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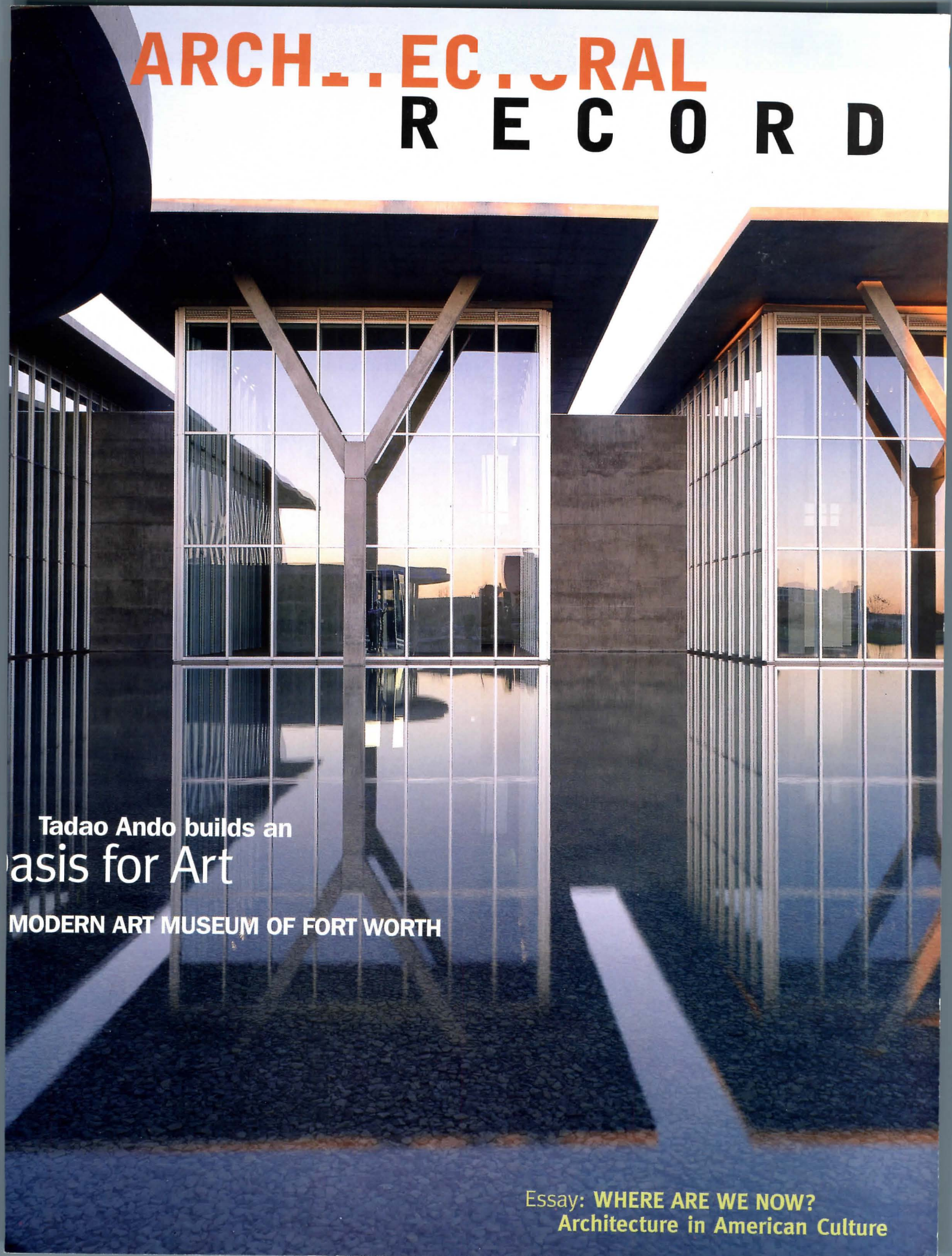

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Essay: WHERE ARE WE NOW?
Architecture in American Culture

CEILING | SYSTEMS

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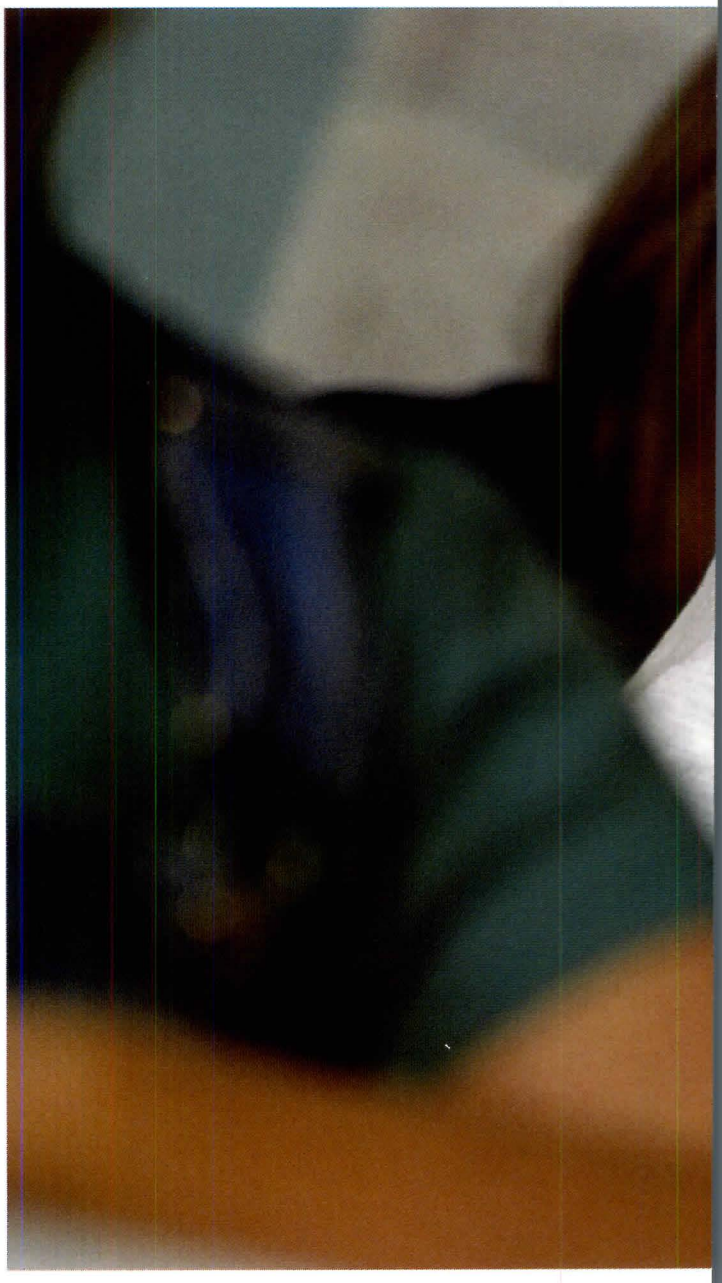

homeduday

with better acoustics, he'd hear that homework is due tuesday

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Whaddya think?

Editorial

By Robert Ivy, FAIA

A woman walks into a bar. Seated at the barstool, wide-eyed, poised and expectant, she is about to raise a drink to her lips when the bartender, a grizzled New York type, leans across the counter and s, conspiratorially, "So, whaddya think about Daniel Libeskind?"

As funny as it sounds, it's a true story—one that exquisitely sums a moment, encapsulates it within a specific milieu, and the words would ke the pitch-perfect line for a New Yorker cartoon. When she described actual experiences in the saloon, the woman in question, an architectural torian, had been making a larger point that architecture had decisively ered the popular consciousness. She recounted her encounter with a kind emused awe, but it also made a hee-haw tale, a slap-your-leg line right of Letterman. If the fragile world finds itself ging for good news, here, at least, was one happy rovement we are pleased to report: Architecture finally gone mainstream.

"So, whaddya think about this Daniel Libeskind guy?"

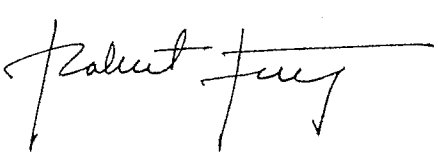
While the story exaggerates the depth of nge, isn't the news astounding? For decades, we hitects have been ruefully, poignantly describing heightened state of European cultural con- usness, an idealized realm in which taxi drivers e opinions on the latest works by heroic design- and racks brimming with consumer magazines present architecture like nany plums or pears. Pick a design; they're perfectly ripe this month and dy for tasting.

In architecture as in plums, however, reality includes the pits. ile Libeskind and Viñoly, Schwartz and Ban may make the front page of A Today, the depth of our national dialogue on architectural matters ains pitifully thin, limited to the superficial image or the emotional, e-jerk reaction—a battle to the finish of the cool eyeglasses. How can we nslate this hype or the heightened public interest to good effect?

Sometimes, words fail us. It seems clear that architecture needs a new language, new words and symbols to explain its character and richness, if we hope to engage our audiences any deeper than the dazzling first impression or the star turn. Up to now, when trying to explain architecture's three-dimensional potential, we have had to rely on a jargon-laced vocabulary that reduces us to babbling pseudo-intellectuals, waving our arms about and speaking in an incomprehensible tongue. Naively, we decry how the public just doesn't get it.

Here, finally, is our chance. The spotlight is focused on architecture with a capital A. By paying attention to our audience, then clearly stating our arguments and contributions, architecture can rise from the arcane to the universal. We need a simplified message. Every person needs shelter. We can provide habitation with a difference, altering and improving consciousness, the sense of potential, even productivity. Our work can reduce wasteful consumption of resources, harness the winds, channel the sunshine and the rain. Given a confluence of the client and the times, and employing our personal gifts, the we can translate the inanimate into poetry, capturing aspirations or even grief in concrete and glass, stone and water and steel.

If bartenders are interested, and they know our names, we architects would be fools not to care. The time is right for clarity and for forceful, engaged presence, with our clients and the communities we serve. It's time to step out of the shadows, into the limelight. Now, whaddya think of Daniel Libeskind? Got a meaningful, ready answer? It's no joke.



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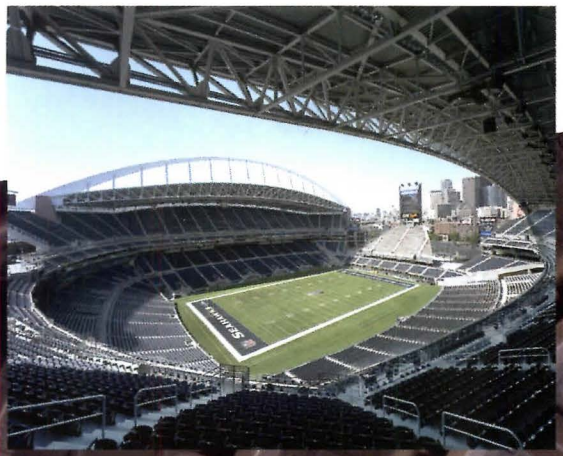
for Skilling's next evolutio



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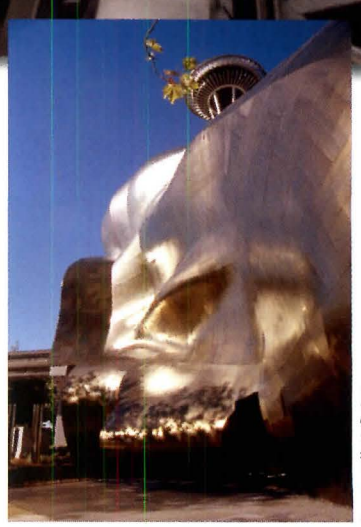
Museum of Glass, International Center for Contemporary Art



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Letters

ality or Renaissance?

much of the debate around posals for the site of the former rld Trade Center has consisted deological noise, awed blather, d expressions of personal taste ut which proposal is spectacular ugh to match the enormity of destruction of September 11. wever, the spectacular may be enemy of the good, especially en we are seeking an effective morial that will not only honor dead and their survivors but o reinscribe the memory of the n-made catastrophe for genera- ns to come.

Yet the more stunning, fabu- s, and dazzling the design, the ther it departs from the familiar, more it is likely to receive d press and public attention. ost all the projects but erson/Littenberg's scheme are his sense spectacular. In THINK's en framework twin towers, the o of structure to usable area uld make it the world's most ctacular and expensive cultural oard; it wows exhibition visitors n a dazzling three-part-sequence mination scheme that would mp Times Square's. And United hitects and SOM's "cities in the " are retro-spectacular—they uld actualize visions of "New York he year 2000" originally pub- ed by King's Views in 1908.

What does this mean for the text of the memorial, which will he subject of an international petition this year? Unlike Maya s Vietnam Veterans Memorial, the nmemorative space at Ground will not be a symbolic tomb but actual one, where more than 00 people lost their lives. Nor will urpose be to create a muted, tral ground for national reconcilia- . Rather, it will need to provide a e for the families of the deceased rieve alone and with others who shared this unbearable experience, and a place for visitors to reflect upon the troubling, perhaps unanswerable questions regarding the meaning of the event. For such purposes, spectacular-ness is an unwanted distraction.

Two of the most enduring purposes of memorials—as demonstrated in Oklahoma—are to provide a place for grieving and for public recognition of the event that caused the suffering, helping survivors transform their present trauma into a more tolerable memory. For these purposes, Norman Foster's proposal of a descent on foot into the depth of the site and into a silent space from which only sky is visible suggests a powerful experience, more conducive to reflection than climbing to a viewing platform many stories above ground, to survey the scene and the place on the ground where the towers once stood. The proposal by the team of Meier, Eisenman, Gwathmey, and Holl represents the opposite, a memorial that is a kind of mapping of the fallen bodies, freezing the moment of horror into a perpetual present, and thus casting a permanent shroud over the place.

The means of access to the memorial site is also central to the experience. Several of the proposals favor mediating access through a museum. In Libeskind's proposal, a hovering overhead museum is the access to the memorial site, which would be the vast underground area defined by the "bathtub walls" and shared by the Path train rails. Other proposals would have visitors trundle though interior underground concourses before reaching spaces circumscribed by the footprints, presumably (although not yet explicitly) lined with shops and other commercial amenities. United Architects' version of this scenario turns the footprints' memorial site into a kind of monumental lobby for the transportation hub, cultural facilities, and shops.

If we neglect these issues, we risk letting the spectacular quality of the design overwhelm the memorial, either by dispersing its location or by subsuming it within the concourses for the cultural facilities, or commercial and transportation spaces. Saving the memorial site from future oblivion is the most important decision facing the LMDC at this time.

—Susana Torre
New York City

Thoughts about Lower Manhattan

On September 12, 2001, I began receiving phone calls from magazine and newspaper reporters asking what should be built on the World Trade Center site—replicate the towers, build taller, build smaller? My own emotional response made it very difficult to imagine that the first question on reporters' minds had to do with the built form. I replied then and remain steadfast in believing that this is the least relevant question to be posed in the wake of this tragedy and yet, even today, the dominant coverage in the press focuses on alternative schemes for building form.

In those days following 9/11, I thought a great deal about the opportunity to create a forward-looking model for the planning of dense urban environments presented by this site being so closely watched by the entire world. Great districts within cities, truly sustainable because people want to live, learn, work, and play there generation after generation, have little to do with skyline imagery. They're founded on the way the mix and blend of uses has evolved to become a community at the pedestrian level. Where is the urgency to find, not skyline sculpture, but a methodology for planning urban settings that we're proud to display to the world?

Planning must start with commerce, the industries that generate a community's reason for being. If we assess the core nature of Lower Manhattan, we find the densest, richest assemblage of financial services and trading entities in the world, offering an unparalleled opportunity to bring the finest school of economics and finance together with the institutions that provide students, research, and ideas. This symbiotic relationship has developed around major universities where commerce and academia form an intense partnership resulting in the rich innovation that has made America the envy of the world. What incentive would attract such an institution? Because in its wake would come the diversity of people and uses that bring urban vitality and around-the-clock activity.

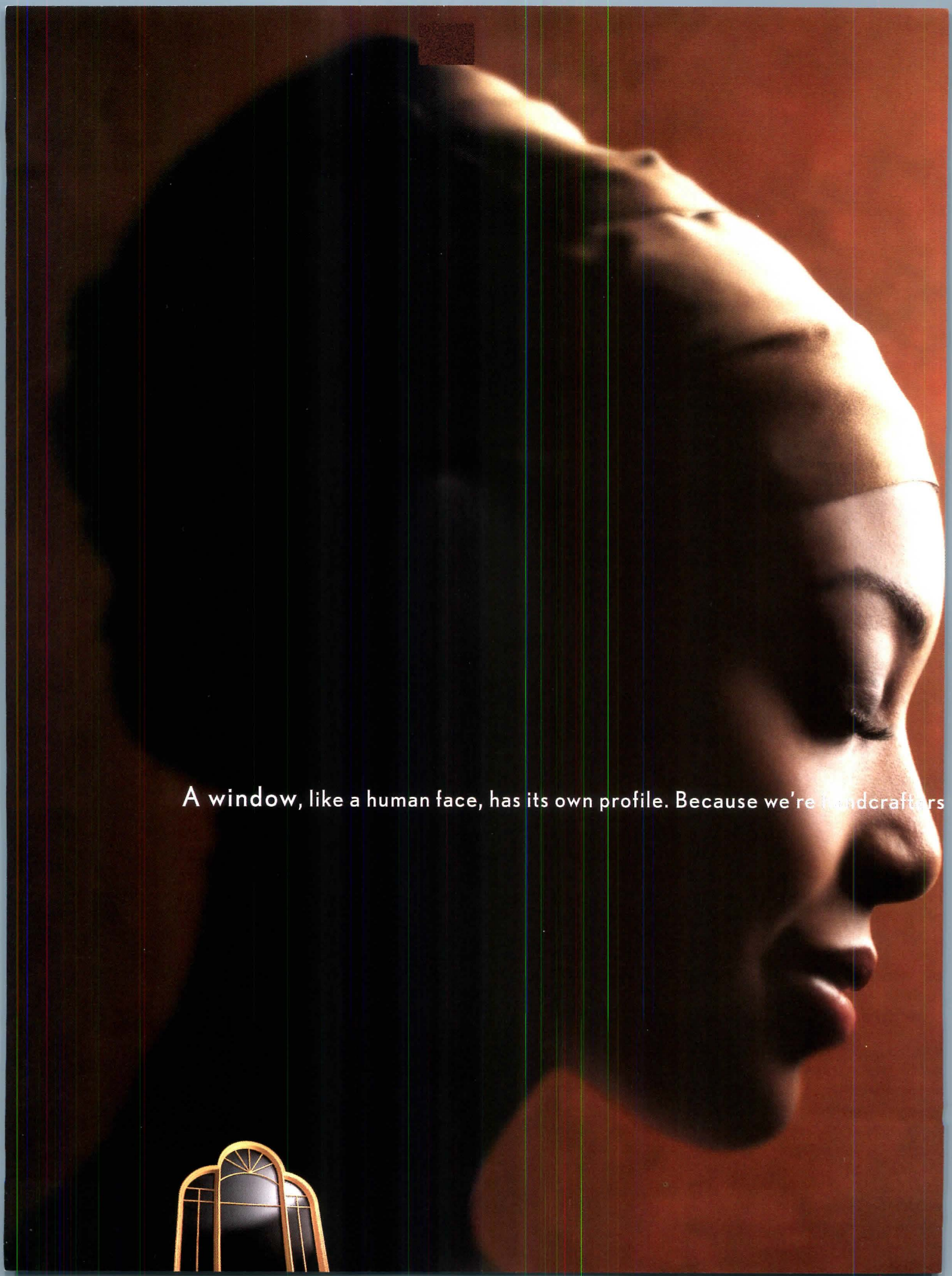
In today and tomorrow's livable communities, residential, retail, work, education, along with civic and spiritual uses will meet the ground, not the sky, offering spaces and places that foster rich human interaction, meaningful emotional experience, and the memorable settings in which we live out our lives. Let's focus for a time on the ground, developing the planning and economic environment that will attract a mix of uses to make a true community. Let the skyline emerge from that strategy.

—Ed Friedrichs, FAIA
Gensler Architecture Design & Planning Worldwide
San Francisco

Corrections

In the February 2003 issue, a credit for Oldcastle Glass, Cleveland, was misspelled [page 166]. In the January 2003 issue, on pages 181 and 182, photo credit should have been given to Benjamin Segal.

Send letters to rivy@mcgraw-hill.com.


A window, like a human face, has its own profile. Because we're

Record News

REBUILDING LOWER MANHATTAN

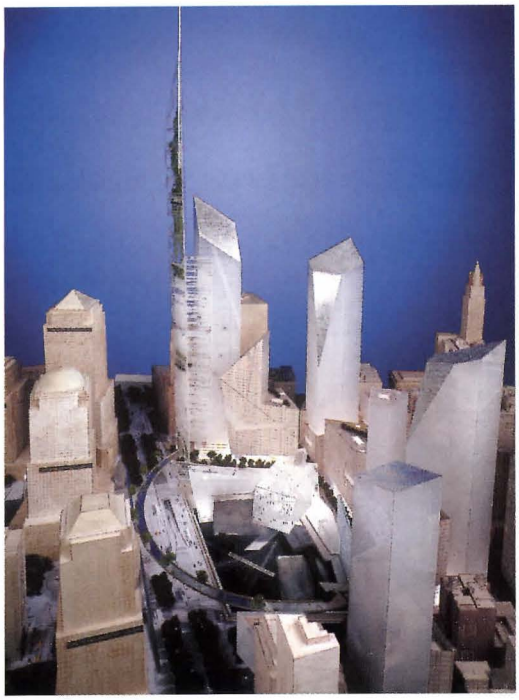
beskind and Think move forward in process to design WTC site

e go to press, the vision of the e of Ground Zero has come ewhat more into focus as election of a winning team land-use plan for the site is imminent. At this time, a sion by the Lower hattan Development oration (LMDC) is cted by early ch.

The LMDC and the Authority of New and New Jersey cted two plans in February as finalists f the nine that were ented by architecture in December, 2002 ORD, February 2003, 31]. The scheme by io Daniel Libeskind, the World Cultural er plan by the Think , led by Rafael y, FAIA, and Frederic vartz, AIA [see mentary, page 65], rged as finalists.

In February, skind and the Think team were fying their designs based on from the LMDC and the Port ority. Roland Betts, the chair of LMDC planning committee and a ber of the LMDC board, said, at we are not saying is that these plans are set in stone. The core idea of each plan will be preserved. Our goal is not to compromise but to make them better."

Libeskind's scheme calls for a 1,776-foot-tall tower with the "Gardens of the World" at the top.



The most dramatic component of his plan includes a memorial space set some 70 feet below grade on a bedrock foundation with the exposed slurry wall on the west. An elevated walkway encircling the site constitutes a memorial promenade.

Think's World Cultural Center, containing two 1,600-foot-tall open latticework towers with cultural facilities, does not require an office structure to create the skyline element that the LMDC has asked for. The Think towers would be built above and surround the World Trade Center (WTC) tower footprints.

WWW The LMDC was pected to select a design for e WTC site by early March. To arn more, and to see all of the chitects' schemes, visit ww.architecturalrecord.com.

The latticework Think towers (above) have cultural components embedded within, while Libeskind's tallest tower (left) has a garden at the top.

The governor weighs in

The New York Times reported on February 20 that New York Governor George Pataki had expressed support for the Libeskind design. Mayor Michael Bloomberg also expressed support for the Libeskind plan. Governor Pataki's support would carry a lot of weight in the decision process because he jointly controls the Port Authority of New York and New Jersey with Governor James McGreevey of New Jersey.

In February, developer Larry Silverstein, who holds the lease for the WTC office space, did not seem too keen on either of the two finalists. He told the *New York Post*, "I don't understand these latticework towers [by Think], how they would be utilized. The evacuation requirements would be massive."

The *Post* also reported that family members of victims of the 9/11 attack were outraged at news that the Port Authority plans to construct a bus terminal in the "bathtub" near Liberty Street, with a garage entrance "under one of the tower footprints."

The finalist teams have been modifying their designs to accommodate a number of underground uses, such as retail, parking, and a transit hub, while at the same time leaving the footprints of the WTC towers untouched and saving a space for a memorial.

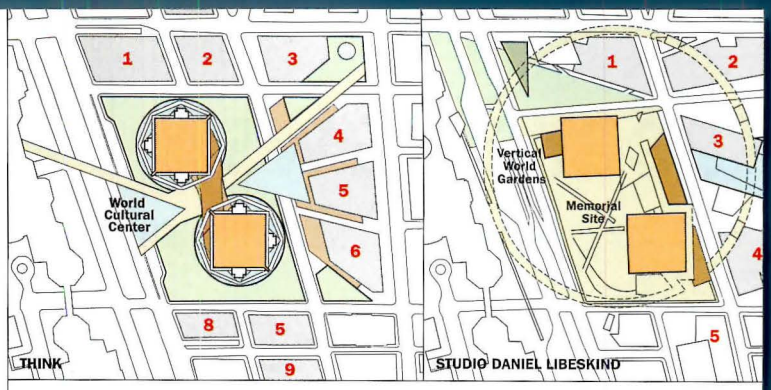
In terms of overall square footage, the finalists both have accommodated more than two times the retail space in their plans than before 9/11 (see plans, next page). Think has proposed about 8.6 million square feet of office space in eight buildings, and Libeskind included 7.6 million square feet of offices in five buildings.

The transportation mix

In February, New York's Governor Pataki described plans for a total of

Record News

REBUILDING LOWER MANHATTAN



(ALL FIGURES IN SQUARE FEET)

OFFICE SPACE			
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Building 2	621,000	Parcel 2	2,000,0
Building 3	752,100	Parcel 3	1,200,0
Building 4	1,935,200	Parcel 4	2,000,0
Building 5	1,970,600	Parcel 5	230,0
Building 6	795,800	**TOTAL**	**7,630,0**
Building 8	213,000		
Building 9	1,870,300		
TOTAL	**8,558,000**		
HOTEL			
Building 7	**658,300**	Part of parcel 3	**700,0**
HOUSING			
Building 8 (optional)	**213,000**	Parcel 5	**1,745,0**
RETAIL			
At and below grade	**1,095,000**	At, below, and above grade	**900,0**
CULTURAL SPACES			
Museum	**200,000**	Museum	**180,0**
Performing arts	**180,000**	Performing arts	**325,0**
Conference center, school and library	**400,000**	Vertical gardens	**24,0**

Source: Lower Manhattan Development Corporation and The New York Ti

OFF THE RECORD

New York City's Columbia University has hired Renzo Piano Building Workshop and Skidmore, Owings & Merrill to develop a master plan, considering whether the school should expand on its existing campus or develop satellite campuses.

Submissions for the AIA's Young Architects Forum Leadership Awards are due March 19. Visit www.aia.org/institute/yaf for more information.

A competition has been announced for design ideas for reuse of the High Line elevated rail structure in New York City. Registration is due April 25 and entries are due May 16. Visit www.thehighline.org for information.

A new Web site highlights the Hopewell Baptist Church restoration project in Oklahoma City [RECORD, February 2003, page 63]. Visit www.goff-hopewell.com.

The Art Institute of Chicago has announced that it is scaling back its planned addition by Renzo Piano. Originally proposed as a 290,000-square-foot structure with 75,000 square feet of gallery space, the addition is now planned for 220,000 total square feet and 60,000 square feet of galleries.

The Ackland Museum of Art at the University of North Carolina at Chapel Hill has named New York–based Polshek Partnership to design an expansion that will double its current size with galleries and teaching space.

The San Francisco Museum of Modern Art will present an exhibition entitled *ROY / design series 1*, featuring the work of New York architect Lindy Roy [RECORD, December 2002, page 73], April 19 through August 24.

(continued from previous page)

$5 billion for Lower Manhattan transportation improvements that could take at least a decade to construct. This would include $1.7 to $2 billion for a transportation hub at the WTC site itself for PATH commuter trains, $750 million for a multilevel transit center at Fulton Street that would serve nine subway lines and be connected to the proposed PATH terminal, and $400 million for a new South Ferry subway station. Other preliminary proposals include rail links to the airports, bus facilities, and a series of new ferry terminals.

Other downtown work

The LMDC has retained firms to develop a plan to enhance Fulton Street, a major east-west street from the WTC site to the East River. Gensler will provide retail and arts/entertainment-planning consulting services for the Fulton Street plan, and Robert A.M. Stern Architects, retained in November 2002 as in-house urban design consultants to the LMDC, will develop an urban design concept plan for Fulton Street. The New York firm Smith-Miller + Hawkinson, also retained in November 2002 by the LMDC, will provide an urban design and planning study of the Wall Street area. On the team with Smith-Miller + Hawkinson are R Lerner, D.I.R.T. Studio, and Sam Schwartz Company for traffic ar transportation design.

John E. Czarnecki, Assoc. AIA

R.Dot recommends new retail corridors in Lower Manhattan

Rebuild Downtown Our Town (R.Dot), a community advocacy group for Lower Manhattan, has issued a positio paper entitled "Retail: Strategies for Revitalizing Lower Manhattan." The paper recommends several specifi strategies for attracting retail to the neighborhoods of Lower Manhattan as a stimulus to future growth.

"Normally, retail is market-driven," says Beverly Willis, FAIA, cochair of R.Dot. "And September 11 created catastrophic nonmarket in the area. But even before that, there was insufficient retail to support the community and then 750 stores were destroyed."

R.Dot undertook a study of current downtown neighborhoods in order to identify shopping districts, retail des tinations, and retail corridors. In addition to these, the report suggests recommended new retail corridors alon streets in underserved neighborhoods. The paper's specific recommendations include offering incentives to majo retailers that would serve as destinations, increasing foot traffic in the neighborhood, and allowing smaller store to grow organically. The report also advocates limiting retail in any new development on the site of the World Trad Center, in order to avoid siphoning retail traffic away from surrounding neighborhoods. The group suggests crea ing pedestrian-only shopping zones in the historic district, creating another catalyst for the return of retail to th damaged neighborhood. R.Dot presented its findings to the Lower Manhattan Development Corporation, the Po Authority of New York and New Jersey, as well as to the state and city of New York. ***Kevin Lerner***

LENDER SIGHTLINES

chitect: McAlpine Tankersley Architecture

Photographer: Mick Hales

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OFF THE RECORD

The International Exhibitions Bureau has named Shanghai as the host city for the World Expo 2010.

The United Kingdom's Foreign and Commonwealth Office has named a shortlist of six firms to design a new British embassy in Warsaw, Poland. The finalists are David Chipperfield Architects, Tony Fretton Architects, Benson and Forsyth, Adjaye Associates, Hoger Hare Architects, and Denton Corker Marshall. A winner will be announced in May.

Kimberli Meyer has been named director of the MAK Center for Art and Architecture, in Los Angeles. Trained as an architect, Meyer has been a curator and artist for more than a decade.

Tod Williams, FAIA, and Billie Tsien will receive the 38th annual Thomas Jefferson Foundation Medal in Architecture at the University of Virginia on April 11.

The University of California, San Diego has selected LMN Architects, of Seattle, with Mathes Brierre Architects, of New Orleans, to design a 78,000-square-foot building for the school of music. Other firms considered were BOORA Architects and Hardy Holzman Pfeiffer Associates.

Five firms are on a shortlist to design the Montreal cultural and administrative complex: Busby + Associates Architects, of Vancouver, Cohlmeyer Architects, of Winnipeg, De Architekten Cie, of Amsterdam, and NOMADE Architecture and Saucier + Perrotte Architectes, both of Montreal. Concept sketches are due in April.

Los Angeles architect Richard Keating has merged with Chicago's DeStefano + Partners to create DeStefano Keating Partners. The new firm will maintain Los Angeles and Chicago offices. Keating and Jim DeStefano had both been SOM partners.

Viñoly wins Kennedy Center project

The Kennedy Center (in foreground, above) will have a plaza extending t the east with two new buildings (left

The Kennedy Center for the Performing Arts has chosen Rafael Viñoly to design its expansion, which will be located on an 8-acre corridor immediately east of the Washington, D.C., complex. The project requires building a deck over the Rock Creek Parkway and Potomac Freeway. Currently, these roads isolate the Edward Durrell Stone–designed building from the rest of the city.

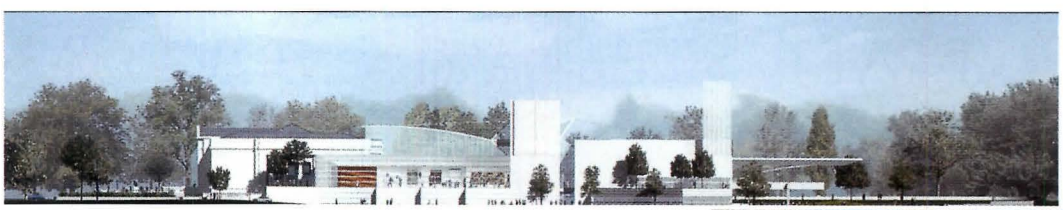
The announcement follows a September authorization by Congress to build this plaza. Terminating at 23rd Street NW, the $400 million deck will improve pedestrian and local traffic connections to the performing arts institution. The Kennedy Center selected Viñoly from a list of international architects.

Viñoly's design for the plaza promotes further integration into the urban fabric. A drive and walkway surround a wedge-shaped, cascading fountain. The water element ends in a circular pool that references the Reflecting Pool in front of the Lincoln Memorial. Viñoly says that the footpath will wrap around the Kennedy Center in an oval, to echo the city's other memorial sites.

Also proposed is a westward extension of the plaza to create a viewing platform over the Potomac River. Viñoly calls the strategy "a way of going onto the water without touching the water, which is quite moving." Moreover, it will allow direct pedestrian connections to the waterfront and Lincoln Memorial.

The Kennedy Center expansio includes the construction of two buildings to house the center's edu cation programs as well as rehears and office spaces. Although their design is preliminary, the glass-and steel buildings comprise 400,000 square feet and will introduce a second architectural vocabulary to Stone's 1.5 million-square-foot structure, because, Viñoly says, "to compose them as an extension of the center challenges its integrity a a memorial."

The Kennedy Center must raise $250 million in private contri butions to build the structures. Ground breaking for the 10-year project is not yet scheduled. *David Sokol*



Cleveland Museum unveiled by Viñoly

The long, linear museum (top) will includ a dramatic glass canopy (above).

New York architect Rafael Viñoly is busy with a number of notable commissions, including a $225 million addition to the Cleveland Museum of Art. In mid-February, Viñoly showed his design for the project, which has a targeted ground breaking in 2004, with completion in 2009.

The project, Viñoly's largest museum commission to date and the largest cultural project in Cleveland's history, will include demolition of nearly half of the museum's five-building complex for the new construction. Two new curving wings will be built to the east and west of a 1916 building. Additions built in 1958 and 1983 will be removed for better circulation through the complex.

A cantilevered glass canopy will lead to a 38,000-square-foot courtyard that will have large-scale sculpture. The addition provides close to 40,000 square feet of new gallery space—a 42 percent increase from the existing museum.

A 1971 addition by Marcel Breuer will be renovated as a new Life-Long Learning Center, providir a hands-on educational experienc for families.

Viñoly's design awaits museu board approval. The project was in tiated with a 1999 facilities maste plan by New York firm Cooper, Robertson & Partners. *J.E.C.*

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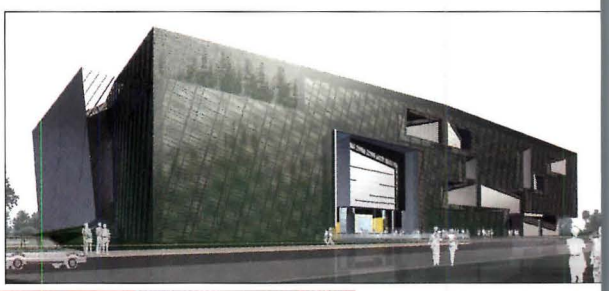
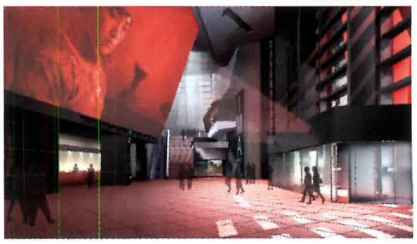
RTKL wins competition for Chinese Museum of Film in Beijing





Clad in a metal mesh (above), the museum wi have projections inside.

RTKL has won an international competition to design the Chinese Museum of Film in Beijing. The project is part of the city's cultural improvements program that coincides with the 2008 Summer Olympics in Beijing. Ground breaking was held in November 2002 for the museum, which is the first to be dedicated to the history of Chinese filmmakers.

The competition, organized by the Beijing Radio, Film and Television Bureau, had a jury process that involved more than 40 people working in the Chinese film industry. RTKL's design was selected among seven finalists from China, France, Germany, Australia, and the United States.

The $40.2 million museum, expected to open in 2005 to coincide with the official centennial of Chinese cinema, will include four floors of exhibition halls for film history, film technology, and exhibitions. A theater component will include an IMAX theater, a 400-seat theater, three review halls, and a multifunctional hall. The 371, 220-square-foot building will also have co lection space and resea offices. Projected image and built-in lights will illu minate and animate glass walls. A thin membran of perforated black metal mesh with plants growi behind it will clad the building's exterior.

"The site-specific design takes its cues from a cinema icon, the production clapboard said Richard Yuen, AIA, a vice president with RTKL and principal in charge on this project. "The 'acting' part of the clapboard is represented by giant translucent glass walls angled toward to main public access, while the museum itself is a simple black box." *J.E.C.*

Koolhaas designs 80-story skyscraper for Beijing

Koolhaas's CCTV will be one of many new Beijing tower

Construction will soon begin in Beijing on the first skyscraper designed by The Office for Metropolitan Architecture (OMA), led by Rem Koolhaas. The building, a 5.5-million-square-foot headquarters for China Central Television (CCTV), will be among the first of approximately 300 new towers to be built in Beijing's new central business district.

Koolhaas won the commission in August 2002 through a competition with 10 other firms, among them Kohn Pedersen Fox, Skidmore, Owings & Merrill, and Dominique Perrault. Koolhaas was one of three finalists, including Toyo Ito in collaboration with FCJZ of Beijing, and the East China Architecture & Design Institute. A contract was signed in December.

The 750-foot tower will be taller than any extant building in Beijing, though several other buildings currently in planning stages would far exceed its height. A statement by OMA describes the building as "not a traditional tower, but a co tinuous loop of horizontal and vertical sections that establish an urban site rather than point t the sky. The irregular grid on the building's face is an expression of the forces traveling through out the structure." A second, shorter building w house a hotel and a theater.

The $600 million project is expected to be completed by 2008, when Beijing hosts the Summer Olympics. *K.L. and J.E.C.*

Record News

In Chicago, Stateway Gardens housing rubble (belo
stands before two of the remaining towers (left).

CHA accused of steering poor people to poor neighborhoods

While the face of public housing in Chicago is taking a dramatic turn, with demolished towers being replaced by low-rise neighborhoods, the displaced residents are not necessarily moving to better or more equitable situations. In late January, a lawsuit was filed against the Chicago Housing Authority (CHA) charging the agency with steering public housing residents to poor, high-crime neighborhoods that are predominantly black.

The National Center on Poverty Law, with the Chicago Lawyers' Committee for Civil Rights Under Law and Business, and Professional People for the Public Interest, filed the lawsuit on behalf of thousands of public housing residents. The CHA is accused of not providing adequate relocation service to those displaced by demolition, which would be in violation of the 1964 Civil Rights Act and the Fair Housing Act.

A study by the National Center on Poverty Law tracked more than 3,200 families relocate from public housing from 1995 to 2002 with ce tificates or Section 8 vouchers. The study found that at least half of the families moved to areas with high concentrations of poverty, and 83 pe cent of the families relocated to neighborhoods that were at least 90 percent black.

The groups that filed the lawsuit are recor mending the CHA begin a program of counselin and relocation advice.

In a statement, the CHA said, "We concur that improvements should continue to the serv system and elements of our relocation process However, we feel that the best way to make these changes is not through a lawsuit."

In 2003 alone, 600 families will be involu tarily relocated with Section 8 vouchers. *J.E.C.*

Task force recommends stringent codes for N.Y.C. buildings

The World Trade Center Building Code Task Force of the New York City Buildings Department released a report of findings and recommendations in mid-February as a result of the 9/11 World Trade Center disaster. Patricia J. Lancaster, commissioner of the buildings department, released a total of 21 recommendations, 15 of which would have to be enacted as law, either in the zoning resolution, fire code, or building code. Visit www.nyc.gov/html/dob/pdf/wtcbctf.pdf for the full report.

The 21 recommendations include a call for the end of the use of open-web bar trusses in buildings over 75 feet in height, pending the development of an appropriate standard by the National Institute of Standards and Technology. One of the recommendations that will have the largest impact on owners of existing buildings is a call for full sprinkler systems to be installed in all existing commercial buildings more than 100 feet tall within 15 years.

The study recommends building stairwells to be larger and more numerous, with enclosures composed of more impact-resistant materials than drywall alone, such as adding a layer of sheet-metal ceramic to drywall.

The city hopes to require air intakes in all new buildings to be located at least 20 feet above ground and away from exhaust discharges and off-street loading areas. The study encourages the use of available impact-resistant materials in the construction of stair and elevator-shaft enclosures.

Building owners would be asked to develop plans for fully evacuating office buildings that go above and beyond the floor-by-floor evacuation plans required for fire safety. One recommendation calls for a uniform information card listing a structure's vital features to be available for firefighters and safety personnel. *J.E.C.*

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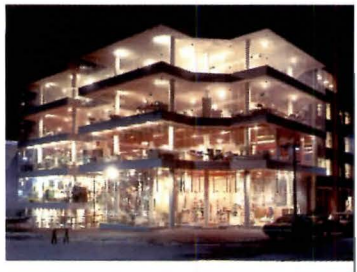
Record News

25-year award honors Design Research building



The Design Research building, now Cr & Barrel, glows like a beacon at night.

The Design Research headquarters building, completed in 1969 in Cambridge, Massachusetts, has won the American Institute of Architects (AIA) 25 Year Award. This award recognizes architecture of enduring significance completed 25 to 35 years ago. The firm that designed the building, BTA (formerly Benjamin Thompson & Associates), will be honored at the American Architectural Foundation's Accent on Architecture gala on March 8 at the National Building Museum in Washington, D.C.

Situated on Harvard Square, the building stands out from its redbrick neighbors with its tempered glass walls and stepped concrete floor plates. Benjamin Thompson started Design Research as a showcase for well-designed interior fittings and furnishings. BTA abandoned the concept in the 1970s, and the building has served as the East Coast flagship store for furniture retailer Crate & Barrel since 1975. *K.L.*

Five receive AIA's Young Architects Award

Five young practitioners are being honored by the American Institute of Architects (AIA) with the 2003 Young Architects Award. The award is given to those in the early stages of their careers who have demonstrated leadership in the profession.

