either flooring or wall applications. Color offerings include 16 bold shades like bright reds and oranges, as well as the company's Earthenware hues.

public modern

- ☒ product: **Atlas, Murale2**
- ☒ manufacturer: **Jacob Delafon**
- ☒ website: **jacobdelafon.fr**



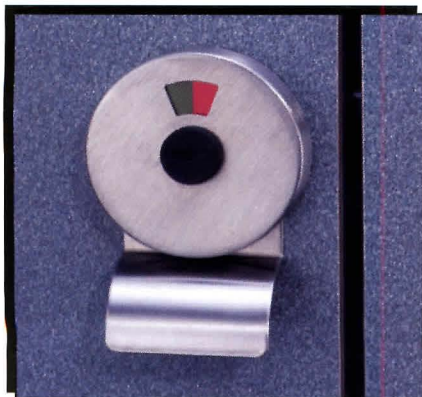
Jacob Delafon offers two urinals with distinct designs: the wall-mounted spherical bowl called Atlas (above, right) and the modular slab Murale2 (above, left). Both use timer button—flush valves and break the traditional mold with clean construction and meticulous design. In multiples, the Atlas forms the centerpiece of any public restroom; Murale2, with its minimalist approach, recedes into its surroundings with style.

- ☒ product: **Meta Plasma**
- ☒ manufacturer: **Dornbracht**
- ☒ website: **dornbracht.com**



Meta Plasma, developed by Sieger Design for Dornbracht, is a single-lever faucet from the Meta Pur series. A solid brass, chrome-plated spout and handle is combined with an acrylic material that interacts with natural light to give the faucet an ethereal glow. Offered in blue, green, and an enthusiastic electric orange, the effect of the fixtures seen together is better than a box of crayons.

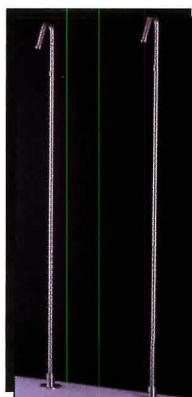
- ☒ product: **Occupancy Indicator Latch**
- ☒ manufacturer: **Bobrick**
- ☒ website: **bobrick.com**



Bobrick offers a through-the-door stainless-steel occupancy latch with a text-free red and green indicator strip: intelligent design to adorn dull restroom doors.

- ☒ product: **Minimal**
- ☒ manufacturer: **Boffi**
- ☒ website: **boffila.com**

Lean and clean, the Minimal Shower from Boffi exposes and accentuates the standard shower body. A simple brushed stainless-steel pipe rises from an industrial escutcheon to a simple U-bend, capped off by a small circular head. When used in a group, its form and simplicity shine. One wall bracket affixes the unit, and there are three options for hot-and-cold mixers that complement the showerhead's shape and size.



- ☒ product: **Eclipse**
- ☒ manufacturer: **Bobrick**
- ☒ website: **bobrick.com**



In a group, the subtle futuristic styling of the Eclipse hand dryer is revealed. It is 2001: A Space Odyssey on a budget. Available in five cover materials and finishes, the no-touch operation adds a sleek look, while eliminating paper costs.

ON STEEL

Lagrange

GETTING STARTED “In 1968, I was lucky enough to get a job at SOM in Chicago. They were just finishing the Hancock, which is an incredible steel structure. Beginning my second week in Chicago, I worked with Bruce Graham and Fazlur Khan, and I really started to understand steel through their teaching. They were incredible people with visions of buildings and structures.”

Lucien Lagrange. Principal. Lucien Lagrange Architects. Born in France, he moved to Montreal in 1959. He interned at Skidmore, Owings & Merrill, tasted Chicago, and couldn't stay away. Now one of the most creative classic designers Chicago has ever seen, he is busy leaving his imprint on the City with Big Shoulders, designing with steel.



DESIGN “You have to understand structure. You have to feel in your body how the structure behaves. You have to think one way about concrete, and then another about steel. There are elements of a structure which are similar; but with tall buildings, you have to understand how – and why – they stand up. You almost have to feel the structure yourself. Once you do that, you'll find that steel behaves very differently than concrete. Steel allows you more flexibility than concrete.”

WORK “You have to get emotional, otherwise a project becomes just a job. You have to have passion for your work.”

VALUE “Efficiency lends value, and steel is highly efficient. Steel offers longer spans than concrete and steel sections have narrower profiles than their concrete equivalents. Therefore, steel lends itself to utilizing the ceiling space to run mechanicals through members, which typically results in higher ceilings. The span capabilities allow us to create setbacks in the building more easily, and these are used for balconies and terraces, which add value to the building.”

COMMITMENT “During the design phase, we changed from a concrete structure to a steel structure. After this decision was made, my client wanted me to resign. I was moving too slow. I said, ‘You cannot fire me. You don't understand the complexity of steel. Later on, if you want to fire me, you can. But I have to finish what I started.’ He didn't fire me. Steel is different. It puts a different layer of complexity on the project that you do not have with concrete. With steel, it's more of a challenge, and you must make a commitment in order to succeed. I understand steel, but how do you really explain it? I was convinced in the end that my client would get a better building because of my belief in steel and my principles.”

CREATIVITY “If you want to be creative, use steel. Steel requires a bit more work from the designer, because you have to put together a ceiling, exterior wall... more pieces come together. When concrete is up, you're almost done. The opportunities for building transparency presented by steel structures are exceptional. This transparency lends an ephemeral quality to the buildings.”

FLEXIBILITY “There's a lot you can create with steel because it's steel. Steel is more straightforward. You can mold concrete, for example. But steel comes in pre-designed pieces, out of the mill. At Erie on the Park, a gentlemen bought two units on top of each other and wanted to connect them. We put a stairway next to the exterior wall. That would have been impossible in concrete. When you design a condo building structured in concrete, you have to deal with interior columns in the units. Because we used steel for Erie on the Park, the advantage was we didn't have any interior columns. We had full design freedom, with clear, open space from the core to the exterior wall.”

TEAMWORK “A creative structural engineer is an integral member of the team when designing with steel. At 175 W. Jackson, we wanted to do something more creative than simply span the space with a large member as we inserted a skylight into an atrium. Our vision was to have the glass appear to float freely above a poetic, light, minimal structure. This could only be done in steel, and our structural engineer helped us realize our vision.”

DETAILS “Designing with steel requires that we pay more attention to details. The integration of the structure with the enclosure, the placement and integration of the glazing, the mechanical coordination – this all requires thoughtful and judicious detailing to execute the building.”

CLIENTS “You have to challenge your clients. That's what designing – especially in steel – allows you to do. Convince the client to do it. They will get excited about getting a better building. They'll make more money. Our clients make money through our designs.”

STEEL “When you start with steel, it's very different. In my mind, when I look at steel, it creates a different emotion. It's exciting because it relates to tall structures, light material. When you think of concrete, you think about shape, heaviness. Intuitively, one usually doesn't relate high-rises with concrete. Steel makes you feel you can build as high as you want because it's light and strong. You can express the structure and it becomes part of your statement. There's so much emotion attached to doing a steel building. It's like a mechanical set... you build up in pieces, and it's exhilarating to follow the forces of the building to the ground. Major buildings – if not the major building of this century – can only be done in steel.”



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Moving Ahead

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EIFS (exterior insulation and finish systems) were introduced to the U.S. just 30 years ago, but they've already become a clear favorite with architects coast to coast. Today, EIFS make up roughly 25 to 30% of the commercial cladding market and are the most popular choice for new commercial construction.

"EIFS manufacturers can be very specific in terms of building type, function, look, and geographic area," says Tom Robertson, marketing manager for **Parex**, a Redan, Georgia-based manufacturer. "There are so many different EIFS variations because buildings have so many different characteristics." No matter which EIFS system is installed, one thing's for sure: EIFS are affordable, energy efficient, durable, and weather resistant. EIFS allow architects to see their most innovative designs come to fruition.

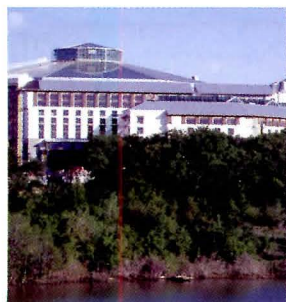
Safe and Sound

As the name suggests, with EIFS, the insulation is located on the outside of the building. But the benefits extend all the way through to the inside of the structure. First, heat and cold air are not as easily transmitted in and out. There are no studs, nails, and screws, so there are fewer gaps and breaks

through which air can pass. This keeps energy bills low and the building's inhabitants more comfortable. "It's like wearing a tight overcoat in the winter," says L. Douglas Mault, a spokesperson for the **EIFS Industry Members Association (EIMA)** and director of industry relations for the West Warwick, Rhode Island-based **Dryvit Systems, Inc.** "It covers the whole body and there aren't any holes where the wind gets through."