The winners include Paul Woolford, AIA, a senior vice president with HOK Architecture, based in Atlanta, who was the 2001 chair of the AIA Young Architects Forum; Lisa M. Chronister, AIA, a project manager with LWPG Architects, Oklahoma City, who led a coalition of advocates to help save the Gold Dome Bank in that city; Paul Neuhaus, AIA, a design/project manager with The Leonard Parker Associates, Minneapolis, who has contributed community building with his desig work for a number of public structures; Paul D. Mankins, AIA, an associate principal with Herbert Lewis Kruse Blunck Architecture, i Des Moines, who has served as th president of AIA Iowa; and Ronald Todd Ray, AIA, principal of Studio2 Architecture in Washington, D.C., v volunteers with the Washington Architectural Foundation Commun Design Services. *J.E.C.*

The winners are (from left) Paul Woolford, AIA, Lisa M. Chronister, AIA, Pau Neuhaus, AIA, Paul D. Mankins, AIA, and Ronald Todd Ray, AIA.

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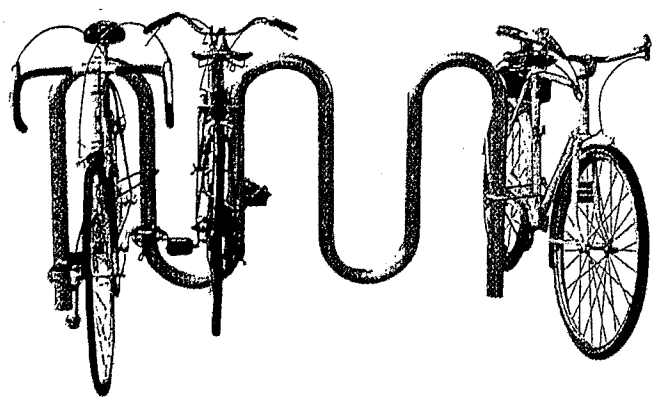

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Record News

A Cyrax 2500 scanner scans the Statue of Liberty prior to 9/11.

Key U.S. structures scanned, documented

Just days after the attacks of September 11, Architect of the Capitol Alan Hantman, FAIA, commissioned crews to laser-scan the U.S. Capitol building in Washington, D.C. Scanning produces a three-dimensional map of the Capitol so that, in case of destruction, the building can be restored or rebuilt.

The Capitol project, recently completed, represents only the third time in which a national icon has been subject to three-dimensional mapping, says Glenn Hill, an associate professor of architecture and director of visualization at Texas Tech University, in Lubbock. Hill, with professors Elizabeth Louden and John White, is collaborating with the National Park Services' Historic American Buildings Survey to map the Statue of Liberty (scanning at Liberty Island pictured, left). That project is ongoing. Park Service engineers have also scanned the surface of Gutzon Borglum's original 1:12 scale model of Mount Rushmore.

According to Hill, laser scanning can "reverse engineer" buildings like the Capitol, creating as-built drawings accurate within one-quarter of an inch. Reflections from a pulsating laser are mapped to create a three-dimensional point cloud, which is then translated into two-dimensional drawings. The method is more accurate than reverse-engineering strategies such as photogrammetry, especially for nonorthogonal structures like statuary.

Although replicas are only skin deep and potentially inauthentic, the cultural importance of a landmark like the Capitol would probably ensure its recreation. "I think there would be some value in just having some symbol there, even if it were a replica," says Dwight Young, a spokesperson for the National Trust for Historic Preservation. *D.S.*

New York City pushing plans for rail yards

While international focus is on the future of Ground Zero, New York City officials unveiled a plan in February for ambitious redevelopment on the west side of the city between Eighth Avenue and the Hudson River, from 28th to 42nd Street.

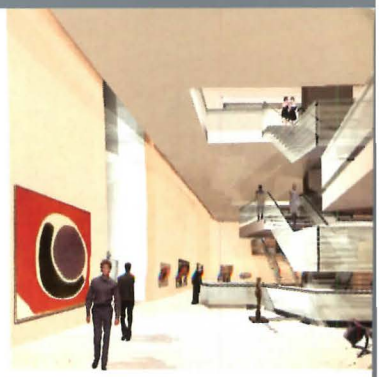
Named the Hudson Yards Master Plan, the proposal has elements that will be key in New York's bid for the 2012 Summer Olympics. The plan includes a $1.5 billion extension of the number 7 subway from Times Square to 34th Street, as well as a $1.2 billion football stadium for the New York Jets built over a deck on top of the West Side rail yards. A commercial corridor between 30th and 34th Streets, from Madison Square Garden to the river, is planned, in addition to office towers along 11th Avenue, a mix of residential buildings and hotels along 10th Avenue, and ferry terminals at 34th and 38th Streets. A call for $1 billion in public funds to expand the convention center to approximately 1.6 million square feet is in the plan. The conversion of the Farley Post Office into a new Penn Station will link the area to the rest of the city and region. *J.E.C.*

Ann Beha designs renovation of 75-year-old Masonic Temple for the Portland Art Museum

In mid-February, the Portland Art Museum, in Portland, Oregon, presented the city's Landmarks Commission with its plans to renovate the historic North Wing. Boston-based Ann Beha Architects designed the adaptive reuse for the building, a former Masonic Temple. The museum is currently raising funds for the $25 million project; ground breaking is scheduled for this summer, with completion due in August 2004.

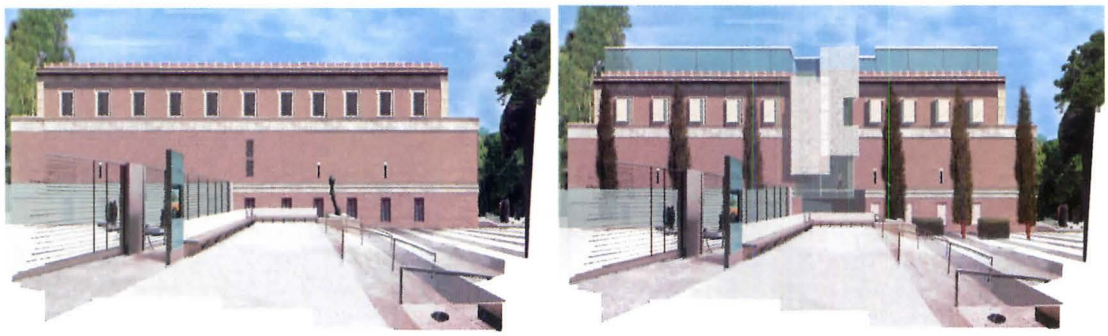
In addition to restoring the Masonic Temple's eclectically styled ballrooms, Beha's design for the North Wing (right) includes three major interventions that, Beha says, pursue a vocabulary of transparency and public accessibility. Alterations include replacing the facade behind the main entrance's upper-story colonnade with glass to bring daylight into the foyer.

Two translucent glass monitors will house both the building's rooftop mechanical systems and an overlook. The so-called "penthouses" give the appearance of skylights during the day, and they will glow at night. Moreover, a folded curtain wall of translucent and transparent glass will replace a vertical slice of the building's south elevation. This "pleat" will mark the southern entrance and visually connect the North Wing and the museum's ma three-wing complex, designed by Pietro Belluschi.



Built in 1927 and purchased the Portland Art Museum in 199 the Masonic Temple is currently used as an exhibition gallery and for office and conference spaces The pending redesign will add 27,000 square feet of new galler space on six levels and will inclu a new location for the museum's library. It will also connect the Nc Wing to the main building via an underground gallery corridor.

Beha was responsible for tw previous redesigns of the museur Belluschi building, in 1995 and 2000. *D.S.*



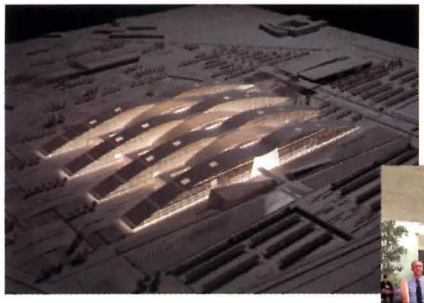
On the Masonic Temple (as it exists today, left), a glass-enclosed vertical slice (right) will denote the southern entrance.

lews Briefs

ıorary AIA members ned The AIA will bestow hon- y membership on eight people ıe 2003 AIA National Convention lay: "Boston by Foot" founder se "Polly" Flansburgh; structural ıneer Jon Magnusson; National t for Historic Preservation presi- t Richard Moe; Terrance Flynn, 1BNA America Bank; AIA Arizona cutive director Tina Gobbel; tographer Marvin Rand; Crystal ıedral founder Dr. Robert uller; and Dr. Tallman Trask III, ıiversity administrator active ıajor academic building and elopment projects.

M to design new NATO adquarters The London office Skidmore, Owings & Merrill M) has designed a new ssels headquarters for the th Atlantic Treaty Organization TO). From an initial pool of 64 firms, 21 competed for the project. Swanke Hayden Connell and Koetter Kim & Associates placed second and third, respectively.

SOM's design for the 172,000-square-foot headquarters is a series of four interconnected low-rise blocks, each with an undulating roof. The building will rise on a 99-acre site opposite the existing headquarters. Although construction costs are not yet determined, NATO officials expect the design to be finalized in 2005, with construction to be completed in 2010.



SOM's winning design for NATO's new Brussels headquarters (interior, right) includes four parallel low-rise buildings.

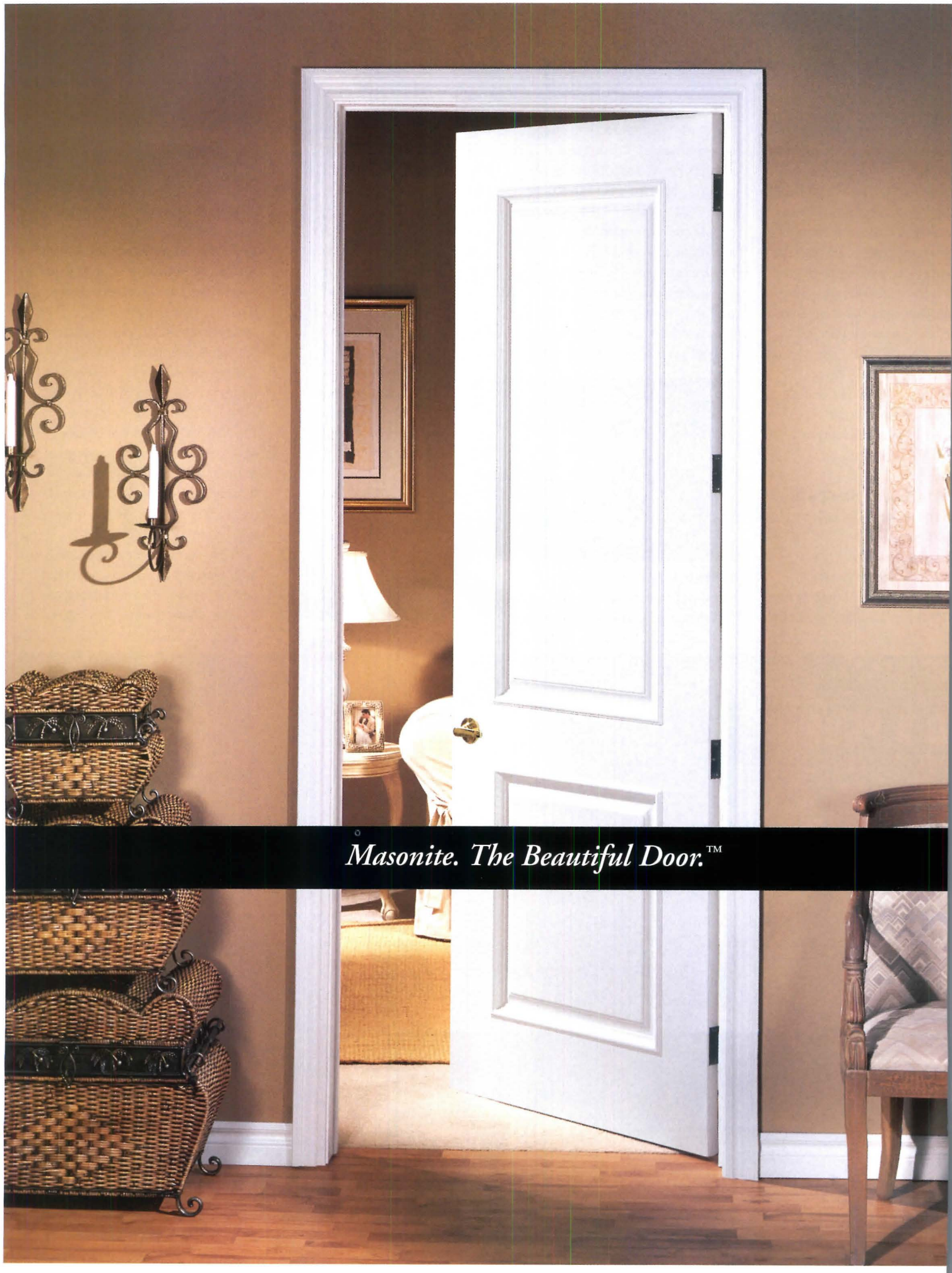
Maya Lin withdraws sculpture When constructed next year, Portland's new North Park Square will be missing a *Playground*. Designer Maya Lin recently rescinded her sculpture of that name from the $2 million park project due to disagreements with park designer Herbert Dreiseitl. *Playground*, a field of rubber hillocks, would have measured 40 feet by 60 feet.

Dreiseitl claimed the sculpture was too large for the park, a one-square-block site in Portland's Pearl District.

Channel glass cladding on the Shaw.

Construction begins on Baton Rouge arts center Construction is under way on the Shaw Center for the Arts, a $50 million multiuse facility designed by Schwartz/Silver Architects of Boston, with New Orleans–based Eskew + Dumez + Ripple and the Baton Rouge firm of Jerry M. Campbell & Associates. The 125,500-square-foot building will incorporate the Louisiana State University Museum of Art, a performing arts theater, and rehearsal and studio facilities, which will open in February 2005.

Schwartz/Silver's design adaptively reuses the 1930s-era Auto Hotel parking garage and other buildings on the site. *News Briefs by David Sokol*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n New York's George Washington Bridge to ton's new Bunker Hill Bridge, some of this ntry's most acclaimed structures are the ducts if Swiss design. This exhibition cele- es the contributions of a group of highly ential Swiss engineers widely recognized he most innovative structural designers of 20th century. At the Princeton University Museum. Call 609/258-3788 or visit v.princetonartmuseum.org for information.

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antastic, MASS MoCA showcases five con- porary artists—Miguel Calderon, Gregory vdson, Alicia Framis, Nils Norman, and artist ective Temporary Services—who embrace orld of hallucinatory, visionary, utopian, and erwise "fantastic" ideas. At the Massachusetts eum of Contemporary Art. Call 413/662- 1 or visit www.massmoca.org.

McMakin: oor Meant as Adornment Angeles
ch 23–June 29, 2003
Makin became a strong presence in the design e in 1987, when he founded the Domestic iture company in Los Angeles. The exhibition mid-career survey of the Seattle-based artist, ng the development of his career in art and gn and his unique manipulations of the tradi- l definitions of furniture and sculpture. At The eum of Contemporary Art. Call 213/621-2766 sit www.MOCA-LA.org.

Our Time: 2002 GSA Design Awards shington, D.C.
ch 27–August 10, 2003
ur Time features models, drawings, and photo- hs of a striking series of federal courthouses, neering achievements, graphic design, and c artwork representing the winning entries in year's General Services Administration (GSA) Design Awards. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Picture This:
Windows on the American Home
Washington, D.C.
March 29–August 11, 2003
Picture This presents windows through multiple perspectives and offers an entertaining two-century history of a building element that opens a view into the changing nature of American domestic life. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

ROY/design series 1
San Francisco
April 19–August 24, 2003
An exhibition of groundbreaking design solutions

by South African–born architect Lindy Roy will launch the first of an ongoing series devoted to showcasing the work of contemporary designers in architecture, graphic design, and industrial design. At the San Francisco Museum of Modern Art. Call 415/357-4000 or visit www.sfmoma.org.

Architecture and Design Permanent Collection
San Francisco
April 19, 2003–ongoing

This exhibition will inaugurate a newly installed, ongoing presentation of the museum's architecture and design collection. Featuring some 100 works of architecture, graphic design, and industrial design from a permanent collection of more than 4,000 objects, the survey will include well-known classics by up-and-coming designers and will highlight special strengths of the collection, including experimental architecture and digital design. At the San Francisco Museum of Modern Art. Call 415/357-4000 or visit www.sfmoma.org.

Harlem Lost and Found
New York City
May 3, 2003–January 4, 2004
This exhibition traces the history of Harlem fro pre-Revolutionary times to World War I. Workin with consulting curator Michael Henry Adams, author of the book *Harlem Lost and Found: A Architectural and Social History, 1765–1915* the museum has drawn from its rich collection to add a unique dimension to the story of the neighborhood's architectural richness. At the Museum of the City of New York. Call 212/534 1672 or visit www.mcny.org.

Garofalo Architects:
Between the Museum and the City
Chicago
May–October 2003
An architecturally distinctive, pavilionlike struct designed by architect Doug Garofalo will be th first in a series of MCA commissions for emerg and mid-career architects. At the Museum of Contemporary Art. Call 312/280-2660 or visit www.mcachicago.org.

Ongoing Exhibitions

Big & Green: Toward Sustainable Architecture in the 21st Century
Washington, D.C.
January 17–June 22, 2003
Through in-depth profiles of approximately 50 contemporary green projects worldwide, alo with a broad examination of global ecological a economic forces, this exhibition demonstrates transformative powers of sustainable design. A the National Building Museum. For more inform tion, call 202/272-2448 or visit www.nbm.org.

Intricacy
Philadelphia
January 18–April 6, 2003
Guest curated by the architect and theorist Gr Lynn, this exhibition includes works by archite designers, and artists that reflect an emerging sensibility that Lynn has labeled "intricacy." At Institute of Contemporary Art at the University Pennsylvania. Call 215/898-5911 or visit www.icaphila.org.

Trespassing:
Houses x Artists
Los Angeles
January 29–April 13, 2003;
May 7–July 27, 2003
The two-part exhibition, co-organized by the MAK Center for Art and Architecture and Belle Art Museum, highlights nine new architectura projects developed in a joint effort between

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Dates & Events

contemporary artists and architects Alan Koch and Linda Taalman of OpenOffice. The projects engage the house as subject, investigating its forms, functions, and significance while imagining a wide variety of prototypes for living. At the MAK Center for Art and Architecture. Call 323/651-1510 or visit www.makcenter.org.

Do It Yourself: Home Improvement in 20th-Century America
Washington, D.C.
October 19, 2002–August 10, 2003
This show is an examination of modern American housing and its products, with cultural implications regarding gender roles and leisure time in the domestic sphere. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

David Adler, Architect: The Elements of Style
Chicago
December 6, 2002–May 18, 2003
This will be the first major retrospective of the architect David Adler's work, featuring approximately 100 pieces, including plans, drawings, photos, models, and decorative arts. At the Art Institute of Chicago. Call 312/443-3600 or visit www.artic.edu.

Conferences, Symposia, Lectures

GlobalShop 2003
Chicago
March 16–18, 2003
GlobalShop is where retailers and brand marketers seek out resources and concepts to define store and brand identity. At the McCormick Place Convention Center. Call 866/933-1001 or visit www.vnuexpo.com.

Coverings
Orlando, Florida
March 24–27, 2003
This event will feature the International Tile and Stone Exposition, the International Flooring Exposition, and the Vision Conference Program. At the Orange County Convention Center. For more information, call 561/776-0600 or 800/881-9400, or visit www.coverings.com.

Lightfair International
New York City
May 5–8, 2003
This year's Lightfair promises to be the biggest and most comprehensive annual architectural and commercial lighting conference to date, with more than 550 exhibiting companies occupying more than 1,460 booths, and an expected attendance exceeding 19,000 architectural, engineering design, and end-user professionals from around the world. At the Javits Convention Center. Call 404/220-2215 or visit www.lightfair.com.

SIDIM
Montreal
May 22–24, 2003
The Montreal International Interior Design Show (SIDIM) will celebrate its fifteenth anniversary. Over 300 international manufacturers, importers, and designers will present their furniture and designs for office, commercial, and residential space-planning applications. At Place Bonaventure. For information call 514/284-3636 or visit www.sidim.com/.

Competitions and Awards

2003 Business Week/Architectural Record Awards
Call for entries deadline: March 14, 2003
The annual global awards program, sponsored by the American Institute of Architects, invites entrants to submit work that has demonstrated that "good design is good business." This is an opportunity for architects and clients to be recognized for exemplary collaboration between client/architect building teams who use architectural design solutions to achieve strategic goals. To download a submission packet, go to the AIA Web site at aia.org, or the ARCHITECTURAL RECORD Web site at archrecord.com. To order by telephone, call 888/242-4240 or 202/626-7467.

International Achievement Awards
Deadline for entries: July 1, 2003
Sponsored by the Industrial Fabrics Association International (IFAI), this competition offers architects an opportunity to gain recognition for projects that have creatively used fabric. The competition features 26 competition categories. Project entries include photos of outstanding specialty fabric projects and descriptions of their unique and important characteristics. To request a brochure and entry form, contact Christine Malmgren at 800/225-4324 or 651/222-2508, e-mail cmmalmgren@ifai.com, or visit www.ifai.com.

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archrecord2

FOR THE EMERGING ARCHITECT

: of archrecord2's recurring themes has been the nontraditional approach to an architectural eer, and this month's section celebrates that. In Design, meet Freecell, a group of four nitects who actively work to avoid being pinned down to one pursuit. And in Work, you can k into a fellowship that allows young architects to earn a stipend while designing low-income sing and other community projects. As always, Live and Talk are found on the Web.

ESIGN

ecell: Never the same firm twice

Lauren Crahan, one of the four members of the Brooklyn firm Freecell, doesn't like to assign a date to the group's founding. As she detailed the connections between various members, her partner Troy Ostrander (second from right) put marker to paper and diamed a sort of timeline with tributaries representing himself, Lauren, and hird founding partner, John Hartmann (left), swooping in to join the pri- channel and then branching off again. The diagram takes in the various ols they attended (Hartmann alone went to three), and the various work- rrangements they've found themselves in since then. The latest includes ddition of a fourth partner, Corey Yurkovich (right).

Freecell's present form defies easy description as much as its history . The firm's product design was featured in RECORD last month, but all four bers were trained as architects and continue to pursue projects like those red on these pages.

"It's not that we don't want to do architecture," Crahan says. "It's that we ys want to put ourselves in a position that allows us to do what we want to ext. Maybe we'll do a traditional architectural project, and the next day cut out a prototype for a piece of furniture or design a Web site. Our drive

Verb Media Offices, New York, 2003
A serpentine cabinet separates public and working areas in this office design. The public side presents a clean face, while the back serves as storage. Quilted curtains move to partition the space.

(continued from previous page) is to not feel trapped within a role that we've already defined for ourselves."

Ostrander adds: "We're trying to avoid the typical office: the day-to-day administration, the endless CAD, the 10-hour day."

The four share a studio in a converted warehouse in Brooklyn's Dumbo neighborhood, near the waterfront. Their space reflects their do-it-yourself attitude: They are constantly tinkering with the office (the recent addition of the studio next door has doubled their work space and given rise to projects such as new bookshelves and a convenient pull-out tray for the coffee machine), and half of the office is given over to the workshop where they build most of their products, their gallery installations, and components of their architectural projects. The workshop has served variously as a room for painting, a greenhouse, and a wood shop.

All of this variety keeps the quartet from getting bored and constantly pushes their work in new directions. They are currently courting a client for what would be their first freestanding building, but aside from designing actual buildings, Freecell's destination as a design firm remains an enigma.

"Our working process is just to try to figure out what next step will lead to whatever the big picture is," Crahan says. "What is the big picture? I don't know."

Ostrander suggests one answer: "It's fame, isn't it?" *Kevin Lerner*

Go to architecturalrecord.com/archrecord2 to see more of Freecell's work, including their past projects and their furniture and product designs.

Horodniceanu Residence, New York, 2003
To make the most of limited space, Freecell designed a Murphy bed that disappears behind a pivoting section of an attached couch. Curved shelving smooths out an angular entry hall, opening up to provide access to storage behind.

NORK

oung architects in the community

orking for a private firm at produced high-end otels, Jamie Blosser found erself "discouraged by the verall profit motive" and nfulfilled by her profes-on. So, when a friend entioned an ad she'd seen r the Frederick P. Rose chitectural Fellowship, osser, 33, decided to vestigate. Begun in 1999 Enterprise Foundation, housing and community evelopment organization, e fellowship offers three-ear partnerships between oung architects and non-ofit organizations in order encourage good design low-income communities.

Blosser scrambled to mplete the application. ree years later, she is orking with the Ohkay Owingeh Housing Authority on tribal lands in San Juan Pueblo, New Mexico, constructing mixed-use housing that blends contemporary architecture with the traditional settlement planning of the Pueblo people.

"The fellowship has given me the tools I need to realize how the creative side of what I do can positively impact the civic side," says Blosser.

This sort of realization, according to fellowship director Stephen Goldsmith, is exactly what the program hopes to facilitate.

"Frederick Rose remembered young architects slaving away in back rooms of big firms, with no voice to express their values," Goldsmith says. "He wanted to bring in young architects who care about community development for underserved communities—and, in the process, create leaders."

Some would-be leaders, of course, require a bit of incentive—particularly those staggering under the weight of student loans. With this in mind, the fellowship, which issued a new call for applicants in January, offers a $40,000 annual stipend and a network of mentors, including an assigned IDP supervisor to help fellows who have yet to meet their licensure requirements. Enterprise also provides a list of potential partners. The program currently selects four fellows each year.

"We want to make it attractive for highly qualified graduates who may be nervous about an alternative approach to their apprenticeship years," says Enterprise Foundation C.E.O. F. Barton Harvey.

Community development necessitates a passion not everyone possesses. But for those who are fascinated by architecture's connection to broader ideas of city planning and policy, the fellowship offers an opportunity for immersion in community-based design projects years earlier than you would likely get such a chance at a firm. But be warned: It's easy to get hooked.

"I'm not interested in working in a traditional private practice anytime soon," Blosser says. "It's too exciting to be able to get the ball rolling and make decisions myself."
Claudia La Rocco

Go to architecturalrecord.com/archrecord2 for more on the fellowship, including stories from other participants and a link to the application form.

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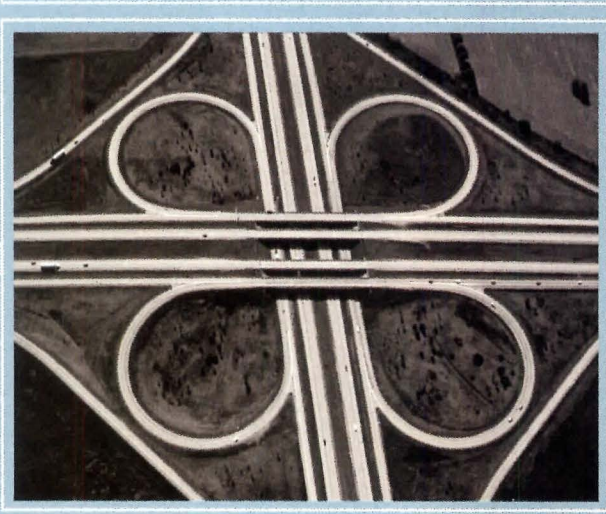

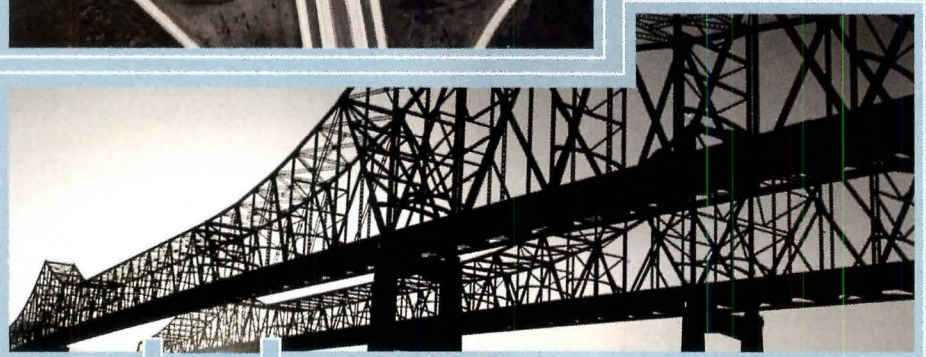

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Practice Matters

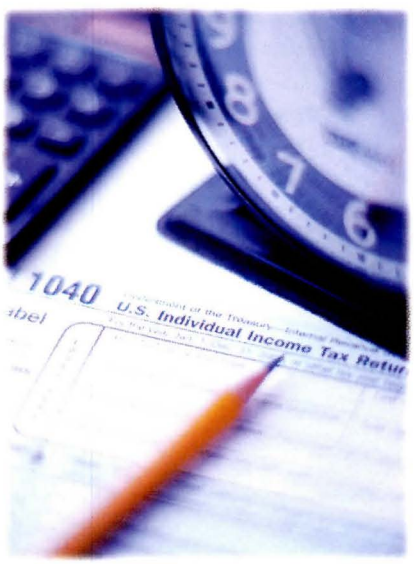
By Alan Joch

y professions are as vulnerable to economy's peaks and valleys as hitecture. The accompanying nges in work load present a con- nt challenge to anyone who is ponsible for staffing a firm. Overfill r full-time workforce during boom es, and when work slows you may yourself burdened with salaries, efits, and eventually severance enses, which gobble up profits. u run too lean, you risk burning your talent with too much over- e and deadline pressure when the d times return.

For a growing number of archi- tural firms, the balm for economic ertainty is a hiring strategy that es a manageable core of full-time loyees with an easily regulated am of freelancers, more formally wn as independent contractors). Their hired-gun status means y hang around only as long as need them, which makes it ier for firms to achieve optimal ffing levels. "The architectural ustry lends itself to this strategy, ause it's either feast or famine," s David C. McFadden, C.E.O. of sulting for Architects, a place- nt service for independent hitects headquartered in New k City. "For the architects, work- as an independent is attractive ause it gives them exposure to ariety of projects."

Unfortunately, relying on ICs nes with its own bundle of risks. IRS presents a labyrinth of s, some open to interpretation,

n Joch is a business writer who s in Francestown, N.H.



that define the legal difference between an IC and a full-time employee. Add to that the tax and workers' compensation laws of individual states, and knowing who to pay what can seem overwhelming for employers. Even architectural firms that believe they are diligently following the guidelines can find themselves defending against employee-misclassification claims. "At my previous firm, a disgruntled [contractor] reported to the Department of Labor and the IRS that he felt he was an employee," says one architect. The IRS agreed with the freelancer and "we paid huge fines." Companies found guilty of misclassifying full-time employees not only face paying back taxes and interest but are liable for penalties as high as 35 percent.

Still, there are those firms that find the temptation to hide behind the legal complexities too difficult to resist. "Most firms have an awareness of the IRS rules," says an industry veteran familiar with the hiring practices of some East Coast architects. "But many firms acknowledge tacitly that some people working in the office are not meeting the letter of the law." Managers in these companies may believe that the benefits of bending the rules outweigh the risks.

ICs save budgets

Given the risks, why bother with ICs? Because, when used properly, they can keep companies humming at less cost than a staff composed solely of full-timers. Along with the negotiated salary and benefits, such as vacation pay, health insurance, and other perks, architectural firms pay a number of expenses that full-time workers may not be even be aware of, including income, Social Security, and Medicare taxes. These ancillary employment expenses can add an additional 30 percent to a straight salary. Hire an IC, and a company pays only the agreed-upon rate for the professional services. The rest is the contractor's responsibility. Once the project is completed, the firm may choose to contract for additional services or not, without the emotion or expense of a formal firing.

For this reason, ICs have for years been a popular resource across all professions. The Bureau of Labor Statistics reports that there were 8.6 million people, or 6.4 percent of the total workforce, employed as ICs at the beginning of 2001, the last year for which there is data. This was roughly the same number as during the height of the last economic up cycle. Matthew Bidwell, a spokesman for the Institute for Work and Employment Research at MIT's Sloan School of Management, Cambridge, Massachusetts, notes that ICs represented a slightly lower percentage of the workforce in 2001 than in 1995, but says that in today's volatile economy, ICs may become more attractive to employers. Firms "would just as soon not make a permanent commitment" today, adds Ralph Steinglass, FAIA, principal of Teambuilders, a New York City organizational-development firm that focuses on architectural and engineering companies. "This works particularly well for smaller firms that are not sure about their work backlog."

The IRS crackdown

Some observers have another explanation besides the economy for why the use of ICs declined in the last decade: fear of the IRS. "The IRS was cracking down on companies that used independent contractors throughout the 1990s," says Lawrence Lorber, partner and labor employment lawyer in the Washington, D.C., office of Proskauer Rose. "Because with independent contractors there is no withholding of taxes, and that has serious tax implications for the IRS." McFadden, of Consulting for Architects, has an even more blunt view: "The IRS gave state, city, and federal agencies marching orders to go out and claim a lot of money."

The crackdown culminated when software giant Microsoft battled the government and a group of former ICs over its hiring practices. Microsoft relied on a cadre of freelance programmers and marketing professionals who received wages for their work but were left out of the company's benefits pool.

THE MICROSOFT CASE STRUCK FEAR IN THE HR DEPARTMENTS OF COMPANIES WHO CONSIDERED BENDING THE RULES.

Freelancers paid their own quarterly income taxes, and Microsoft paid no Social Security taxes for these workers. Freelancers even signed contracts that spelled out their independent status.

But in practice, these "freelancers" looked and acted like full-time Microsoft employees, with assigned offices and equipment on the Microsoft campus, and schedules that had them working side by side with the regulars. In 1989 the IRS went after Microsoft, which eventually paid taxes to the government and back pay for overtime work to some of the "misclassified" employees. The company then made some of these workers permanent employees. Others could continue only if they joined an employment agency that placed temps and would pay the required taxes.

Later, part of the original band of freelancers sued the company for retroactive benefits, including participation in its retirement and stock plans. Microsoft was eventually forced to compensate the workers. If the government's goal in going after Microsoft was to strike fear in the HR departments of smaller companies who considered bending the rules, it worked. Lorber says the Vizcaino ruling hovers over companies across all industries that hire ICs.

The Miller Hull Partnership, Seattle, is one design firm that finds freelancers useful to supplement its permanent staff of 46 people. "We now have one guy who's helping build a model who has been here a couple of months," says Stacy Rowland, accounts manager. "We also have a former employee who left to start a firm, and we hired that firm as a consultant." She says the use of ICs is constantly in flux at Miller Hull. "We can go for a year without having one, then if a big project on a fast schedule comes in, we may hire several."

But in good times or bad, Rowland's company doesn't hire ICs cavalierly. The laws surrounding independent contractors "can be pretty tight," she says. "The best arrangement is to contract with a guy who owns his own firm and works from that address. He submits invoices and gets a 1099 [a year-end tax statement for independents], doesn't fill out a time sheet, and works fewer than 30 hours a week."

That's an attractive profile because it addresses the key criteria the IRS uses to differentiate IC from full-timers. Two basic types of nonpermanent employees pertain to the architecture industry. First, there are *independent contracto* professionals who provide a servi based on information the client presents as to what work will be performed. The service provider determines how the work gets do (the method) and provides the means (the tools and resources) completing the task. These worke are responsible for paying their ov quarterly estimated income taxes and typically receive 1099-MISC income summaries, rather than W wage forms, at the end of the yea to file with their annual tax return *Common-law employees* are wo ers who may or may not be labele

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as full-time employees, but the methods and means for performing their services are governed by the client. This includes directives on when and where to do the work, the tools and equipment the worker will use, who will provide supplies and ancillary services, and in what sequence work leading up to the final product must flow. The government also considers whether the workers perform their service on site and in concert with regular employees, as in the Microsoft case. Employers of these types of workers are responsible for withholding and paying income, Social Security, and Medicare taxes.

McFadden believes employers sometimes get into tax trouble because some of these rules are open-ended. "The standards may be interpreted in different ways at the state, city, and federal level," he says.

To clarify employment relationships, Rowland routinely requires ICs to sign a contract that spells out their independent status, including the fact that her company won't withhold or pay income taxes. Some companies require ICs to provide a trove of additional paperwork. This documentation includes business cards, invoice forms, copies of professional licenses, and 1099-MISC forms from previous years, all of which can bolster an employer's case if it is charged with misclassifying employees. However, no amount of contracts and paperwork is enough in itself to protect a company if its freelancers don't meet the methods and means criteria. "With independent contractors, the rule of thumb is whether how they produce [the final work] is up to them, as long as the result is consistent with the employer's standards," he says. "If part of the deal is that they have to work between 9 and 5 and the employer is providing the computers to do the work, then I'd say the independent status may simply be a sham."

He adds that employers can lawfully create a category of temporary full-time employees who are hired for a particular length of time but for whom the employer withholds taxes. The advantage: Since there's no expectation of long-term employment, these workers may be painlessly let go if business declines, but their tax status remains clear while they're on the job. "We have had a policy for years here where even temps working freelance are put through the payroll system," says Carl J. Nolan, comptroller for Fox & Fowle Architects, New York City. "They may not have insurance and benefits, but we pay payroll taxes."

Lorber says another increasingly popular option is to hire professionals through a temp agency rather than entering into direct agreements with the employee. The employer chooses services from the agency's stable of providers, who in turn are direct employees the agency. In return for a service fee the employer pays the agency the latter takes responsibility for withholding and paying federal ar local taxes and may offer additior employment benefits, such as health insurance.

As work slacks off in some markets, firms are becoming mor cost-conscious. Project managers who are fortunate enough to nee help in a hurry need to involve HF accounting, and legal advisers when making hires so that ICs ar evaluated for more than just their design talents. Karen M. Johnstor AIA, principal of J.M. Califf AIA & Partners, a 4-person design firm Irvine, California, gives this sage advice: "We don't contract with c sultants unless they actually have their own businesses, can provide proof of a current city business license, provide contract services other clients, and they do not phy cally work in our office. Anything less is too risky." ■

Do recent collaborations of design architects for the WTC site show that Gropius had it right?

Commentary

By Suzanne Stephens

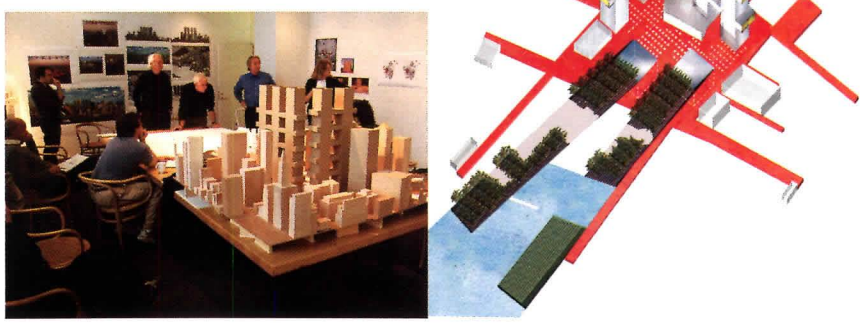
k in the Bauhaus days, Walter pius argued that the "team" of tsmen, artists, and architects ld take over from the lone, tive genius. Yet, by the mid-20th tury, Gropius's model had been smogrified into the corporate itectural firm that offered a d package of services, but gn inventiveness was not part e picture. When independent itects got together for a special ect (United Nations, Lincoln ter), the results often resembled proverbial camel created by a mittee. Meanwhile, the image of ndividual architect as a creative us just wouldn't go away. If any-g, it was fortified by the media's ped-up cult of celebrity in the r part of the century.

So the circumstance whereby of the seven teams short-listed mpete in the planning of the d Trade Center (WTC) site each ded several different design es was compelling. To be sure, competition, sponsored by the er Manhattan Development oration (LMDC) and the Port ority of New York and New ey [RECORD, February 2003, 31] involved engineers and/or scape architects as consultants, for the individual design es, such as Studio Daniel skind, Foster and Partners, and rson/Littenberg Architecture Urban Design. But the mere ght of such design honchos ichard Meier, FAIA, Peter nman, FAIA, Charles Gwathmey, , and Steven Holl, AIA—each a definite imprimatur—coming up with a joint design is striking. Does this portend something for the future? And does it promise the creation of great architecture?

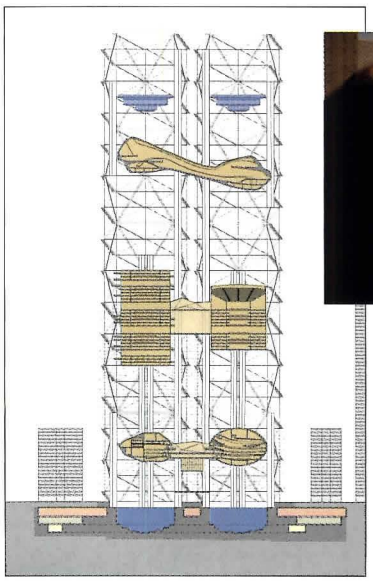
In any event, as RECORD goes to press, the THINK team and Studio Daniel Libeskind have been selected as the two finalists (page 29). Whether or not the winner is a team or an individual probably won't be that telling in this situation: The contest is too peculiar, with too many variables, for its outcome to indicate much about the success of one over the other modus operandi. Nevertheless, the actual experiences of the team members and their thoughts on the benefits or disadvantages of collaborations offer some insights for the future.

The incentives for teaming up were obvious with the WTC site: With a complicated selection process, a program that is arguably hypothetical and ambiguous, plus the knowledge that the firms stood to lose money because of the hours required and a remuneration of only $40,000, it made sense to spread the risk. Also, the time frame was severely truncated. After a briefing in early October, the design teams had two weeks until the first review, then another two weeks until a "mid-term" review, and about two weeks before a final review, after which the schemes were readied for the presentation on December 18, 2002.

For this reason, logistics were critical, particularly since three of the four teams had architects flying in from Tokyo, London, Rotterdam, Amsterdam, and even Los Angeles. Although e-mail made international collaboration possible, face-to-face contact was imperative. Generally, one office in New York served as home base for constant meetings and work. The international firms had one or two people take up residence in the New York office, while the principals would appear every two weeks for intense charrettes.



The Meier, Eisenman, Gwathmey, and Holl team discusses its WTC-site scheme.



Reviewing the World Cultural Center: THINK's Shigeru Ban, Frederic Schwartz, Ken Smith, and Rafael Viñoly.

Four gorillas on a grid

The New York Times' bringing together of well-known architects to work on a special issue of the Sunday magazine (September 8, 2002) devoted to the design of Lower Manhattan proved to be a dry run for collaborations for the LMDC competition. Richard Meier found that he, Eisenman, Gwathmey, and Holl could really communicate with each other (the first three also had known each other for about four decades). Even though Holl, the relative newcomer, describes his encounter with Eisenman at the first meeting as "really heated," he claims the process worked well.

Skidmore, Owings & Merril team, led by Roger Duffy, included architects, artists and urban planners.

Gwathmey says both Holl and Eisenman showed they "could move past particular design predispositions to a healthy dialogue. Holl would come back and push the scheme, and improve it. Peter also took on the project as an abstract exercise. He was a great critic."

For his part, Eisenman felt that "working with four gorillas involved negotiating and making trade-offs. Ultimately, it didn't look like any of our projects." Holl says that was the point—not to create a "signature" of any one architect, which he thought would be empty.

The group also decided that this scheme should be a piece of urbanism more than architecture, and designed the scheme to feature a large Memorial Plaza from which fingers of space extended to the water. The building forms resulted from lifting the grid up off the ground. The domination of the grid proved to be a signature piece, which is easy to understand:

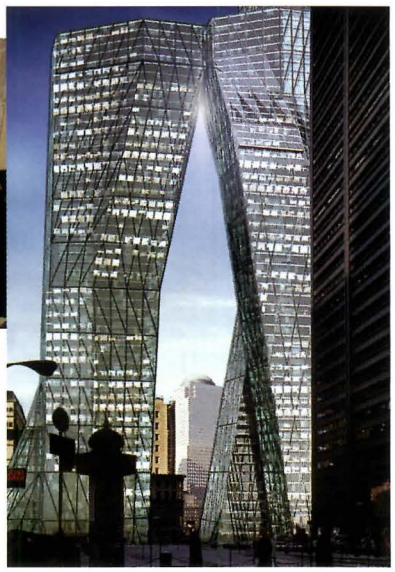
United Architects' scheme was proposed by five architectural firms.

These guys grew up on grids. Even if it is not rotated and cranked here, the grid is still their lingua franca.

In discussing how the four developed their scheme, Meier says, "I would attribute the building form to Peter and Steven, the transportation system was totally worked out by Charlie, and I came up with the fingers of open space. But we all did this. The conversations were terrific." Gwathmey argues, "The whole process energized me and refocused me. I would do it again." As for Eisenman? "It's a cleansing experience that's good once in a while—but, like a sauna, not all the time."

Three's a crowd

On the day of the presentation, it seemed like the THINK team must have been the most fractious group—after all, they were presenting three schemes, as if they couldn't agree on which one was best. Nevertheless, principals Frederic Schwartz, AIA, Rafael Viñoly, FAIA, Shigeru Ban, and landscape architect Ken Smith stick by their explanation that each proposal reflected different levels of public financial investment, from the least expensive "Sky Park" to the "Great Room" and, ultimately, the "World Cultural Center." And now they have the last laugh, because the third scheme, with its two open lattice-work towers, is the one that caught the LMDC's and the Port Authority's



fancy. The first two schemes were quickly sloughed off.

The collaboration of these architects was prompted by *The New York Times*' effort, where Schwartz and Viñoly designed separate projects. Schwartz enlisted Shigeru Ban, who had worked on Westway right after he got out of Cooper Union. And Ban also had his own ad hoc partner in New York, Dean Maltz, join the team. Schwartz brought in Ken Smith, whom he knew from another competition collaboration.

William Morrish, an urban planner on the THINK team, argued for developing several schemes as a way to explore public space as a central theme. The LMDC encouraged THINK to proceed with three, even though it caused a kerfuffle among other teams discouraged from doing so. According to Ken Smith, he and Schwartz worked the most on the "Sky Park" scheme, while Ban came up with the "Great Room" proposal and a concept sketch for the "World Cultural Center," which Viñoly then developed. Ban insists, "Everyone presented his own design or designs in the beginning. But the three schemes did not result from three architects' different views."

The troika of schemes almost caused THINK to sink on December 18. The audience, made up mostly of the media, was totally confused: Were these three parts of one scheme or three different schemes? Viñoly contends he didn't have sufficient time to explain the difference at the presentation. But the *Times* continues to get it wrong: Herbert Muschamp's February 6 essay on the two finalists illustrated THINK's chosen scheme, the "World Cultural Center," with a rendering of the Great Hall from the now-jettisoned second submission.

THINK says it had even more proposals. Schwartz (who Ban describes as acting in the role of the "mother to the two kids—Viñoly and me") felt that ultimately the THINK team pulled off the ambitious effort because, he says, "We shared the same work ethic, even if we don't have the same ideology." And they shared a willingness to spend money. Viñoly estimates the cost was at least $500,000, nonreimbursable.

New kids on the block

The most overwhelmingly unusu proposal was the Brobdingnagia megastructure produced by Unit Architects, whose members cam from London, Amsterdam, Los Angeles, and New York. A clear testament to the success of the laborative process is that the tea is actually forming a permanent New York office, while keeping se rate home offices.

Greg Lynn, of Greg Lynn FO explains that all knew each othe well. Indeed, in 2000, Lynn in Lo Angeles, UN Studio (lead by Ben Berkel and Caroline Bos) in Amsterdam, plus Reiser+Umem in New York had teamed up for t Downsview Park competition in Toronto. Although the WTC-site team of Foreign Office, in Londo (Alejandro Zaera Polo and Farsh Moussavi), couldn't do it then, th were available this time around.

Meanwhile, Kevin Kennon, who used to be with Kohn Peder Fox, had worked with Jesse Reis AIA, and Nanako Umemoto on a scheme for New York's Eyebeam arts center competition in 2001 and contacted them.

United Architects also deci against "signature" buildings—b certainly came up with a thunde ing, signature statement. To do s the group divided up areas in th first four weeks, with particular p cipals focusing on components s as the surface plaza (Umemoto) the subgrade level (van Berkel a Foreign Office); the towers (Fore Office and Kevin Kennon); the v

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space (Greg Lynn and van Berkel); and the memorial space (Lynn, Reiser, and Peter Frankfurt, from the graphic design firm Imaginary Forces). In this effort, Caroline Bos and Kennon often became the "glue" for the rest. But, says Reiser, "No one had to establish ground rules, and there were no different agendas." Lynn adds, "The compressed time frame meant any pettiness got washed out."

At one point the group wondered if it should come up with a plan that would conform more to what the LMDC and the development community might want, with freestanding towers placed east of Greenwich Street. The architects took a vote, "which was close," reports Lynn. And that was that.

Gropius beyond the grave

Of all the teams, the SOM group proved in the end to be the most perplexing in terms of the design and the final outcome. SOM's presence both enabled the team formation and posed the problems, the first being that SOM had been hired by the developer, Larry Silverstein, who has the lease to the original World Trade Center. To be part of the competition, the firm had to suspend work for Silverstein during this phase. Meanwhile, David Childs, FAIA, and Marilyn Taylor, FAIA, the two established heads of SOM's New York office, felt they shouldn't participate. So Roger Duffy, AIA, an up-and-coming talent at SOM, put together the cohort. Duffy, who had worked with artists before, describes his role as the "curator," and asked the DIA Center for the Arts for names of artists. "Artists bring an intangible aspect," he says. "They observe things in a way that architects do not." So he contacted Iñigo Manglano-Ovalle, Rita McBride, Elyn Zimmerman (who knew David Childs), and Jessica Stockholder.

The architects involved were more familiar to SOM, for it has worked with architect Stan Allen, AIA, and landscape architect James Corner, of Field Operations, on a Fresh Kills, Staten Island, land-use plan, and with Michael Maltzan, AIA, of Los Angeles, during his previous association with Frank Gehry, FAIA. The others, such as SANAA (whose principals are Kazuyo Sejima and Ryue Nishizawa), in Tokyo, and Willem Neutelings and Michael Riedijk, of Rotterdam, were known to Duffy, but not through working relationships.

AN OFFICIAL AT LMDC TOLD THE *NEW YORK POST* THAT THE SOM TEAM FOUGHT LIKE "CATS IN A SACK."

It took time for such a large group of architects and artists, many of whom were strangers to each other, to become familiar wit the others' ideas and the issues. "It was chaotic, not smooth," Zimmerman notes. "SOM kept it focused. But it was brave and cra to get so many involved."

An official at the LMDC told t *New York Post* that the team fou like "cats in a sack." Duffy shrugs it off, saying, "A few too many architects hadn't worked together Manglano-Ovalle has a more philo sophical take: "At the beginning, when you are conceptualizing a direction and negotiating terms, there is an equal playing field. But when you start giving form to the idea, territories of expertise appe and the common language erupts into different ones. They collide, b conversely, this collision promotes a more complex understanding of what's at stake."

Complex understanding or not, the number of team member did diminish by the end when Neutelings Riedijk quit the group,

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Commentary

objecting to the final arrangement of urban forms, a series of 940-foot-high bent towers densely covering the site. Another participant felt, "The ideas were deeply watered down between the second and the final review—inexplicably so."

Even with the diluted final version, the scheme was a loner. Duffy argues the buildings, erected on nine parcels, were bent so that light and air could penetrate between them. Sky gardens in the towers became the primary form of public space, to "challenge concepts of private and public," says Duffy.

The final version did look strangely undeveloped and lacked appeal for the press and the public. SOM decided it needed to pick up the ball with Silverstein, and so withdrew right after Christmas (advising the other team members by e-mail). SOM says it expected the LMDC would allow the team to continue through the next phase (cost and traffic analyses), but the LMDC said if SOM was out, the whole team was out. "Some of the meetings with the LMDC and the Port Authority had been contentious," says Allen. "They expected us to keep the footprints, but we felt these boundaries were artificial."

Clearly the footprints are part of the competition's realpolitik. Both finalists are keeping commercial development on the east part of the site, away from the footprints, with a land-use plan strikingly in accord with Beyer Blinder Belle's. Some could say that as radical as SOM seemed, it was proposing a concept that too snuggly fit in with Larry Silverstein's original desire to have 60-story office towers totaling 11 million square feet on the site.

Another time, another place?

Certain lessons can be drawn for architects who want to collaborate. It helps if the architects know each other well from the outset, and better yet if they have worked together. Then they have to put aside individual differences, and allow debate to occur freely. And it is important, Holl remarks, "to articulate right away what you are trying to achieve."

Many collaborators were not happy with the LMDC's changing goals and agendas. But Ken Smith of THINK points out, "While this is a messy process, you have to commend LMDC for taking the risks and going into uncharted territory. They didn't know where we or they were going with it."

And they aren't the only ones. But one question we might consider is whether the collaborations produced better, or more interesting, architecture than those by individual offices. Theoretically, the sum should be greater than the parts.

These schemes were definitely not camels by a committee. However, the end results were very strong polemical statements, rather than something that migh be conceivably built in the next f decades. With the collaborations the design architects seemed lik chefs involved in a master bake-off. In several cases, the final dis had so many ingredients, the pul lic and the media couldn't digest it, or in the case of the Meier team, the design was of such an unremitting consistency that it quickly led to satiety.

The individual offices had the advantage of combining and expanding certain tried-and-true ideas, or—in the case of THINK—pouring its energies into three dishes, and throwing two away. However, the intensity and power the schemes should not be ignore And certain parts and pieces can salvaged and developed further i the future. As Morrish points out, "Collaborations provide the energ and ideas in a tough situation like this." Nevertheless, there will alwa be the dilemma of too many chefs stirring the pot—even when they work well together. ■

Can architects and planners use security concerns to create more humane cities?

Critique

By Michael Sorkin

cent ad for a Homeland Security nmit and Exposition bore the dline, "Grab Center Stage In a 8 Billion Market." Clearly, para- is a growth industry and the iferation of conferences and etings to discuss its implications taggering. Since September 11, nation has been consumed with war on terror" and the lens of diffracts more and more of the aning of everyday life. From bomb ectors at the airport to the rise thnic profiling to the visa difficul- of the students we admit from oad to the Pentagon's sinister a-mining project run by Admiral n Poindexter (of Iran-Contra fame) he new tics in our private behav- the culture is suffused with ements to anxiety, as the media es on the imminence of terror.

My own private internalization his fear strikes me from time me on my walk home from my lio, which takes me past a large eral building that houses, among er offices, the passport agency. approach this block, I often find elf thinking about car bombs. r particularly anxious days at k, I sometimes imagine I have tted the lethal vehicle (generally e nondescript minivan) set to ode. I have walked blocks out of way to circumnavigate the build- and the impending fatal blast.

We measure the environment e light of our perception of its s. Whether skirting dark streets at night, mapping and avoiding "dangerous" neighborhoods, or staying out of tall buildings, the human geography of the city entails assessments of convenience, pleasure, and risks. Our problem nowadays is that we are creating an urbanism predicated primarily on risk avoidance, one likely, in its more extreme versions, to have a terrible effect on fundamental ideas of the good city. To the degree that we acquiesce, we become complicit in a cycle of exacerbated paranoia, creating a bunker mentality.

tributing editor Michael Sorkin is director of the urban planning ram at City College of New York.

Behavioral bunkers

There are both material and immaterial bunkers. The material variety—already abundant—include the proliferation of biometric checkpoints, credentials checks, hardened construction, defensive bollards, ditches around "high-value" targets, and so on. The immaterial fortifications are more internal and revolve around modifications to our own behavior: anxiety about setting out, willingness to permit prying into our private information, suspicion of people who somehow look "wrong," or demands for accelerated police action. Internalizing the means of our own repression, we risk allowing fanatics to turn us into totalitarians.

In his book *Discipline and Punish,* Michel Foucault describes the response of a town in the Middle Ages to an outbreak of the plague. Lacking modern medical knowledge, the town—on a signal from the authorities—adopted a state of hyperorderliness, making personal movements geometrical and activities clockwork. This superposition of an apparently rational style of urban behavior was meant as an antidote to the evil and irrationality of the disease. Needless to say, it was not effective, although—in a typically *post hoc propter hoc* argument—the eventual waning of the plague could be attributed to the only course of action actually taken.

And this will be our delusion, too, if we acquiesce in the reimagination of our cities as battlegrounds, rushing to superimpose military order in a place that requires very different styles of discipline, hierarchy, and choice. We have all suffered the new inconveniences of the main focus of current security efforts: the air transport corridor. The time in line waiting to pass through detectors, the force of interrogators asking us whether someone has given us something to carry on the plane, the large numbers of armed personnel, the endless thresholds at which we are scanned, and our progress through space mapped step-by-step have all become part of the background of our lives. Making this process convenient by making it invisible is not one in which we should participate uncritically. We may want to glide from the concourse to the gate, but I, for one, want to know when I am being electronically patted down and to whom this information is being conveyed.

Given the genuine risks that we do face, however, the question becomes whether there is any meeting ground between the need for precautions and the ongoing project

Coast Guard officers keep watch over Lower Manhattan, where tightened security has changed transportation and pedestrian patterns.

of urban amelioration—the construction of cities that are humane, democratic, and sustainable. I think there are several potential points of convergence between these concerns, places where energy might be focused to make our cities both more comfortably secure and more comfortably free, a kind of "peace dividend" from a number of the measures we are likely to take based strictly on questions of security.

We can begin by extracting questions of safety and security from a narrow focus on terror. So many more of us die falling down stairs or in automobile accidents than in wars or terror attacks that a little perspective is necessary, a realistic sense of proportion about the sites and organization of investment. The risk of being struck down crossing the street by an S.U.V. is far higher than the worst bin Laden can do. I don't mean to be glib, but it is important to understand that the fear-mongering of the moment is based on a set of fundamentally political agendas. How then to depoliticize the idea of safety, or rather, how to democratize it?

MANAGING SYSTEMS OF MOVEMENT IS THE CENTRAL OPPORTUNITY FOR SYNERGY BETWEEN SECURITY AND URBANITY.

To begin with the most obvious, the project of making cities and buildings safer must encompass needed improvements for security from other risks. Clearly, reinforcing buildings against seismic hazards also brings greater safety from other sorts of externally induced structural traumas. Perhaps even more important is the dramatic improvement of fire safety. Many of the lives lost in the World Trade Center disaster might have been saved with better fire-abatement systems, with increased means of egress, with better internal communication, with careful attention to the presence of toxic and flammable materials. These are steps that need to be taken on an urgent basis, especially in tall buildings.

If September 11 can serve as a goad for us to address the threats mounted to buildings, this is to the good. However, even here we hazard a kind of parochialization of risk. Building safety must also encompass the effects of architecture on climate, the health-related effects of "sick building syndrome," the damage to resources in remote locations, the flat-out toxicity of many of the materials with which we build, the dangers of the building process, and the insecurities engendered by the massive consumption of energy by buildings (itself one of the reasons for the current rush t war). A national policy based on securing the means for continuin the cycle of hyperconsumption ha enormous and unfaced planetary and political consequences. Build security goes way beyond metal detectors and security guards.

Rethinking the city after 9/

One of the striking scenes in New York City following September 11 was a dramatic rearrangement in the movement of traffic, when access via bridges and tunnels w limited. Emergency vehicles were able to flow without impediment. Streets were preternaturally quie Pedestrians were predominant. Carpooling was enforced.

In the process of rethinking city after 9/11, the management systems of movement is perhaps the central opportunity for synerg between security and urbanity. In New York, we have the opportuni for a dramatic pedestrianization downtown, using Ground Zero as point of dissemination for the net


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work. This local greening might be accompanied by a large-scale reduction in private vehicles in the city as a whole and the replacement of no-longer-required road space with parks, bikeways, and other public amenities. The moment is also ripe for a more rational system of goods distribution and delivery. Both security and urbanity would benefit from more rigorous management of city traffic: greater efficiency in delivering milk might have an ancillary benefit in greater inefficiency in delivering bombs.

A general increase in architectural and urban "inefficiency" could, indeed, have many positive effects. A multiplication of routes and a mix of scales would humanize cities that are too straightforward and homogeneous. Structural overdesign and redundancy could increase both safety and complexity. An architecture more integrated with the earth around it would enhance thermal performance, environmental continuity, and variety of use. The sort of bottom-line inefficiency represented by European-style regulations that limit the dimensions of office floor plates to guarantee workers access to light and air would create buildings that are psychically and physically both safer and friendlier.

As Jane Jacobs has observed, strong neighborhoods are safe neighborhoods. Her theory suggested local spatial supervision based not on centralized means of surveillance but on the extension of the idea of neighborliness. Although anonymity is a prized value in city life, it is one among many, and there are styles of violation of our privacy that are more and less civic. The grandmother leaning out of the window keeping an eye on the street is a radically different phenomenon than those M-16-toting guardsmen manning checkpoints downtown after September 11. It is not liberal sentimentality to suggest that building strong neighborhoods, neighborhoods with complex nets of relationship and interdependency, is an intrinsically superior style of security than CCTV on every corner. Our personal participation in the security of our cities and neighborhoods should grow from a sense of decorum, not fear.

The good urban life

By extension, we are now presented with an opportunity to rethink the nature of business and commercial concentrations within individual cites. The same technologies that allow corporate headquarters and call centers to grow on green-field sites far from the pleasures and conveniences of town can also allow us to adopt a policy of local decentralization based not simply on security from terror but on the convenience of building sustainable communities. Places in which living, working, education, culture, recreation—all the components of the good urban life—can be planned comprehensively: metropolitanization rather than globalization. In terms of the rea economic development of New Y City, for example, it would seem far more productive to apply the massive capital that is about to squandered on unneeded office downtown to the reconstruction the Bronx Hub or 125th Street.

The key to our security is neither the construction of new fortifications nor a willingness to progressively surrender our shri ing rights of privacy to the tende mercies of the national security state. Our best defense against terror lies in the strength of our democratic institutions and of o human character: Armament is not a substitute for a culture of compassion and generosity. The horrible events of 9/11 are not a call to arms, but to justice, to increase the peace. Good cities, the manufactories of our civiliza tion, are a bulwark. ■

Tackling tough questions: From the divided city of Jerusalem to the amorphous realm of theory

Books

e Next Jerusalem: Sharing e Divided City, *edited by chael Sorkin. New York: nacelli, 2002, 432 pages, 0 (paper).*

uly 1999, at an idyllic estate in lagio, Italy, architect and critic chael Sorkin orchestrated a con- ence on the future of Jerusalem. invited Israelis and Palestinians a few people from other places. 25 participants—architects, nners, economists, political scien- s, and academics—offered an y of proposals for the physical re of a city that has been built, troyed, rebuilt, conquered, con- ted, coveted, and divided for usands of years.

Few places in the world raise h seemingly intractable issues of ereignty, religious belief, and social anization as does Jerusalem. pite all their differences, the par- pants at the 1999 conference ibited a surprising "convergence of ws," says Sorkin, on issues ranging n the legitimacy of Palestinian onhood and the need for an open to the consolidation of infrastruc- e in the Jerusalem metropolitan a. *The Next Jerusalem* is the of that conference, a sharply igned book that brings together essays illustrated with a mix of hip ges, impressionistic sketches, umentary photographs, and color- charts and maps.

As Sorkin explains in his pref- , "It may have been my own taken faith in the religion of archi- ture, but I felt that there were es that *could* be discussed out- side the territory of politics. No matter the ultimate disposition of sovereignty, it seemed to me that questions of ecology, preservation, neighborhood development, open space, and so on would need many of the same answers."

The book's essays present a diverse set of concerns and ideas. For example, Ghiora Aharoni, an architect now working in New York City, proposes displacing key monuments such as the Dome of the Rock and the Western Wall to places outside of Jerusalem and accomplishes the task in photo montages that force readers to consider the emotional attachments of place and object. Romi Khosla, an Indian architect currently working with the Palestine Authority, envisions a high-tech train running from Gaza to Haifa and connecting communities as different as Hebron, Jerusalem, and Ramallah. Several of the book's contributors offer dramatically different readings of Jerusalem—from Dag Tvilde and Ali Ziadah's use of demographic maps to Amir Sumaka'i Fink's view of "queer" Jerusalem and its gay landmarks. Other contributors include Thom Mayne (who makes some wry connections between theme parks and the Old City), Lebbeus Woods (who contributes some remarkable drawings entitled *Meditations on a New Jerusalem*), and Moshe Safdie (who has been building and designing neighborhoods in the city over the past three decades).

Reading this book now—when negotiations and trust between Israelis and Palestinians have broken down—one can't help but wonder if it is a remnant of a brief moment of hope in the history of Jerusalem. But precisely because the outlook seems so bleak right now, I think this book is more important than ever. As I write, political violence is an everyday event and Israel is busy constructing a giant fence to separate itself from its Palestinian neighbors. *The Next Jerusalem* points in a very different direction and should be required reading for everyone concerned about the fate of this unique and mesmerizing place. *Clifford A. Pearson*

Landscrapers: Building with the Land, *by Aaron Betsky. New York: Thames & Hudson, 2002, 192 pages, $50.*

In terms of coffee-table architecture books, *Landscrapers: Building with the Land* is eye-candy with a concept. Aaron Betsky, the director of the Netherlands Institute for Architecture and the former architectural curator for the San Francisco Museum of Modern Art, presents a collection of high-gloss projects with an abundant, even excessive, rationale.

Betsky begins with the idea that architects use land in a multitude of ways, manipulating materials, construction, structure, and function to form and inform their designs. "Landscrapers" (a cute linguistic play co-opted from architect Antoine Predock) are the result of this practice. Not landscape architecture, landscrapers address the concept of land.

With this conceptual frame established, Betsky continuously redefines the term *land* in the book's five essays and 43 projects. This strategy addresses the differences among projects that range in program, site, and materials. Land provides structure for an underground facility in Steven Holl's Nelson-Atkins Museum expansion, in Kansas City, Missouri. It dictates formal shape in Massimiliano

Books

Fuksa's Niaux Caves Entrance Pavillion, in France. And it is construction material in Herzog and de Meuron's Dominus Winery, in California. Betsky establishes relationships by juxtaposing projects that would seem unrelated except for their conceptual use of land. By connecting a variety of projects under this lens, Betsky's curatorial skills are at their best.

Yet the liberal use of the word *land* as a concept can be confusing and ineffective. Betsky repeats it ad nauseum and in place of *ground*, *site*, and the more specific *dirt*, *pavement*, *gravel*, *grass*, and so on. In the process, it loses meaning. The book is full of sentences like: "[Landscrapers] take many forms, but in all cases they unfold the land, promising to lay a new ground on which we can erect an architecture of the land." And "Architecture is no more than a mark on a land that has been shaped to create a void." Betsky also forces some projects into his conceptual framework. For example, he reads the Minnaert Building, in Utrecht, by Neutelings Riedijk as "carving land" since its red-pigmented concrete exterior is "[the architect's] own version of the land." Okay, but a stretch.

Still, as a slide show of projects that use land in different ways, the book is an interesting, if not an in-depth, resource. The two-page-per-project organization is as effective as a museum exposition on the topic: informative, but brief. Of course, delving too deeply into any given project might bring up issues other than land, complicating Betsky's narrow focus. *Megan Feehan*

Surface Architecture, *by David Leatherbarrow and Mohsen Mostafavi. MIT Press, 2002, 300 pages, $40.*

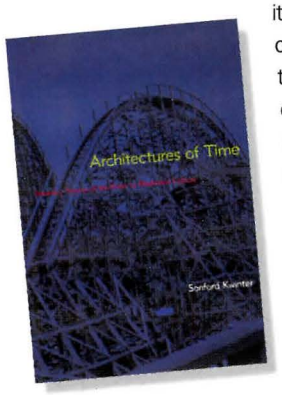
Mention the word *surface*, and most people think "superficial" or "shallow." But surface is fundamental in architecture. Exterior surface, along with form, conveys a building's function and triggers the more subjective determinations of whether it is pleasing or ugly, conventional or edgy, stodgy or spirited. Surface is also the aspect of architecture that has changed the most in recent decades. Early in the last century, new construction methods made possible the "free facade" and started architects thinking about the relationships between skin and structure and between modernity and tradition. New technologies have produced more food for thought, prompting the authors of *Surface Architecture* to ask how design can profit from them while remaining "neither independent n subjugated to the domination of technology." Not a bad question.

In pondering it, Leatherbarrow and Mostafavi wander through rec history. Unfortunately, like Hansel a Gretel and the bread crumbs, they leave a trail of nearly useless sentences that don't prevent you from getting lost. Here's one: "The windo as an element of separation forme a distance across which connectio assumed recollection, or joining pr sumed memory, so constituting a horizon of yearning." Is there any good reason why theorists can't w simply and directly?

Compounding the vaguenes and convolutions, the authors' organization of the text often see governed by free association. The start with the early Modernists' infatuation with volume, modern production methods, and new mat rials and the movement's disdain f eclecticism and representation. Th

cuss Louis Kahn's attempt to ieve monumentalism within dernism, then look at Minimalism, is Sullivan, Frank Lloyd Wright's atment of the frame versus deco- on, Le Corbusier's emphasis on izontal windows as expressions of ucture, Aalto's use of banked win- s on curved walls, and more erally, the role of different window es. They examine approaches to lding, starting with that of the trian Secessionists, then segue to lf Loos's contempt for ornament, a discussion of *surface appliqué* uildings. They explore Mies's utili- an buildings as well as those by ert Kahn, George Howe, Richard tra, Jean Prouvé, the Smithsons.

How do Leatherborrow and stafavi suggest resolving the flict between production meth- and surface treatment? They as an example the work of nish architect Alejandro de la a, who uses found objects and a ety of materials to design build- that express "something of the ryday but also the anonymous world of industrial products." They explain, "In a world so eager for representation, this architecture seems justly poised between reticence and invention." In their final chapter, the authors return to architecture's relationship to technology, but they fail to satisfactorily answer the question they posed: how design can benefit from technology while remaining "neither independent nor subjugated" to it Or did I miss something in the fog of words? *Andrea Oppenheimer Dean*



Architectures of Time, *Sanford Kwinter. Cambridge: MIT Press, 2002, 232 pages, $30 (cloth), $18 (paper).*

In *Architectures of Time*, Sanford Kwinter tells us in his preface that he had completed most of his thinking and writing about the relation of architecture and the dimension of time in the 1980s and early '90s. The manuscript was then lost in the mail, and Kwinter had to reconstruct it—at a point in his career when its importance to him was on the wane. Long stretches of the book are discourses on physics, time, relativity, and Kafka. In all of these, Kwinter is interested in relating Einstein's theory of relativity to notions of space and time, and how it is reflected in each.

Ultimately, Kwinter's goal is to show how Modern architecture reflected new concepts of space and time in ways similar to how they were reflected in science and art (particularly literature). Kwinter graciously suggests that readers interested primarily in design skip over the chapter on Kafka. Most engaging in this volume is the discussion of the work of the Italian Futurists—specifically Antonio Sant'Elia—and how they captured the essence of a new architecture, one tied to movement and the modern age. Kwinter presents an engaging analysis of Futurist projects, as represented in their sweeping perspectives.

But if you are looking for ideas that might easily be transferred to the design studio in this book, you're in for disappointment. Some nearly impenetrable writing only makes more frustrating how Kwinter's observations and ideas might be incorporated into everyday design. Perhaps it wasn't the writer's intent to make his theoretical speculations readily useful to architecture as it is practiced today. But that brings us to a question that many people ask about this discipline: What is "good" architectural theory? And perhaps even more important is to ask of a theoretical inquiry that only tenuously makes connections to the world of architecture: What good is it? *Michael J. Crosbie*

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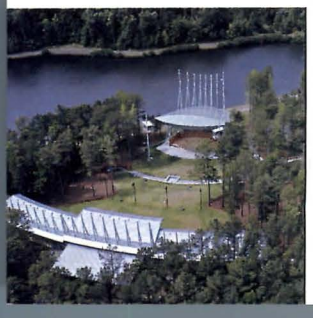
Snapshot

Ingrid Whitehead

Big drama in a little clearing in North Carolina

gine a night in June. You're lying on a blanket, staring up at the stars, or asionally standing by the stage nearby, as the strains of *Porgy and* s gently but powerfully fill the air. Hundreds of blankets form a patch- quilt on the green around you, where the entire town has come out to y live classical music and the company of fellow townspeople.



This vision inspired architect William Rawn, who created The Pavilion at Symphony Lake for the town of Cary, North Carolina—one of the summer homes for the North Carolina Symphony. Commissioned by then-mayor Koka Booth, the 34,000-square-foot group of buildings comprises a performance shell and a structure containing VIP dining, concession stands, rest rooms, and services. The $12 million project was conceived to give this suburban town a civic icon to encourage community interaction and pride.

Unlike traditional outdoor venues, The Pavilion at Symphony Lake has a VIP dining area (above) situated behind the open-seating area on the grass, giving everyone a great view of the stage (right).

Rawn had teamed with acoustician R. Lawrence Kirkegaard in 1994 to design the much-heralded Seiji Ozawa Hall at Tanglewood, in the Massachusetts Berkshires. Having heard about the success of that project, Mayor Booth asked Rawn to design the amphitheater on the shore of the man-made Symphony Lake, in Regency Park. Kirkegaard once again collaborated.

With site in mind, Rawn created latticelike structural steel poles, 80 feet tall, which mimic the tall pines in the park. The pavilion was placed at a 45-degree angle to the lake so that the audience always has a view of both stage and lake. A hanging glass roof shelters performers and bathes the stage in natural light during the day. The roof houses lighting equipment and contains computer-controlled flickering bulbs—like a basket of fireflies suspended above the performers.

"It's a decidedly contemporary structure," says Rawn, who admits he expected the town officials to request him to recreate a 19th-century-style design. "They had the guts to go for something modern. And everyone in Cary loves it." ■

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By James S. Russell, AIA

Only 18 months ago, the megabuck glitterati clinked glasses at the unveiling of the Rem Koolhaas–designed Guggenheim Las Vegas [RECORD, January 2002, page 101]. It had promised to be one of those moments that history measures as characteristic of its era, just as the emergence of the spire of the Chrysler Building, only months before the stock market crashed, signaled the dizzy peak of Jazz Age optimism. Conjured as a moneymaker, the Las Vegas outpost finally—inevitably, it so recently seemed—merged art, architecture, brand culture, and commerce. It celebrated the values of the "bourgeois bohemians" who, according to author David Brooks (in his *Bobos in Paradise*, Touchstone, 2000), "have one foot in the bohemian world of creativity and another foot in the bourgeois realm of ambition and worldly success."

The Guggenheim Las Vegas is shuttered (temporarily, say officials), as is its sister institution, the Hermitage Guggenheim. The entrepreneurial vision of executive director Thomas Krens, which made possible the architectural event of the decade, Frank Gehry's Guggenheim Bilbao, has ended. That era of endless possibility began deflating along with the dot-com bubble, and evaporated with the broader, corruption-hastened collapse of the American stock market—source of so much Bobo wealth and hubris.

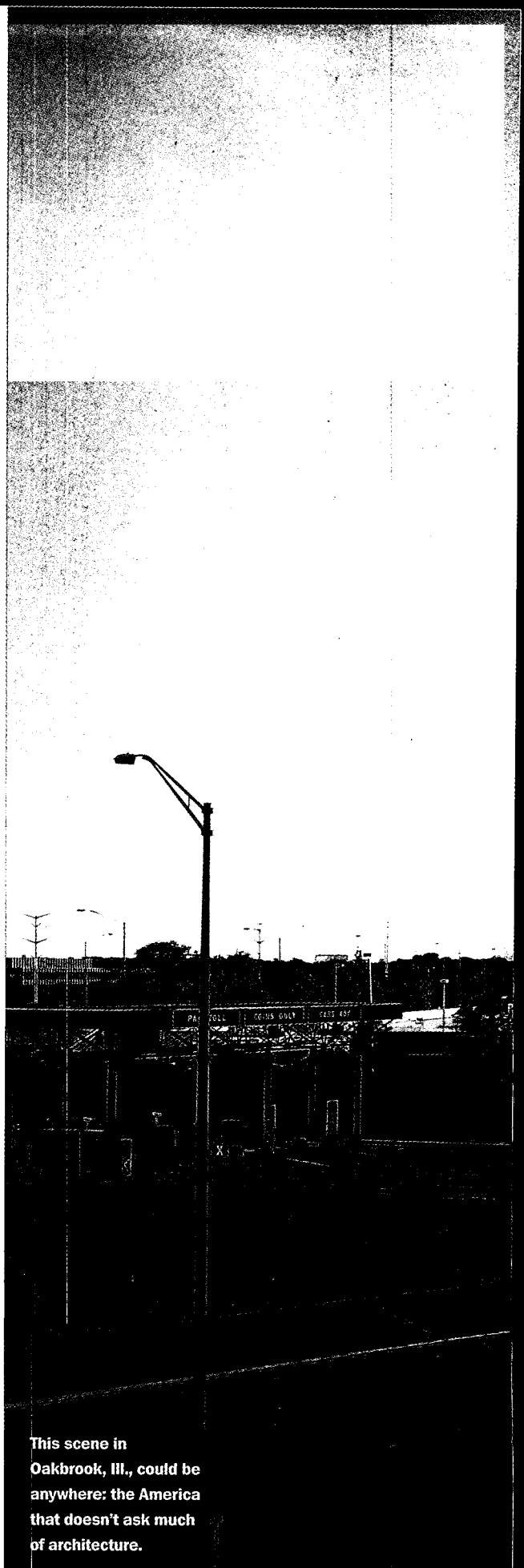
Then the terrorist attacks of September 11 shattered the nation's sense of its own inviolability. In that brutal spectacle, we found that we could not consider ourselves safe from large-scale terrorist acts, executed using the portable, inexpensive, and efficient technologies that were among the great industrial accomplishments of recent years. The terrorist attacks engaged the nation in a war of ideals, one that may have to be fought over an extended period using wartime's uncompromising measures.

In his book, Brooks argued that the Bobo elite had little use for politics and blurred what had once seemed the defining values of culture (Krens, for example, seeming to equate motorcycles with Mondrian). But a reassessment of national values is clearly under way, even if it is still only simmering. Can an anti-ideological nation that defines itself primarily by what it buys and projects no values beyond those embodied in commercial media fully engage a foe driven by moral and religious fervor?

Under such circumstances, enormously ambitious projects like the now-cancelled $650-million Guggenheim branch that would have stretched for a block or more along Manhattan's East River and loomed spectacularly over the East River Drive, appear to be very indulgent baubles (not to mention possible targets). The uncertainty of the times has stalled a number of other prominent projects, including the Magnes Museum in San Francisco (Daniel Libeskind) and the Whitney Museum expansion in New York (Rem Koolhaas/OMA). The Los Angeles County Museum of Art has shelved its massive OMA plan, announced only about a year ago.

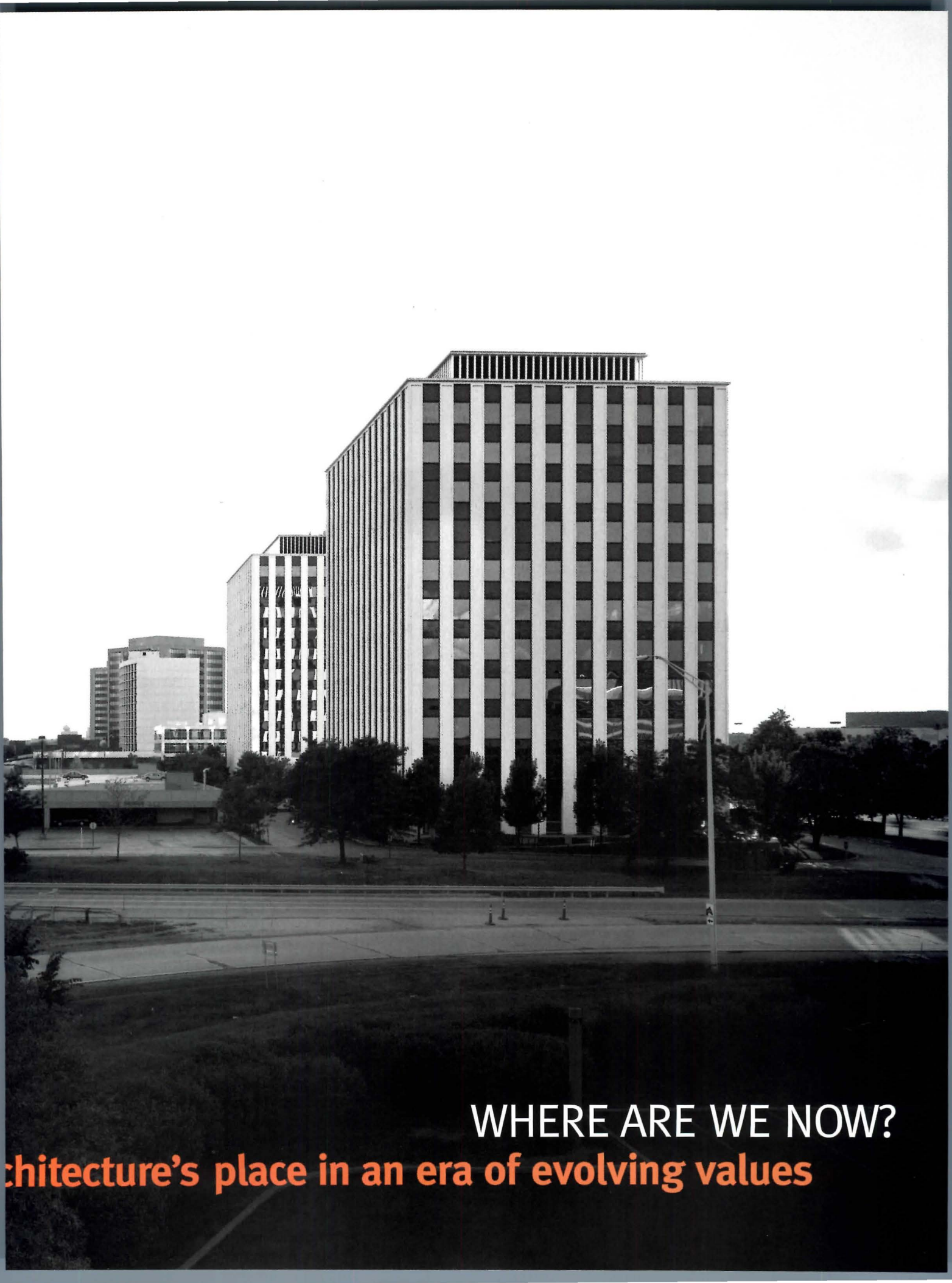
Big, splashy urban trophies are but a tiny fraction of American architectural output, but there is a sense that such projects represent the profession and the limits of its possibilities. If architecture lives by the champagne fund-raiser, does it die by it?