Without that bulky insulation in the wall cavity, EIFS walls are also considerably thinner, creating more living space on the inside—so landlords have more room to rent, and tenants have more room to live. "Instead of a six-inch wall, you can have a wall that's just four inches thick," says Mike O'Neil, product manager for the Atlanta-based **Sto Corp.** "In a sizable structure, that can really add up."

This exterior insulation also creates a barrier to moisture, preventing building destabilization and decay. "It is very important to keep water outside of the wall cavity. Extra water in the building can support the growth of undesirable organisms, like mold, and do damage to the building's structure. With EIFS, any condensation that would attempt to occur happens on the exterior of the building," O'Neil says. "In and of itself, EIFS is a moisture barrier. But like



any other wall cladding, improper caulking and installation at the window and door interfaces can create space for moisture to get in."

The concern over moisture has prompted EIFS manufacturers to develop additional moisture protection solutions. "EIFS are trending to 'water managed' designs utilizing continuous secondary weather barriers," says William R. Kasik, president and CEO of **Senergy**, a Jacksonville, Florida-based EIFS manufacturer. "Today's EIFS utilize state-of-the-art technology, including a monolithic secondary weather barrier and a drainage plane." Dryvit, for example, has developed the Inifinity, Outsulation Plus, and Outsulation MD drainage systems; Parex now has a line of moisture protection systems that includes Water Master Commercial-VR, with channels for moisture to escape; and Sto Corp. now offers EIFS NEXt (New Exterior Technology) where StoGuard is applied on the sheathing and other structural elements as a secondary moisture barrier.

Another option for architects looking for extra moisture protection may be to complement EIFS with another wall cladding in certain areas of the building, like the Cement-Board Stucco exterior wall systems, which have been jointly designed by Senergy and the Charlotte, N.C.-based company **National Gypsum**. "This can serve as a companion to EIFS," says Craig Robertson, National Gypsum's market manager for cement backer board. "It can be used on the same jobs as EIFS, but installed in places that are exposed to higher impact and more water."

What Meets the Eye

The layers in EIFS combine to create a wall cladding that's both functional and long-lasting, but what's most appealing to architects is that EIFS allow them to unleash their creativity—without blowing their clients' construction budgets. "All of the EIFS systems offer the desired stucco look in a variety of textures and unlimited color possibilities, combined with a vast number of economical architectural detail options," says Senergy's Kasik.

The options are limitless when it comes to color—architects can mimic traditional building

shades or use the facade as a canvas to make a bold color statement. "One of an architect's primary concerns is that the building is going to be easy to clean and the color long-lasting," says Parex's Robertson. "EIFS incorporates an acrylic finish that is very durable and a technology that resists dirt and is easy to maintain." With EIFS, nicks and scratches in the outermost layer from normal wear and tear are not as noticeable because the layers below have been dyed the exact same color.

What's more, because EIFS are malleable, architects can experiment with shapes, forms, and textures, creating looks that range from antique to playful. "The more typical choices include curves, coins, arches, reveals, accent bands, and other sculptural details," says Sto Corp's O'Neil. "But we're seeing some really innovative designs," he says, noting recent constructions like a basket factory with a "woven" texture and another that was designed to look like upside-down house.

These unique building shapes are also more easily accomplished because EIFS are relatively lightweight. "Whereas some masonry can weigh 35 pounds per square foot, EIFS only weighs about seven," says EIMA's Mault. "This allows the designer or engineer to make a lighter structure because it doesn't have as heavy a wall on it." EIFS walls are also less susceptible to structural damage that leaves cracks in the facade. "Because the expanded polystyrene (EPS) boards in EIFS are limited in size to two by four feet, the building is made to handle both structural and weather movement," Mault adds.

EIFS manufacturers insist that the industry's driving force continues to be its aesthetic appeal. "In terms of system performance, the market is not asking for minor variations. If there are four drainage options out there, architects aren't asking for a fifth. They're satisfied with the 20-odd systems that each manufacturer offers, and what they're asking is 'How can I get a different aesthetic appeal?' " says Parex's Tom Robertson. "Our challenge, as manufacturers, is to give them as many options as possible."

■ By Emily Hodnett

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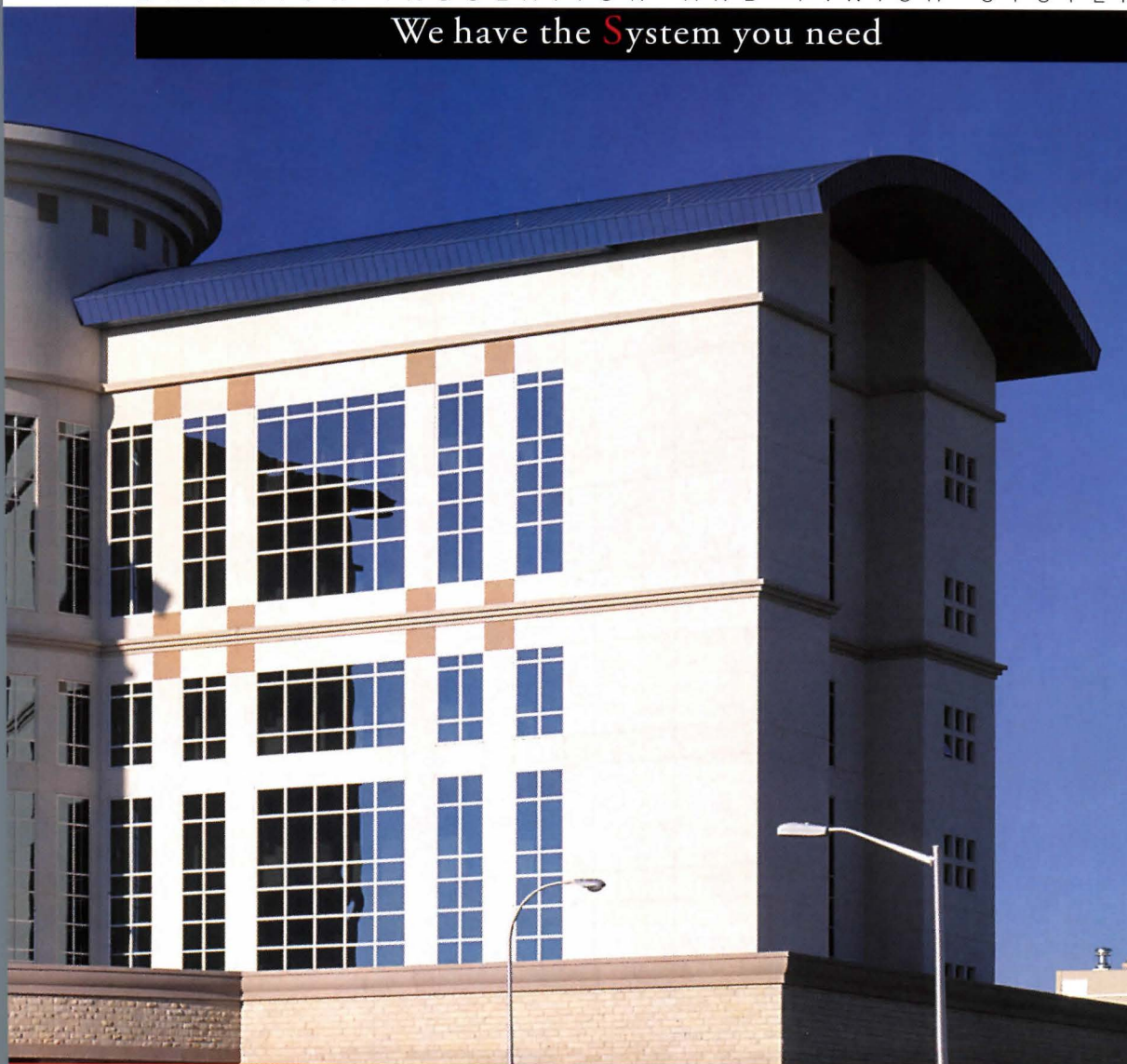
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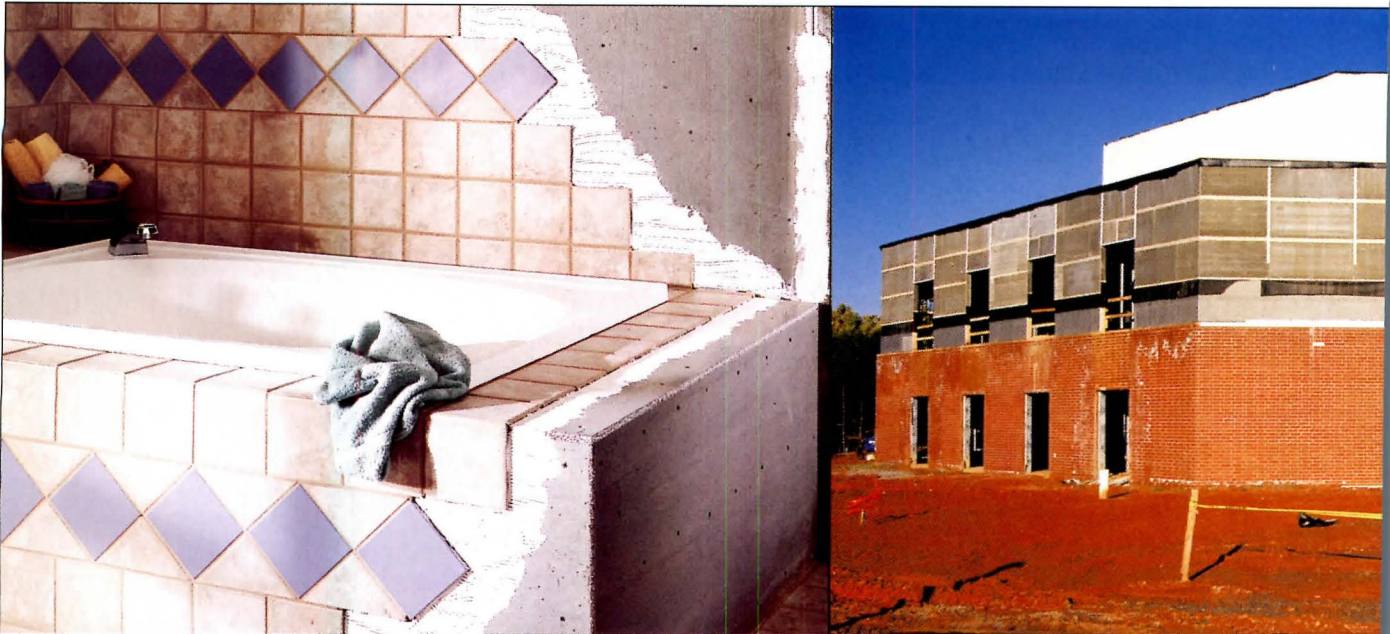
MEMBER OF