This question emerged in a commentary written in the *Los Angeles Times* by its architecture critic, Nicolai Ouroussoff, which seems to echo a gathering unease in the profession. "Today, architects working in America are confined to serving a relatively small and entrenched elite—the corporate kingpins and aging philanthropists who typically make up the boards of the country's major cultural institutions," he



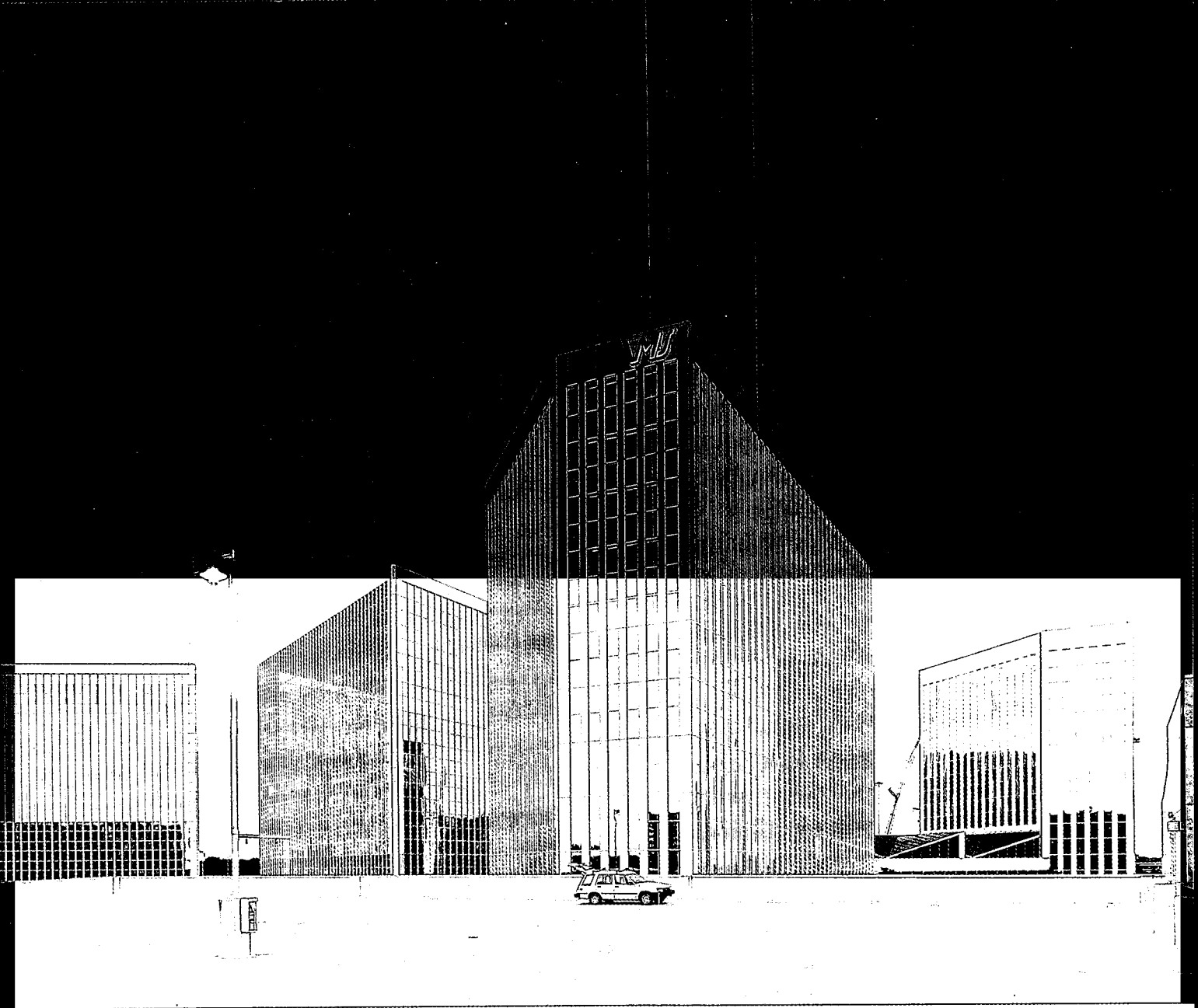
PHOTOGRAPHY: © BOB THALL, FROM *THE NEW AMERICAN VILLAGE* (JOHNS HOPKINS UNIVERSITY PRESS)

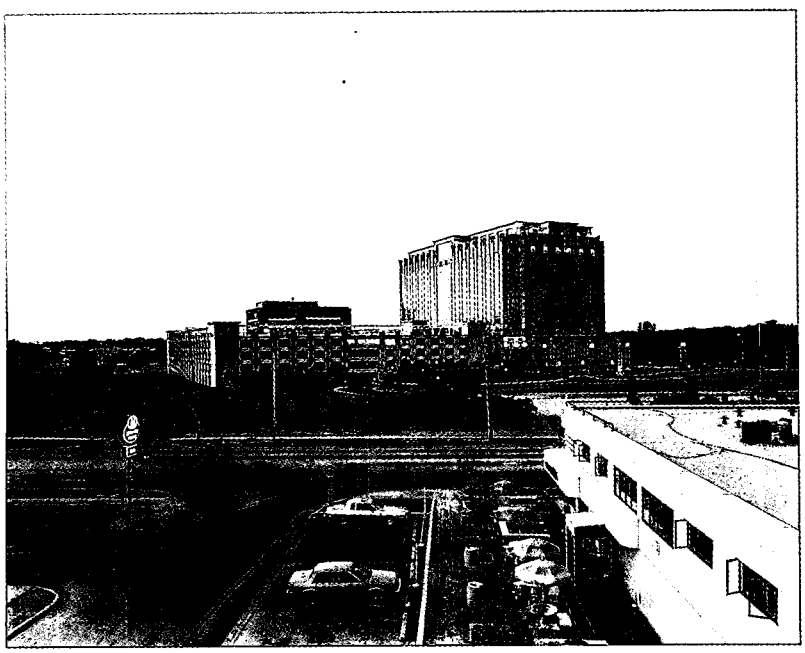
This scene in Oakbrook, Ill., could be anywhere: the America that doesn't ask much of architecture.



WHERE ARE WE NOW?

chitecture's place in an era of evolving values





Does the simplistic real estate "product" that accumulates across urban America truly express its identity, values, and aspirations? Near O'Hare International Airport, Chicago, 1991 (top); Schaumberg, Ill., 1995 (left and opposite).

ote in January. He worries that an architecture that serves as a "mere ything for the rich and their institutions" speaks little to the city's real eds, especially in its poorer neighborhoods.

The assertiveness of contemporary architectural expression ne under attack from another quarter last fall. In a panel, called nument and Memory, sponsored by Columbia University's partment of Art History and Archaeology, Sherman Nuland, a surgeon l authority on death and healing declared, "I actually find myself ended by the thought that there will be a piece of architecture on that t [Ground Zero], because, ultimately, architecture is about the archi-." Another panelist, Leon Wieseltier, of *The New Republic*, added, chitects in the aftermath of September 11 have been altogether too d." Criticizing proposals for the site assembled by *New York Times* hitecture critic Herbert Muschamp, he said, "There is something a litgrotesque in the interpretation of Ground Zero as a lucky break for art, he opportunity for advancement of a particular aesthetic cause."

Wieseltier is not the first to argue that no work of design could r match the terror attack's magnitude of tragedy. "The planes that ught down the World Trade Center exposed, along with other frailties, frailty of matter as a medium for the perpetuation of human gress," he added. Nor is Nuland alone in his naive assertion that a gar- would somehow escape the visible hand of the designer. But there is nething shocking in the idea that architecture lacks legitimacy as a ans of cultural expression.

In flush economic times, it mattered less that people thought h things. Just as pop-styled, three-tenor spectacles have been thought to new audiences to "serious" music, there has certainly been a hope that dramatic, sensuous, and even beautiful architectural form-making that become de rigueur for ambitious institutions in America might build oader public constituency for design. Anecdotally, it looks like more mmunities recognize the value of structures that offer amenity to their rs and enhance their surroundings, ecially in library-building programs, oric preservation, and federal courtses. But with economic uncertainty nes pressure to dispense with publicited grace notes.

Americans have tended to succb to such pressure. Even after an extended era of great wealth, we shop in some kind of American Rue de Rivoli, but in concrete hangers, ch, if designed to recognize anything but the cheapness of their conction, offer a faux pediment carved out of Styrofoam and skimmed in thetic stucco. America obsesses about its children and their education increasingly churns out schools using the same catalog plans in the rts of the West as in the mangroves of the Gulf Coast. And they little r from nearby outlet malls.

America is not a poor nation even now, but it builds poor. A on that works in warehouses, drives on massive slabs of asphalt at best bellished with a few trees to the indistinguishable bank, city hall, and pital, is not asking architecture to say much.

architecture thrive in privatized culture?

much of the capitalist world, architecture remains largely a public eavor, underwritten by the state. In America, architects constantly t their public consciences and artistic aspirations to the ever-changing rities of private wealth, which has a more powerful role in creating an form here than in virtually any other developed nation. Sometimes alignment of private capital and artistic intuition makes possible some- thrilling, like the tower-dotted skylines that rose to dizzying heights

in the 1920s. Skyscrapers, to be sure, have been the best advertisement for the commercial city ever since. In the past 20 years, however, private development has pretty much lost interest in using architecture to make a handsome skyline or advertise a company's place in the community.

In the 1980s, the rise of corporate raiders and "maximizing shareholder value" definitively ended an era in which corporations (motivated by genuine community commitment or paternalistic noblesse oblige—take your pick) considered buildings something more than warehouses for workers. Facilities since then have been regarded as profit-making assets in their own right, and any commitment to express a

Is architecture a plaything of a value-free elite? If it isn't, why can't it more deeply express ideals in the day-to-day landscape?

connection to a local community, to present corporate values in steel and glass, or to reflect by design the needs of business process have been all but banished. Business leaders have permitted themselves to be driven by a speculative norm of real estate (demanding only the generic and the identical; obsessed with the "exit strategy") because they could not find a way to value architectural nicety or invention.

The colossal commercial overbuilding of the 1980s, which created an inventory excess that hung over the industry for 10 years, might have taught everyone a lesson, but instead it led to a nationalized and concentrated development-finance process that is even more rigid and values the contributions of architects less than ever. It's nearly impossible to build innovatively, to recognize unique circumstances, or to choose technologies (to save energy, for example) that take longer than a few years to pay back. This is why the tremendous technological advancement one sees in commercial buildings outside the U.S. (especially in workplace design that is both low-energy and high amenity) cannot find a market here. And it is why the architect's role has been relegated to curtain-wall specifier and lobby decorator.

The nation has tolerated this temporary, disposable urbanism simply by moving farther out into the semirural fringes, vastly expanding the edges of metropolitan regions. The search for a place that is, as sub-

urban historian Robert Fishman has written, "freed from the corruption of the city, restored to harmony with nature, endowed with wealth and independence, yet protected by a close-knit, stable community" seems today to be unending. As a nation, we are still largely unwilling to consider that the very mobility that allows us to build our dream at the bucolic urban edge embodies the means by which the oak woods next door becomes Oak Woods Estates.

Is it a style thing?

Part of what makes our era confusing is that it offers an enormous aesthetic diversity. You can see a debt to 20th-century Modernism in much of what is built today, but most is not tethered to a single theoretical or social movement. Architecture does not deserve a central place in culture, many observers argue, because people don't like what architects design. "Architecture should be understandable to everyone," wrote Francis Morrone recently in *The New Criterion*, in a story critical of today's aesthetic innovation. "The urban architect simply does not possess the right to impose his aesthetic vision on the public." This echoes the plaints of many political conservatives, who increasingly see today's sculpturally spectacular and assertive designs as emanating from a leftist political agenda.

> The vaguely Modernistic boxy stores and slablike apartments that dominate th landscape reflect a cheapness of construction.

Aside from how authoritarian Morrone sounds, those who, like him, argue for a vision of architectural civility through historic style seem blind to the conservative vision of unfettered capitalism and individualism which is precisely the agent of the chaos they abhor in urban cityscapes. If today's buildings seem unneighborly, or inconsistent, or ignorant of history, that reflects America and its priorities today, an America made largely to conservative individualistic and antigovernment values.

The boxy stores and slablike apartments that dominate the landscape may look vaguely Modernistic, but they reflect not a stylistic orthodoxy but cheapness of construction. It's the euphemistic "cost effectiveness" applauded by conservatives and enforced by Wall Street analysts, who do not regard public spiritedness in architecture as prudently contributing to the bottom line.

Aesthetic individualism has been the source of dynamism within the American architectural scene, the reason it is intellectually healt in spite of the inability of so many talented people to build beyond t lowest-common-denominator commercial norm. Impressionist paint made compelling art of the dark hulk of the locomotive thunderi through the flower-bedecked countryside. The fractured topograp buildings we see these days reflect an awe of the empty freewayscapes today's emblematic urban form. Frank Gehry infuriated contextualists the Pacific Northwest by making a sensuous collision of electric-guit colored forms for a rock 'n' roll museum [RECORD, August 2000, page 12 He didn't build a "regionalist" pavilion of fir beams; the museum's "c text" was a sea of surface parking.

In time we'll know whether today's explorations into the iron contradictions, and bizarre juxtapositions innate to culture now h made an art of lasting value. But attempting to refract the world nation inhabits is a serious endeavor that deserves respect, even if it d not always work. The dynamism and possibility of America is w appeals to Europeans like Rem Koolhaas, who come out of cultures m more comfortable with architecture and much more willing to spe public and private money on it.

The deal architects and society make

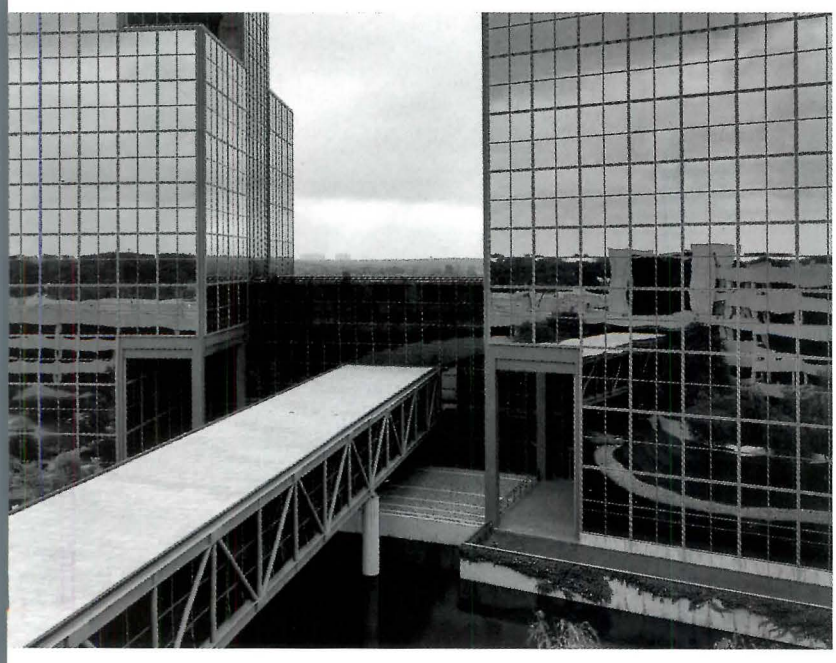
Much of today's most adventurous work does not meet Morrone's cr rion of "understandable to everyone," and he is certainly not alone finding much contemporary work aesthetically objectionable. But it Daniel Libeskind, presumably not a favorite of aesthetic conservati who made a stirring defense of architecture's place in public culture at Columbia panel last fall.

He argued for architecture as an expression of even such er tional abstractions as memory and loss. "Buildings are transformat of inert materials—stone, concrete, glass—into something living. in that sense, they really speak a language, both communicative and silent," Libeskind said. "Space," he added "is actually something lik person, a physiognomy, a soul, a spiritual entity given to a particu locale. And that's the genius loci that we feel when we are in a pla The material urban world is not only inescapable, he argued, it sha our values and culture as much as any form of art, literature, or deb does. "We're not at home in language. We're at home at home."

The architectural community, whatever its aesthetic procl ties, largely rallies around the idea that cities should be civil places that civility should be expressed by what people build. But what pe build cannot be separated from their values.

European cities, even new ones, tend to look more orderly their streets more architecturally collegial than do American ci History is recognized and the nature of the city is, as Daniel Libeskind noted, "of concern to everyone."

These values, it must be added, are bolstered by the commitm of a great deal of public money for the creatio architecture and the nurturing of a vital archi tural culture. The enormous expressive bravur witness in much international work does not o ate in an aesthetic vacuum but is tethered social, technological, or ecological ideal. Th



American cities are full of bleak, boxy office towers, such as this one in Schaumberg, Ill.

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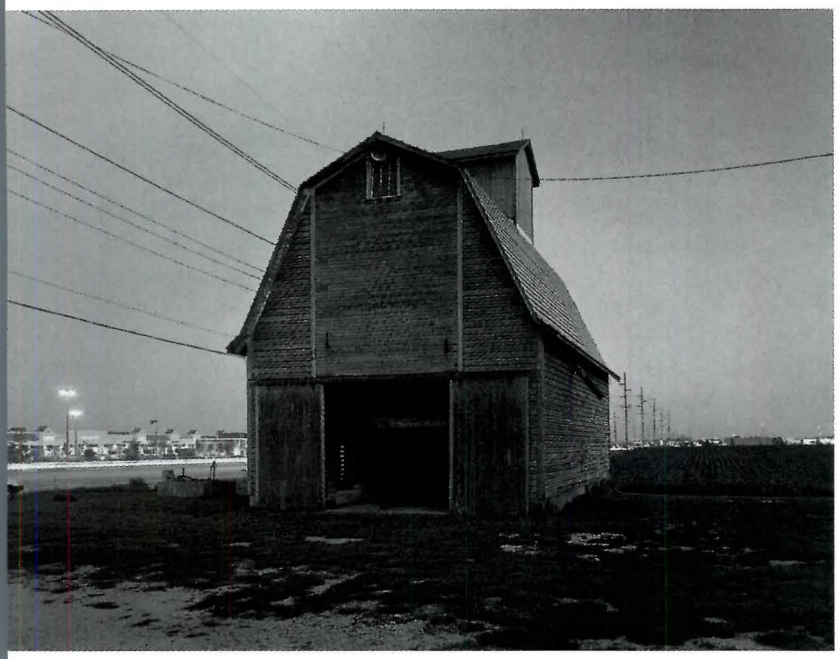


Americans unendingly search for authenticity—but don't build it. Route 59, Naperville, Ill., 1992 (left).

what has helped build and retain a public consensus for public buildings.

Consequently, society authorizes architects to build much more than museums that enhance board-member egos or glitzy restaurants for celebrity chefs. They build housing, day-care centers, social centers, schools. They design roads and bridges.

Dare architecture represent ideals?

Since De Toqueville, America has been described as a nation of joiners. Community feeling and participation have eroded in recent years, according to Robert D. Putnam, whose book *Bowling Alone* (Touchstone, 2000) asserted that the spatially and socially segregated urban places we make contribute to a loss of community engagement. Whether in the desolate neighborhoods of abandoned industrial centers or in the gated communities of the disconnected pods of sidewalkless suburbia, there's not much about the built environment today that expresses a sense of connectedness or common values.

If we don't have a sense of community, we don't have any reason to build to any but our own individual values or tastes. If we fail to support architecture that speaks to common values, it is not surprising that we use our best architects only when a certain level of spectacle is called for or as a toy for the wealthy. Nor should it be surprising that these projects alone fail to bring vitality to urban places or fundamentally transform them. (For all the attention the Bilbao Guggenheim has garnered, it did not on its own transform the city. A program of public investment in airports, a subway, and other cultural facilities reinforced the job the museum did of putting the city on the map.)

Architects have long defined themselves as people who will make lives better. Is this necessary to retain legitimacy as a profession? Or does such a definition marginalize practitioners in a culture that prizes construction that costs little and that is supposed to deliver the maximum dollar turnover per square foot?

Pragmatically, AIA's agenda in Washington succeeds, pitted as it often is against much larger, better funded special interests, in large part because people do see architects as the kind of people who want to put the community's larger welfare first. That is a very precious reputation that we will pay dearly to squander.

Leon Wieseltier was not the o observer to see architects as "too avid" in the sp with which they began to organize ad hoc rebu ing coalitions, like New York New Visions, after September 11 disaster. But the effort proved have enormous influence over the rebuilding, and the volunteers h reaped enormous public appreciation. The consortium was there to fi planning void that yawned because local officials were so unused to plann and could not put together their own efforts for months afterward.

Such important efforts notwithstanding, the rewards for act to advance the ideals of a larger society are, for architects, slim. There those who say our most adventurous designers are not socially responsi but there is not now a substantial milieu for architects to be soci responsible in. As a nation, in our roles as public and private clients, don't make it easy to build ecologically. We expect architects to acc below-cost fees for doing bureaucratically ensnared "affordable" housi To the extent that they are built at all, senior centers, hospitals, clinics, day-care centers hew to the same painted-drywall, dropped-ceiling, fluorescent-light norm as everything else. Architects are shut out of bri design (as well as most other forms of infrastructure building) for fear they will make public works cost more.

One can argue that this is the profession's own fault, that it d not work hard enough to demonstrate the very good things it can do, such criticisms no doubt have some basis. At some point, however, it's p ple—individually, in government, in business—who must commi societal values architecture is capable of expressing.

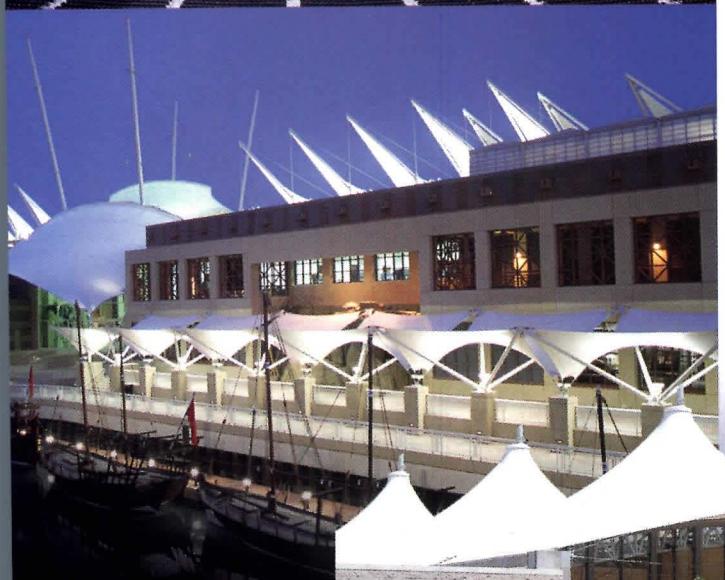
Government has been turned into such an evil word that di investment in transportation, in schools and colleges, and in other kind public facilities is suspect today, whatever its value to the economy as as to our health as a society. (Ask the average business group wha greatest priorities are and you usually hear "improve the quality of workforce"—that is, invest in education—and "improve transportatio another direct government investment.) Instead, we manipulate the code, hoping to spur greater consumer purchases or to get businesse buy equipment they would otherwise not order.

Our fear of making investments in a more workable amenable public realm run deeper than the political sensibilities of moment. We think it's too hard to find political consensus. We're af

As the nation reconsiders its values, should the places we build express what w share rather than aggrandize who we are?

we'll spend too much—be seen as public spendthrifts. We fear gov ment making mistakes. And if we try to make communities in new or innovate in whatever way, we will make mistakes.

Perhaps this is the moment to be gutsier; to put our money our best thinking (and some of our cash) into schools, transportat housing for those who need it, public places—places that exemplify ability to work together and help each other; places that express wha share rather than aggrandizing who we are. We can propose architec that's not just about "adding the aesthetics," but about using buil fabric to meet the ample real needs out there. If America wants to st for something—not just in the world, but within their own comm ties—and wants to pass those values on, architecture remains the permanent barometer of a civic culture. ■



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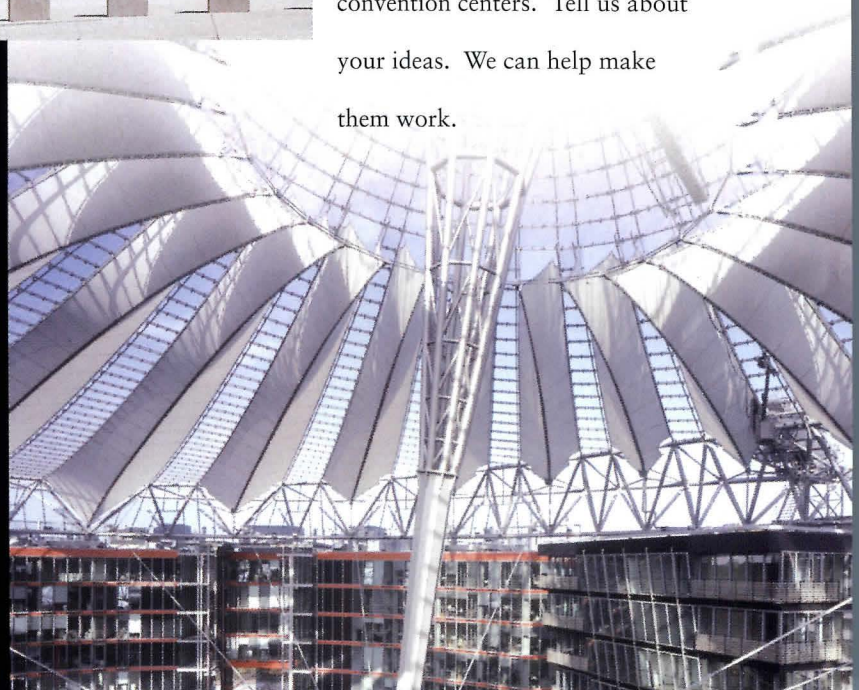

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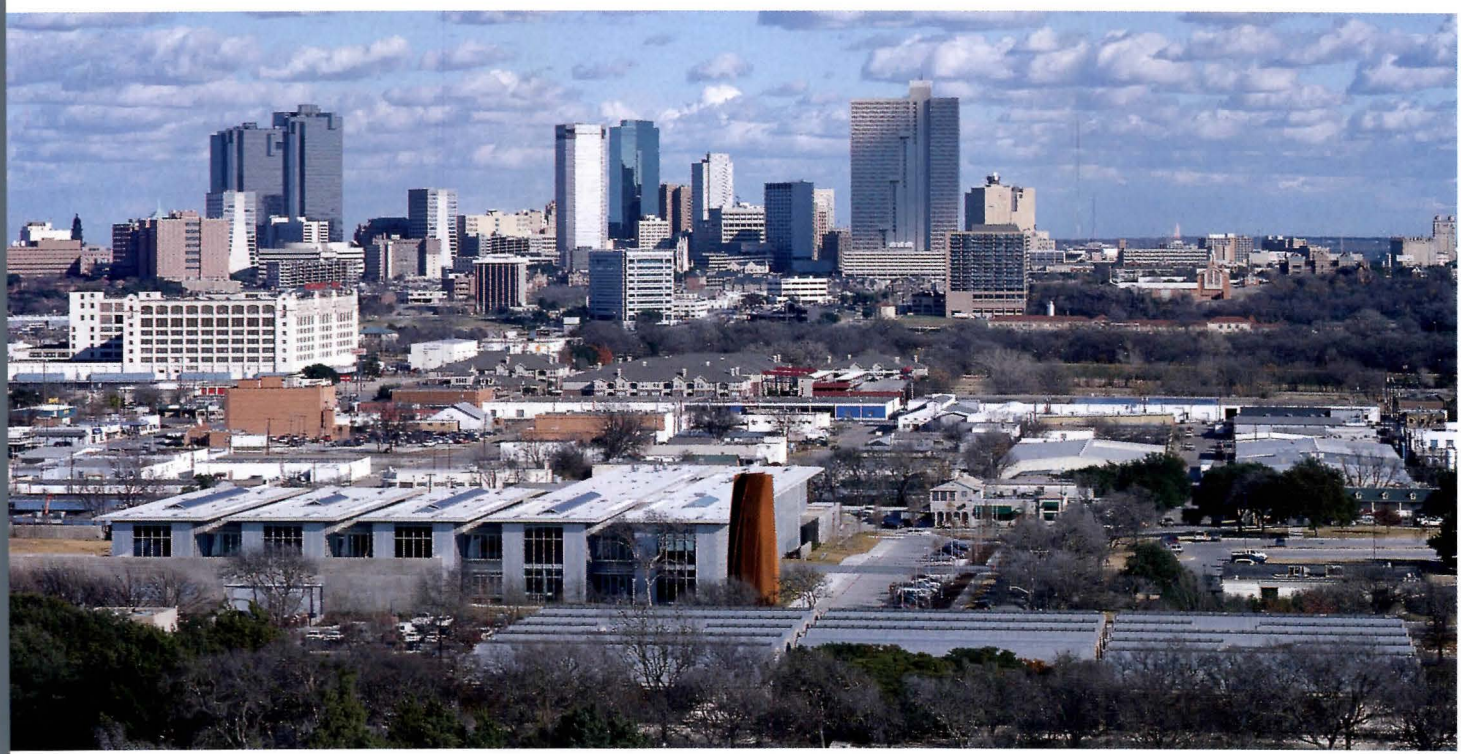
The 153,000-square-foot Forth Worth Modern is the larges museum of postwar art in the U.S. after New York's Museum Modern Art. The buil ing sits on an 11-acr site (opposite) at the edge of town.

Tadao **Ando** brings his concrete-and-glass poetry to the Texas plains at his new

MODERN ART MUSEUM OF FORT WORTH



David Dillon

Tadao Ando once described his basic architectural intention as "creating spiritual worlds, with spaces so strong and deep that [they] will penetrate to the people who contact them." The luminous chapels in Japan that launched his career (the Church he Light, 1989, and the Water Temple, 1991) fulfilled that ambition, as s the new Modern Art Museum of Fort Worth. Monumental without ng overpowering, the building uses contemporary materials and details reate serene spaces where visitors can commune with art, nature, and nselves. In an era of billowing titanium walls and fluttering brise-ils, the Modern speaks in a calm, assured voice about the importance ilence, solitude, and craftsmanship.

"I think of this museum as the heart and center of the commu-," Ando said at the dedication in December 2002, "a place where ple come together, like a church." Yet spirituality is not the first thing comes to mind as you approach the Modern. The main facade, along nell Street, is a collage of aluminum and glass, coolly corporate and newhat generic, like a brochure photo for a Fortune 500 company. his all?" you wonder.

Fortunately not. The minute you enter the lobby, space explodes ard and outward toward a sculpture garden with a reflecting pool that bounces light off walls and into corners. For a moment, the building dematerializes and all you see is earth, water, and sky—nature and architecture in rare harmonious balance. This play between inside and outside continues through the building, from the café to a transition space, modeled on the traditional Japanese *engawa*, that edges the first-floor galleries to a narrow glassy staircase on the north side, which appears like a surprise gift.

Then the details coalesce and you see that the Modern is really a building within a building, an aluminum-and-glass shell wrapping a dense concrete core. Although the basic plan—five parallel pavilions framing a reflecting pool—suggests repetition and uniformity, the structure has nei-

tributing editor David Dillon is the architecture critic of The Dallas ning News.

Project: *Modern Art Museum of Fort Worth, Fort Worth, Texas*
Design architect: *Tadao Ando Architect & Associates—Tadao Ando, FAIA, principal; Masataka Yano, Kulapat Yantrasast*
Architect of record: *Kendall/Heaton Associates—William Kendall, FAIA, managing principal; Laurence Burns, AIA, executive principal; Rollie Childers, AIA, principal in charge; Jory Alexander, AIA, interior designer; Nobuhiko Shoga, team coordinator*
Consulting architect: *Richard Fitzgerald & Associates*
Engineers: *Thornton-Tomasetti (structural); CHP and Associates (m/e/p); Huitt-Zollars (civil)*
Consultants: *SWA Group (landscape); George Sexton (lighting); Cerami and Associates (acoustical); Peter M. Muller (curtain wall)*
General contractor: *Linbeck Construction*

As with many other Ando buildings, the museum's entry fac (left and above) is understated and off few clues to what lie inside. Richard Serr 67-foot-tall, 230-ton Cor-ten steel sculpt *Vortex* (left in photo above), stands at th corner of the buildir and provides a verti counterpoint to the horizontal thrust of the roof.

. It is full of wonderment created by Ando's play of one element against ther: solid and void, heavy and light, open and closed, East and West.

Ando got the commission in a 1997 design competition, beating Arata Isozaki, Ricardo Legorreta, and three other architects for the $65 lion job. The Modern had long been the poor museum in a rich seum town and desperately wanted a building that would put it on the and also stand up to Louis Kahn's sublime Kimbell Art Museum across street. Ando gave them both.

His original plan called for a total of 230,000 square feet, 75,000 of r galleries. That was more than the museum needed or could afford, so gradually cut it back to 153,000 square feet, a third of it for art. The six

NDO IS A BUILDER NOT A SCULPTOR. HAT HAPPENS OUTSIDE IS NEVER AS IPORTANT AS WHAT HAPPENS INSIDE.

angular pavilions, an unambiguous reference to the Kimbell's six vaults, e reduced to five, and some of the support space was eliminated. Even n, the new building is four times the size of the old one, which is being verted to a community arts center.

Despite the editing, the essence of Ando's original design ains intact. Unlike Frank Gehry or Santiago Calatrava, Ando is a builder ner than a sculptor. What happens outside is never as important to him as what happens inside, which may explain why the Modern has four walls but only one real facade, the others being concealed by loading docks, parking lots, and landscaped berms.

Although there is no right way to walk through the building, most visitors turn left, past the information desk and a remarkably discreet museum shop, and follow a curving concrete wall into the first gallery. This ellipse—a calculated counterpoint to the linearity of the rest of the structure—forms a kind of side chapel devoted to a single work, Anselm Kiefer's sculpture *Book with Wings*. A large Kiefer painting dominates an end wall, a small Francis Bacon self-portrait off to one side. That's it. Out of 2,750 works in the museum's permanent collection, curator Michael Auping chose to exhibit only 154, as if the only proper response to a windfall of space were to waste some of it. In his shrewd installation, less becomes more, subtraction more revealing than addition.

The main exhibition galleries are large white rectangles suited to the scale of a Robert Motherwell or a Jackson Pollock. Yet, as elsewhere, what seems familiar turns out to be otherwise. Some galleries are neatly self-contained, while others burst open with views of the garden and reflecting pool or the downtown skyline. One minute you are looking down from the second floor at a Morris Louis or Richard Diebenkorn, the next you are glancing up a staircase at a self-portrait of a fright-wigged Andy Warhol. One of the most remarkable spaces is a two-story concrete gallery containing Martin Puryear's *Ladder for Booker T. Washington*. Whether viewed from

E MODERN BEEFS UP A CULTURAL DISTRICT AT'S STILL A WORK IN PROGRESS

Worth's Cultural District is quely American, with calf ropers Cézanne connoisseurs occupy the same block, sometimes same building. Within its 950 es are three exceptional art seums designed by a triumvi- of Pritzker Prize and AIA Gold dal winners: the Amon Carter ened in 1961 and designed Philip Johnson), the Kimbell ened in 1972 and designed Louis Kahn), and now the new dern, the latter two directly oss the street from one another. a theater, coliseum, botanic den, science museum, and a ygirl Hall of Fame and eques- n center that draws a million tors each year, and you have a arkable cultural bouillabaisse.

From a planning perspective, vever, the District is still an nipelago of discrete attractions tentative connections to another and to the surround- neighborhood. Parking lots ramshackle buildings line its approaches; there aren't enough signs, sidewalks, and other pedestrian amenities. Although major exhibitions attract overflow crowds, visitors don't hang around afterward because of the dearth of shops, restaurants, and gathering places.

While its new building has propelled the Modern into the top tier of contemporary art museums, it has also highlighted the need for more balanced development within and around the District—more boulevards, plazas, and other connective tissue, along with better links to adjacent neighborhoods.

An urban village of shops and apartments has been proposed for the District's eastern edge, and there's talk of a hotel and a light-rail link to the stockyards and Fort Worth's bustling downtown. If one or two of these projects pans out, the Cultural District could finally become the coherent environment that its name implies. *D.D.*

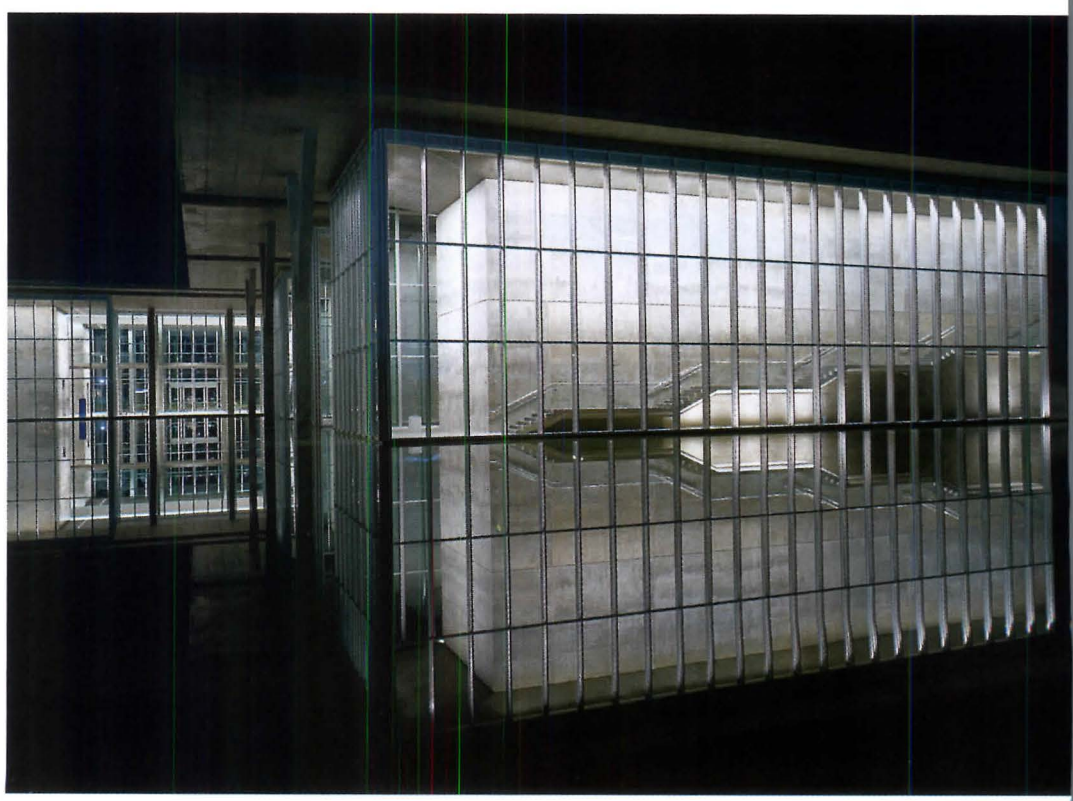
The long pavilions of the Modern (right in photo above) pay homage to the famous vaults of Kahn's Kimbell (left in photo).

SITE PLAN

In the evening, the museum's glass pavilions shine like Japanese lanterns set on a 1.5-acre pond.

Ando was asked by the client to provide spaces and vistas that serve as breaks from viewing art.

Ando designed the pavilions as long glass boxes with concrete cores (above). A long stair overlooking the pond helps animate the northernmost pavilion (right).



ndo turns concrete and ructural elements into works of art

ao Ando is the Leonardo of hitectural concrete, and in the dern Art Museum of Fort Worth produced a masterpiece. Every l in the building was scraped by nd until it was smooth as silk. ners are sharp enough to cut per, and switch plates and smoke rms have surgically precise nch reveals.

"He never quit designing," alls Paul Sipes, project man- r for Linbeck Construction rporation "He was always striving perfection. The fact that nobody ever achieve it didn't stop him."

The toughest job was casting dramatic Y columns that sup- t the museum's cantilevered fs. Ando wanted them poured in ce as a single piece, but the con- ctor and structural engineer ncluded that a vibrator working at h a steep angle would destroy expensive wood forms. So they cided to cast the arms and stem parately in Weesa board forms, n place the diagonal pieces in a cial steel cradle, connected by a ar, to form a V. The entire unit s then hoisted into place atop the m, the various connecting rods d bolts concealed by a special eve that makes the completed Y k like one piece.

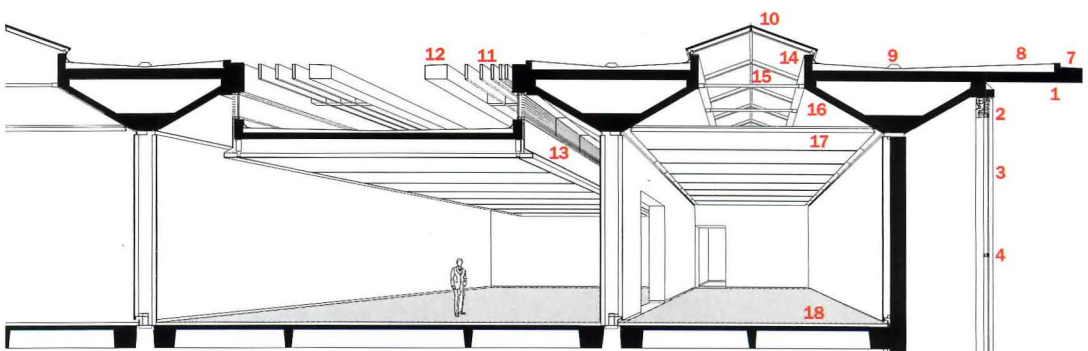
Ando wrapped the individual vilions in 12-by-5-foot panels of ss, each one three layers thick insulation and ultraviolet protec- n. (An early conceptual design led for nearly mullionless panels asuring 36 feet high and 18 feet e, but nobody could manufacture m.) The panels are hung on slen- steel columns painted the same or as the mullions so that they appear. At night, the pavilions w like gigantic Japanese lanterns.

Daylight is the soul of Ando's sign. To introduce it into the gal- es without damaging the art, he d consultant George Sexton veloped a sophisticated system of filters, louvers, and skylights. The vaulted ceiling above the grand staircase, for example, consists of a layer of stretched translucent fabric with a filter above to distribute light evenly around the vault. In the exhibition galleries, they installed a series of fixed louvers, which direct light onto the curved concrete haunches that support the roof and down into the galleries.

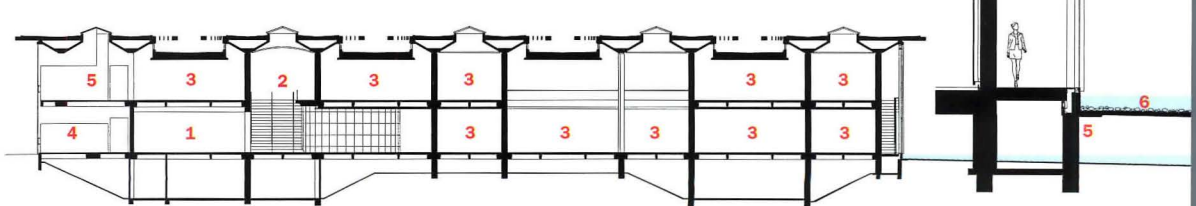
For Ando, the Kimbell is a benchmark of Modernist craftsmanship. One of his goals for his building, he said, was to "achieve the same level of construction" as Kahn did. He succeeded. *D.D.*

A system of filters, louvers, and skylights brings daylight into the galleries (drawings below), built of concrete and glass (right and above).