National Gypsum Company Presents Controlling Moisture in Interior and Exterior Applications

The versatility and durability of cement board make it an ideal substrate for interior surfaces and exterior finishes exposed to heavy moisture.



Cement board is an excellent substrate for interior and exterior surfaces exposed to moisture, helping to prevent tile cracking and other damage.

PROLONGED EXPOSURE TO MOISTURE IS THE SINGLE MOST POWERFUL CAUSE OF BUILDING DETERIORATION. Whether from a natural source such as rain or snow, from sources such as leaky pipes and pipe condensation, water vapor from soil, or produced by activities within the building, moisture can take its toll on both the building envelope and interior construction materials. Moisture-related problems can be relatively minimal, such as discoloration, which is purely aesthetic, or so severe as to compromise a building's structural capacity. Major problems stemming from prolonged exposure to moisture can include:

- Chemical deterioration or dissolution of wood and gypsum products
- Corrosion of metal components, such as structural framing
- Freeze-thaw deterioration of concrete, stone, and masonry
- Volume changes that cause swelling, warping, or shrinkage that can lead to cracking and structural failures
- Microbial growth, such as mold and mildew, which can affect appearance and structural stability in severe cases

Although the effects of moisture can be complex, the cause is fairly simple. As defined by John F. Straube, Ph.D., a professor at the Department of Civil Engineering and School of Architecture at the University of Waterloo in Waterloo, Ontario, Canada, four conditions must be satisfied for a moisture-related problem to occur:*

- A moisture source must be available
- A route or means by which moisture can travel
- A driving force to cause moisture movement
- Materials involved must be susceptible to moisture damage

*ASHRAE Journal

LEARNING OBJECTIVES

This article covers how the versatility, durability, and ease of installation of cement board contribute to preventative design solutions, especially in high-moisture areas.

Key points include:

- >The effects of prolonged exposure to moisture on buildings
- >Interior and exterior installation possibilities
- >Comparison of the performance of four types of cement board
- >Safety precautions



Architecture Magazine Continuing Education

To take the quiz and earn 1 AIA/CES Learning Unit (LU) of health, safety, and welfare, go to www.architecturemag.com, click on "Continuing Ed," and proceed to "Controlling Moisture" or turn to page 93. You must answer 70% of the questions correctly to receive credit for this course. This course requires online reading in addition to the following article in order to be able to take the quiz. See page 93 for details.

In theory, architects could choose to eliminate any one of these four conditions to prevent a moisture problem in a given building, but in practice, each condition is virtually inevitable. It is impossible to remove all moisture sources from a building, to create buildings with no imperfections, or to remove all forces driving moisture movement. It is also unfeasible to use only materials that are not susceptible to moisture damage. Therefore, controlling or managing—rather than eliminating—these factors becomes the challenge that faces architects. And with judicious design, assembly, and material choices, exposure to moisture can be significantly reduced.

Re-Do Right

The 1/4" thick cement board is ideal as a floor underlayment in any interior application as it eliminates the need to modify adjacent thresholds when abutting to carpeting, wood flooring, and other common flooring materials. This thickness can also save time and labor when remodeling countertops, as it can be applied directly over existing countertop surfaces, as long as the existing surface is not compromised by damage.

Cement board is an excellent substrate for almost any surface that is exposed to moisture. It is a durable surface that is able to withstand prolonged exposure to moisture (absorption can be as low as 6 - 8%) and its composition, which varies by type, generally consists of four components: Portland cement (5 - 10% gypsum), lightweight aggregate, fiberglass mesh, and the manufacturer's proprietary ingredients. Its hard, durable surface is ideal as an underlayment for ceramic, slate, or quarry tile, and most types of cement board can be used in exterior applications, such as external siding, and

or applications to a broad range of moisture-resistant interior and exterior installations. But it is important for architects to specify proper assemblies for peak performance.

Interior and Exterior Applications

Atriums, kitchens, and bathrooms are probably the most intuitive interior spaces for specifying cement board. With countertops, shower enclosures, tub surrounds, and even floors exposed to moisture on a daily basis, these areas present prime opportunities for water damage to gypsum drywall and ceiling panels, swelling and warping of wood substrates beneath countertops and floors, and microbial growth. Cement board's low water absorption (as defined by ASTM C 437) and linear variation due to changes in moisture (ASTM D 1037) help to prevent tile cracking, and its very favorable bacterial and fungus resistance (ASTM G22 and ASTM 21, respectively) help protect susceptible substrates. It should be noted, however, that in high-moisture interior applications and all exterior applications, a waterproofing barrier should be specified to further protect underlying materials.

Cement board's durability makes it a good substrate for exterior applications, such as exterior sheathing, soffit panels, and decks. In addition to moisture resistance, the material maintains a Wind Load rating between 30 and 40 PSF, can withstand temperatures up to 220°F (105°C), and exhibits high impact resistance.

Specifying

Flooring and Countertops (see figures 1 and 2 below)—Specifying cement board underlayment for countertops and floors (including decks) requires similar construction considerations. Minimum 5/8" exterior grade plywood should be securely glued and fastened to floor joists or counter base, with floor joists or counter frames specified at a maximum of 16" o.c. A setting bed of adhesive or mortar should then be applied to the subfloor or base, and cement board should be immediately laminated to the substrate, leaving a 1/8" space between boards at all joints and corners and a 1/4" gap along walls. Stagger cement board joints, so that they do not line up with underlying substrate joints, and fasten cement board every 8" o.c.

Around perimeter of each board, locate fasteners 2" from the corners and not less than 3/8" from the edges. For reinforcement, all joints should be completely filled with bonding material. On non-tapered joints, such as butt ends, a 6" wide, 1/16" thick coat over the entire joint should be applied. 2" alkali resistant fiberglass mesh tape (3" for exterior applications) must then be embedded into the applied bonding material at the joint. Bonding material should be applied over the fasteners to conceal and allowed to cure. After curing, adhesive or mortar should be applied over the cement board and tile laid over for a finish.