1. *Concrete*
2. *Aluminum louver panel*
3. *Insulated glass*
4. *Aluminum mullion*
5. *Precast concrete*
6. *Gravel*
7. *Stainless flashing*
8. *Concrete roof*
9. *Roof drain*
10. *Skylight*
11. *Aluminum louvers*
12. *GFRC tube*
13. *Clerestory window*
14. *Aluminum mullion*
15. *Fluorescent lamps*
16. *Unfinished concrete*
17. *Translucent fabric*
18. *White oak planks*

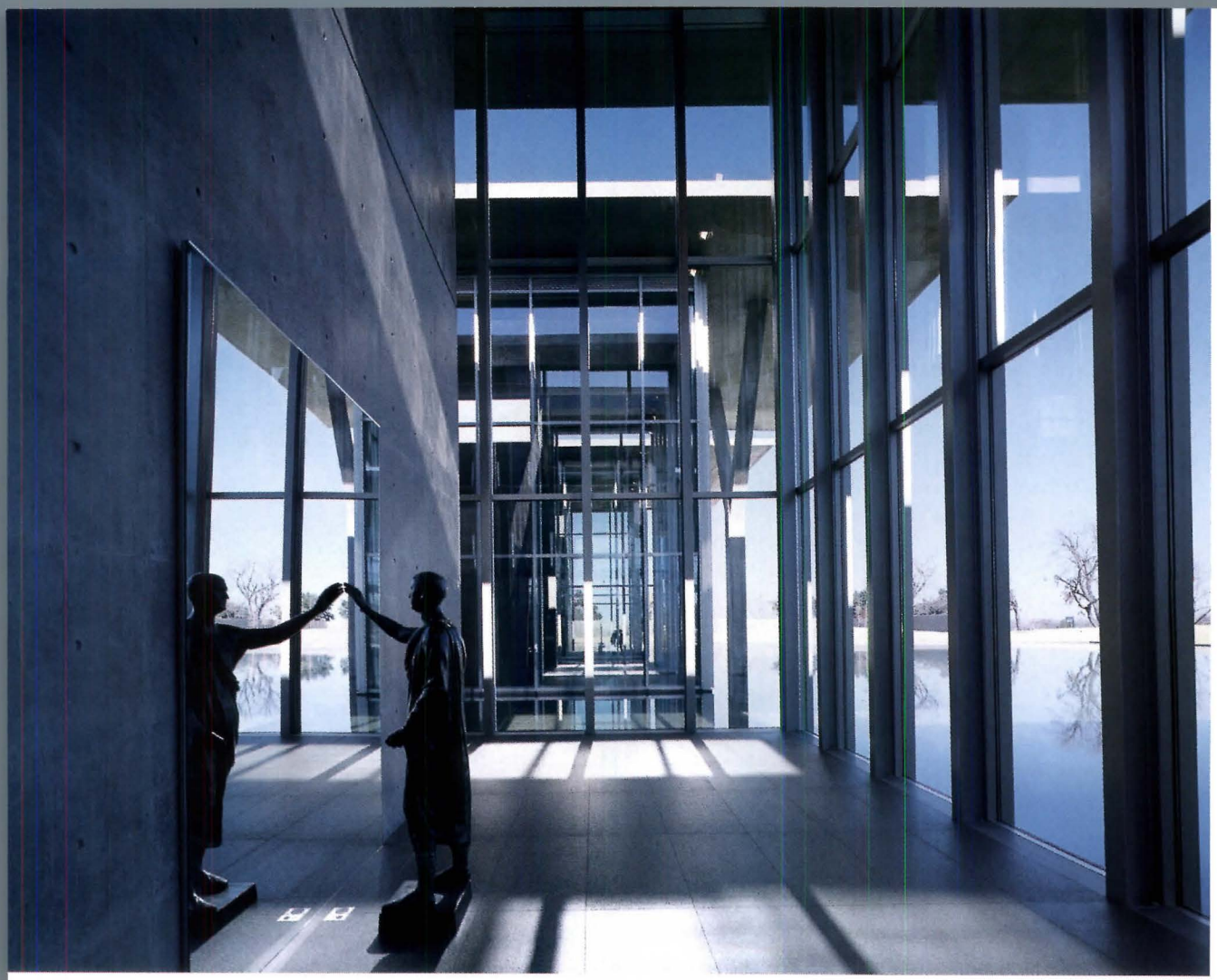


GALLERY PERSPECTIVE

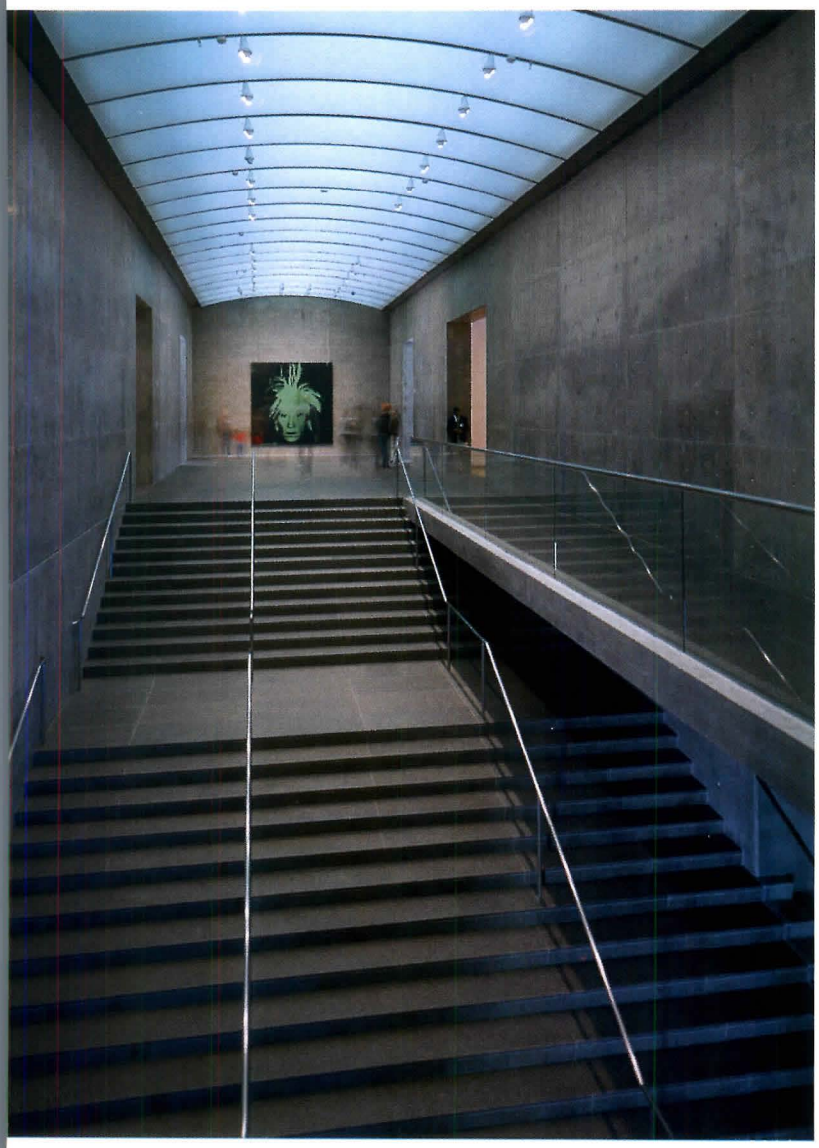


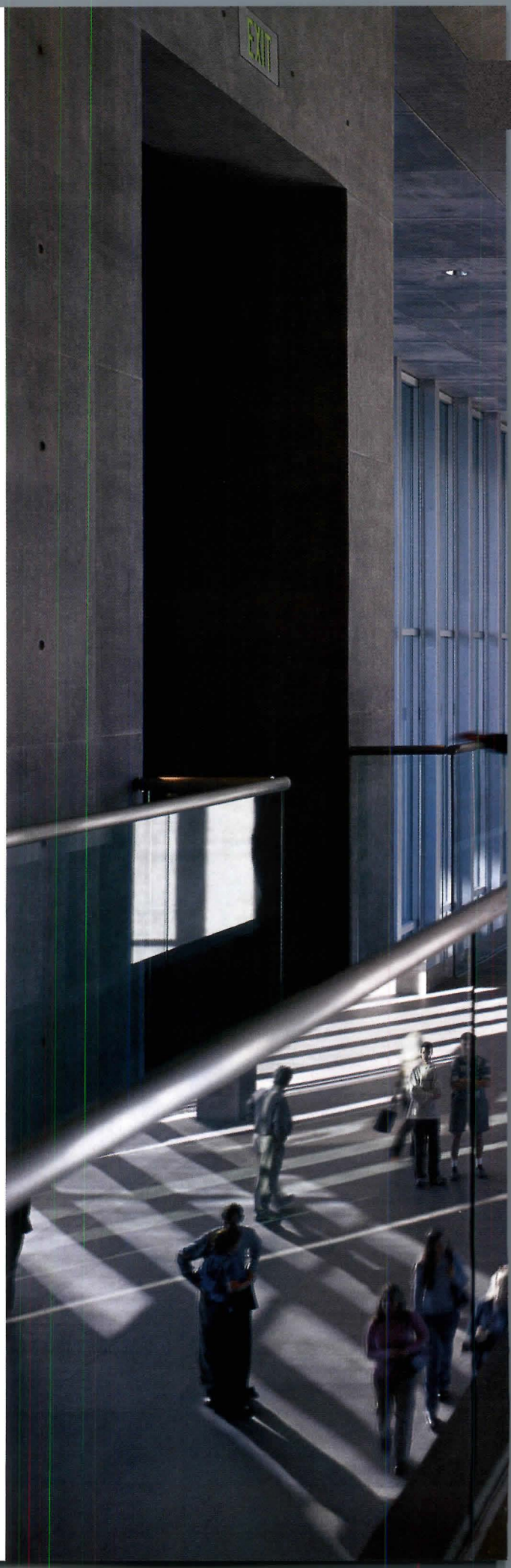
SECTION THROUGH GALLERIES

1. *Lobby*
2. *Grand stair*
3. *Gallery*
4. *Office*
5. *Classroom*



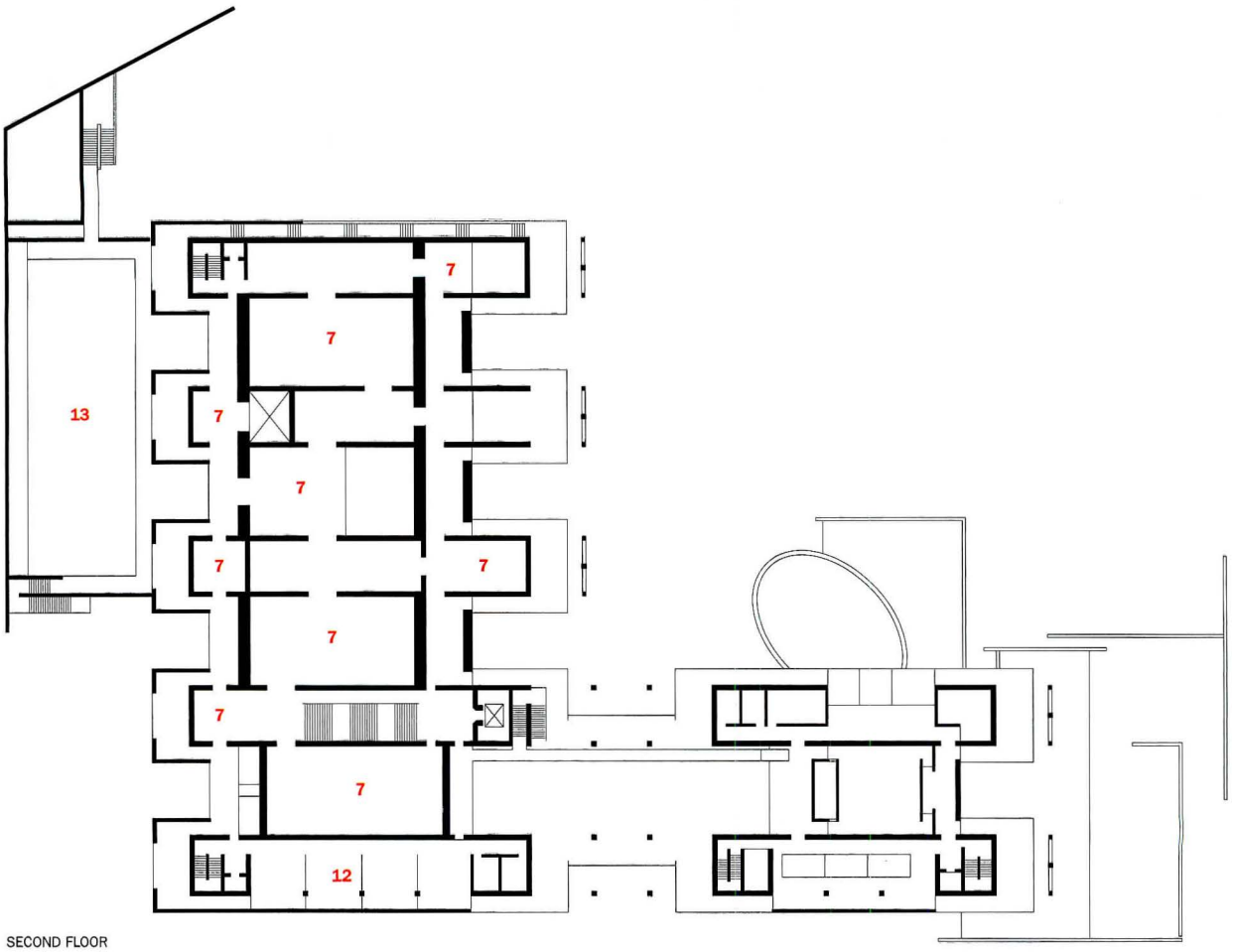
While some new museums have been criticized for not bei sympathetic to art, Ando created remarkable spaces in the gallery pavilions (above, left, and opposite) that are kind to art as well as visitor



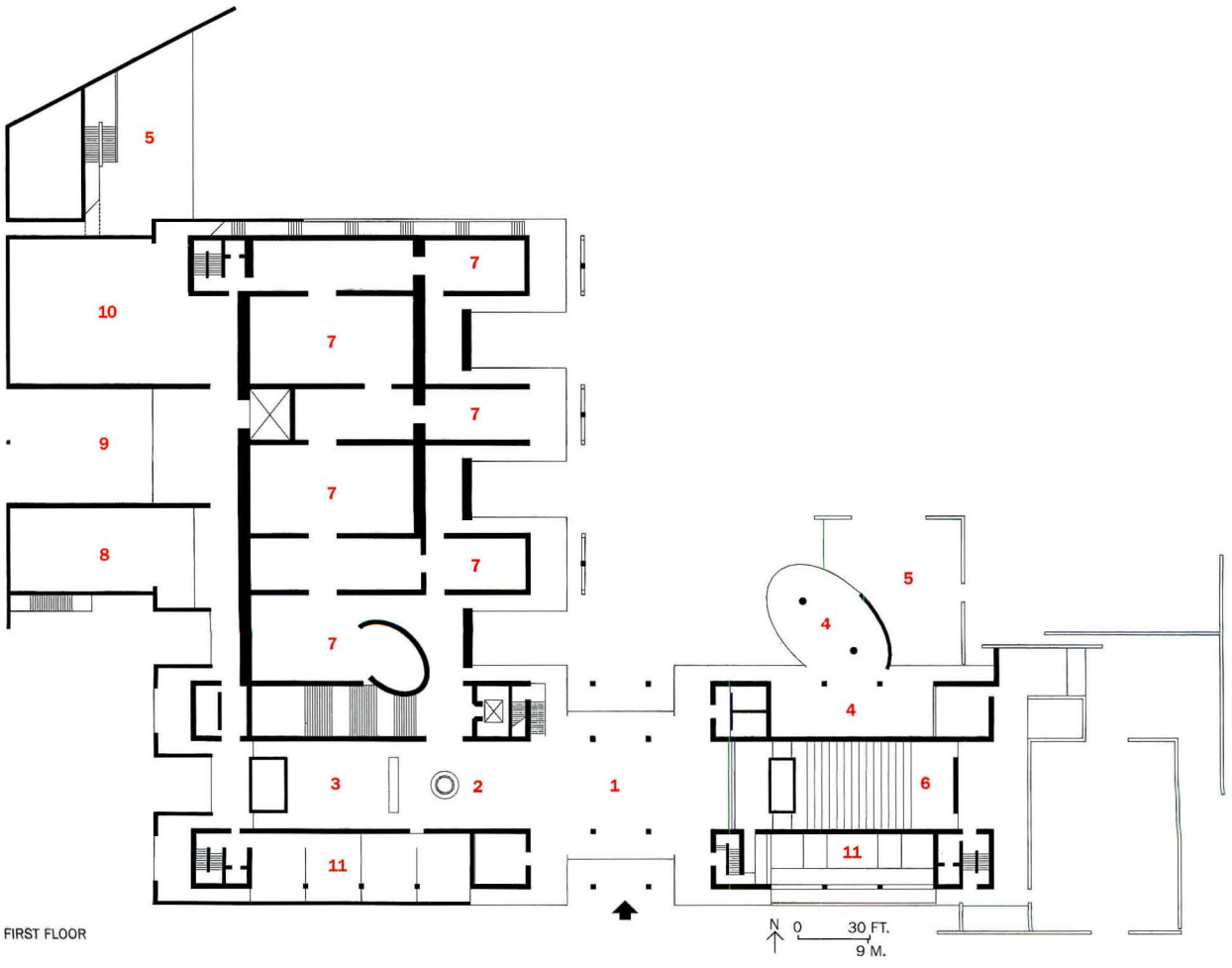

EXIT

The entry lobby (this spread and opposite, top) and grand stair (opposite, bottom) provide opportunities for people watching. Since opening in December, the museum has been a hit, drawing more people in a two-day period after Christmas than it had in any month the year before.

The new, $65 millio
building, four times
size of the museum
old building, has
53,000 square feet
gallery space. A sta
case (opposite) offe
views to the water
also the chance to
touch and apprecia
the building's rema
able concrete work



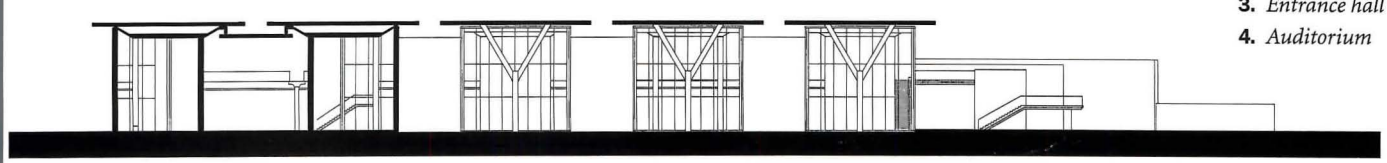
SECOND FLOOR



FIRST FLOOR

1. *Entrance hall*
2. *Information*
3. *Museum shop*
4. *Café/restaurant*
5. *Terrace*
6. *Auditorium*
7. *Gallery*
8. *Art workshop*
9. *Loading dock*
10. *Storage*
11. *Offices*
12. *Art classrooms*
13. *Sculpture terrace*

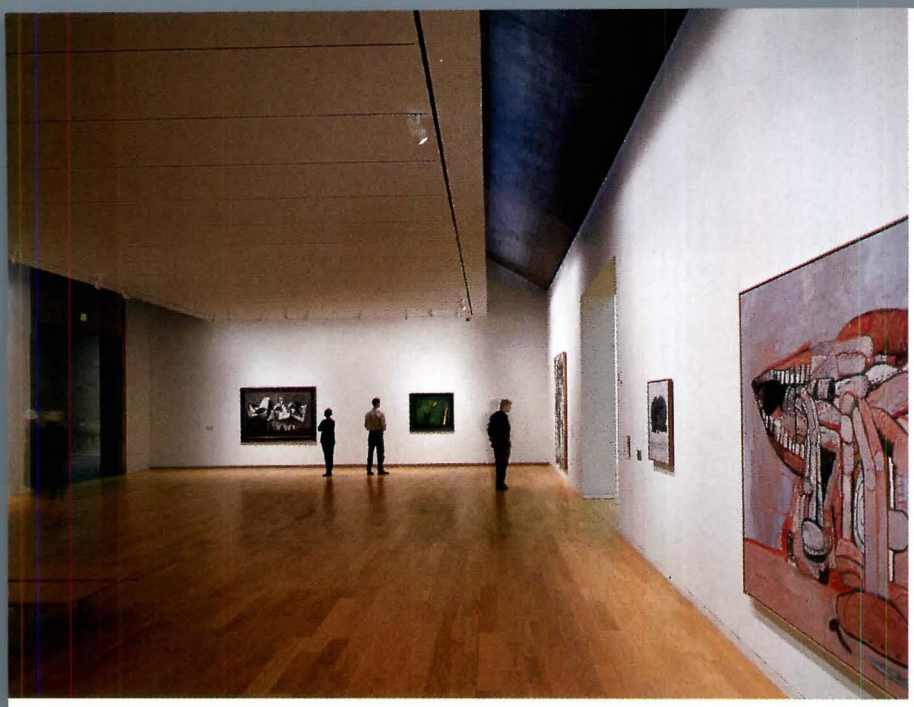
1. *Gallery*
2. *Office*
3. *Entrance hall*
4. *Auditorium*



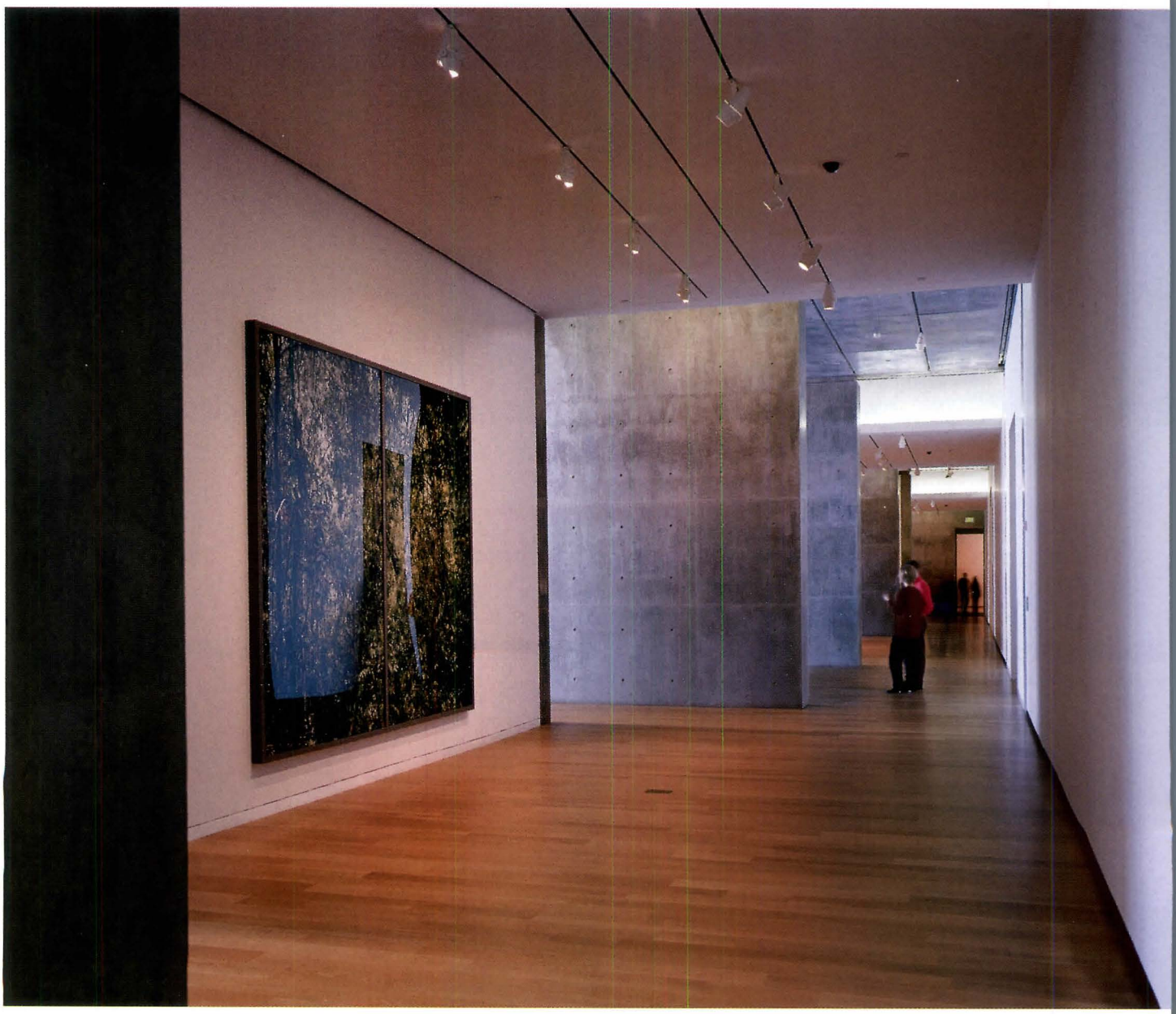
NORTH-SOUTH SECTION

EAST-WEST SECTION

0 30 FT.
9 M.



The museum's galleries were designed to accommodate large works of art and offer a range of settings, from self-contained spaces to ones that open onto big views of the garden and reflecting pool. Ando and consultant George Sexton designed a system of filters, louvers, and skylights that bring daylight into t galleries without da aging the art. Chief curator Michael Aup chose to exhibit onl 154 of the museum' 2,750 works of art, there's room to app ciate them all. Anse Kiefer's *Book with Wings* (opposite), fo example, gets an el tical space on the fi floor all to itself.



w or above, it is Minimalist restraint raised to the power of 10.

A central stair rises from the first floor to galleries and classrooms e. Ando is a poet of vertical movement, and this impeccably crafted ent evokes even grander versions at the Hyogo Children's Museum and Chikatsu Asuka Historical Museum, in Osaka. We are meant to walk ly and purposefully, noting the silky concrete walls and the wash of from a vaulted ceiling reminiscent of those in the Kimbell. Ando's , like Kahn's, has body and dimension: You could cut it with a knife.

Much has been written about Ando's admiration for Kahn, and hallenges he faced in building directly across the street from his hero's erpiece. For Ando, the Kimbell is a summa of Modernist craftsman- after which architecture devolved into historical pastiche and empty y. He makes a few obvious bows to Kahn—in the play of pavilions, the of natural light, the integration of building and landscape—but his test tribute resides in the quality of the Modern's construction.

Ando said repeatedly at the opening that he hoped to rise to "the e level" as Kahn and "to create a link with a great work that is already ent." The Modern is a combination of structural tours de force—the ing elliptical roof of the café, the dramatic Y columns supporting the ion cantilevers—and exquisite small refinements, such as the surgically se reveals around signs and switch plates. Every square inch of concrete was hand-scraped and gently buffed; yet, unlike the overfinished concrete at Ando's 2002 Pulitzer Foundation for the Arts, in St. Louis, it retains the qualities of a natural material, including subtle shifts in color, tone, and texture.

Ando's one serious gaffe was turning the Modern's loading dock toward the Kimbell. The latter's dock is in a similar position but is smaller and lower and hidden by a wall and a planted berm. Most visitors don't even know it's there. What they see from the Kimbell, on the other hand, is the Modern's shipping, receiving, and trash collection. It makes for a clunky composition and, whatever the explanation, a surprisingly rude gesture.

In every other way, though, the Modern is a worthy neighbor and companion for the Kimbell, a blend of structural inventiveness and refined detailing that manages to honor its neighbor without mimicking it. ■

Sources

Anodized aluminum and glass curtain wall: *Masonry Arts*
Anodized aluminum wall panels: *A. Zahner Company*
Low-e laminated glass: *Interpane*
Skylights: *Supersky*
Acoustical ceiling: *Armstrong*
White oak lobby desks: *Techniques*
Black granite pavers: *Lucia*
White oak flooring: *Flooring Assocs.*

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

At the end of the Strekdam in Amsterdam, beside former-silos-turned housing-complex, Silodam overlooks the River IJ, with vi that extend into the harbor (this page a opposite).

MVRDV created SILODAM, colorful waterfront housing built at the end of a wharf near the former silos for which it is named

racy Metz

or a city famed for the tall, thin patrician houses along its canals, Amsterdam has been surprisingly slow to discover the charms of waterfront living along the sea arm of the IJ that forms the city's northern edge. Admittedly, this is a more rugged, industrial ronment than the ultraprotected, 17th-century city center, but every urbanite can sense its potential.

The first building to realize that potential is Silodam, a large sing complex of 157 apartments on the water in the former harbor to the west of town. Moreover, this building, fruit of a 1994 com-tion, marks the first large housing complex designed by the erdam-based firm of MVRDV.

The building gets its name from its neighbors, a 19th-century-k and a 20th-century-concrete silo (now also converted into sing), constructed along a dam projecting obliquely into the water of J and serving as a breakwater for the residential area landside. The RDV building differs from the neighboring silos in that it is not rely on the dam, but stands 20 feet to one side; that is, it is not just on waterfront, but actually in the water.

On the outside, Silodam's robust proportions stand out dra-ically—about 400 feet long, 65 feet deep, and 10 stories high. The erials of the facade, rough-and-tumble to the point of looking slap-, call to mind stacked shipping containers. These variations in the de are also functional, dividing the building's large mass into dis-t neighborhoods comprising four to eight apartments of the same type. These groupings can be recognized on the inside by the color of the hallways, where the blank hotel-like doors, floor mats, and ceilings are included in the color scheme, varying from powder blue to red to yellow-green and cobalt blue.

The largest neighborhood within the complex is a section of 10 apartments for a group of adults over 50. While the individual apartments are no different from others, the architect was asked to take this arrangement into consideration in the design of the section, and one of the units is used communally and as a guest house. The hallway on the eighth floor is the only one to run without height differences the full length of the building, like an artery.

Monolithic though the building may look on the outside, inside it is intricate and ingenious, with floor plans that fit together like the pieces of a jigsaw puzzle. Much effort has been made to exploit the views on both sides, and the daylight is bountiful. The four sections of this big box contain an extraordinary variety of housing types, sizes, and prices, while at the same time managing to accommodate the government-prescribed 30 percent low- and middle-income housing. No wonder project architect Nathalie de Vries calls the building an upright village.

The apartments vary in all three dimensions: in width, from 20 to

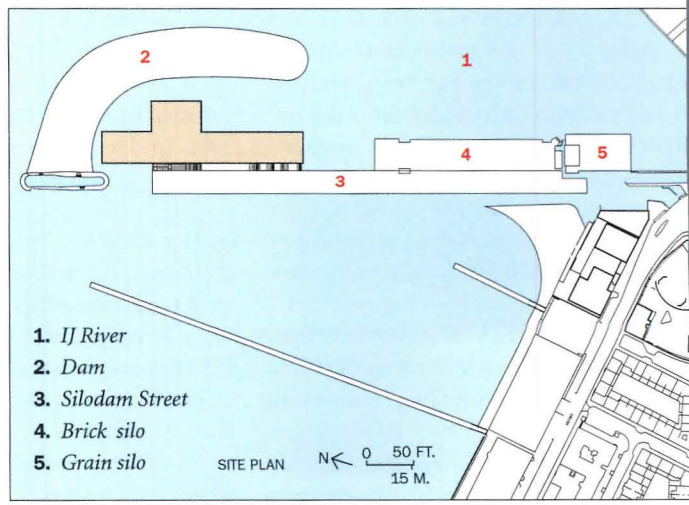
y Metz is RECORD*'s correspondent in Amsterdam and the author of the book* Leisure and Landscape, *released in September 2002 by NAi Publishers.*

Project: *Silodam, Amsterdam, the Netherlands*
Client: *Rabo Vastgoed; De Principaal*
Architect: *MVRDV—Winy Maas, Jacob van Rijs, Nathalie de Vries, principals*
Engineer: *Pieters Bouwtechniek*
Consultants: *Cauberg Huygen (acoustical)*
General contractor: *Bouwcombinatie Graansilo's vof, Amsterdam*

50 feet; in depth, from the full 65 feet, affording views both of the water and of the city, to half that; and in height, from standard to double-height atria, with floor-to-ceiling picture windows, to triple-height lofts. There are even so-called X apartments that are staggered diagonally through the building, with, for example, living rooms and kitchens on one floor facing the water of the IJ, and the bed, bath, and study on the floor above, facing the city. All apartments have a glazed loggia; in one neighborhood the loggia has grown to a two-story glass facade, creating an interior street as a communal space.

In an apartment for a household of two people, one of whom has a design practice at home, the front door, kitchen, and dining area, as well as a living room, are on the seventh-floor mezzanine level, with a view out over the water. A staircase leads to the eighth floor, where the bedroom and office have a view over the city.

On the top floor, one of the penthouses (with views in all directions) contains a glazed roof terrace—situated like a regular room but open to the sky, with a wooden deck—between the living room and the



Silodam's colorful, variegated facade stands out dramatically over the River IJ. The rough-and-tumble exterior materials of the large complex call to mind stacked shipping containers.

ıen. A corner apartment offers a combined living room and kitchen, an enclosed balcony that also functions as a hallway facing the water leading to the bedroom.

In the glazed loggias, the architects were unable to solve the blem of making the windows fully operable without their getting in vay as you walk by, and it is apparent from the various kinds of fur-re that people put there—varying from upright dinner-table chairs to ic garden chairs—that most people aren't quite sure whether these ias qualify as inside or outside spaces.

Another couple, a designer and an architect, grouped the ance, kitchen, bedroom, and bath on one floor, and in the double-ht space beneath, ranged around two very large slanting structural mns, positioned the living space, an office and, hidden behind mobile oards, a guest bed. If you leave by the door on this lower floor (the ents prefer to use the hallway for storage space), you find yourself on oden deck looking between the slats to the sloshing water of the cov-ered marina below the building.

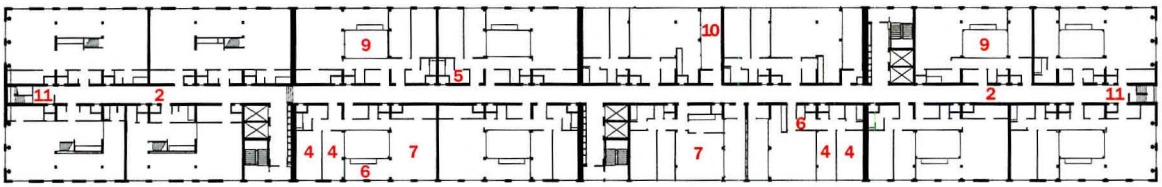
Silodam marks an interesting transition from the traditionally mass-oriented Dutch approach to housing toward more freedom for owners. All parties involved—the architects, the municipality, the commissioning housing corporation, and not least the new inhabitants—

VARIATIONS IN THE FACADE ARE FUNCTIONAL, DIVIDING THE BUILDING INTO DISTINCT NEIGHBORHOODS.

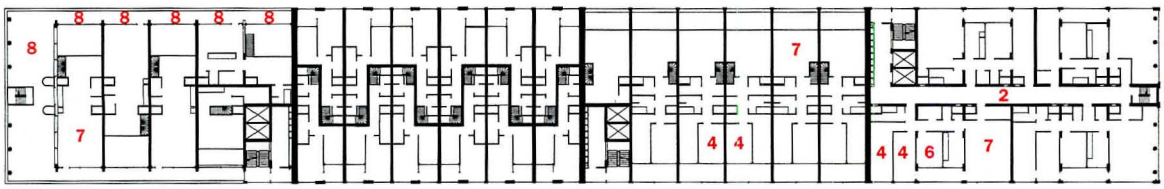
wanted the building to function as a large envelope offering the greatest possible diversity in floor plans and therefore in lifestyles.

Given the strict housing regulations in Holland, this was no easy task. Each detail had to be completely worked out beforehand. Thereafter, the new owners could change their space in consultation with the contractor, who was more amenable than most to buyers' wishes. The

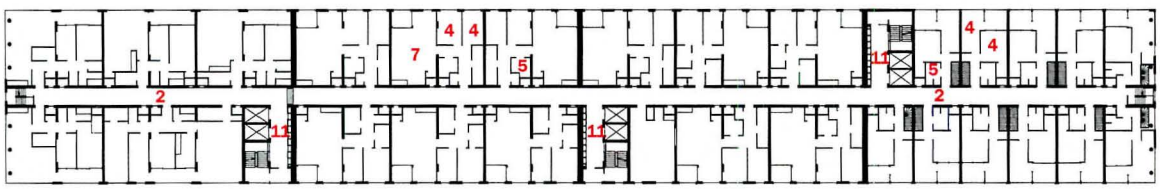
Silodam is not squa
on the dam, but sta
20 feet to one side;
not just on the wate
front, but actually i
the water (opposite
right). The building i
divided into distinct
neighborhoods, whi
are reflected in the
irregular facade.
Boardwalklike raise
wooden sidewalks s
the structure apart
from the street (opp
site, bottom), and a
small marina with t
landing piers under
building provides se
faring opportunities
the residents (oppo
top left).



NINTH FLOOR

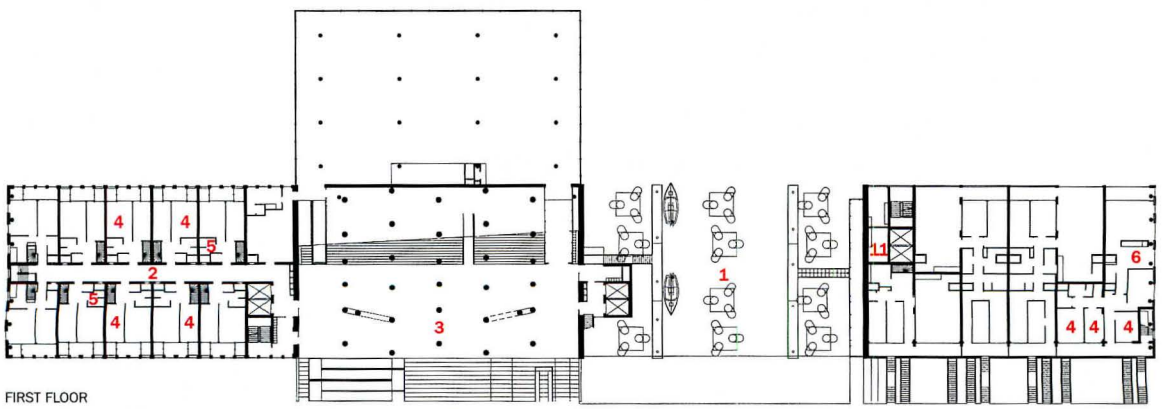


EIGHTH FLOOR

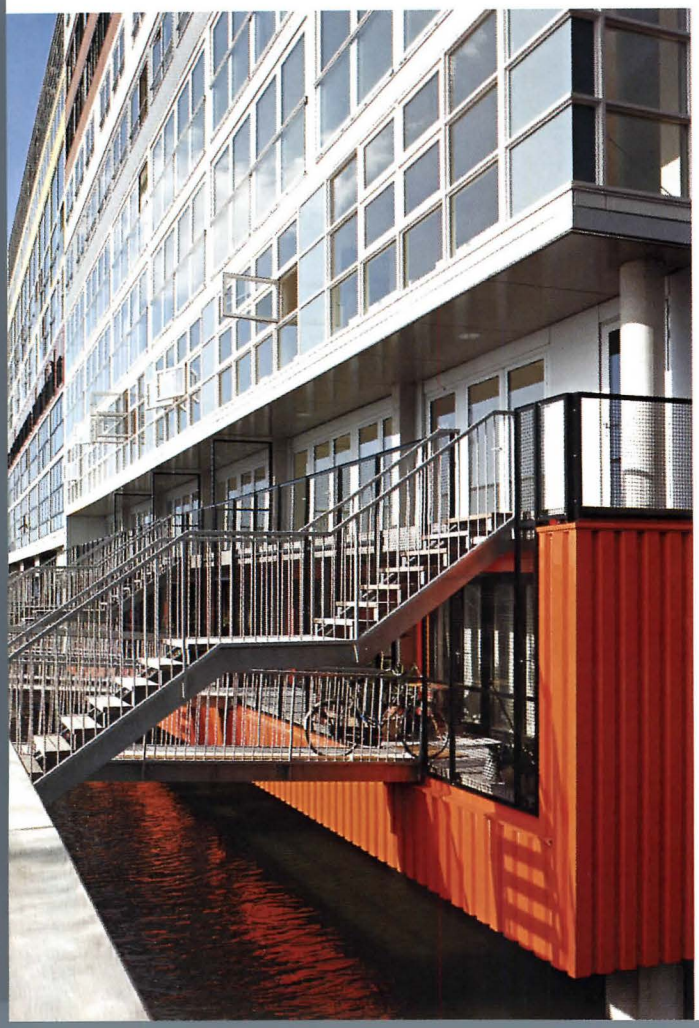


FOURTH FLOOR

1. *Harbor*
2. *Corridor*
3. *Entrance hall*
4. *Bedroom*
5. *Bathroom*
6. *Kitchen*
7. *Living room*
8. *Balconies*
9. *Patio*
10. *Garden*
11. *Vertical transpor*



FIRST FLOOR



building represents a transitional moment in Holland's approach to housing; it is an ode to the broadest possible social and architectural variety, representing a shift toward the interests of the home buyer.

The social composition of Silodam was also influenced by another trend: Between the competition and completion, a period of almost eight years, the housing prices in Amsterdam shot up, making the building more of a "yuppie bunker," as the Amsterdammers call it, than it was intended to be. Next time, says Nathalie de Vries, she will push the envelope even further and offer buyers an "intelligent casco," or shell, in which much less is predetermined.

Along with the variation in housing types, De Vries's agenda incorporated public space into what otherwise remains a relatively mono-

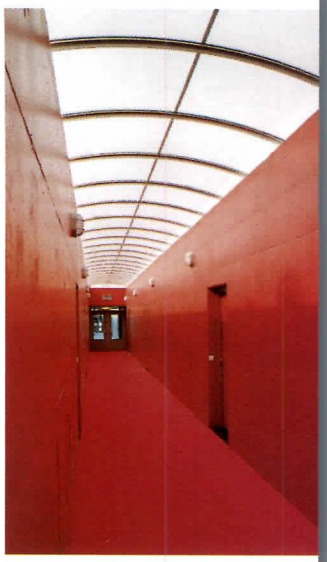
ONE OCCUPANT APPLAUDS THE COMINGS AND GOINGS OF THE BIG CRUISE SHIPS AS THEY SAIL SLOWLY AND MAJESTICALLY BY.

functional apartment building. "This is inevitable, in a time when there is less and less space to build but more and more people want to live spaciously," she says.

Boardwalklike raised wooden sidewalks set the structure slightly apart from the street. An open entrance hall with wooden stairs over the full breadth of one of the four sections provides access to the dwellings, and in nice weather the stairs function as a podium where people sit on the steps, chat with the neighbors, and enjoy the view.

Not only inhabitants but also passersby can walk right through the building onto a large, unfurnished wooden deck to enjoy the view over the water. (To the relief of the inhabitants and the architect, it is apparently too cold and windy here for junkies and homeless people). A

The apartments vary in all three dimensions, affording views both of the water and of the city, and many feature floor-to-ceiling picture windows. The color of the hallways ranges from powder blue to red to yellow-green and cobalt blue.



erous space intended for a restaurant or a gym rests under this so-ed balcony, but there are no takers so far. A small marina with two ding piers under the wooden stairs provides seafaring opportunities the residents.

De Vries would have liked to take this concept much further and r the inhabitants of Silodam more communal facilities: a guest room, haps, or medical help for the elderly, or a pool, or even simple things like

HE BUILDING IS INTRICATE AND GENIOUS, WITH FLOOR PLANS THAT FIT OGETHER LIKE THE PIECES OF A PUZZLE.

undry room. Originally the design included a large rectangular opening r the top of the building that could be used as a communal space or a -care center.

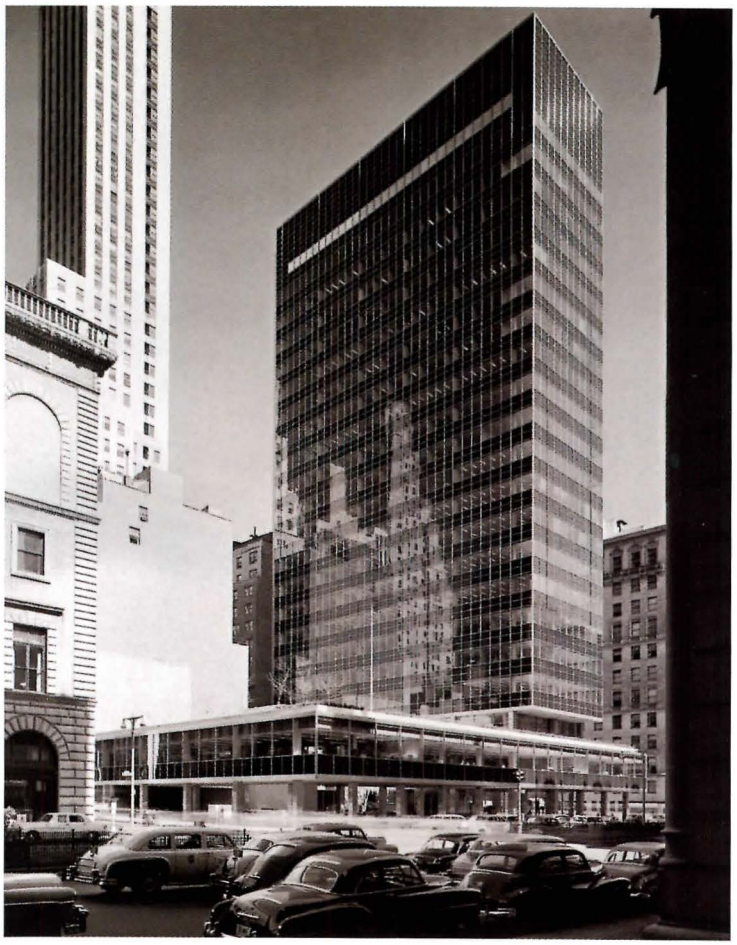
In front of the building, sunk into the dam, is a vertical parking ucture designed specially for tight spaces, which can also be found ng Amsterdam's 17th-century canals. At street level, all you see is a simple shed; you drive your car in and onto a platform, then use your resident's code to activate the hydraulic mechanism that lowers your car into a subterranean multilevel stack of cars on platforms at very close quarters. To retrieve your car, you punch in your code, the platforms revolve underground, and your car rises into the shed.

For financial reasons—and also, perhaps, for fear that in a building that is an ode to modern-day individualistic urban life there would not be sufficient communal spirit to use and maintain the space—the complex was largely filled with apartments. A remnant of the original plan survived in the form of what occupants call the "crow's nest," a double-height opening at the outer western edge on the tenth floor. One of the occupants keeps tabs via Internet on the comings and goings of the big cruise ships on their way to and from the passenger terminal farther east, and brings friends and a bottle of wine to the crow's nest to applaud as the boats sail slowly and majestically by. ■

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

A radical facelift of glass-and-stainless steel curtain-walled Lever House on 53rd Street and Park Avenue, designed by SOM in 1952, is now complete, and its lobby and outdoor plaza areas (opposite bottom) spiffed up and replanted.

ANALYSIS The restoration of New York City's LEVER HOUSE is not so same-old same-old, as Architects SOM and William T. Georgis demonstrate



Suzanne Stephens

Authenticity" has come to be the operative term for describing all sorts of preservation efforts. Yet its meaning remains elusive, largely due to changes in the technology of restoration and adaptive reuse. With the recent renovation of New York's Lever use, which involved a radical facelift for its famous glass and stainless- l curtain wall, the issue surfaced once again. Is the wholesale stitution of the original skin with a new and improved version legiti- e, no matter how close the final result comes to the original earance? The glass is green-tinted and single-paned, as in the original, now it is heat-strengthened instead of annealed. And while parts of the lerlying curtain-wall structure of carbon steel have been kept—just ped of rust and recoated—a new aluminum receiver system supple- nts the old. Nevertheless, Wayne Curtis, in *Preservation* magazine ptember-October 2002), wondered if it were not like replacing a dete- ating stucco wall of a Baroque church with Dryvit.

The debate turns on whether or not we should judge the authen- y of the methods to restore Modern buildings by the same criteria we for restoring, say, age-old churches crafted by stonemasons. The issue exing, since it is only recently that Modern buildings began to be con- red qualified for landmark designation. Indeed, Lever House, designed Skidmore, Owings & Merrill's (SOM) Gordon Bunshaft and completed 952, was one of the first of the crop of Modernist buildings to be ved." New York's Landmark Preservation Commission (LPC) desig- ed the 31-year-old building as a historic landmark in 1983 after it had n threatened by the Fisher Brothers, developers who bought the lease then produced plans to demolish the 24-story structure. Jackie assis and Philip Johnson managed to rally the troops to fight for land- king, drawing architects to their cause who had previously dismissed servationists as a bunch of blue-haired ladies in tennis shoes.

lace in skyscraper history

nough short by skyscraper standards, Lever House was the first cor- ate office building in the International Style idiom to go up in New

ect: *Lever House curtain-wall acement and restoration*
ner: *RFR Holding*
erior wall consultant, engineer ecord: *Gordon H. Smith, P.E.*
hitectural design consultant: *lmore, Owings & Merrill—David Childs, FAIA, senior design partner; T.J. Gottesdiener, AIA, managing partner; Carl Galioto, AIA, technical partner*
Interior architect, lobby renovation: *William T. Georgis, Architect—William T. Georgis, AIA, principal*
Landscape architect: *Ken Smith*

William T. Georgis, architect in charge of the interior renovation, designed white leather and stainless-steel chairs and a steel and glass table on a wool rug for the lobby (above). His concierge desk of walnut and stainless steel is *larger than* the original desk by Raymond Loewy (above), removed long ago. Noguchi sculptures on temporary loan are now installed in the lobby and the outdoor plaza spaces.

York City. Granted, Philip Goodwin and Edward Durell Stone's Muse of Modern Art preceded it in 1939, and Wallace Harrison and his tea United Nations Secretariat went up in 1950, but here was a tot wrapped-in-glass office building, erected by a soap company as a sym of hygienic modernity. The client, Charles Luckman, was perfect: He been trained as an architect before becoming head of Lever Brothers.

By incorporating a plaza at the ground level, partially covered v a one-story-high horizontal slab resting on columns, and by taking adv tage of a little-used zoning provision that allowed the office tower to straight up to any height as long as it only occupied 25 percent of the site, Lever House was a distinctly different urban form. It thrust forward an al native to Manhattan's conventional wedding-cake silhouette resulting fr the 1916 zoning code. With its skinny (8,700-square-foot) floor plates mid-rise height, the building provided a density only eight times the siz the site. But Lever Brothers didn't care about added rent from the unb floor space or ground-level shops.

The let-there-be-light-and-air credo of Lever House was to famously embodied in 1958 by Mies van der Rohe's Seagram Building, s catercorner across Park Avenue. By 1961, zoning would be changed encourage more such tower-with-plaza options—and soon the rest of city followed, although not so successfully.

ew player arrives on the scene

ardless of its historic significance, Lever House showed the wear and of its years. It became clear that the curtain-wall technology of 1952 not holding up (see sidebar). After Lever Brothers, now Unilever, left hattan for Greenwich, Connecticut, in 1998, RFR Holding appeared he new owner of a 99-year-lease on the building and its air rights. ough the LPC had already approved SOM's drawings for a renova- submitted by Unilever in 1996, RFR promised a sensitive restoration. red engineer Gordon H. Smith to do the actual curtain wall, with M as design consultants. (The HVAC system did not need overhauling, ough RFR undertook specific modifications where needed.)

RFR then put a young architect, William T. Georgis, in charge of restoration and redesign of the lobby and elevator cabs and had him rdinate the design efforts for the outdoor and indoor public areas. rgis, who has worked with RFR and two of its principals, Aby Rosen Michael Fuchs, on a number of interior commissions, such as building ies and private residences, wanted to retain the 1950s aura of the inal spaces without resorting to "slavish reconstruction." The lobby ishings designed by Raymond Loewy were long gone, and there were photographs, but no drawings, available. (Loewy's sumptuous lern offices for the top brass still exist on the 21st floor, a perfect time

A MIDDLE-AGED MODERNIST ICON IS REJUVENATED WITH A NEW SKIN

When Lever House was designed 50 years ago by Gordon Bunshaft, of Skidmore, Owings & Merrill (SOM), curtain-wall technology was in its infancy. The glass envelope remains exquisitely detailed, even in light of several decades of advancements, but its performance was eventually undermined by 1950s' technology.

If a soap manufacturer wants to project an image of cleanliness, then architectural transparency is one way to express it. In an otherwise bland review, *Engineering News Record* (May 1, 1952) quoted the architects as making cost-saving claims, as well, for the hermetically sealed envelope. They argued that operable windows were more expensive to install, and that fixed glazing reduces the frequency of interior cleaning by keeping out dirt and grime, of which there was a lot more in the air in 1950.

Fixed glazing also reduced the costs of heating and air-conditioning. Although certainly not up to today's standards, the light green tint of the glass did indeed reduce by half the heat gain (solar heat gain coefficient of 0.60) allowed by typical clear glass. Developed by the Pittsburgh Plate Glass Company (now called PPG Industries) in 1934, the innovative Solex glass also reduced interior brightness (visible light transmission of 77 percent) and, as a result, made it practical to design buildings with huge expanses of glass. Because tinted glass was produced in limited quantities until after World War II, reportedly not until Lever House was completed in 1952 was such glass used as both a design element and for environmental control.

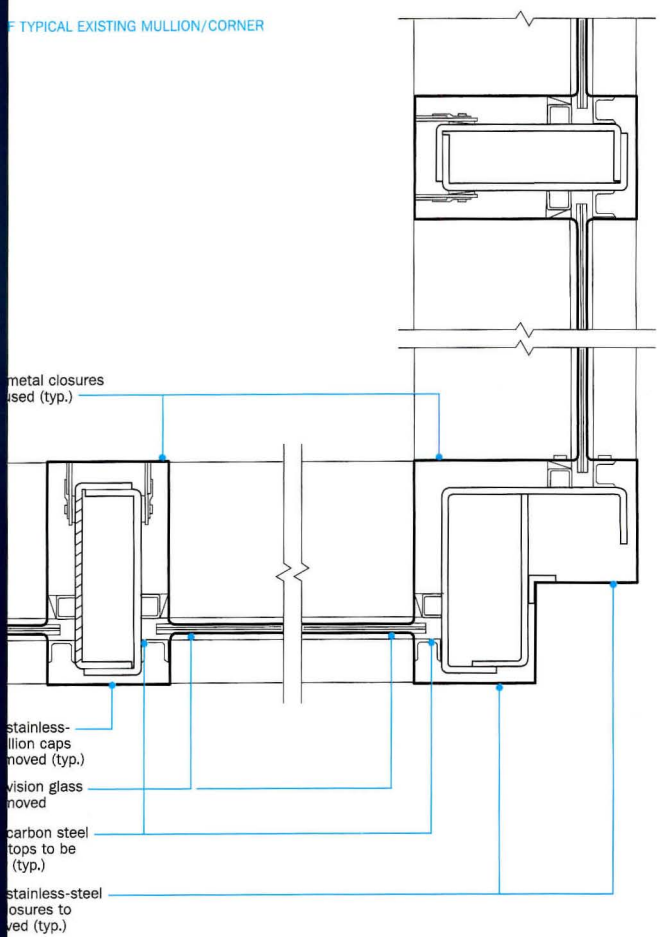
The architects knew that mullions made of carbon steel corrode, and when they corrode, they expand, and when they expand, they crack the glass. So the designers capped the mullions with 16-gauge stainless steel and sealed the joints. Over the decades, however, moisture infiltrated the system and the glazing began to fail. By the time SOM was hired to restore the envelope, almost none of the original glazing remained.

The spandrels, which were also glass, were reinforced with wire. Originally, the spandrel was limited by available glass size to two pieces. Now, however, glass can be manufactured in bigger units as float glass. SOM's spandrel detail for the restoration in 1996 duplicated the original with two pieces of glass joined by a mullion. When the new owner hired curtain-wall consultant Gordon Smith, he revised SOM's drawings so that the spandrel was a single piece of monolithic glass, but a nonfunctioning mullion was applied to keep the proportions the same. "To recreate the 1952 spandrel detail would have doubled the labor costs and required twice as many joints," says Smith. And besides, as both SOM and Smith agree, no one would know the difference.

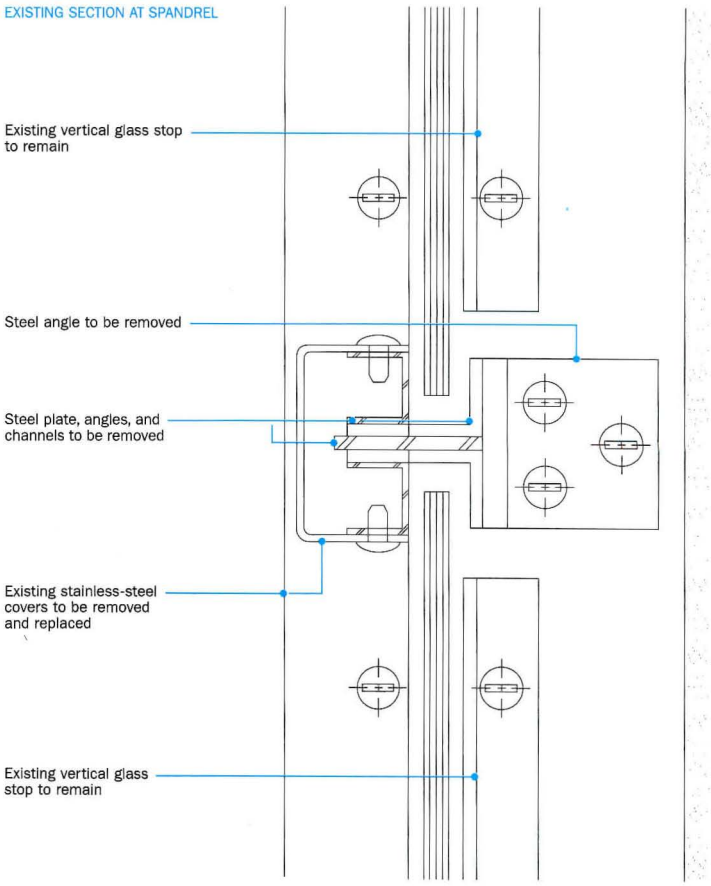
Although the process of restoring and replacing the facade was extremely tedious, it wasn't more complicated than constructing a new envelope, because the original was well conceived. Wherever possible, Smith insists, the original carbon steel was scraped, coated with high-performance paint, and reused. A new aluminum subsystem was added to help prevent moisture penetration into the carbon steel. All the stainless-steel caps were replaced because Smith determined that it would have been too costly to remove, catalog, and store them during the renovation. The result is precedent-setting for the future care of Modern architecture. *Sara Hart*

Whereas the wired-glass spandrel pan were originally divi into two parts with full mullion, now a nonfunctioning mul lion (above and left is applied to the pa els. The environmer codes for energy us were waived so tha the same single-paned glass could installed.

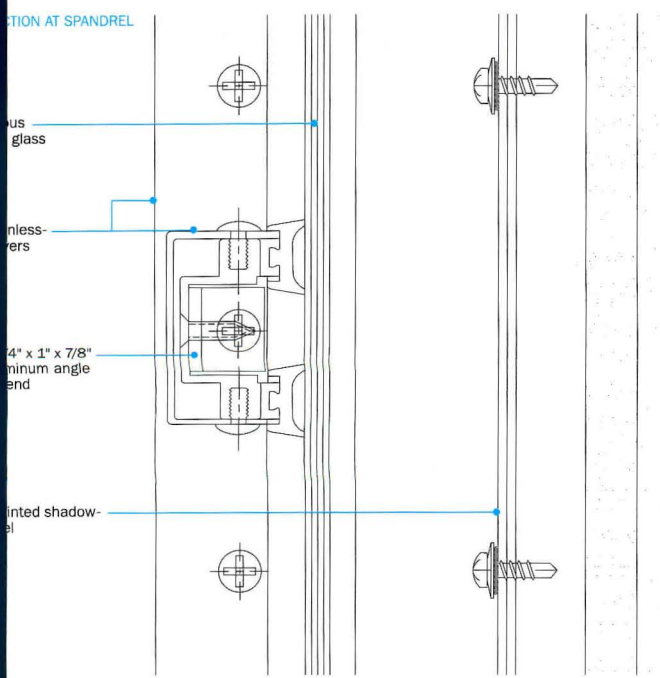
F TYPICAL EXISTING MULLION/CORNER



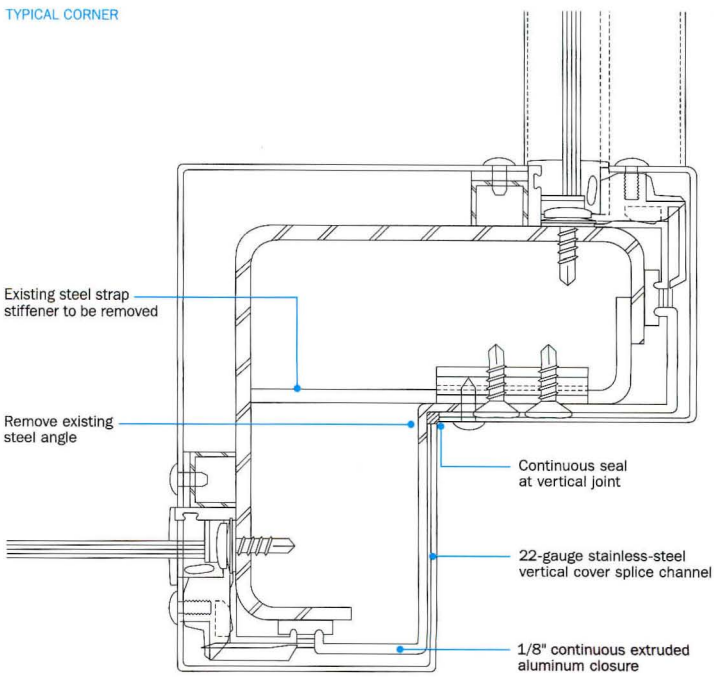
EXISTING SECTION AT SPANDREL



TION AT SPANDREL



TYPICAL CORNER



Georgis restored floors, ceilings, and wall surfaces, including the yellow mosaic wall at the rear of the elevator bank. Art curator Richard Marshall has mounted an exhibition of Isamu Noguchi's sculptures, seen in the lobby (above) and the north entrance plaza (opposite). This spring, a bar by London-based designer Marc Newson is scheduled to open at the south end of the complex.

capsule, where Unilever maintains an outpost of four floors).

Georgis designed the lobby's taut, planar furniture to be sim and svelte: The concierge desk is Claro walnut and brushed stainless s with enameled steel panels, while the seating is white leather and steel, the coffee table, glass and steel. As Georgis points out, the chairs ar shaped, as is the table base in plan. "We got a little logo-happy," he s "but we tried to keep it subtle." Working with lighting designer John Schwinghammer, Georgis also created new custom lighting within existing openings in the ceiling, plus flexible fixtures for the artworks.

The $60 million renovation on top of the undisclosed price the lease meant that RFR needed to get fairly high rents for the floors (to $80 per square foot), with partial occupancy occurring during restoration. In order to attract tenants, RFR thought the plaza as well as lobby could be enlivened. Even if Lever House's public areas had bee radical concept, truth to tell, the plaza was usually empty—and critici for not adding much to street life. In the early days, Bunshaft had wor with sculptor Isamu Noguchi on an open space plan for the ground le However, it was never realized, and ultimately SOM provided the plan design for the ground level and the third-floor terrace.

Now, with landscape architect Ken Smith, graphic designer hael Bierut, of Pentagram, and art curator Richard Marshall, this situ- n would change. Ken Smith's impulse was to finally realize the Noguchi me, including fabricating sculptures that had been designed for the e. But the Noguchi Foundation was not in favor of their being recon- ted posthumously. Instead, working with Marshall, the foundation ded to lend sculptures on a temporary basis as part of an exhibition. op of that, it went along with recreating Noguchi's plans for outdoor ble seating, composed of black and white squares and circles. The er-level terrace has been replanted just as it was. For his part, Bierut loped signage, including a typeface, "Lever Sans," generated from the rs in the name emblazoned on the building.

By staying within the spirit of the realized and unrealized inten- s, RFR and its team brought back the gleam of the original and nced the richness of the ground-floor spaces.

So is it authentic? After tussling with this question in his article *reservation* magazine, Wayne Curtis concluded that one has to think erently about authenticity in preserving a Modern machine-made ding versus the handcrafted sort. The point is well taken. But most important is the conventional wisdom that it is not what you do, but how you do it that matters. Here, the level of quality and attention to the materials, details, and proportions of the new elements appear comparable to the old. "The level of detail Aby Rosen was willing to bring to this project is extraordinary," says Georgis. The company seems to have been taken with its new image: Shortly after buying Lever House, RFR acquired the Seagram Building, further burnishing the company's reputation for collecting high-caliber Modernist landmarks. And now as Lever House approaches its 51st anniversary, it attests to the merits of "authentic" restoration in the most modern (i.e., newest) manner. ■

Sources

Glass vision and spandrel panels: *PPG*

Stainless-steel and aluminum curtain wall: *Flour City Architectural Metals (defunct)*

Concierge desk: *VCA-Volz-Clark*

Chairs (lobby): *La Chaise de France; Raredon Resources*

Table: *Raredon Resources*

Rug: *Patterson, Flynn & Martin*

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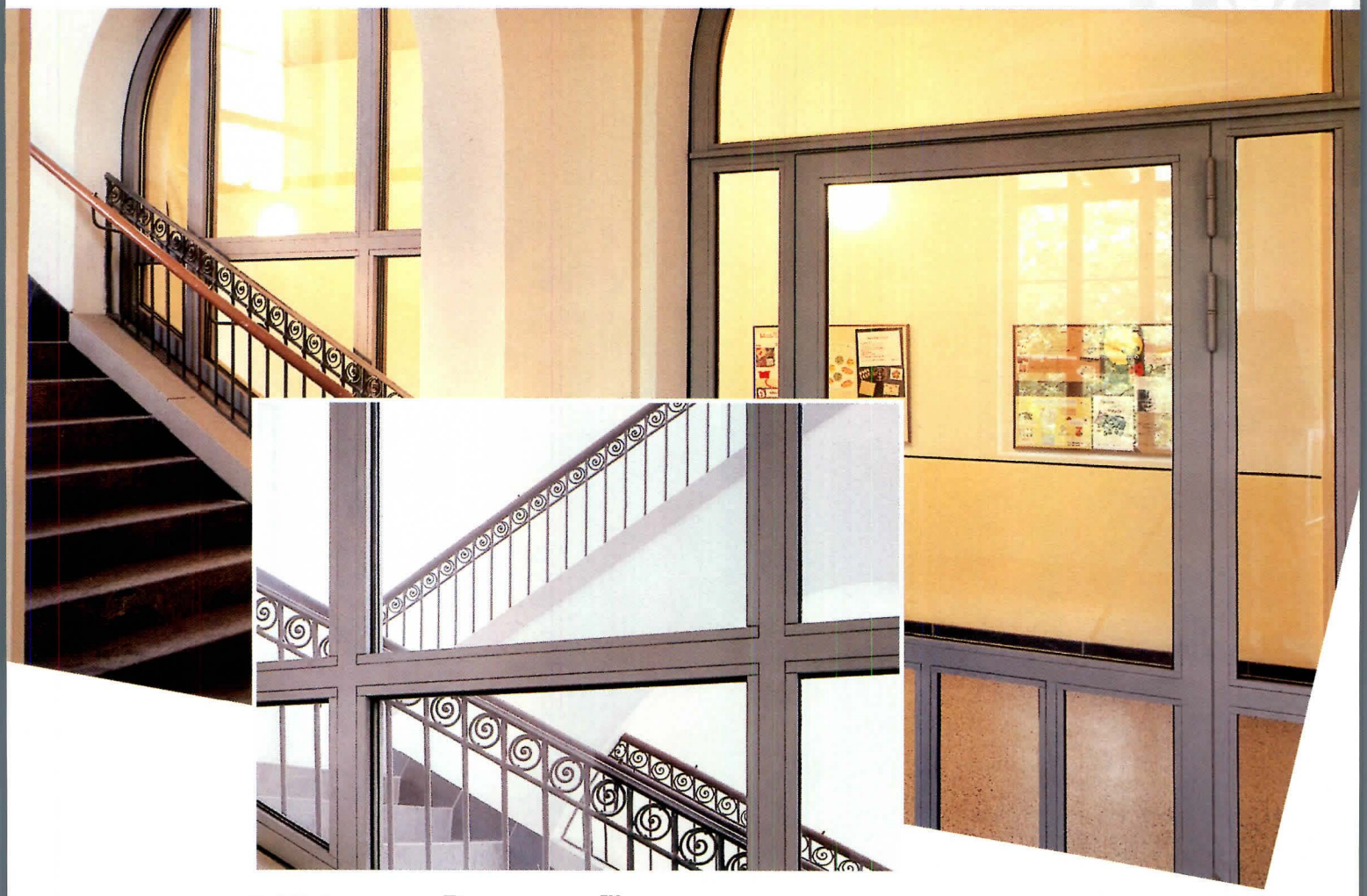

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K-12 SCHOOLS

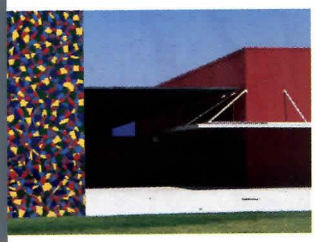
As Good As It Gets

WHILE WELL-DESIGNED SCHOOLS FOR THE YOUNGER GENERATION SIGNIFICANTLY IMPACT THE QUALITY OF EDUCATION AND LIFE, PROGRESS IS SLOW.

1.

Oegstgeest, the Netherlands

Defying conventional notions of design in children's schools, Herman Hertzberger raises the classrooms up into the light-filled sky.



2.

La Joya, Texas

A modest but cheerful school designed by Kell Muñoz Architects reflects an aesthetic that is clearly "south of the border."

3.

Brooklyn, New York

A neighborhood in need of inspiration gets it with Mitchell/Giurgola Architects' bright, proud school and community center.

4.

Los Angeles, California

Daly Genik performs alchemy on an old warehouse and office building in one of the most impoverished neighborhoods in downtown L.A.

For additional school projects, and more information on the ble and products involved in the following projects, go to Building Type y at **architecturalrecord.com**.

By Jane F. Kolleeny

Rare is the K-12 school building that is thrilling to look at. True, we see less of those painfully familiar, '60s-style boxy egg-carton structures with rows of classrooms and long dark hallways that resemble prisons. Even so, school boards, tight regulatory processes, and strict programming requirements all too often tie the hands of architects and curb imagination.

We are told schools are evolving toward a new architectural vocabulary to express our culture's changing values. Classrooms are wired for the Internet and flexible to accommodate cluster teaching. Schools double as community centers, providing a gathering place for after-hours events long after the kids go home. Instead of libraries that house only books, media centers with state-of-the-art technology are the status quo. Even as the nation suffers through a recession, the education construction market remains strong, at least for now. Yet, while there are financial resources and innovative ideas for new schools, overall the aesthetics are moving at a turtle's pace. In the words of Judy Marks, Hon. AIA, the associate director of the National Clearing House for Education Facilities (NCEF), which tracks education trends, "Change is slow, resembling small victories rather than broad reforms."

NCEF produced a document in November 2002 called *Do School Facilities Affect Academic Outcomes*, by Mark Schneider (www.edfacilities.org), which clearly showed that design excellence counts. Good indoor air quality, ventilation, temperature, lighting, and acoustics produce a notable positive outcome. Building quality, age, spatial configuration, and aesthetics also have a significant affect. Schneider cites research concluding that "student achievement lags in shabby buildings," and many studies have found fewer disciplinary incidents as building quality improves. The post–World War II baby-boom era saw an explosion in large schools, but that trend has shifted. An impressive body of research shows that small schools (300 to 400 students for K-6; 1,000 for 6-12) affect performance, especially for students in low-income areas.

The evidence that positive environments count puts into sharp focus the conundrum of why good design in schools is so slow to make progress. The environments provided for children have a huge impact on their attitudes and the quality of their education. With 20 percent of the U.S. population, nearly 55 million people, spending their days in elementary and secondary schools, shouldn't we be concerned? In the post-Columbine era, we really should. The four schools featured here demonstrate both innovation and good design. School boards, citizens, educators, planners, and architects should take note. ■

Primary School De Vogels
Oegstgeest, the Netherlands

1 **HERMAN HERTZBERGER, A DUTCH LEGEND IN SOCIAL DESIGN, PLAYS HIS HAND AT OUTFITTING A SMALL SCHOOL AND RESIDENTIAL COMMUNITY.**

By David Cohn

Architect: *Architectuurstudio Herman Hertzberger—Herman Hertzberger, Cor Kruter, Sonja Spruit, Geert Mol, Roos Eichhorn, Hans Snoek*
Client: *Municipality of Oegstgeest*
Consultants: *Adviesburo Steens (services consultant); Raadgevend Ingenieursbureau Eurotechniek (mechanical); dgmr raadgevende ingenieurs (electrical); dgmr raadgevende ingenieurs (acoustics); Tulux Lichtadviezen (lighting)*
General contractor: *Gebroeders Blokland, Hardinxveld-Giessendam*

Size: *11,200 square feet*
Cost: *Withheld*

Sources
Steel: *H. Buyk Construction*
Furniture: *Gebroeders Blokland*
Windows: *Kuin Kozijnen*
Concrete: *Gebroeders Blokland*
Paint: *Van Zanten*
Glazing: *Van Noordenne*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

A disciple of Aldo van Eyck and pioneer of the Dutch Structuralist movement in the 1960s, Herman Hertzberger is back. In projects such as the 1966 Montessori School in Amsterdam, Hertzberger championed the use of design as a catalyst for social interaction. Although overshadowed in recent years by new generations of Dutch architects, Hertzberger, now 71, continues to direct a busy practice, updating his formal language while maintaining his experimental outlook. In an eight-classroom primary school for a small residential development in Oegstgeest, a town outside Leiden, in South Holland, he demonstrates that his techniques of social design are as pertinent as ever.

Program

Hertzberger won the competition for the school and 32 adjacent row houses with his daring solution for a triangular site too small for the required program. In contrast to the dispersed developments of its surroundings, Hertzberger arranged the houses in a bowlike curve that defines a strong public space, like an English crescent. He placed the school at the spring point of the curve with views to all sides. But, as he observes, "no amount of juggling could prevent the housing and school from crowding each other out."

Contributing editor David Cohn is author of Young Spanish Architects *(Birkhauser, 2000).*

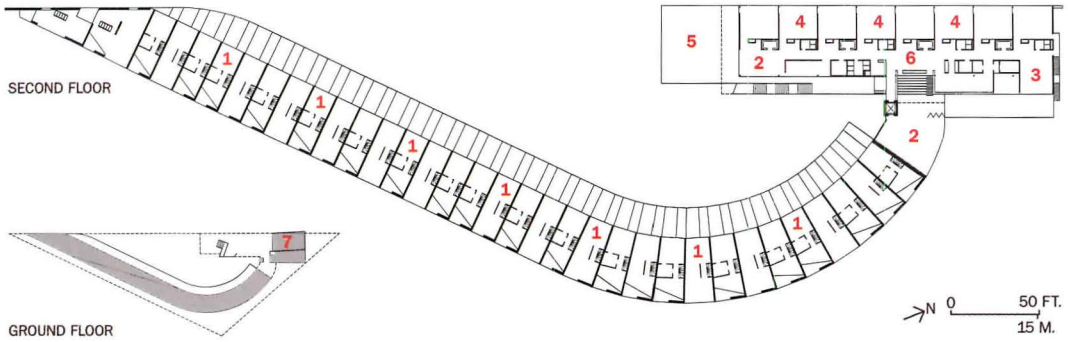
Solution

Defying conventional wisdom, Hertzberger raised the classrooms into the air "so that the houses have views uninterrupted by the school, and the school looks out over the houses." The strategy also created needed outdoor play areas. The classrooms are raised 16 feet to span the gymnasium occupying part of the site, "high enough so that the space under it isn't creepy." School manager Letty Vreeken likes the height for the extra daylight that it brings into the classrooms, but she misses "shade, grass, and trees" on the upper terrace. "It's lovely, but in the summer it's quite hot, though I wouldn't let anyone take it away." Hertzberger notes, "We had to overcome the traditional idea that children should be on the ground, that they need its protection." He counters that approach in saying, "There is more to see higher up; greater distances, clouds, a view of the neighborhood."

The building is accessed by a staircase that begins as a wide podium under the classrooms and zigzags out to rise along the eastern facade. Hertzberger explains, "Like everything else in the project, it was designed to become a social space. The beginning of the stair is like a stage, where children can wait or perform in connection to the playground. The stair isn't too steep, and the kids like to go up and down it quite fast. It is a barrier for the par-

PHOTOGRAPHY: © DUCCIO MALAGAMBA

Defying conventional wisdom, the classrooms are raised 16 feet to span the gymnasium occupying part of the site. Manager Letty Vreeken likes the height for the extra daylight that it brings into the classrooms, but she misses "shade, grass, and trees" in outdoor areas.



Raising the classrooms into the air created needed outdoor play areas (below). The building is accessed by a staircase that begins as a wide podium under the classrooms and zigzags out to rise along the eastern facade (bottom).

1. *Row houses*
2. *Multiuse rooms*
3. *Art studio*
4. *Classrooms*
5. *Terrace*
6. *Main square, amphitheater*
7. *Gym*

ents, perhaps, but the teachers a happier if the parents don't come so often. And there is an elevator. But Vreeken cautions that the chi dren sometimes use the stairs to "throw things down on other children. There are many accidents."

Hertzberger organized the interiors to break down the rigiditie of a conventional school plan. "I tri to make the interior like a micro ci he says. The classrooms open via wide sliding doors to alcoves that draw small group activities into the corridor "streets." A "main square" in the form of an amphitheater steps down to a multipurpose roor Hertzberger notes that the variety and flexibility of spaces is particula important for the different learning needs of the many foreign-born children in the school. Vreeken finc particularly useful the theaterlike main square and the open areas a each end of the corridor, dedicated craft activities and the kindergarte respectively. "They are fantastic spaces to work in," she maintains.

nmentary

zberger attributes the evolution s formal language since the Os in part to changes in avail- materials—he finds steel and inum cheaper these days than concrete and concrete block he erly used. But more importantly, ays, he has become more flexi- n his approach to design. "I try t the program develop possibili- for adjustment; to make a form an umbrella, where different gs can happen underneath.

"From outside, the form of the ol is very precise, but the form en to change and adjustment; errace could be built into class- ns, and a new open terrace d be added, or perhaps a court- . It's not a monumental, finished ct but the gesture of a roof r which there is more liberty openness."

Indeed, the De Vogels school ears to be the work of a much nger architect, packed with ocative ideas. ■

The building is accessed by a staircase designed to become a social space (below). The classrooms open via wide sliding doors to alcoves that draw small group activities into the corridor (top).

Ann Richards Middle Scho
La Joya, Texas

2

HONORING LA JOYA'S MEXICAN CULTURE, KELL MUÑOZ ARCHITECTS CREATES AN OASIS OF COLOR IN A HOT BLEACHED LANDSCAPE.

By David Dillon

Architect: *Kell Muñoz Architects—John H. Kell, Jr., FAIA, Henry R. Muñoz III, principals; Steven Land Tillotson, AIA, Henry Ortega, AIA, Benito Polendo, AIA, Manuel Hinojosa, AIA, Hector Gamboa, Carlos Rios, Baldemar Bernal, Carlos Mejia, team*
Client: *La Joya Independent School District*
Consultants: *Hinojosa Engineering (civil/structural); HMG & Associates (m/e/p); Alexander Boedy Associates (landscape)*
General contracting: *Wilson Construction*

Size: *130,000 square feet*
Cost: *$8.4 million*

Sources
Wood doors: *Baur Flooring*
Glazing and metal doors: *Polvado Glass*
Metal/glass curtain wall: *Polvado Glass and Vistawell*
Hardware, aluminum storefronts, glass: *MacLaird Glass*
Tile: *Mion Terrazzo Tile and Marble*
Steel: *Tri-City Steel Fabricators*
Brick: *Valley Block and Brick*
Roofing: *Sechrist-Hall Company*
Paint: *Guerra's Paint Company*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

La Joya sits on a flat, featureless stretch of the Rio Grande Valley between Laredo and McAllen, Texas. Its name, "the jewel," refers to a small natural lake west of town that early settlers claimed sparkled like a gem. But daily life is seldom so alluring. La Joya is a poor community of migrant workers and day laborers, who pick fruit, pour concrete, and look after the small ranches in the area. The dot-com boom of the 1990s was only a rumor here and in the rest of the valley.

Program

The Ann Richards Middle School, designed by Kell Muñoz Architects, of San Antonio, and named for the state's tart-tongued former governor, captures both the reality and the resilience of the town. Its architecture is direct and pragmatic, yet also playful and visually exuberant. Stucco walls glow red, blue, green, mustard, and magenta, the colors of Mexico and the desert. Several are covered with cracked Italian tiles that seem to vibrate in the South Texas sun.

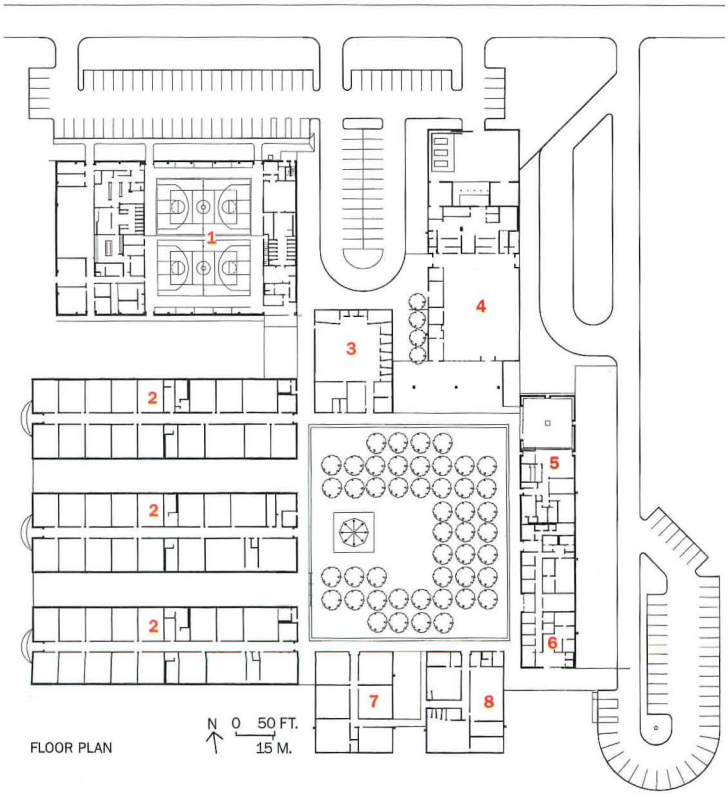
School principal Judith Solis says it took time for the students to get used to the color. "Most schools are so bland that at first they were bewildered," she recalls. "Students from other schools teased them about being in a theme park. We had to teach them that the color exists in the rocks and plants of this place, that it is part of who they are."

Contributing editor David Dillon is the architecture critic for The Dallas Morning News.

Solution

The heart of the school is a large open plaza, similar to those in the small Mexican towns from which many La Joya residents come. It is paved in concrete bricks, with a grid of live oak trees and a small pavili or *kiosko*, for festivals and perfor ances. The plaza is the social and cultural center of the school, whe students mingle between classes and return in the evenings and o weekends for special events. For governor Richards, known to teac ers and students as *comadre*, or godmother, bought the furniture f

The heart of the school is an open plaza. Here, stucco walls covered with cracked Italian tiles glow red, blue, green, mustard, and magenta. "You won't find any graffiti here," notes Principal Judith Solis, "because the kids have a real sense of ownership."



FLOOR PLAN

1. *Gym*
2. *Classrooms*
3. *Music room*
4. *Cafeteria*
5. *Library*
6. *Administration*
7. *Orchestra, choir, dance*
8. *Computer, art, theater*

the plaza and often donates the honoraria from speaking engagements in the valley for books and programs.

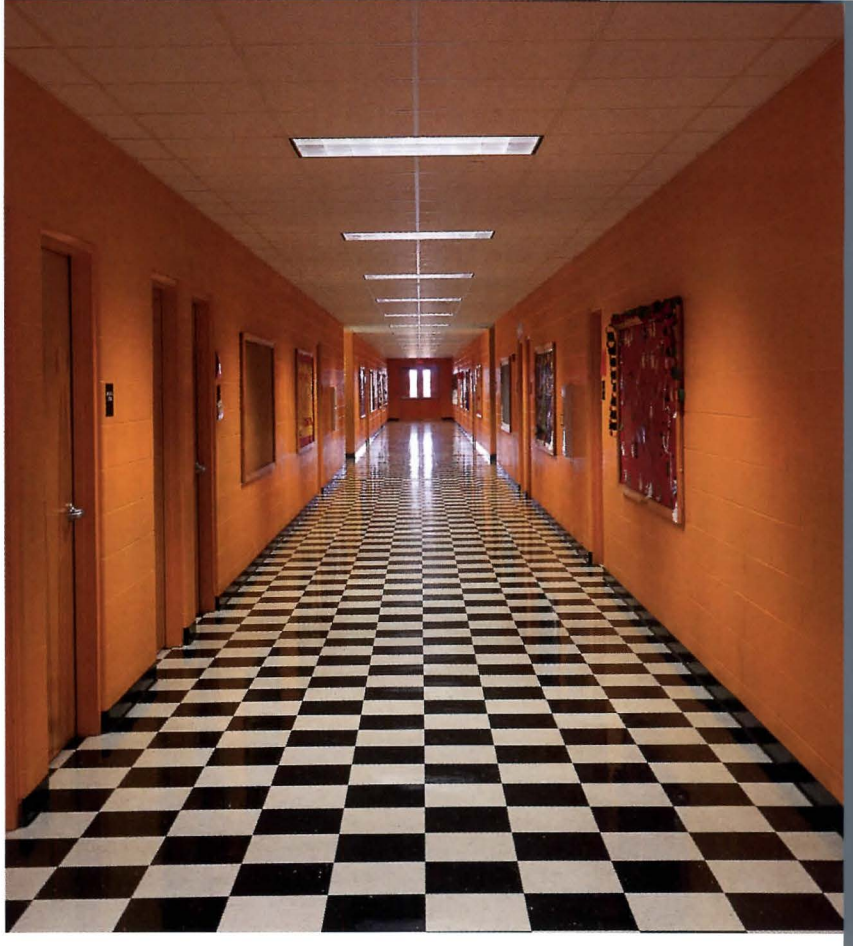
Kell Muñoz designed the school for 1,000 students, a number that has now grown to 1,250. All of them are Title I, and most are economically and linguistically disadvantaged, meaning that for them school is more than a place to learn English and math; it is a refuge and a sanctuary. "You won't find any graffiti here," notes Ms. Solis, "because the kids have a real sense of ownership in the school. It connects them to their own culture and encourages them to feel good about themselves." Each grade (six, seven, and eight) has its own classroom wing, long one-story rectangles with bright walls and black and white linoleum floors. Theater, dance, art, and music classes are held in adjacent buildings, which are linked by simple metal awnings that provide protection from the sun and rain. (La Joya is a center for mariachi music, and on many days visitors to the school are greeted by the sound of guitars and trumpets.) The gymnasium occupies a large, prefabricated metal building that fits the low-budget, ad hoc aesthetic of the school and the region.