Even a new generation of EIFs products that are increasingly popular on both residential and low-rise commercial building projects (see online material).

Four types of cement board have been introduced to the market:

- Fiber cement—A fiber cement board with cellulose aggregates and a squared off, open edge (for interior use only)
- Glass mesh—A concrete, glass mesh backer unit with reinforcements and an open mesh edge
- Cement coated—An aggregated cement core reinforced with polymer coated glass fiber mesh and a cement coated edge
- Double wrapped—A lighter weight cementitious backerboard with a polystyrene aggregate, fiberglass mesh, and a double wrapped edge

With innovations introduced by each of these types (see charts 1 and 2, in online material), usage has extended from limited interi-

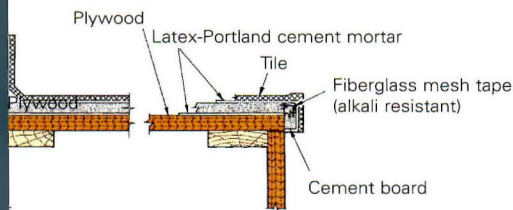


FIGURE 1

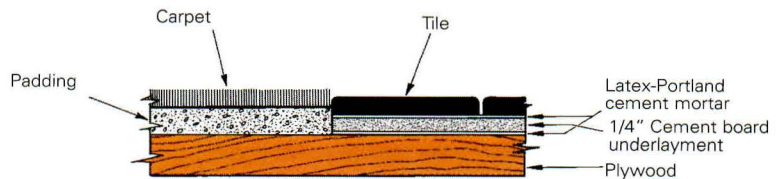


FIGURE 2



Controlling Moisture in Interior and Exterior Applications

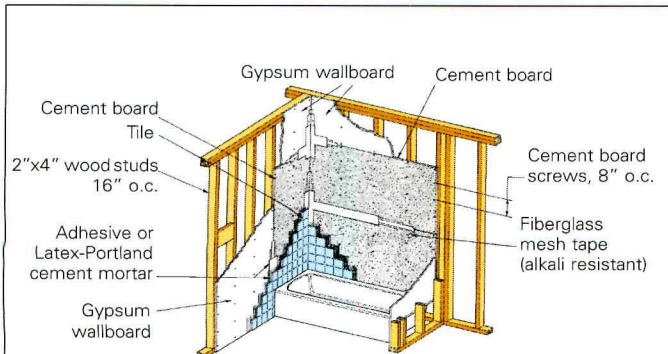


FIGURE 3

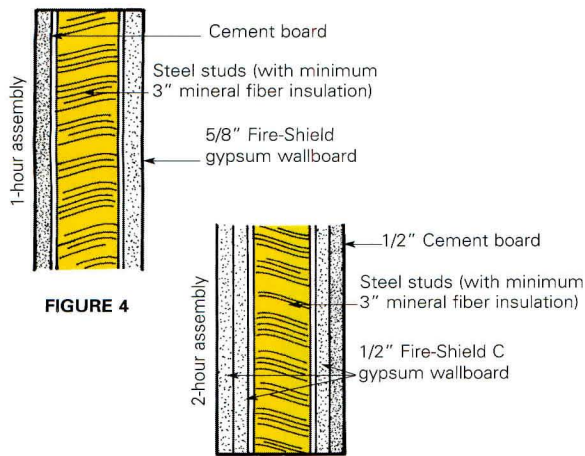


FIGURE 4

FIGURE 5

Fire Update

In addition to moisture resistance, cement board offers proven fire resistance assemblies (see figures 4 and 5 above).

Generally cement board has 1-hour and 2-hour fire rating installations. Basic assemblies follow:

1-Hour Rating

- > 3-5/8" steel studs, 16" o.c.
- > One layer of 1/2" cement board (horizontally or vertically)
- > One layer of 5/8" Type X wallboard attached vertically on opposite side with joints staggered
- > 3" thick mineral fiber insulation batts in the stud cavities

2-Hour Rating

- > 3-5/8" steel studs, 16" on one side
- > Base layer of 1/2" Type C wallboard (vertically)
- > Face layer of 1/2" cement board (vertically)
- > Two layers of 1/2" Type C wallboard (vertically) on opposite side
- > 3" thick mineral fiber insulation batts in stud cavity
- > All joints staggered

For decks, specification is similar to indoor flooring, with two modifications. The subfloor should be sloped at a minimum pitch of 1/4" per foot to facilitate water run off (floor surface should remain true to plane within 1/8" in 10'), and a waterproof membrane should be applied to the entire surface of the cement board before laying down tile. Cement board's Robinson Type Floor Test, conducted by the Tile Council of America, gave a durability rating of light commercial, appropriate for high traffic interior and exterior usage (see chart 3, in online material).

Interior Walls (see figure 3 at right)—For walls or shower and tub enclosures, all framing should comply with local building code requirements and be designed to provide support with a maximum allowable deflection of L/360 under all intended loads. Framing members should be spaced a maximum of 16" o.c. The edges of the cement board should be continuously supported. It may be necessary to add blocking to the studs. Also, don't apply over protrusions, such as heavy brackets, that jut out beyond the framing plane.

Apply cement board with ends and edges closely butted but not forced together. Stagger end joints in successive courses. Drive fasteners into field of cement board first, working toward ends and edges, spaced a maximum 8" o.c. Make sure the panels are tight against the framing. While cement board is unaffected by moisture, a water barrier should be installed between the framing members and the back of the panels to protect the wall cavity.

Interior Ceilings—The deflection of the complete ceiling assembly due to dead load (including insulation, cement board, bonding material and facing material) should not exceed L/360. Framing members should be spaced a maximum of 16" o.c. Ceiling joist or furring channel should not exceed 16" o.c. (edges of the cement board parallel to framing should be continuously supported.) Provide additional blocking when necessary to permit proper attachment. Space fasteners a maximum 6" o.c. with perimeter fasteners at least 3/8" from ends and edges. Make sure the panels are tight against the framing.

Exterior Walls—While cement board is unaffected by moisture, a water barrier must be installed to protect the cavity. It should be installed according to the manufacturer's specifications between the cement board and the framing members. Studs should be spaced a maximum of 16" o.c. Edges/ends of cement board parallel to framing should be continuously supported. Provide additional blocking when necessary to permit proper attachment. Do not install cement board directly over protrusions from stud plane, such as heavy brackets or fastener heads.

Apply cement board with ends and edges closely butted but not forced together. Stagger end joints in successive courses. Drive fasteners into field of cement board first, working toward ends and edges. Space fasteners maximum 8" o.c. with perimeter fasteners at least 3/8" from ends and edges.

For joint reinforcement, trowel bonding materials to completely fill the tapered recessed board joints and gaps between each panel. On non-tapered joints, apply a 6" wide, approximately 1/16" thick coat of bonding material over entire joint. Immediately embed 4" alkali resistant fiberglass mesh tape fully into applied bonding material and allow to cure. Same bonding material should be applied to corners, control joints, trims, or other accessories. Feather bonding material over fasteners to fully conceal.

The following quiz includes questions derived from online material not included in this printed article. You are required to read the additional online material in order to take the quiz and complete this continuing education unit. Please go to www.architecturmag.com, click on "Continuing Ed," and proceed to "Controlling Moisture" for the additional information.