The architectural showpiece is the library, with its cracked tile walls and 20-foot hyperbolic paraboloid roof that rests on a single Mayan-style column in the center of the room. These bold forms were developed by Mexican architect Felix Candela and adapted by John Kell's mentor, O'Neil Ford, for schools and factories around Texas. They make the library a special place, where books and reading open the door to the wider world.

Commentary

The school cost $9 million ($67 per square foot), and inevitably the economies show in some of the detailing. The paraboloid shells and the butt-glazed windows clearly stretched the contractors. But the architects' overall design is exactly right. La Joya needed a place that was intimate, lively, and welcoming, and the Ann Richards Middle School is all of those things—a source of pride and pleasure along a shifting cultural fault line. ■

A large open plaza, peppered with oak trees and a *kiosko* used for performances and festivals, functions as the social and cultural centerpiece of the school (opposite, left and right; below left two). Inside, the hallways feature bright walls and black and white linoleum floors (top right), and the library houses a single Mayan-style column that holds up the 20-foot roof (bottom right).



P.S. 156, I.S. 293
Brooklyn, New York

3 **WITH A JEWEL-LIKE PRESENCE, MITCHELL/GIURGOLA ARCHITECTS' SCHOOLHOUSE STANDS TALL.**

By Jane F. Kolleeny

Architect: *Mitchell/Giurgola Architects—Paul Broches, partner in charge; John Doherty, Virginia Kindred, Faek Braick, Susan Stando, John Kurtz, team*
Architect of record: *John Ciardullo Associates*
Client: *New York City School Construction Authority*
Consultants: *DVL Consulting Engineers (m/e/p); Ysrael A. Seinuk (structural); Langan Engineering (landscape, site, civil); Branston Partnership (lighting); Cini-Little (kitchen)*
General contractor: *The DeMatteis Organization*

Size: *157,000 square feet*
Cost: *$52 million*

Sources
Roofing: *Johns Manville*
Hardware: *Atlantic Hardware*
Ceilings: *Armstrong*
Custom woodwork and paneling: *Eli NY Design*
Ceramic tile: *Daltile*
Interior ambient lighting: *Lumax; MagniFlood; Lithonia*
Exterior lighting: *Holophane*
Flooring: *Azrock; Polysafe (auditorium)*
Plastic laminate: *Formica*
Paint: *Sherwin Williams*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

In the mid-1800s, tract homes and high-density tenements changed a once-rural Brownsville into a dreary urban neighborhood in southwestern Brooklyn. Effectively a slum, with unpaved streets and no sewers, it was home to struggling first-generation Jewish immigrants who worked in Manhattan's garment district. After World War II, it was abandoned by the industry's more successful entrepreneurs, who were replaced predominantly by African-Americans. Although efforts were made in the 1970s and '80s to upgrade the area, it remains neglected today.

Brownsville needed a hero, and it appeared in the form of this school, which encompasses almost a full city block and plays a vital civic role in the rough and tumble neighborhood. Doubling as a community resource center, the building is utilized by most of the local families for performances, sports, and social and educational events. It replaces a 1908 school building on the same site that had been vandalized and was subsequently demolished, in 1993, because it contained asbestos and lead.

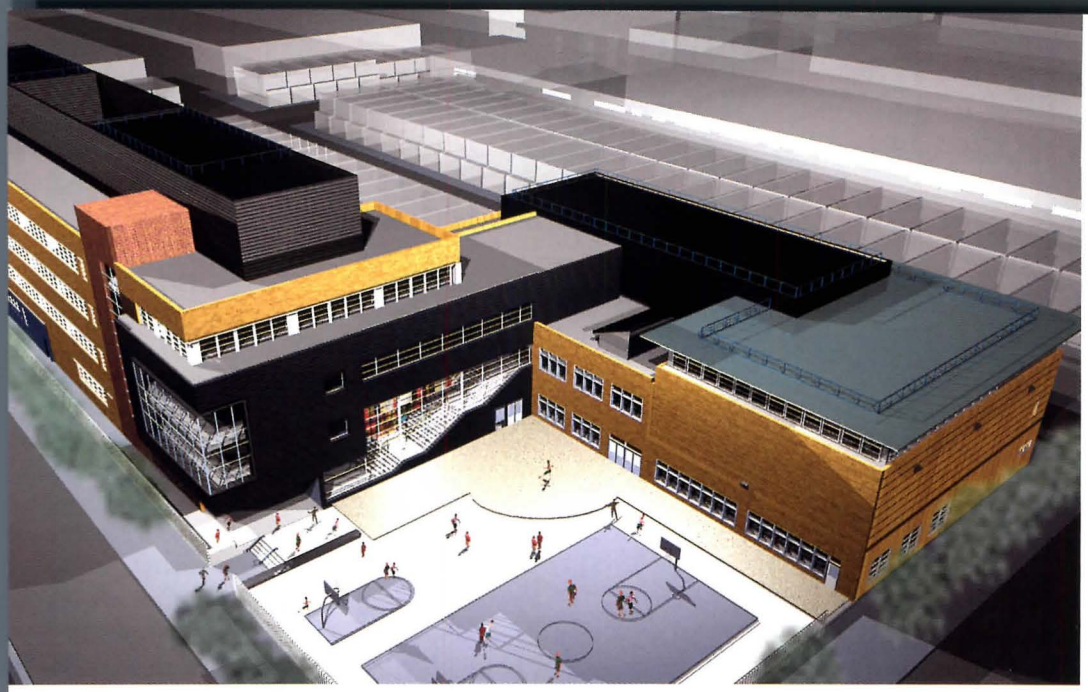
Program

The new school accommodates 200 gifted seventh and eighth graders and 900 K-6 students. One long wing of the four-story building is composed mostly of classrooms, with the gym, cafeteria, library, and other public areas clustered in the other wing so that classrooms can be secured when the school is closed.

An Annenberg grant for art made it possible to offer the kids an enriched arts program. These funds helped create two arts classrooms, a dance studio, music room, recording studio, and a 416-seat, stadium-style auditorium. Principal Martha Torres, a cheerful, assertive woman who displays a combination of sternness and gentleness befitting a school principal, finds art to be a most effective teaching tool: "We present ar a multidisciplinary way—we discu cultures, and the students explore them in every conceivable way—through dance, art, music, history literature. Art saves these student

Solution

As the central theme of the curric lum, art is also reflected in the school's design. The most visibly compelling part of the building, a story wall of glass tiles designed b



The tan-brick, white-trimmed mass of the school takes up almost a whole city block (left). At the main entrance, the facade is composed of a handsome aluminum panel system and yellow curtain wall (below and opposite).

The design of the school supports the theme of learning through art. A wall composed of glass tiles (this page), glazed hallway display areas (opposite, left), and a 416-seat, stadium-style auditorium (opposite, right) all pay tribute to creativity.

noted sculptor Ned Smyth overlook the prominent grand stairway mark ing the main entrance. Illuminated night and prominently visible to the community through a glazed wall, i fronts Sutter Avenue, one of the ma arteries in Brownsville. The play- ground and public areas of the sch open onto this street, bringing in more life. Paul Broches, FAIA, of Mitchell/Giurgola Architects, remark that "the school is the main civic building in the area and serves a critical community purpose in addi to its role as schoolhouse."

The client's design standards required security screening over the windows at the first-floor leve "Frequently other schools use expanded wire mesh, which has a somewhat prisonlike association. We have found a perforated meta panel that provides an equivalent measure of protection, if not more and is much more attractive both looking from the inside and outsi says Broches.

Standard features include durable, high-quality, low-mainte- nance materials: terrazzo floors, steel doors, painted concrete blo walls in classrooms, and attractiv finished glazed concrete block in corridors and all public spaces to assure a utilitarian, tanklike resiliency that is still user-friendly Designed for future wireless use, classrooms are flexible and can b converted from standard format t the popular small cluster.

Commentary

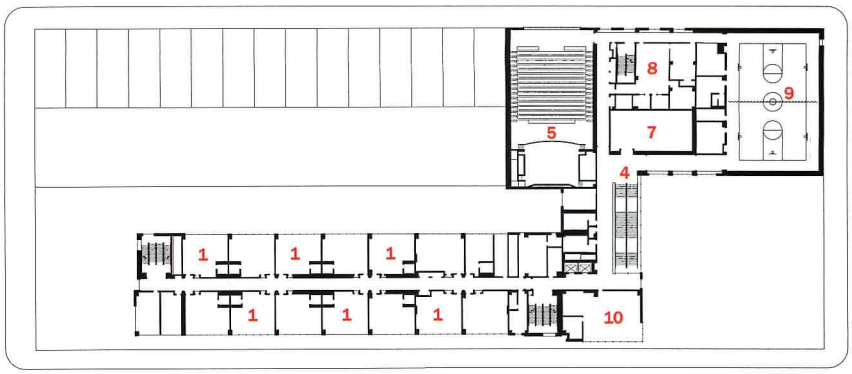
School principal Torres copes we with the chaos that hordes of you children inflict. "We like the age r of students. While they don't inte that much, the intermediate stu- dents become mentors and do internships with the younger kids Through its clean design, large accommodating public spaces, a airy classrooms, the school has uplifted the local community. Tor continues, "Everyone wants to be here! Neighborhood residents ha tried to establish residency in the school's catchment area in order send their children here."

A delightful art exhibition

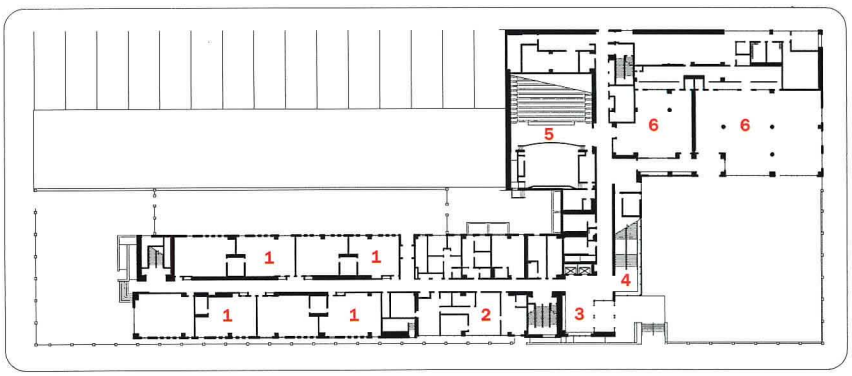
ently put together by the second
ders spanned the length of one
he long corridors of the class-
m wing. The kids had created an
rpretive show about such
ous works as Van Gogh's *Starry*
ht, Da Vinci's *Mona Lisa*, and
tisse's cutouts and still lifes. The
d and durable hallways provide
perfect, immutable surface for
h transient displays—gypsum
rd would immediately have been
to shreds. Additional glazed
way display areas were designed
he architect so that each class-
m can present their trophy works
rotected public areas.

The tan-brick, white-trimmed
ss of P.S. 156/I.S. 293 stands tall
t to the adjacent row houses; in
ther neighborhood it might not
s exciting as it is here. It is clear
the cheerful faces of eager
ormed children lining the hallways
this school has gone well
ond the dictates of education,
ving instead as an inviting beacon
ope for the whole community. ■

1. *Classrooms*
2. *Administration suite*
3. *Entry*
4. *Stair*
5. *Auditorium*
6. *Cafeteria*
7. *Dance studio*
8. *Music studio*
9. *Gymnasium*
10. *Art classroom*

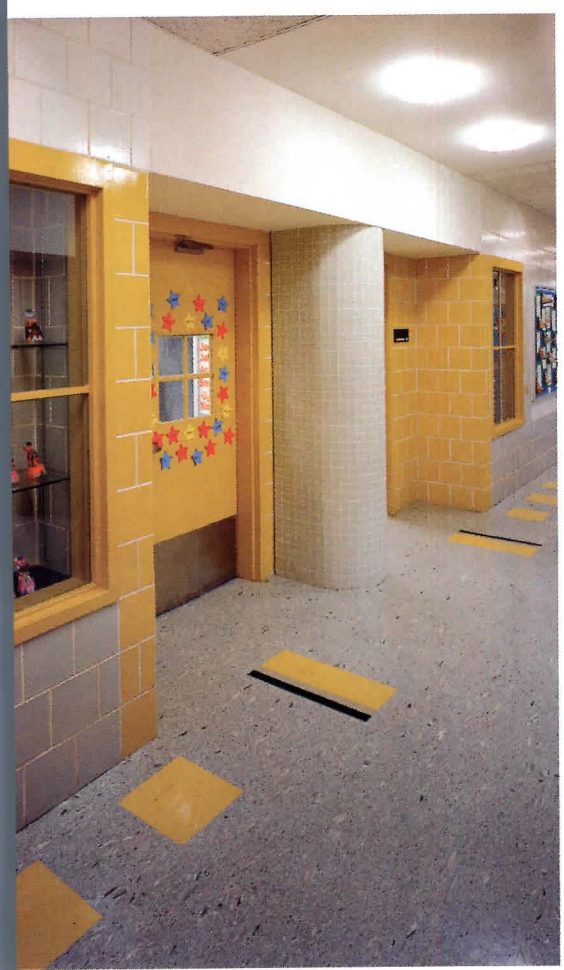


SECOND FLOOR



GROUND FLOOR

N 0 30 FT. 9 M.



Camino Nuevo Middle School
Los Angeles, California

4

LIKE A MAGIC WAND, DALY GENIK'S SKILL TRANSFORMS NEGLECTED BUILDINGS INTO OPPORTUNITIES FOR CELEBRATION.

By Alice Kimm

Architect: *Daly Genik Architects—Kevin Daly, AIA, principal in charge; Christopher Genik, AIA, Gerlinde Artzmann, Kyle Chad Clark, Josh Kenin, Alice Park, Brian Reiff, Chia Hung Wang, Jared Ward, team*
Client: *Pueblo Nuevo Development*
Consultants: *John A. Martin and Associates (Phase II, structural); William Koh (Phase I, structural); IBE Consulting Engineers (mechanical); Silver, Roth & Associates (electrical)*
General contractor: *Miller Contracting*

Size: *20,000 square feet*
Cost: *$3 million*

Sources
Elevators/escalators: *Schindler*
Interior ambient lighting: *Zumtobel*
Custom benches: *Nexwood*
Paneling: *Nexwood*
Cement plaster wall coverings, wall tile: *Daltile*
Paints and stains: *ICI Dulux*
Storefront door: *Kawneer Tuffline*
Storefront system: *Kawneer TriFab*
Metal/glass curtain wall: *Metal Sales (corrugated, perforated stainless steel)*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

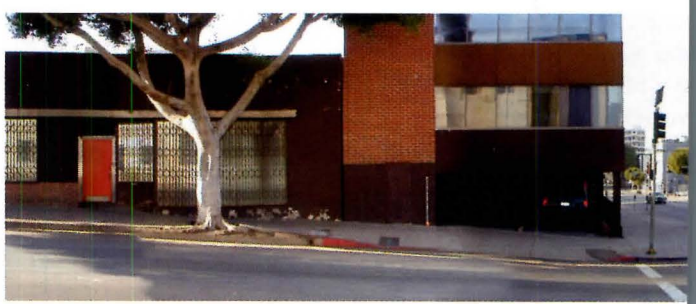
In 2000, Kevin Daly and Chris Genik of Daly Genik Architects completed a highly acclaimed charter elementary school in Los Angeles [RECORD, February 2001, page 134]. The inspired transformation of an abandoned mini-mall, it fulfilled the first phase of a master plan for the new Camino Nuevo Charter Academy campus. The academy is the brainchild of Philip Lance, a highly proactive priest, who has been aided by school specialist Paul Cummins and charter-school developer ExED. Camino Nuevo responds to crisis conditions in one of the most impoverished areas of Los Angeles.

Featured here is the just-completed next phase—a middle school housed in an 8,500-square-foot, one-story former warehouse and an adjacent 10,500-square-foot, three-story former office building. The latter runs along Wilshire Boulevard, a major thoroughfare. With this project, Daly Genik continues its exploration into upgrading the conventions of generic building types and using derelict buildings to create vibrant cultural and civic facilities.

Program

When the school opens this fall, its 250 to 300 students will occupy 10 classrooms, four located in the one-story volume of the former warehouse and six on the second and third floors of the former office facility. (A continuous circulation system allows the two structures to function as one building.) The raised classrooms are linked by wide corridors that run directly alongside Wilshire. A parents' center and the school's administrative offices reside on the ground floor. An independently functioning community health center also occupies this level.

Alice Kimm practices architecture in Los Angeles.

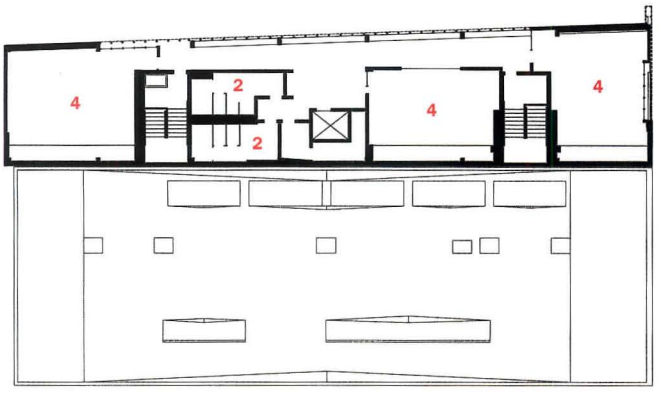


Solution

Philip Lance comments that an u school "is a chance to make a gr impact on a neighborhood, where have a large captive constituency you can broaden the educational mission to include adults." He thu challenged Daly Genik to create a facility that celebrates the neighb hood and welcomes its residents- a facility that is, both formally and metaphorically, transparent.

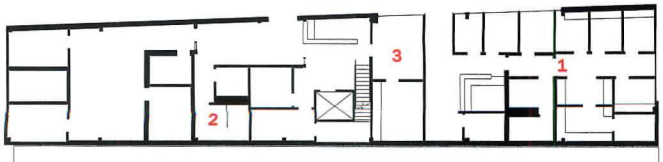
rugated, perforated
inless-steel sheets
lace the existing
tain wall along
shire Boulevard.
s attractive element
ates a giant sun-
een, mitigating the
t, views, and sound
t pass through its
ous surface (right
below).

The school's main entrance is located in the one-story former warehouse, where it abuts the former offices (left). West-facing clerestory windows and large openings in the roof bring light into the classrooms (right).



SECOND FLOOR

FIRST FLOOR



1. *Health center*
2. *Bathrooms*
3. *Offices*
4. *Classrooms*
5. *Lab*

N 0 10 FT. 3 M.

GROUND FLOOR

The main entrance to the school is located at the south end of the one-story former warehouse building. This structure is divided down the middle, with classrooms on the west side and the school's major circulation spine, or street, on the east. Looking through the front gates provides a captivating view down the street, which will be full of activity when the facility is open.

Introducing natural light into this building's interior was of utmost importance. This was accomplished with west-facing clerestory windows in the classrooms and large openings in the roof above the street. The openings are left uncovered; noises dissipate into the sky, and fresh air and light are present at all times. The street is further enlivened by a curved, folded, and colored plaster wall enclosing the classrooms. This wall further animates one's view into the school from the street outside.

The most interesting feature of the renovated, three-story office building is the treatment of the upper-story facades protecting the corridors along Wilshire Boulevard. The architects replaced the existing curtain wall with corrugated, perforated stainless-steel sheets to create a giant sunscreen. Light, views, and sound pass through its porous surface. From the street, silhouettes of people moving back and forth behind the facade are clearly visible. The transparency is vital; according to Kevin Daly, "Philip Lance's expectation that this school be a visible presence in the city influenced ou thinking about this facade. We felt it to be our responsibility to bring a catalytic quality to it, to reveal son aspect that is totally unexpected."

Commentary

Camino Nuevo proves that liabilitie such as run-down or abandoned buildings can be turned into asset However, reusing existing structure is not this project's only lesson. Its openness to the surrounding neigh borhood, in answer to Philip Lance original mandate, creates an impo tant urban impact. As Daly notes, "There is no way to isolate it. Beca of its open-ended nature, the perir ter is never set. The boundary is a of possibilities." He expands on thi approach: "The school could beco one in a chain of projects logically connected throughout the city as social infrastructure."

While there is little certainty that such a windfall of developm would come to pass in the area, those who care about the quality urban life are hopeful. Camino Nuevo provides an exciting alter tive for needy neighborhoods tha have only small parcels of land v existing buildings on them to offe up as potential development site If this school can take up an ent block previously composed of ab doned and underused structures and turn it into a vibrant and sta lizing force in the community, the this is good news indeed. ■

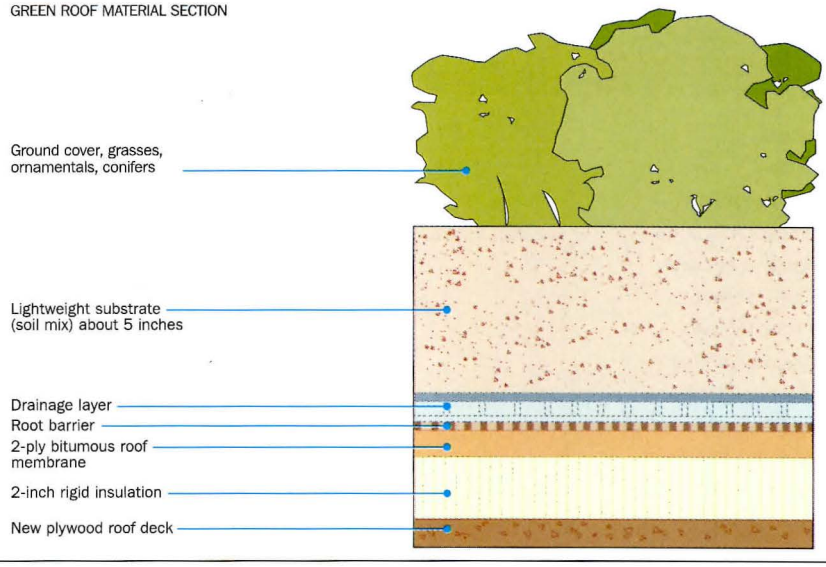
Vegetation Systems Atop Buildings Yield Multiple Environmental Benefits

OFING TECHNOLOGY DEVELOPED IN GERMANY IS STARTING TO TAKE ROOT IN NORTH AMERICA

Nancy B. Solomon, AIA

With a few glorious exceptions, rooftops have played a rather unglamorous role in modern construction. The top surface of a typical building is a necessary, tarian component that is technically addressed dur- design and construction and then goes unnoticed by ut, hopefully, the maintenance crew. The horizontal face that once defined the building's site—teeming n life and engaging in countless rejuvenating cesses—is replaced by an inert, one-dimensional e several stories in the air. Slowly but surely, owners, itects, and planners are beginning to recognize the able opportunities inherent in these virtually for- en patches of real estate.

One very promising option is a green roof, a erproof protective covering featuring a top layer of ts embedded in a growing medium. Conceptually king, the new vegetation replaces the ecology royed at grade by the building footprint. The plants form a ruggedly simple carpet or a lusciously elab- e garden. Popular in Europe for decades, green roofs are only now nning to sprout up in North America.



A standard section through a semi-extensive green-roof system designed by Linda S. Velazquez of Alpharetta, Georgia, for an existing residential building in downtown Atlanta.

ving the seeds

f vegetation is not new. For millennia, indigenous architecture was cov- with plant material—from sod to thatch. Twenty-five hundred years Babylon was renowned for its hanging gardens. And, in the early 20th ury, Le Corbusier extolled roof gardens in his vision of the new city.

According to Linda S. Velazquez of Alpharetta, Georgia, who publishes a green-roof Web site (www.greenroofs.com), the idea for contemporary green roofs came from medieval Iceland and Scandinavia. For inhabitants of these resource-limited regions, sod was one of very few readily available building materials.

But green-roof technology began in earnest in Germany, where, in 1971, Gerda Gollwitzer and Werner Wirsing published *Roof Areas Inhabited, Viable and Covered by Vegetation*, a book that outlined the modern green-roof concept. Today, that country essentially mandates green roofs: They are required in some jurisdictions and are offset by tax incentives in others. Fourteen percent of all rooftops in Germany have been greened, according to Steven W. Peck, president of the Cardinal Group, in Toronto. In 1999, his firm formed Green Roofs for Healthy Cities (www.greenroofs.ca), a network of public and private organizations, to promote the application of this technology in North America.

The main draw for green roofs in Germany is, undoubtedly, their environmental benefits. Top on the list is their contribution to storm-water management. In highly developed, densely populated regions, the sewer infrastructure can be overwhelmed by the amount of water that quickly flows off conventional roofs during a heavy downpour. A green roof slows down, reduces, and even cleanses storm-water runoff. "It's like having a giant sponge on the roof," says Brian Lambert, marketing manager with the Garland Company, a roofing manufacturer based in Cleveland.

This permeable surface absorbs and retains water, allowing much of it to evapotranspire, and only very slowly releasing the rest to the ground—at which point it has a chance of reaching an aquifer rather than simply disappearing down a pipe. According to an industry rule of

ributing editor Nancy B. Solomon writes about architecture and technology.

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn page 152 and follow the instructions.

EARNING OBJECTIVES

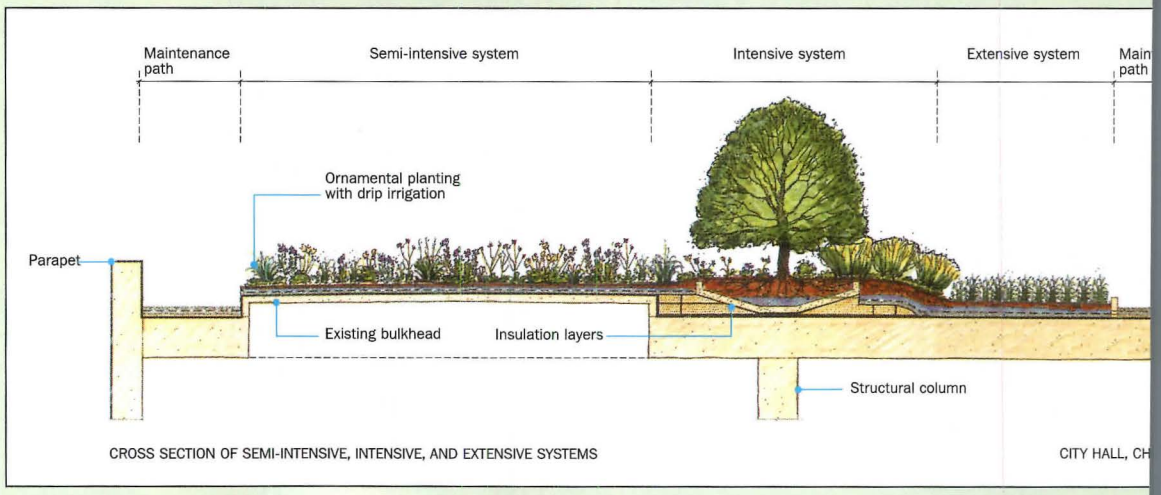
fter reading this article, you should be able to:

1. *Describe the components that make up a green roof.*
2. *Explain the environmental benefits of a green roof.*
3. *Identify types of plants suitable for a green roof.*

For this story and more continuing education, as well as links to es, white papers, and products, go to **architecturalrecord.com**.

City Hall, Chicago

The century-old City Hall (above) had been covered by a conventional ballast roof. By utilizing internal columns and adding reinforcement where the skylights once spanned, the architects were able to install three different vegetation systems (right). The pilot project (above right) includes a perimeter path, which is recommended for maintenance.



CROSS SECTION OF SEMI-INTENSIVE, INTENSIVE, AND EXTENSIVE SYSTEMS

CITY HALL, CH

thumb, notes Roger Schickedantz, AIA, associate partner at William McDonough + Partners in Charlottesville, Virginia, a green roof with low-growing vegetation can absorb about 70 percent of the rainwater it receives. And air pollutants that often get swept up with the precipitation, including nitrogen and phosphorous, are filtered out by the vegetation before they can pollute groundwater or streams.

Another major factor is a green roof's contribution toward alleviating the heat island effect, an ever-increasing problem in major urban centers. Exposed blacktop roofs are notorious for reaching very high temperatures in the summer and raising the ambient air in the process. Plants counteract this phenomenon. In addition, vegetated roofs help moderate a building's internal temperature, purify the outside air, and provide habitats for plants, insects, and birds.

Green-roof proponents list other benefits, as well. Although more expensive up-front, green roofs may be more economical over time: Stewart Comstock, water-resources engineer at Maryland's Department of Environment, in Baltimore, estimates that, in five to seven years, operational savings in terms of energy consumption and maintenance costs will offset the construction premium associated with a simple green roof with low-growing vegetation. In addition, living roofs provide aesthetic and psychological relief to a concrete-and-asphalt urban jungle.

Transplanting to North America

As green-roof technology has improved and our own environmental c lenges loom ever larger, government leaders and clients are slowly reali that the benefits of a living roof can also apply on this side of the Atla

In fact, green roofs are gradually being added to the regula toolbox for storm-water management in the United States. Maryla Department of Environment, for example, recommends that local ju dictions consider it a permeable surface. Taking heed, Anne Aru County now equates green roofs with grassy surfaces when calculating amount of water that a new development must retain and treat, says Mc Plait, chief engineer for the county's Office of Planning and Zoning.

With regard to the urban heat island effect, one highly vis experiment with green roofs is taking place in Chicago. Concerned al the public health threat due to the increasing summer heat differe between downtown Chicago and its outlying suburbs, Mayor Richar Daley encouraged the Chicago Department of Environment to look possible solutions. This effort has resulted in a 20,300-square-foot g roof on top of Chicago's City Hall [RECORD, February 2003, page 79]. pilot project, completed in 2001, will test various plant types and gr roof systems for this region. The design team included Weston Soluti an environmental engineering company based in West Che

Chiropractic Health Center, Luzerne County, Pa. Although most often applied to flat planes, green roofs can also be installed on sloped and even curved surfaces (left two). Here, plastic lumber battens were attached at the steepest sections to prevent soil slippage. Fabric mesh held soil in place until plant roots took hold. Water drains freely, although slowly, from green roof to eave. The extensive roof was planted with a type of sedum (below). Van der Ryn Architects of Sausalito, California, designed the center.

nsylvania; McDonough + Partners; and Conservation Design Forum, ndscape architecture and planning firm in Elmhurst, Illinois.

Ever pragmatic, U.S. building owners are being motivated not by environmental gains: "Longevity is one of the places where our nts see benefits," observes Russell Perry, AIA, managing partner at Donough + Partners. To understand why, consider the three condis that typically damage a conventional, black-membrane roof: deness caused by the sun's UV radiation; thermal shock due to temture differential between top and bottom layers; and punctures lting from pedestrian traffic or dropped tools. The vegetation and soil rs of a green roof protect the membrane from all three.

Assuming the membrane is properly installed at the beginning, ould last much longer than an exposed roof membrane. No one ws for sure, as green roofs have not been in place long enough, but e in the industry have suggested a doubling or even quadrupling of membrane's life, thereby estimating a life expectancy of 20 to 40 years.

tomy of a green roof

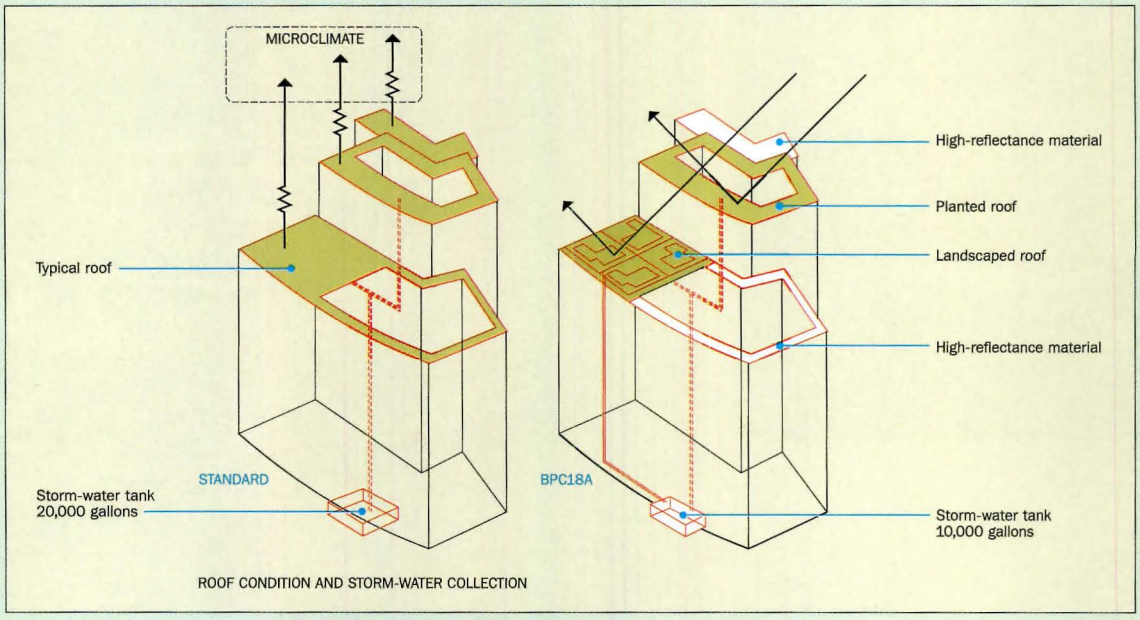
all roofs, the most important characteristic of a green one is its ability eep water out of a building. It does this with several protective rs: waterproof membrane, drainage system, fabric filter, growing medium, and vegetation. Depending on the particular system and project, a layer of insulation may be installed below the membrane, a root barrier may be added above the membrane, a wind barrier may be placed above new plants, and irrigation may be installed as part of the roof system.

The waterproof membrane is the most critical layer. "Vegetation can always be replanted," says Lambert, "but you've got a big problem if the building gets a leak." After installing the membrane, he recommends waiting long enough before planting to see if there are any holes. "Do a flood test. Try to make it leak. You want to make sure the materials and labor are top-notch," he cautions. Different green-roofing companies promote different membranes—from multi-ply modified bitumen to PVC—often depending on what their sister roofing company sells for a conventional roof.

A root barrier is usually specified when tall plants or small trees are included in the landscape design. It may not be needed when low-growing vegetation with very fine hairlike roots is planted. In this latter case, however, a root barrier may still be installed to protect the membrane from larger plants that could take root if seeds migrate from other areas by birds or wind.

A drainage system is required below the soil layer to handle excess water due to very heavy precipitation. The system essentially con-

20 River Terrace, Battery Park, New York City
An intensive green roof on the 17th floor (right) and an extensive one on the 27th floor are tied to a gray-water system: Roof runoff and other building wastewater, collected in a basement cistern (diagram, below right), will irrigate the midair gardens. In a typical building (below left), roof runoff is not reused. The project was designed by the New York office of Cesar Pelli & Associates and the New York landscape and urban design firm Balmori Associates in accordance with Battery Park City Authority's *Green Residential Guidelines*.



ROOF CONDITION AND STORM-WATER COLLECTION

sists of an elevated air space into which water can collect and, once it reaches a certain level, flow off the roof—typically through interior drains. As with membranes, the drainage layer varies from manufacturer to manufacturer: One, for example, relies on a plastic tray whose profile resembles an egg carton, while another installs a layer of gravel. Some drainage systems are designed so that a portion of the collected water can be saved and recycled back into the soil during arid periods. In comparing drainage systems, architects should be cognizant of how much water they can hold for how long a period, and how much they weigh. A very fine cloth filter is placed between the growing medium and drainage system so that only water can pass through.

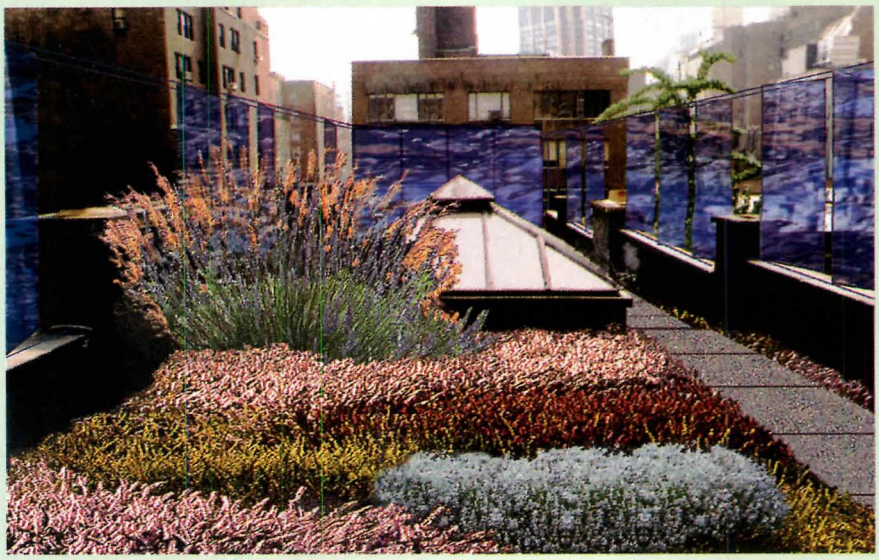
Engineered soil and hardy plants

When it comes to living roofs, not all dirt is the same. In fact, the medium in which the vegetation is planted must be carefully engineered for the system to achieve its expected life. It would be a big mistake, for example, to install a soil that is more than 20 percent organic: "The plants will look great for the first two years, but then roof health will deteriorate because organic soil disintegrates quickly," says horticulturist Ed Snodgrass, who studies and grows green-roof plants on his family farm, Emory Knoll Farms, in Street, Maryland (www.greenroofplants.com). Again, each manufacturer offers its own special blend that considers weight, w capacity, and compaction over time.

The depth of the growing medium and species of plant dis guish the two basic types of green roofs—extensive and intens Extensive green-roof systems have very shallow beds, in the order of 6 inches, that support only very hardy, low-growing vegetation. These the most practical and economical green roofs, as they are lightweigh weighing little more than a traditional ballast roof—and require littl no maintenance or irrigation.

With deeper beds, intensive systems can grow many more v eties of plants—and even small trees. They can be much more aesth than extensive roofs, easily lending themselves to a gardenlike atm phere. But the additional soil and taller vegetation translate into hig roof loads, so additional structural support is often necessary. This typ roof landscape typically requires regular maintenance—including wa ing, fertilizing, and mowing—that adds to ongoing operation costs. nutrients from the fertilizer, which is water soluble, can slowly make t way to local water bodies, where they can add to the ecological havo

A lightweight growing medium can easily be lost to the w until stabilized by mature plants. A mesh made out of a biodegrad material, such as jute, is recommended to cover the dirt tempora



Earth Pledge Foundation, New York City
Earth Pledge Foundation, a nonprofit environmental organization based in Midtown Manhattan, promotes the construction of green roofs in New York City through its Green Roofs Initiative program. The foundation's own 600-square-foot intensive roof garden (left), used for promotional events, lunch meetings, and informal entertainment, was designed by Balmori Associates and completed in 2002. Principal Diana Balmori experimented with perforated plastic screens at the roof perimeter (above) to moderate wind. They were not installed, however, due to budget limitations.

Alternatively, in some proprietary systems the plants are grown in plastic trays or sodlike mats on grade, so that they are fairly mature and secure in the growing medium before these components are lifted into place.

Rooftops can be harsh environments. The plants that survive the best are those that have adapted to similarly harsh locations. Imagine the handful of plants you would find growing on a windswept rock outcropping high up on a mountain, scorched by intense direct sunlight in the summer, frozen by snow in the winter, and drenched by rain in the spring. "That's what you want to plant—not roses," explains Perry. Fortunately, such hardy plants can be very attractive, and they come in many different colors, not just green.

By and large, the plants that seem to fare best on U.S. roofs are the same ones promoted in Germany: succulents, with varieties of sedum being the most common. Because of their particular metabolic processes, succulents are very adept at conserving water and can therefore survive drought conditions. And, when planted in the appropriate region and soil conditions, many do not need ongoing fertilization because the nutrients from their dropped leaves are simply reused. "It's self-sustaining," observes Perry.

But conditions—in terms of temperature fluctuations, light, rain, wind, maintenance, occupant access, to name a few—do vary from roof to roof, necessitating one type of plant over another. Priorities also vary: In the U.S., for example, there is a lot of pressure to use native pl on roofs despite the fact that, according to horticulturist Snodgrass, don't yet have any proven natives."