TEST QUESTIONS

1. When using cement board in a high-moisture area, what precaution should be taken to protect the underlying surfaces or cavities from water damage?
 - a. No precaution is needed because cement board is moisture proof
 - b. A moisture protection barrier or waterproof membrane should be placed between the framing members and the cement board
 - c. The tiling or exterior finish should be sealed completely, so that moisture cannot seep into the underlying surfaces
 - d. None of the above
2. A cement board stucco system can be used in what sort of installation?
 - a. Residential buildings and low-rise commercial buildings
 - b. Commercial buildings only (both high- and low-rise)
 - c. Vertical installations only to ensure proper moisture management
 - d. Residential buildings only
3. With the exception of fiber cement board, how do you cut cement board?
 - a. Generally, cement board should be cut with a carbide knife or electrical cutting device for a clean finish
 - b. Cement board doesn't need to be cut; it's flexible so you can just bend it until it snaps
 - c. Score a line with a utility knife, snap the board along the line, and cut the opposite side of the board along the break
 - d. Cement board must be delivered precut by the manufacturer
4. Cement board is excellent for remodeling projects because...
 - a. The material is cheap
 - b. Cement board can be placed directly on top of existing counter-tops if the underlying surface is structurally sound
 - c. Cement board eliminates the need to modify adjacent thresholds when abutting to carpeting, wood, and other flooring materials
 - d. Both b and c
5. Does double wrapped cement board have any advantages over the other four types?
 - a. It has the lowest weight of weather resistant cement boards
 - b. It has the lowest moisture absorption
 - c. It meets 40 PSF rating Wind Load results for standard 1/2" products
 - d. All of the above
6. When using flexible cement board, what is the minimum turning radius, as conducted by the Tile Council of America?
 - a. 6" radius for a 90° corner
 - b. 12" radius for a 75° corner
 - c. 8" radius for a 120° corner
 - d. Both a and c
7. What is the Robinson Type Floor Test rating for cement board?
 - a. Light Commercial
 - b. Residential
 - c. Moderate Commercial
 - d. There has been no testing on this material as a floor underlayment
8. What are some of the major structural problems that can result from prolonged exposure to moisture?
 - a. Deterioration of drywall and wood substrates
 - b. Volume changes (swelling, shrinkage, and warping) that can cause cracking
 - c. Microbial growth
 - d. All of the above
9. What is the fire rating assembly for cement board?
 - a. 1-hour
 - b. 2-hour
 - c. Most types of cement board have 1- and 2-hour assemblies
 - d. Cement board does not have a fire rating assembly
10. In order to prevent moisture damage, architects should...
 - a. Eliminate the moisture source
 - b. Eliminate the means by which moisture can travel
 - c. Eliminate all building materials that are susceptible to moisture
 - d. Moisture cannot be completely eliminated; it must be managed with good design, materials, and assemblies

For more detailed information on the effects of prolonged moisture on interior and exterior building surfaces, refer to the Environmental Protection Agency Web site at www.epa.org

Controlling Moisture

Successful completion of this test (a score of 70% or higher) will earn 1 AIA/CES LU hour of health, safety, and welfare.

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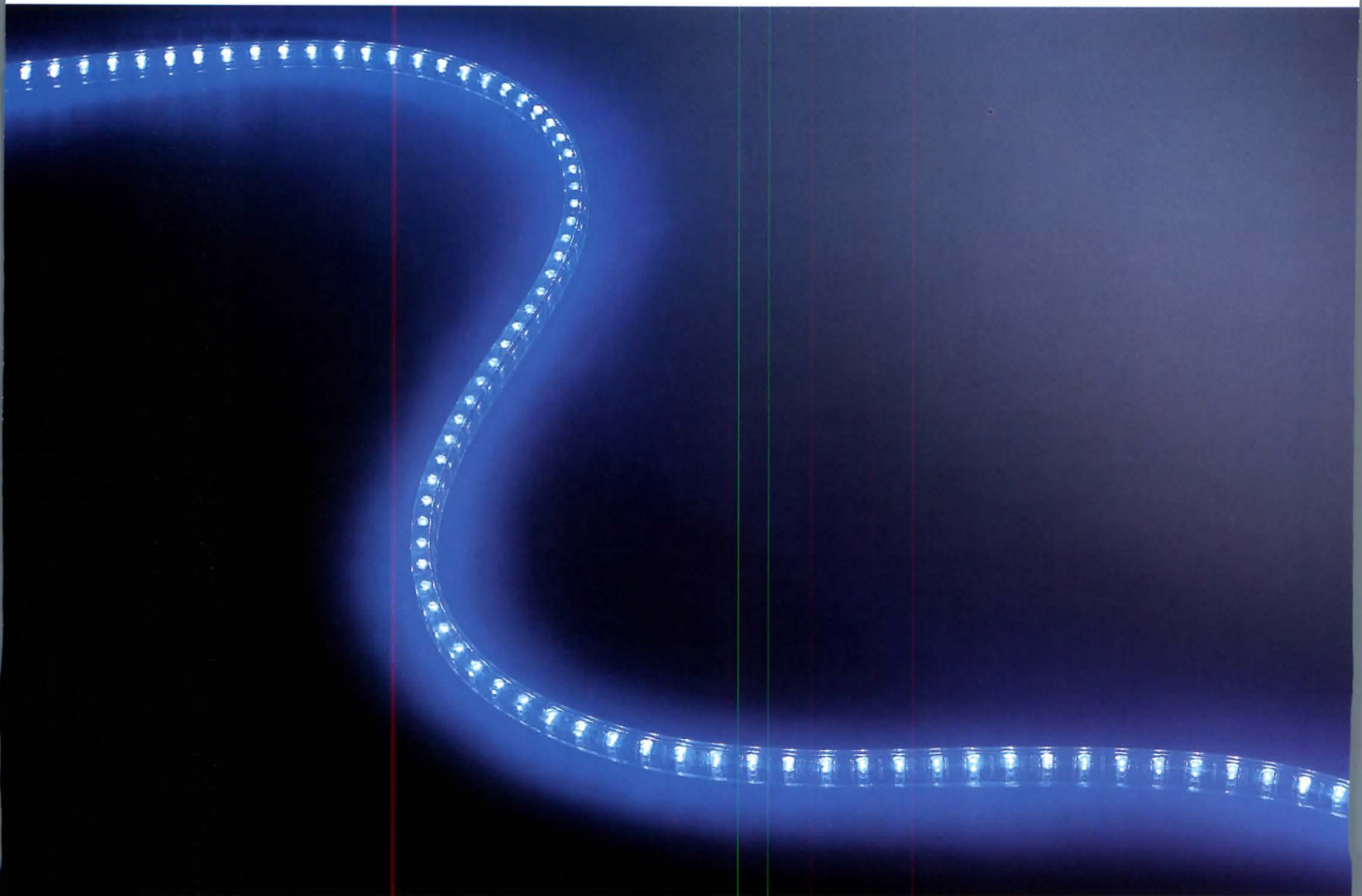
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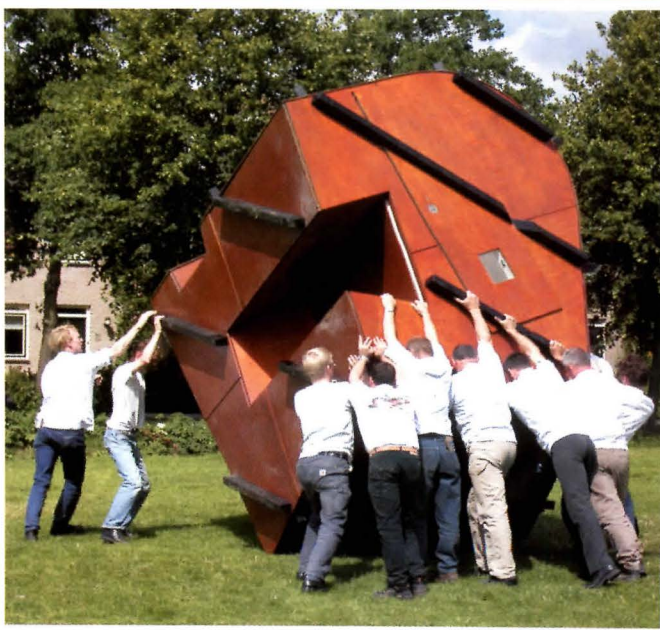
Home | Lars Tunbjörk | Steidl Photographer Lars Tunbjörk captures the peculiar meeting point of banal and bizarre in eerily still photographs of middle-class suburban houses in his native Sweden. **Anna Holtzman**



EXHIBITION

Strangely Familiar: Design and Everyday Life | Walker Art Center | Minneapolis | Through September 7

Michael Graves has transformed toilet plungers into objets d'art with aesthetic flourishes, but *Strangely Familiar* spotlights more than a gloss on the quotidian. The shelters, clothing, furnishings, and even food assembled by curator Andrew Blauvelt don't always dazzle, but their designs do demand that users reevaluate their relationship with everyday items. Does a chocolate bar with inch marks, by designer Paolo Ulian, require measured consumption? Can a sprawling pig farm be constructed as a tower to conserve land, as imagined by architects MVRDV? Nearly half the exhibit is architectural in nature, designs that prod a rethinking of basic dwelling habits. Doug Garofalo's contortionist remodel of a 1960s Chicago home hints at potential salvation for suburban living. Cardboard tubing substitutes for timber in Shigeru Ban's paper loghouses, which were erected as cheap, temporary shelters for the homeless after an earthquake in Japan in 1995. And backyard sheds go mobile with Koers, Zeinstra, van Gelderen's Tumble House (right), which can be rolled like a boulder across a field. Will a shipping container ever feel like home, as envisioned by LOT/EK in Mobile Dwelling Unit? Hard to say, but the built-in bed feels as comfy as any. The show travels to Pittsburgh's Carnegie Museum of Art later this year. **Joel Hoekstra**



THE FIFTY-FIRST ANNUAL P/A AWARDS

The longest-running architecture awards program in the United States—and the only program honoring unbuilt work—enters its 51st year. As in past years, a five-member jury of distinguished, independent professionals will recognize unbuilt projects demonstrating overall design excellence and innovation. All entries must be commissioned by paying clients for execution. Judging will take place in September 2003. Winning entrants will be notified in October 2003 and their projects published in the January 2004 issue of *Architecture*.

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SUBMISSION DEADLINE: AUGUST 26, 2003

1 Who Can Enter

Architects and other design professionals practicing in the United States, Canada, or Mexico may enter one or more submissions. Proposals may be for any location, but work must have been directed and substantially executed in offices in those three countries.

2 Real Projects Only

All entries must have been commissioned for compensation by clients with the authority and the intention to carry out the submitted proposal. A project designed for a competition is eligible if it is the one proposal the competition's sponsor intends to build.

3 Architectural Design Entries

Architectural design entries may only include works of architecture scheduled to be completed after January 1, 2004. Indicate the anticipated completion date on the Project Facts Page (see item 10). Prototypes are acceptable if commissioned by a client.

4 Urban Design Entries

Urban design entries must have been accepted by a client who intends to base future development on them. Please include implementation plans and an anticipated time frame with your submission.

5 Verification of Client

The jury's decision to evaluate any submission will be contingent upon *Architecture*'s verification that it meets all eligibility requirements. *Architecture* will contact the clients of projects selected for recognition. *Architecture* reserves final decision on eligibility and accepts no liability in that regard.

6 Providing Additional Materials

If the submission should win, the entrant

agrees to make available further information and publication-worthy graphic material as needed by *Architecture*.

7 Publication

Winners of P/A design awards or citations grant *Architecture* first publication rights for their winning projects while under construction or when complete or substantially complete (at *Architecture*'s discretion). Publication may not coincide with building completion, but *Architecture* retains first publication rights to the project for up to one year from its completion.

8 Award

P/A award- and citation- winners will be announced at a celebration in New York City in January 2004. Winning projects will be exhibited at that event, and may subsequently travel as a curated exhibition. Winners may be asked to submit a summary presentation for exhibition and travel purposes.

9 Binders

Entries must consist of legibly reproduced graphic material accompanied by adequate explanatory text in English. All entry material must be firmly bound in binders no larger than 17 inches in one dimension only, to a maximum of 11 by 17 inches (9 by 12 inches preferred). Avoid fragile bindings, and any materials which may endanger jurors (such as sharp metal edges). Supplementary documents, such as research reports or urban-design appendices, may be bound separately as part of the same entry. Slides should be submitted only as supplementary material. Video-cassettes, CD-ROMs, models, and any unbound material will not be considered.

Please complete and submit all parts intact with each entry. (See item 15 for instructions.) Photocopies of this form may be used.

Address entries to:
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New York, NY 10003

10 Project Facts Page

To ensure clear communication to the jury, the first page of each entry binder must list project facts under the following headings: Location, Site Characteristics, Zoning Constraints, Type of Client, Program, Construction Systems, Funding, and Schedule. This information must include square footage, cost, and, where possible, specific materials. All project facts should fit on one page.

11 Documenting the Process

Entries should document the design process, as well as its result. *Architecture* encourages entrants to include copies of preliminary sketches, alternative preliminary schemes, information on context, precedents for the design, and excerpts from working drawings.

12 Research Behind Projects

We encourage including records of any research performed in support of projects entered.

13 No Original Drawings

Please do not send original drawings; *Architecture* accepts no liability for submitted materials.

14 Anonymity

To maintain anonymity in judging, no names of entrants or collaborating parties may appear on any part of the submission except on entry forms. Credits may be concealed by tape or other simple means. Do not conceal identity or location of projects.

15 Entry Forms

Each submission must be accompanied by a signed entry form. Reproductions of the form are acceptable. Complete the entire form and insert it intact into an unsealed envelope attached to the binder's back cover.

16 Photocopy

Please enclose one bound set of 8 1/2-by-11-inch photocopies of your entry. The first two pages should be copies of your entry form and the Project Facts Page, in that order. Secure the photocopies inside the back cover of your binder.

17 Entry Categories

Identify each submission on its entry form by type. (See facing page.) Mixed-use facilities should be classified by the largest function.

18 Entry Fees

An entry fee must accompany each submission. The fee is \$100 for *Architecture* subscribers; the nonsubscriber fee is \$135, which includes a one-year subscription to *Architecture*. Each entry after the initial entry is \$100. Make check or money order payable to *Architecture*. Canadian and Mexican entrants must send drafts in U.S. dollars. Fee must be inserted in an unsealed envelope with the entry form (see item 15).

19 Return of Entries

Architecture will return entries ONLY if they are accompanied by a self-addressed, stamped envelope. *Architecture* assumes no liability for loss or damage.

20 Entry Deadline

Deadline for sending entries is August 26, 2003. All entries must show a postage date as evidence of being in the carrier's hands by August 26. Hand-delivered entries must arrive at *Architecture*'s editorial office (address above) by 5 p.m. EST on August 26. To ensure timely receipt, *Architecture* recommends using a carrier that guarantees delivery within a few days.

THE FIFTY-FIRST ANNUAL P/A AWARDS

DEADLINE: AUGUST 26, 2003

Entrant _____

Contact Name _____

Address _____

Phone Number _____ Fax Number _____

E-mail Address _____

Project Name _____

Project Location _____

Client _____

Client Phone Number _____

Entry Number (for **Architecture** use only)

Fee check one

Subscriber \$100

Entry plus one-year subscription \$135

(A \$165 value)

Category check one

- | | |
|---|---|
| CM COMMERCIAL <input type="checkbox"/> | HS SINGLE-FAMILY HOUSE <input type="checkbox"/> |
| CU CULTURAL <input type="checkbox"/> | ID INDUSTRIAL <input type="checkbox"/> |
| ED EDUCATIONAL <input type="checkbox"/> | RC RECREATIONAL <input type="checkbox"/> |
| GV GOVERNMENTAL <input type="checkbox"/> | RL RELIGIOUS <input type="checkbox"/> |
| HM MULTIFAMILY HOUSING <input type="checkbox"/> | UD URBAN DESIGN <input type="checkbox"/> |
| HR HEALTH-RELATED <input type="checkbox"/> | |

certify that the parties credited executed the submitted project and that it meets all eligibility requirements (1–6). I understand that **Architecture** may disqualify any entry that fails to meet submission requirements (9–20). If this entry wins an award or citation in the 51st Annual P/A Awards, I grant **Architecture** sole first publication rights to the project during construction or when fully complete, the choice of which is at **Architecture's** discretion (7–8). Signer must be authorized to represent those credited.

Signature _____

Name _____

Architecture will feature the winning entries in its January 2004 issue and **Architecture** will provide information on winning entries to local and national media.

EXHIBITION

The Art of Design | SFMOMA | San Francisco |

Ongoing In April 2003, the San Francisco Museum

of Modern Art (SFMOMA) installed an ongoing exhibition of its architecture and design collection. Instituted as a department in 1983, the museum's permanent collection extends from the early twentieth century to the cutting edge of contemporary design. In *The Art of Design*, curator Joseph Rosa doesn't merely present a round-up of greatest hits, but rather highlights the readiness of designers to experiment with new technology and alternative materials—as in the digital renderings and perforated steel model of Greg Lynn's 1998 Embryologic House (below). While perhaps not groundbreaking, this is a progressive stance for an established art institution. Also on display are chairs by designers ranging from Marcel Breuer to Gaetano Pesce, along with a motorcycle by Massimo Tamburini and tea services by Walter Gropius and Zaha Hadid. Two-dimensional works include drawings by Mies van der Rohe, John Hejduk, and Bernard Tschumi; a second gallery is devoted to graphic design, ranging from a poster by Paul Rand to web design by John Maeda. (SFMOMA claims it was the first museum to officially collect web design, and Rosa is enthusiastically pursuing digital design.) The exhibition will change every six months; with some 4,000 works to choose from, it has a long future. **Sally B. Woodbridge**



BOOK

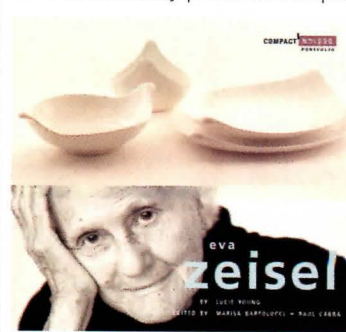
Ingo Maurer | Michael Webb; George Nelson |

Michael Webb; Gaetano Pesce | Marisa Bartolucci;

Eva Zeisel | Lucie Young | Chronicle Books

Four new titles join the concise and beautifully produced Compact Design Portfolio series, edited

by Marisa Bartolucci and Raul Cabra. The books chronicle the careers of whimsical lighting designer Ingo Maurer; late great architect, editor, and Herman Miller design director George Nelson; artist-designer Gaetano Pesce, known for *using uncommon materials*; and ceramicist Eva Zeisel, 96 and still designing. **AH**



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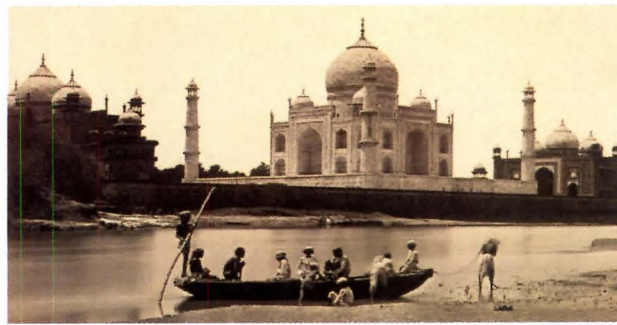
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views

EXHIBITION **Traces of India | Canadian Centre for Architecture | Montreal | Through September 14**

The provocative exhibit *Traces of India* maps the ways in which Europeans have used images of architecture to tame, preserve, and remember the British Raj. Over 200 compelling nineteenth-century photographs document the importance of architectural sites to the West's understanding of cultural and religious diversity in colonial India. The evocative material on display—postcards, clips from Bollywood movies, and even toys—leads to surprising insights. Particularly interesting is the implicit argument that political conquest went hand-in-hand with heritage preservation, and that the development of the Taj Mahal and other monuments as tourist destinations for foreigners paved the way for their later success as potent symbols of Indian national identity. The Canadian Centre for Architecture has hit upon a link between these historical artifacts and issues faced by contemporary design professionals; given the troubled relationship between the West and the East, what topic raises more controversy today than the symbolic role of architecture in world politics? **David Theodore**

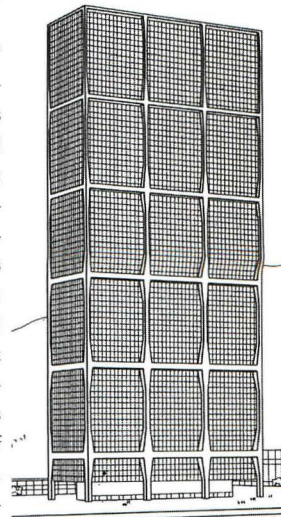


BOOK

Tower and Office: From Modernist Theory to Contemporary Practice | Iñaki Ábalos and Juan

Herreros | MIT Press The architect-coauthors, whose industrial modern aesthetic and ecological sensitivity grace several projects in their native Spain (April 2003, page 60), examine the evolution of the skyscraper. Equal parts case study, theoretical discourse, and architectural criticism, their book was first published in Spanish in 1992, and is now available in English with an appendix updated through September 11, 2001.

The project's core is the authors' thorough analysis of changes in high-rise construction methodologies through the twentieth century, and their argument that manufacturing methods and communication technologies previously reserved for military use contributed to developments in civil construction and production methods. Supported with images and comparison table diagrams, the book is clearly presented, though sometimes a little too reliant on the reader's assumed familiarity with the texts of American philosopher Richard Rorty, used to construct the book's theoretical foundations. **Elizabeth Donoff**



EXHIBITIONS **BEACON, NEW YORK**
Watershed

An installation of site-specific public artworks along the Hudson River sponsored by the arts organization Minetta Brook. **VARIOUS SITES**
www.minettabrook.org
Through May 2005 

**BRUSSELS**

The Americas
An examination of the evolution of ancient Latin American cities. **CENTRE INTERNATIONAL POUR LA VILLE, L'ARCHITECTURE ET LE PAYSAGE**
www.civa.be
Through October 5

CHICAGO

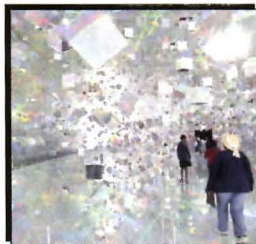
Gehry in Cleveland
Frank Gehry's new Weatherhead School of Management building at Case Western University. **CHICAGO ARCHITECTURE FOUNDATION**
www.architecture.org
Through September 28

CHICAGO
Site Specific

Artworks that represent rather than respond to specific places. **MUSEUM OF CONTEMPORARY ART CHICAGO**
www.mcachicago.org
Through August 31

COLUMBUS, OHIO
Supernova

A high-tech installation of lights, lasers, and mirrors by the experimental Japanese artist Hiro Yamagata. **COSI COLUMBUS**
www.cosi.org
Through September 1 

**NEW YORK CITY**
Zaha Hadid

A retrospective coinciding with the opening of the architect's contemporary arts center in Cincinnati. **ARTISTS SPACE**
www.artistspace.org
Through July 26

NEW YORK CITY
Jewels of India

A presentation on architectural heritage preservation in India by the World Monuments Fund. **WORLD MONUMENTS FUND GALLERY**
www.worldmonuments.org
Through September 10

NEW YORK CITY
Central Park in Blue

An exhibition of cyanotypes of early Central Park in celebration of its 150th anniversary. **MUSEUM OF THE CITY OF NEW YORK**
www.mcnyc.org
Through September 28 

**PITTSBURGH**
Pittsburgh Platforms

Nineteen new projects in architecture and environmental design from the Pittsburgh area by local designers. **CARNEGIE MUSEUM OF ART**
www.cmoa.org
Through October 5

SANTA BARBARA, CA
Aesthetics of Hygiene

Modernist kitchen and bathroom design in Southern California from 1928 to 1955. **UNIVERSITY ART MUSEUM**
www.uam.ucsb.edu
Through November 2 

**SCOTTSDALE, ARIZONA**
southwestNET

A survey of work by architects and graphic designers practicing in the southwestern United States. **SCOTTSDALE MUSEUM OF CONTEMPORARY ART**
www.smoca.org
Through September 14

VALENCIA, SPAIN
Valencia Biennial

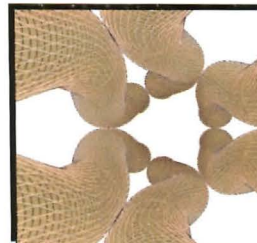
The second Valencia Biennial of international visual and performing arts, and architecture. **VARIOUS SITES**
www.masdearte.com/bienalvalencia
Through September 30

VENICE
Venice Biennial

The 50th international art exhibition, on the theme of *Dreams and Conflicts: The Dictatorship of the Viewer*. **VARIOUS SITES**
www.labiennale.org
Through November 2

VIENNA
Foreign Office Architects

Work by the London-based firm, including the Yokohama International Ferry Terminal in Japan. **MAK**
www.mak.at
Through August 3 

**WILMINGTON, DELAWARE**
Raymond Loewy

A retrospective on the industrial designer who created numerous American icons. **HAGLEY MUSEUM AND LIBRARY**
www.hagley.org
Through August 3

EVENTS **ASPEN, COLORADO**
Design Takes on Risk

The 53rd International Design Conference in Aspen, Colorado. **BENEDICT MUSIC TENT**
www.idca.org
August 20-23

BOSTON
Density Conference

The Boston Society of Architects presents a conference titled *Myth & Reality*. **OMNI PARKER HOUSE**
www.architects.org/density
September 12-14

TORONTO

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www.merchandisemart.com
September 18-19

UDINE, ITALY
Chairs

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www.promosedia.it
September 12-15

COMPETITIONS **P/A Awards**

Architecture's annual awards for unbuilt work. (See page 96 for details.) **www.architecturemag.com**
Deadline August 26

25 Year Award

The American Institute of Architecture's annual award to an enduring architectural landmark completed 25 to 35 years ago. **www.aia.org**
Deadline August 29

ar+d award

The Architectural Review's fifth annual award for international emerging architects under the age of 45. **www.arplusd.com**
Deadline September 16

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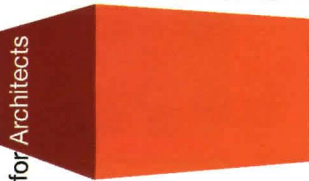
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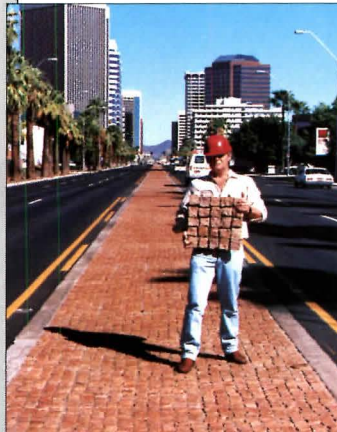
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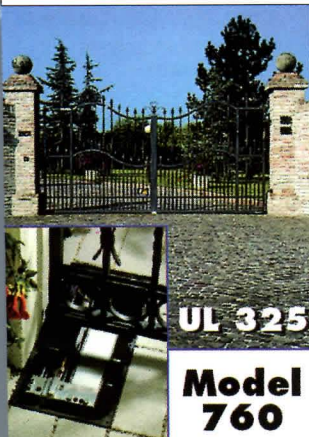
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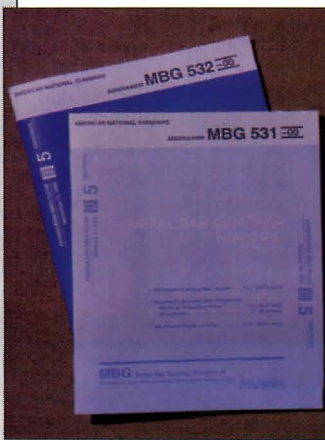


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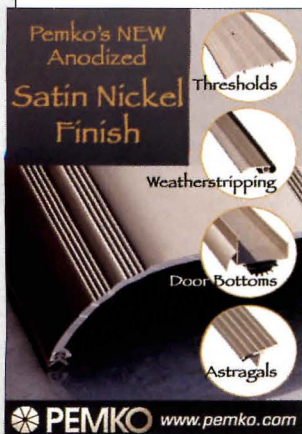
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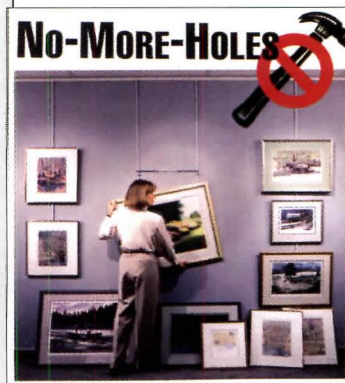
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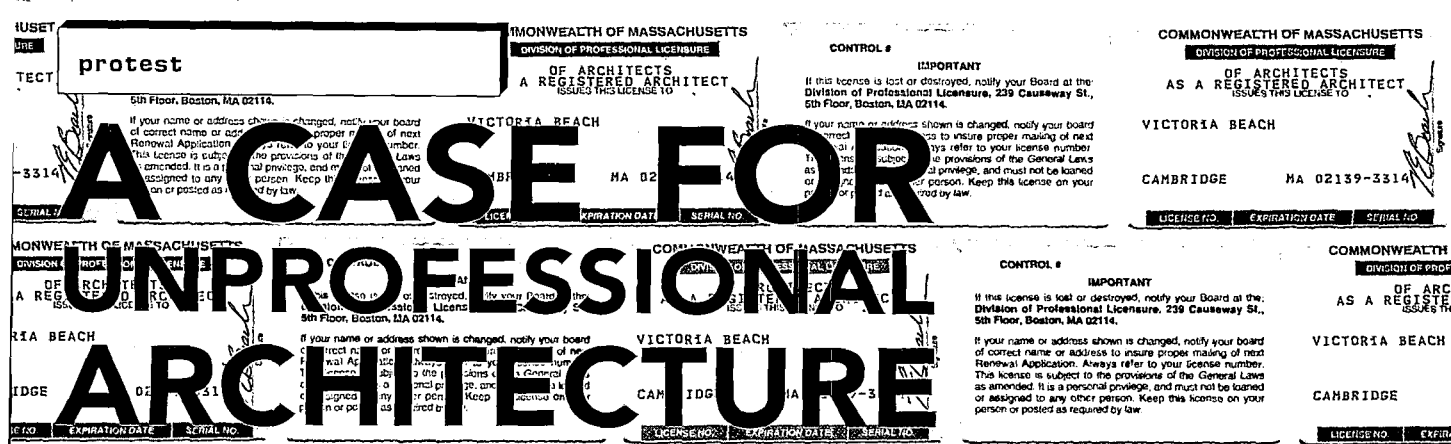
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Professional licensure is a misleading measure of architectural skill.
by Victoria Beach

It's safe to say that Frank Lloyd Wright produced his best architecture before he became a licensed professional. Wright was licensed to practice architecture in 1996, in a posthumous ceremony some 36 years after his death. Indeed, much of the world's great architecture was completed before any architect needed a professional registration to practice—an idea that caught on in the twentieth century.

Today, one only has to look around at all the uninspired dreck built by licensed architects bullied by or in cahoots with powerful commercial forces to understand that licensure is, at best, a necessary but insufficient condition for architecture. It might be time to revisit this experiment and ask: "What has the profession done for architecture lately?"

TO LICENSE OR NOT TO LICENSE

The professionalization of architecture was hardly welcomed with open arms. The most prominent British architects of the late nineteenth century, for example, fought desperately against professional licensure, predicting it would kill architecture. In the United States, opposition to professionalization came primarily from Jacksonian ideas of anti-elitism and capitalist ideas of access to markets.

Engineering, medicine, and law, with their underpinnings in physics, biology, and logic, had long proved quite compatible with standardization and regulation. (By 1830, most U.S. states required doctors to meet licensure requirements; in fact, such licensure requirements can be traced back to twelfth-century Europe, when King Roger of Normandy ruled that doctors had to present proof of peer-certified competency before offering medical services.) The qualities that distinguish architecture from building, however, are the very

qualities that transcend the scientific. Architecture certainly involves the science of engineering, but often only as a means to nonscientific ends. Architecture's nontechnical aspects (elegance, suitability, intrigue) are subjective and can be judged only by the users, the public, and possibly by experts, but definitely not by legal codes.

Similarly, the nineteenth-century Britons thought that the scientific aspects of good building (sanitation, safety, durability) could easily be professionalized, because they can be taught, tested, and objectively evaluated. Building inspectors, engineers, and codes should take charge of these technical issues, they asserted. Regulation, they claimed, would confuse the science of building with the art of building. It would imply that the artistic component is as objective as the science part. Licensure would deceive an unwitting public, perhaps criminally, into equating licensed "architects" with legitimate architects.

Wright deceived no one. He was an under-credentialed overachiever, not the other way around. Though he may have burdened others with bad behavior and debts, few would dispute his contribution to the built environment. He was an ambassador of architecture.

All professionals are supposed to be official representatives of their profession's core values. Legal ethics requires that lawyers be ambassadors of the law. Though it may seem incredible, lawyers are not supposed to help their clients break or even bend the law to private purpose. The moment a client engages a lawyer, the lawyer assumes a double duty: The lawyer must not only use the law to serve the client's case, but must also use the client's case to serve the law. Oddly, this means that a client is more exposed to legal obligations after hiring a lawyer than before.

Likewise, shouldn't licensed architects be ethically compelled to use their client's project to serve architecture, while clients under their care assume similar obligations?

Making architecture a profession should have achieved this, but it hasn't.

ARCHITECTS OR BUILDING ENGINEERS?

When society requires professional licensure for a field and thereby grants monopoly protections to practice, it asserts the special necessity of that field for society's survival. That architecture is a protected profession by definition automatically means society considers it of vital public interest. So why is the public not cooperating, not helping architects create breathtaking architecture everywhere?

Because we are living a lie. Architecture is not essential to society—buildings are. By legally forcing citizens to hire "architects" when all they need is a building, we turn architects who serve these needs into building engineers. There are many adequate buildings, but not every one is architecture.

For years architects have complained that the public doesn't understand what they do. When architects make buildings (not architecture) and laws require buildings (not architecture), it is no wonder clients balk when architects pursue larger issues.

There are at least two paths out of this contradiction. One would be to persuade the public to license architects on issues beyond safety, broadening architecture's legal description to match its actual scope. Another path is to accept that the current legal description is legitimate for a profession but does not accurately describe architecture's role. This would suggest creating a profession of building engineers who are licensed to ensure safe buildings.

The profession did not and probably will not get us more architecture, so I vote for the latter: for letting people, not policy, decide which buildings have achieved architecture.

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