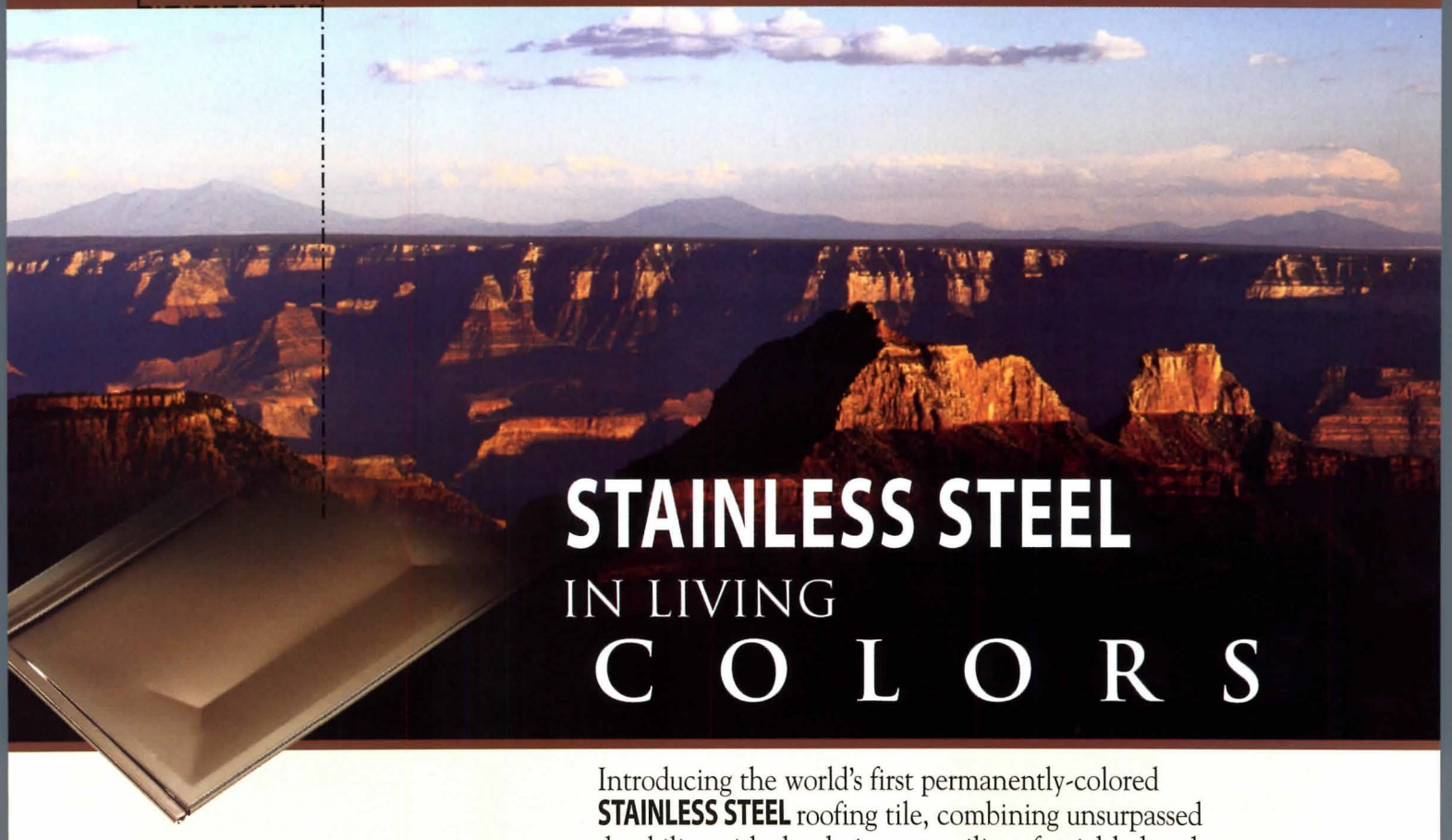
Whether drought-tolerant low-growing vegetation or thir larger shrubs, all plants need sufficient water to get up and running. O temporary, above-soil irrigation systems are installed for the first grov season. "It's used as an insurance policy," explains Lambert. If aestheti very important, a permanent irrigation system may be installed abou inch below the soil to deliver water to the roots as needed.

Plowing ahead

Today, about 10 patented green-roof systems are available from about dozen companies in North America. Each company typically offers service for a complete green-roof system, from membrane to pla According to Schickedantz, however, an architect can, and often sho mix and match proprietary components to suit a project's particular ne

Some of these companies strictly focus on green roofs; other traditional roofing manufacturers that are adding green to their palett either case, the American firms have typically aligned themselves wi German green-roof manufacturer and modified the German techno to suit North American building requirements and climatic conditi

durability | permanence | ingenuity | style | performance | versatility



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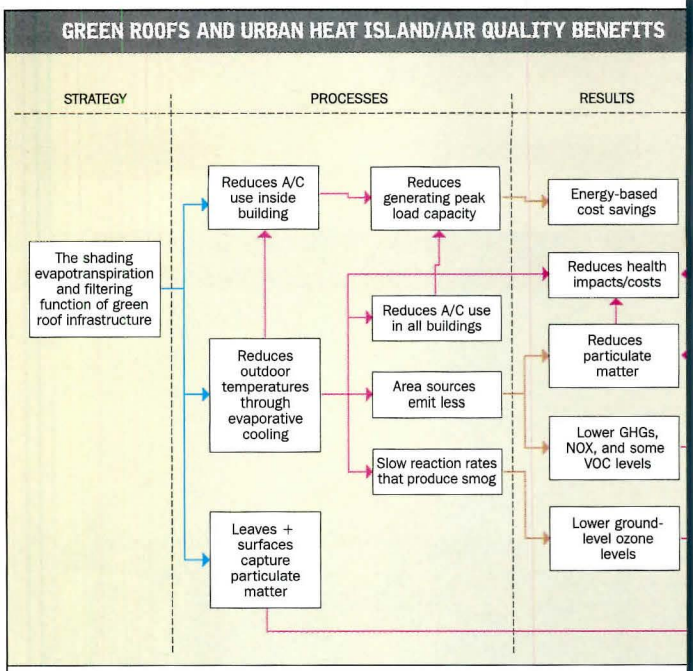
However, the jury is still out as to whether these systems have been fully adapted to our continent. And there is not yet enough hard data distilled from rigorous testing—here or, for that matter, in Germany—to show quantitatively how well green roofs succeed in their expressed goals.

Fortunately, a few researchers in academia are beginning to rectify the situation. For example, Bill Hunt, P.E. (www.bae.ncsu.edu/people/faculty/hunt), extension specialist with the biological and agricultural department at North Carolina State University in Raleigh, has set up three experimental roofs to investigate, among other factors, the speed at which water runs off both conventional and green roofs, measure how much nitrogen and phosphorus are absorbed by the systems, and determine the optimum roof slope, soil type and thickness, and plant species for the southeast United States.

Despite the various systems currently on the market, Hunt admits that there are still a lot of design questions to be answered: How thick should the soil be? What type of soil should be used? What are the best plants for quick growth? How does soil depth affect plant growth and flood reduction? "Right now it's a shotgun approach," confesses Hunt. But not for long: "Soon there will be enough data so that we can make pretty good preliminary design recommendations," he predicts.

In the meantime, to further their education, architects interested in this new technology may want to attend Greening Rooftops for Sustainable Communities: The First Annual North American Green Roof Infrastructure Conference, Awards, and Trade Show. It takes place on May 29 and 30, 2003, in Chicago and is cosponsored by The City of Chicago and Green Roofs for Healthy Cities. ■



This diagram from Green Roofs for Healthy Cities and Environment Canada indicates the multiple energy and health benefits associated with living roofs.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- **Read the article "Vegetation Systems Atop Buildings Yield Multiple Environmental Benefits" using the learning objectives provided.**
- **Complete the questions below, then fill in your answers (page 238).**
- **Fill out and submit the AIA/CES education reporting form (page 238) or download the form at www.architecturalrecord.com to receive one AIA learning unit.**

QUESTIONS

1. Vegetation and soil protect rooftops from all except which type of damage?
- **a.** UV radiation
- **b.** water
- **c.** thermal shock
- **d.** punctures

2. The roof membrane's life expectancy changes in which way due to vegetation?
- **a.** it lasts 5 years less
- **b.** there is no change
- **c.** it lasts 10 years longer
- **d.** it is expected to last 20 or more years longer

3. The most critical layer of a green roof is which?
- **a.** soil layer
- **b.** waterproof membrane
- **c.** vegetation
- **d.** filtered drainage

4. When is a root barrier specified?
- **a.** when tall plants are used
- **b.** when low-growing vegetation is used
- **c.** when the drainage system is specified
- **d.** when the soil layer is shallow

5. A drainage system is required to handle which?
- **a.** daily watering
- **b.** recycled water
- **c.** excess water
- **d.** stored water

6. Extensive green-roof systems can be described by all except which?
- **a.** shallow soil bed
- **b.** requires regular maintenance
- **c.** supports low-growing vegetation
- **d.** lightweight

7. Intensive green-roof systems can be described by all except which?
- **a.** gardenlike atmosphere
- **b.** deep soil bed
- **c.** need structural support
- **d.** economical green roofs

8. The type of plants best suited for rooftops is which?
- **a.** roses
- **b.** native plants
- **c.** succulents
- **d.** shade-loving plants

9. The environmental benefits of green roofs include all except which?
- **a.** storm-water management
- **b.** cooling the ambient air
- **c.** releasing nitrogen into the drainage water
- **d.** providing a habitat for insects and birds

10. Green roofs are encouraged in Germany by which means?
- **a.** some jurisdictions offset cost by tax incentives
- **b.** required by a constitutional amendment
- **c.** cost of plants is subsidized by government
- **d.** labor is provided by the government

ts High School
, CA

PAXTON / PATTERSON PRESENTS

School Construction:

Technology Is Changing the Way Kids Learn ... And the Classrooms in Which They Do It.

Mendez Fundamental Intermediate , Santa Ana, CA

ohen H. Daniels

een nearly seven years since former U.S. Secretary of Education Richard ey released the nation's first educational technology plan. That plan, had the lofty title "Getting America's Students Ready for the 21st Centu- ing the Technology Literacy Challenge", transformed overnight what our learn, how they are taught, and the Internet-driven wave of change that er education has had tremendous impact on classroom design itself.

The classrooms for the 21st century are shaped by Internet learning.

Programs defined as technology education are replacing programs known as industrial arts in the same way that industrial arts replaced "manual arts" 30 years ago, and both curriculum and facilities are dramatically different.

"Architects who are pulling from their files, as the basis for new school plans today, blueprints from the 60s—and there are still a great number of them—are doing their clients a disservice," says one Midwest-based tech education consultant. "To accommodate the new curriculum, schools today, especially the new labs, are wildly different than anything you and I grew up with."

This continuing education piece will look at recent trends in technology education and will look briefly at how learning success can be influenced by effective design. In it, we will look at a number of technology labs, including those in which modular units replace "typical" classrooms and curriculum, and we will discuss the environments necessary to effect successful "project-based" learning.

Last year, for the third year in a row, U.S. school construction spending exceeded $20 billion—a little more than half of it in new facilities. Nearly 40 percent of the new high schools, and about 10 percent of the new middle schools, included technology labs. Of the nearly $10 billion in renovation of existing schools that was completed in 2002, a significant percentage was for converting existing industrial arts classrooms to technology education facilities.

"The philosophical change from industrial arts to technology education has involved the renaming of programs, the restructuring of courses and changes in facilities," says Kenneth S. Volk, former assistant professor with East Carolina University's Department of Business, Vocational and Technical Education, now a senior lecturer with the Hong Kong Institute of Education's Department of Engineering and Technology Studies.

Between 1970, when the first university renamed and restructured programs from industrial arts to technology education, and 1990, the number of industrial arts teachers graduating from U.S. universities declined by more than 70 percent, according to Volk, and the decline over the past decade has been even more precipitous. Volk predicts the demise of industrial education in the U.S. by year 2005.

Dr. Michael DeMiranda, a Distinguished Technology Educator (DTE) at Colorado State University, says such a prediction is unfounded. "Some form of trade

ING EDUCATION

Use the learning objectives below to focus your study as you read **School Construction: Technology Is Changing the Way Kids . And the Classrooms in Which They Do It.** one AIA/CES Learning Unit, including one hour safety welfare credit, answer the questions on , then follow the reporting instructions on page to the Continuing Education section on *d.construction.com* and follow the reporting ons.

NG OBJECTIVES

ling this article, you should be able to:

- *the trends in technology education and its impact ure learning environments.*
- *are of how the design of schools can impact the ng and how students and teachers interact.*
- *rstand ways to design a technology lab to be flexible llow for future growth in technology and learning.*

Toll Middle School, Glendale, CA

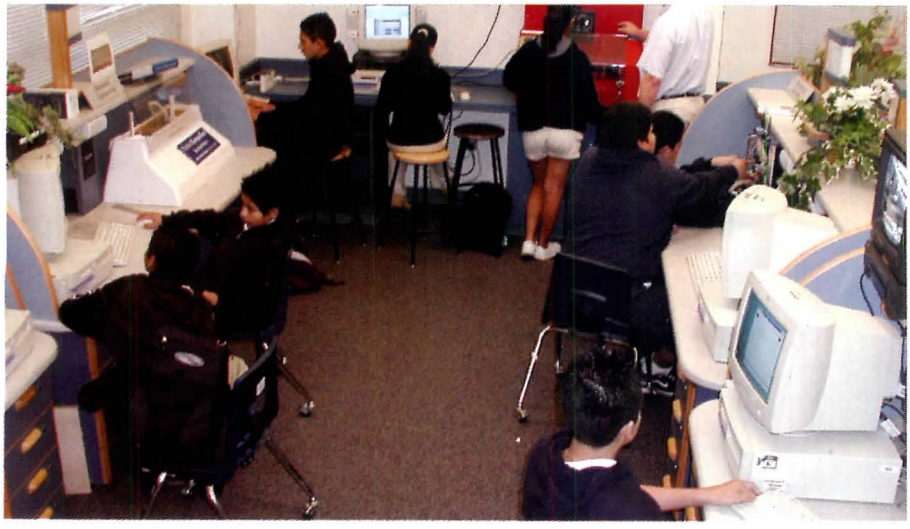
and industrial education will continue," he says. "We are not replacing anything" DeMiranda says.

"I think that is true," says another technology education industry source. "Educators are too inertia-bound to eliminate probably 30,000 (industrial arts) programs in the next two years. We have, in fact, seen a resurgence in 'shops' in the last year or so" says a supplier.

However, "thirty years ago, in California alone, there were six schools which produced 200 student teachers per year in industrial arts," says John Waltemeyer, a former industrial arts teacher who today is an educational consultant for a modular education supplier. "Today there is a single school in the state training industrial arts teachers; it produces fewer than 10 graduates a year, and less than half go into teaching," says Waltemeyer.

High school and middle school administrators and industrial arts teachers interviewed for this article say this trend is apparent: as current industrial arts teachers retire, their shops are closing and being converted to other uses.

In their place, with increasing frequency, are modular learning programs, developed by outside equipment suppliers who once served the industrial arts marketplace. In place of wood shop—often in the same facility that once housed a school's wood shop—are modular technology classes that engage an increasingly cross-gender student group in such subjects as alternative energy, architectural design, bioengineering, communications technology, construction technology, digital electronics, environmental technology, manufacturing technology, materials science, multimedia production, robotics and automation, and transportation technology.



Mendez Fundamental Intermediate School, Santa Ana, CA

The modular learning programs come with a new too and facility demands, all their own—wind tunnels, race t stress-testing apparatus for engineering modules, a six-ft.- apparatus for experiments that teach the principles of ma ic levitation. A construction technology program is accon nied by a four-sided light box that demonstrates the heat mission values of four different window glass combinatio including a low-e sandwich. Students use the equipment gain hands-on experience with real-world materials and g an understanding of real-world alternatives.

Technology education's hardware and activities have bee incorporated into other disciplines. Math and science teache now using robotics, CAD and modular hardware typically fo in technology education in order to provide concrete applica to their lessons. English classes, now often called "communic incorporate video production, desktop publishing, and other "tools" found in technology education's communication clus

New Learning Methods Demand New Classroom Concepts

"Young people in a modular learning environment work on projects toge says a supplier. "They look at problems from every angle. They brainstor possible solutions. They come up with a plan, test a model, keep the part that model that work and eventually write a narrative about their experie They learn how the physical world really works in an environment that c resembles the real working world." And they do it, increasingly, in classro without desks.

Educators are still grappling with the notion of technology education a how best to achieve "technological literacy" in the U.S., and designers are attempting to provide answers to high-profile problems to school boards w sometimes don't even know the questions.

Digital content and networked applications are transforming education Department of Education officials. That transformation is increasing the p sector stake in public education. Increasingly, not only the tools of the tech logical transformation—computers and LANs and WANs (local and wide- networks), but the curriculum itself, come from outside the traditional edu tional community.

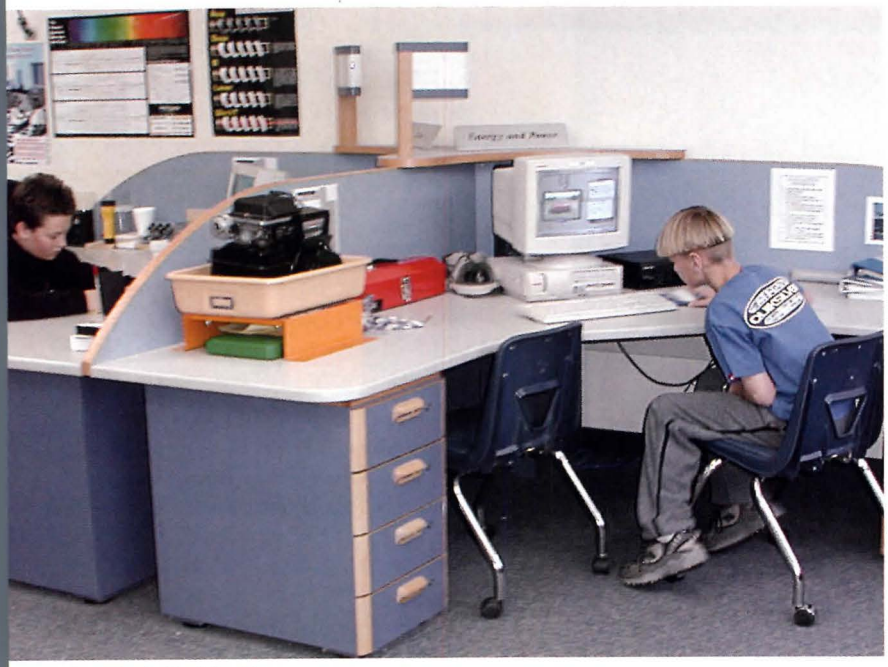
The tech lab affords the architect and the school board a unique oppor to design a space that ensures a "powerful" learning experience, says a tech supplier. But what does that space look like?

"When it comes to specifying classroom equipment, most architects kn what goes in a biology lab, but most have never been in a tech lab, and they to know more about it. That's where we come in."

One technology education supplier operates four regional learning cen where both teachers and designers engage in seminars to stand the new technology and its accompanying curriculu Between five and 10 percent of that audience is architects. most, it is an epiphany," says a spokesperson. "They tell us had no idea that was going on.'"

At the 4,000-student Manual Arts High School in dow town Los Angeles, the third-oldest school in the city, once percent African-American, now 80 percent Hispanic (mo half Manual Arts student body lists Spanish as its first lan guage), 11th-grader Ernesto Smith was quietly busy with other students—both female—at a workstation in a corne a converted metal shop.

The students were constructing a working model of a lev train, the first real-world version of which is to be unv by the Chinese this spring—a $1.1 billion, 36-mile system necting Shanghai and Pudong. Incredibly, Smith and his mates, understand the principle involved in the constructi a noiseless, frictionless rail project. Smith says of the proc which he gained that understanding "this is fun!"



nont Middle School, Glendale, CA

Girls in industrial arts class? Education is undergoing a revolution, so is sroom design. As the goals of education change to reflect the new educa- al needs of our society, so, say both educators and designers, do the strate- for technology integration. The new credo of federal educators is that it is ntial to prepare students with critical thinking skills—to give them prob- -solving strategies more in tune with a complex world.

One of the criticisms of modular, vendor-supplied curriculum is that ıisetrap and CO_2-powered vehicles, which all vendors seem to include as of middle school curriculum, while fun, are of limited educational value. ıe case of the more reliable of the modular vendors, however, curriculum eated by educators, or former educators, based on technology standards set ederal, state, and in some cases local jurisdictions.

One of the architectural modules widely installed in U.S. classrooms has ents exploring architectural history and comparing architectural styles on One of a 20-day program. On Day Two, students are doing simple sketch- nimicking what they have seen the day before. By Day Three, students are rviewing clients and doing preliminary site plans, and by Day Four, they loing conceptual models and drawing sections and elevations of simple s. Eventually they will create 3-D models, consider the effects of the sun on ilding and environmental site issues. They will design a transit center, have ıtroduction to AutoCAD, and, at the end, make a presentation to a "client" design problem of their choosing. All the while, they have recorded lessons ıed in an electronic journal.

Educators refer to two very different teaching theories: directed instruc- —lectures, worksheets and tests with specific expected responses; and what metimes called constructivist teaching, which focuses on learning through blem-solving and stresses group work in place of individual performance. critical that architects understand the distinction, because the classrooms ach are very different. Small classrooms with rows of desks, maybe 30 of ı, will suffice for the former.

sters, not Rows; Tables, not Desks

tables are replacing rows of desks in many contemporary classrooms. Dis- and storage areas are being added, and learning centers are being intro- d. These design features are the outgrowth of a growing emphasis on proj- based learning. This project-based approach to learning establishes collabo- e technology learning environments, or "collaboratories," that enable proj- nhanced science/technology learning. Tables provide space for students to k together in either large, or small, groups. Display areas enable teachers and students to exhibit projects, and storage areas give students a place to house their "works in progress." Learning centers provide the opportunity for self-directed learning.

In some states—Virginia is one—traditional desks have been replaced by tables in more than one-quarter of all elementary classrooms, Nine of ten Virginia elementary schools have student work stations in their classrooms and 70 percent have special rooms for tutorials and small groups of students. Because contemporary teaching often crosses traditional academic disciplinary lines, many classrooms also now have moveable walls to accommodate student groups that may combine more than one class. One fifth of all Virginia elementary schools and half the state's middle schools incorporate moveable walls as part of school design.

"More traditional arrangements are being replaced gradually by nontraditional organization of classrooms," says a recent report on design features in Virginia's public schools. "Elementary and middle school classrooms organized by grade-level and high school classrooms organized by academic discipline are changing to include thematic, interdisciplinary, and family clusters."

In each of the three years since 2000, according to the U.S. Department of Education, U.S. new school construction totaled more than $20 billion. The $20.34 billion in new construction in 2000 was the highest in history, and in each of the years since 2000, slightly more than half total school construction spending was on new facilities.

It is interesting to note the elements of that new construction, the extent to which industrial technology and vocational shops were a part of new school designs and the degree of technology support that went into new facilities. The numbers reflect the trend toward advanced technology education.

At the high school level, 35.7 percent of new schools included facilities for industrial technology classes; 26.8 percent included vocational shops. Just over nine percent of all new middle schools included industrial tech facilities; 3.1 percent, vocational shops. Nearly all—98.2 percent—of the high schools under construction in 2002 were supported by local area networks. Nearly 97 percent included fiber optics or cable. At the middle school level, 96.9 percent of all new facilities in 2002 included LANs; 98.4 percent, fiber optics or cable.

All This is New, Say Architects

In an effort to improve high school science, math, and technology education teaching and learning, the National Science Foundation sponsored a planning study, the objective of which was to develop criteria, standards, and a process for programming and planning prototype laboratories and support spaces for secondary school instruction. The results of that planning study can be found at www.labplan.com.

Badger High School, Lake Geneva, WI

Manual Arts High School , Los Angeles, CA

Architects with experience in technology lab design, and award-winners in new high school design were asked these questions:

1. How will the teaching spaces for math, science, computer science, and technology education be different in the next decade?
2. How can the architectural design ensure flexibility for future programmatic change?
3. Is there a preferred or ideal process for interacting with school representatives to ensure that the design and resulting facility will support current and future programs and pedagogy?

The responses in full, and the sources of the remarks can be viewed in the required reading for this continuing education section. (Instructions are at the end of this section.) In brief, however, the responses were these:

- we will be seeing more and more industrial technology shops converting to clean technology labs, reducing the need for large machinery and the traditional shop setting.
- schools, once designed as spaces for "passive" learning are changing to meet new demands, and learning spaces must now support a wide variety of learning activities and environments.
- flexibility is a key factor in tech lab design, and classrooms, in most cases, must be larger to accommodate computers and spaced for team-learning.
- furniture must be appropriate for technology integration. The old desk-chair combination will not accommodate the personal computer.
- expensive science "wet labs" are being reduced in number. They are being replaced by "virtual reality" stations in which the computer replaces hands-on experimentation.
- interior bearing walls with small-span columns are an impediment to flexible classroom design; mechanical, electrical and plumbing systems must be flexible enough to permit walls to move to accommodate combined classes and accommodate growth and future program changes, infrastructure must be fluid; cable trays and all technology routes must be accessible.
- redundancy in design of mechanical, electrical and plumbing equipment is critical, spaces must be adaptable to any use.

Space is a critical issue in technology education lab planning, as is the problem of maintaining a line-of-sight between teacher and students. "We often find ourselves trying to put a size-12 foot into a size-nine shoe," says Waltemeyer. "If I am building a tech lab, the ideal space is open, with the modules against the walls. We find architects frequently trying to create tech labs within a space defined by the traditional classroom—a space of about 900 sq ft. The ideal tech lab space is at least twice that, or even 2,400 sq. ft."

At the Mendez Fundamental Intermediate School in Santa Ana, Calif., former science teacher David C. Greenwald now teaches technology in a room that was originally designed for a shop class. Because the education modules, each with its own 19-in.computer monitor, are arranged "traditionally," in rows across the room as desks might have been arranged, and because Greenwald operates from one end of the room, students are lost behin their computers.

"Keeping everyone on task in the computer classroom i a challenge," he says. To solve the problem, Greenwald has installed roughly a dozen TV monitors throughout the roon can, thus, watch his students at work. The exercise, he admit is a little like monitoring a department store security system but despite classroom limitations he is enthusiastic about m lar education: "Because of the nature of the lab, students are exceptionally motivated, and, he says, they are, therefore suc ful at advanced levels of learning." This, says Greenwald, "is nitely the most challenging course my students have ever attempted, but it is also the most rewarding."

The Front of the Classroom is Where?

"When we ask teachers 'Where is the front of your classroon the answer is 'there really isn't one anymore,'" says one archi

Ideally, says Diedre Weber, a home economics teacher a Eleanor J. Toll Middle School in Glendale, Calif., who for a y and-a-half has taught a modular education class called Family Consumer S ences in a converted sewing classroom and who is now working with local architects on a wholesale renovation of the 75-year-old school, the teacher tion should be in the center of the classroom, and it should be slightly elev to maintain a line-of-sight between students and teacher.

A frequent problem, say tech education designers, is getting teachers, th selves, to think beyond traditional classroom settings. At Walnut High Sch in Cincinnati, Ohio, teachers were asked to contribute to scoping process f a recently completed Arts & Science center that would house the school's c puter science labs. "Getting the staff to think beyond the basics, like scienc with working sinks and running water was a challenge," says Deborah Hel executive director of the school's alumni association. "Some wanted enoug outlets to plug in extension cords. In a $10.5 million building, we weren't g to have extension cords," Heldman says.

Education consultants like Waltemeyer most often work directly with sc districts, but also host training sessions for teachers, administrators and arc tects, at which Waltemeyer says, designers can network with prospective cli

It is essential, says Waltemeyer, that the school's vision of its tech lab be before construction drawings begin. "Change orders become expensive," h The complexity and often heavy mechanical/electrical demands of tech ed tion classrooms make mid-construction changes even more costly.

While much remains to be learned—and debated, this much is clear, sa those working on the cutting edge of technology education reform: the ov whelming advances made by e-business have made e-learning—computer works, multimedia, content portals, search engines, electronic libraries and web-enabled classrooms—an integral part of the 21st Century classroom. The reform is forcing us to rethink the purpose and the architecture of ou educational infrastructures in very fundamental ways. ■

For further background, readers are referred to the websites of the followi organizations: the International Society for Technology in Education (IST International Technology Education Association (ITEA), National Clearin house for Educational Facilities (NCEF), National Center for Educational tistics (NCES), the National Educational Technology Standards Project (N and the U.S. Department of Education's Office of Educational Technology (OET). Also of interest to classroom architects is the November 2002 repo the U.S. Department of Education's Office of Educational Research and Improvement: "Technology in Schools," which offers tools and guidelines assessing technology in elementary and secondary schools. It may be foun http://nces.ed.gov/pubs2003/2003313.pdf.

Click For Additional Required Reading

As part of the required material for this CES section, please read the archi comments section of the National Science Foundation planning study. To a the material online, go to **archrecord.construction.com/resources/conte** To request a faxed copy, contact Bonnie Grzelinski at (800) 323-8484 ex 202, or email bgrzelinski@paxpat.com.

LEARNING OBJECTIVES

- Know the trends in technology education and its impact on future learning environments.
- Be aware of how the design of schools can impact the learning and how students and teachers interact.
- Understand ways to design a technology lab to be flexible and allow for future growth in technology and learning.

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 238. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

Q: 1. Last year, for the third year in a row, U.S. school construction spending exceeded:

A: a. $120 million
b. $10 billion
c. $20 BILLION
d. $25 billion

Q: 2. How much of the annual spending on U.S. school construction last year was in renovation of existing schools?

A: a. nearly one third
b. a little less than half
c. a little more than half
d. more than three fourths

Q: 3. Which of the two teaching theories focuses on learning through problem-solving and stresses group work in place of individual performance?

A: a. Directed instruction
b. Constructivist

Q: 4. The current model of small classrooms with rows of 30 desks would work for which style of teaching?

A: a. Directed Instruction
b. Constructivist

Q: 5. What percentage of high schools under construction in 2002 were supported by local area networks?

A: a. 78.2%
b. 88.2%
c. 98.2%

Q: 6. Redundancy in design of mechanical, electrical, and plumbing equipment is critical.

A: a. True
b. False

Q: 7. An ideal tech lab space is which in comparison to current traditional classroom sizes?

A: a. Small than
b. Same size
c. Larger than

Q: 8. Learning spaces of the future are being designed for one specific subject or activity per classroom.

A: a. True
b. False

Q: 9. The trend in classrooms is working in small groups.

A: a. True
b. False

Q: 10. All but which would allow for flexibility in a learning lab design?

A: a. Electrical lighting on whips
b. Speakers in the ceiling and zoned
c. Accessible cable trays
d. Small span columns

Belmont High School, Los Angeles, CA

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Resilient Flooring Design Options

ient Flooring can mimic nature, reduce sound and static. With it, we can te limitless patterns that burst with contemporary color and energy, that the imagination and command attention. Tinkering with traditional " manufacturers have created new product lines of heightened durability and ease of maintenance. New products and processes can help you qualify for Leadership in Energy & Environmental Design (LEED) credits. And—look—linoleum is back!

In this continuing education section, we will evaluate tile vs. sheet flooring, look at the product selection criteria for a range of flooring types and look at the characteristics of a range of both tile and sheet products available to commercial designers.

Tile gives the designer the ability to make many different "modular" designs; sheet flooring lends itself more easily to circular patterns. The "binder" in resilient flooring is, in the case of nearly all commercial flooring, vinyl.

As a general rule, the higher the vinyl content, the better the general performance—and the higher the cost. Vinyl composition tile (VCT) is more easily, less expensively installed and more easily repaired, but requires more routine maintenance. With VCT, designers can create a harder, denser surface than is generally available with sheet flooring.

Sheet flooring offers a seamless application for critical environments. Relatively recently developed vinyl-enhanced tile (on the market for about the past three years) gives designers the option of a 16-in.X 16-in. tile, nearly 80 percent larger than traditional 12-in X 12-in tile, reducing cost and enhancing performance.

Additives and Stabilizers: More "Meat in the Meatloaf"

Depending on the "recipe" selected to combine vinyl resin with selected additives and stabilizers, vinyl can be made flexible enough for wallcovering, rigid enough for pipe, can have nearly any texture or pattern, and can be made clear or in virtually any color. Vinyl's durability, resistance to the elements and fire performance all can be affected by additives or stabilizers.

The major components of resilient flooring are vinyl and fillers, like limestone or clay for rigidity. Plasticizers, stabilizers and pigments are secondary components. In general, higher vinyl content increases resilience and long-term wear increases a flooring material's resistance to indentation and its flexibility.

Vinyl by itself, without any filler, is inherently unstable. All products require some degree of filler and can require special adhesives or heat welding. In some

UING EDUCATION

Use the learning objectives below to focus your study as you read **Resilient Flooring Design Options** To earn one AIA/CES Unit, including one hour of health safety redit, answer the questions on page 169, ow the reporting instructions on page 240 the Continuing Education section on *d.construction.com* and follow the g instructions.

NG OBJECTIVES

ding this article, you should be able to:

- *mine the design and performance criteria for ing resilient flooring.*
- *rstand the aesthetic and performance characteristics vs. sheet flooring.*
- *lop a comprehensive overview of available resilient products.*

applications, like cleanrooms, where particulates are a problem, high-vinyl content flooring is a perfect solution.

"I use vinyl in virtually every project we do," says Erin Rindal, interior designer for Bassetti Architects, Seattle. "It's about durability and cleanability. Advances in vinyl means you can use products in locations and ways you couldn't in the past. In general, it is thicker, more durable than it once was."

"And there are a lot more options now," Rindal says, "sound absorbing vinyls, for instance, are ideal for school corridors; we use welded sheet vinyl in nurses stations and training rooms."

Design Considerations

Many factors should be taken into consideration when determining which flooring material to select for a specific application. There is a broad range of floor coverings, each with specific performance characteristics for various applications.

"Designers must look first at the entire building environment," says the product manager for a Texas-based manufacturer. "The architect must know his client and the environment for which he is designing."

"Some flooring performs better in certain locations than others," he says. Solid vinyl requiring buff maintenance, for instance, may not be the best choice for entryways where road salt, sand, and oils may be tracked. There, a more durable finish, which will require less frequent maintenance, is required to stand up to the wear-and-tear.

When looking at slip-resistant floors, designers need to look at those that offer the best performance along with ease of maintenance. A high coefficient of friction (COF) should not be the only factor in high-traffic areas that may require high maintenance because of the general nature of slip-resistant products. As a general rule, the higher the COF, the more maintenance the floor will require.

Designers must consider these performance characteristics when specifying resilient flooring:

Design flexibility. Vinyl sheet flooring and tile are available in myriad styles and colors. Vinyl tile is available in shapes that can be custom cut and laid out in patterns using different colors or finishes. Tiles can be arranged to depict a corporate logo or to guide traffic in a hospital or retail setting. Resilient flooring's diverse product options allow for easy transition between marble, wood and stone visuals due to the similar, if not identical, gauges available. This consistent gauge profile eliminates the need for depressed slabs or alteration of door or cabinet heights in remodels, It allows for a more seamless transition between floorcoverings of almost any type.

Usage. Designers must look at both aesthetics and safety and be aware of traffic patterns that will determine the best characteristics of the flooring. The flooring may need to support static loads or the movement of vehicles. Moisture resistance may be a critical factor, or resistance to fading.

Resilience. Vinyl flooring reduces noise and provides comfort underfoot.

Solid Vinyl Tile provides maximum resistance to indentation and stain resistance, making it ideal for high traffic areas such as post offices.

Unlike such hard surfaces as wood, laminate, terrazzo or ceramic tile, vinyl have "give" and thus are referred to as "resilient" flooring.

Durability. Vinyl flooring is durable and time-tested, maintaining its be under heavy foot traffic and use. It is moisture, chemical and stain resistant spills can be easily removed. When compared with alternative materials, vir offers an attractive installed cost with economical maintenance over the life the floor.

Safety features. A wide range of both tile and sheet vinyl floors is availa with enhanced slip-retardant surfaces suitable for a variety of commercial a institutional applications.

Moisture resistance. May be critical depending on the type of subfloor, moisture conditions may affect adhesive performance. In most cases, resilien floors may be installed in areas where water might be spilled on the floor, pr ing the correct adhesive is used and the floor has a minimum number of sea

Stain resistance. Will vary by product and manufacturer. Special formu tions are available for use in areas where exposure to chemicals and staining reagents is likely to occur. In general, vinyl floors are resistant to alkalis, aci alcohols, oils, greases and aliphatic hydrocarbons. Ketones, esters and chlor and aromatic hydrocarbons may cause softening.

Light reflectivity. Light reflectance data is published by manufacturers. general, when looking to accentuate natural lighting, lighter colored floorin recommended. Light reflectance is a measure of the percentage of light refl off a surface. The Illuminating Engineering Society of North America recor mends that floors have a reflectance factor of 20-40 percent in offices, 30-5 cent in educational facilities, 20-30 percent in hospital operating rooms, an greater than 20 percent in industrial settings.

Sound Insulation. Of special importance in areas with heavy floor traff Resilient flooring, in general, will cushion impacts and thereby reduce traff noise or noise from dropped objects more than other hard-surface floors su wood, marble, ceramic or concrete. In addition, underlayments are availabl further reduce impact noise and sound transmission.

Fire retardance and heat performance. Most resilient floors are manuf tured to be safe from normal fire hazards. In large-scale experiments that h been run to simulate actual fire conditions, vinyl flooring products have no been significant contributors to the spread of the fire or resulting hazards. fact, vinyl flooring resists burning and typically does not continue burning an external flame is removed. However, a resilient floor surface can be perm nently damaged or scarred by burning cigarettes, matches or very hot items

Cost. Vinyl is a cost-effective flooring material both in initial and lifec cost. Vinyl lasts considerably longer than carpet and can, therefore, save m on repairs and replacement and vinyl flooring typically costs less than oth hard-surface floors. Typically, commercial vinyl floor tile has an installed of from $1.25 to solid vinyl at $8.70 per square foot, depending on the th ness and pattern. Commercial sheet vinyl has an approxim installed cost of $2.64 to $6.00 per square foot, compared t square-foot cost of $3.84 for wood parquet flooring (oak, s dard, 5/16" thick, not including finish); $7.00 for ceramic ti (natural clay, thin set); and $7.75 for terrazzo (1-3/4" thick, bonded to cement). Commercial grade carpet ranges from $18.20 per square yard/$2.02 per square foot (nylon, level l 26 oz., light to medium traffic) to $70.00 per square yard/$ per square foot (patterned wool, 48 oz. heavy traffic).

Maintenance requirements. Overall, vinyl is tough, re ant to scratching, scuffing, staining, indentation and other d abuse. This durability is especially critical in commercial set where routine wear and tear take a toll on floors.

The thickness of a vinyl floor's wearlayer is an important ele in determining its performance and ease of maintenance. Th thickness is generally measured in mils, or thousandths of a inch. Higher-quality vinyl floors may also utilize a urethane layer, while lower-priced floors generally feature a vinyl wea to protect the underlying pattern. In general, a urethane wea makes the floor easier to clean and more stain-resistant.

king at the Specs

gners looking at flooring spec for the first time may find the enclature mysterious. Let's demystify it. A typical commercial flooring spec reads something like this:

ype: ASTM F 1066-99, Composition 1, non-asbestos formulated; 2 inch by 12 inch; 1/8 [3/32] inch gage; minimum .45 CRF per STM E 648; maximum smoke density of less than 450 per ASTM 662; static load limit of 125 psi or higher; minimum slip resistnce rating per ASTM D 2047.

STM F 1066-99 (the final figure refers to the most recent stanupdate, in this case in 1999) is the American Society for Testing Materials standard for most vinyl flooring.

Composition 1, or Class 1, means that the surface pattern of the ing runs through the entire thickness of the product. By federal vinyl flooring can no longer contain asbestos. No one manufac- a product in the U.S. that does contain asbestos, and you cannot one, but specifications still contain the caveat.

Minimum .45 CRF refers to the "critical radiant flux" (CRF) of the ing surface, and ASTM E 648 refers to the testing procedure for CRF.

Maximum smoke density of less than 450 is the ASTM spec every ufacturer must meet to govern the volume of smoke generated by looring in a fire.

tatic load limit is usually measured by ASTM F 970. In recent years, severodified versions of ASTM F 970 have been created to provide a broad e of static indentation performance. Higher ratings should be expected enhanced or solid vinyl tile. When comparing psi ratings, be sure identists were conducted, i.e. how was the standard test method changed. To mmodate equipment such as motorized beds in hospital rooms, designers often turn to a "homogeneous" flooring product.

As shown above, Linoleum is a tremendously versatile product that lends to imaginative designs.

Manufacturing Process

inyl products are made from combinations of vinyl resin and various tives that give these products their particular properties. The additives monly used in vinyl flooring include:

lasticizers, oily liquids that are used to soften the vinyl and provide flexi- to the formula.

tabilizers, used to minimize degradation and discoloration from heat ight.

igments, which are added during the manufacturing process to give vinyl ge of colors.

illers, such as limestone or clay.

rocessing/fabricating. Once additives have been combined with resin, the ting material is called vinyl compound, and is in pellet form. The nature e vinyl compound allows versatility in the production process, enabling ufacturers to meet many of the performance requirements of various ing applications. In the next stage of manufacturing, either vinyl tile or vinyl flooring is created.

Vinyl tile is manufactured by one of two methods: either by melt-comding the ingredients at high temperatures, then molding the hot material the desired shape, or through a "calendering" process by which compos are mixed together then fed through a series of rollers that gradually eze the material to a desired gauge. Finished sheets are most commonly n. thick, but are also made 1/16 or 3/32-in. thick.

lthough the total process and product raw materials will vary depending he type of tile being produced, solid vinyl tile and printed vinyl tiles in ral contain a much higher content of vinyl and less filler than vinyl comion tile (VCT).

heet vinyl is produced by a variety of methods that may include printing, d chips or liquid coatings that may or may not be on a carrier sheet. This or may not produce a multi-layered construction. Most product is then d in an oven and may or may not be coated with a thin film of urethane or specialty topcoats, including acrylics, paste layers, or chips.

Patterns are applied to some sheet vinyl flooring using a rotogravure printing method, in which colors and patterns are printed on the surface of the base layer, or through an inlaid method, in which the design goes all the way to the backing. With rotogravure, a rotating cylinder prints colored inks on top of the core layer, offering virtually unlimited possibilities in patterns and designs. The printed pattern is covered with a clear vinyl wear layer and the product is oven-cured. In the inlaid process, solid-colored vinyl chips are laid on top of a carrier sheet and then bonded together, under heat and pressure, creating the resulting pattern.

Specifying Tile Types

Three general types of tile are distinguished by their vinyl content, the percentage of which determines the product's resistance to long-term wear, its abrasion resistance, its ability to resist indentation, and its flexibility---its ability to compensate for minor substrate movement.

Two further tile subsets provide a broader range of aesthetic options: luxury vinyl tile and premium vinyl composition tile provide designers with an expanded range of aesthetic options. In addition, tile may be modified to increase both static control and slip resistance.

Vinyl composition tile is the industry standard for most commercial applications. In fact, VCT accounts for roughly 80 percent of all installed resilient flooring. In general, it is the lowest cost material available and the lowest installation cost. Although VCT may be maintenance intensive, it is highly durable, is noted for its long life and is, therefore, the most highly specified flooring material for low initial budget projects like schools and retail spaces.

VCT is distinguished by its high limestone content---the product is generally speaking 85 percent limestone, and is augmented with vinyl resin, plasticizers, stabilizers and pigments that make VCT available in an extraordinarily broad range of colors. It is a "modular" product, generally sold in one-eighth-in.-thick, 12-in.X 12-in. squares. Modular installation, as opposed to sheet flooring, makes it easy to replace damaged tiles, and vinyl composition tile conforms to ASTM F-1066.

Premium vinyl composition tile has similar properties to traditional VCT. It, too, conforms to ASTM F-1066, but is available in a broader range of chips and sizes, can be non-directional as well as directional and costs slightly more than traditional VCT. Common applications for premium VCT are in retail and education settings, but it is also more widely seen in healthcare and corporate settings.

Vinyl enhanced tile (VET) is distinguished by its higher binder (vinyl) content—generally between 16 and 33 percent. It offers the advantage of greater

resilience, longer wear, improved abrasion characteristics, and is available in larger tiles than traditional VCT, 16-in. by 16-in. It is slightly more expensive than traditional VCT, say manufacturers, but offers the advantage of lower installation cost, and vinyl enhanced tile frequently includes a special topcoat that minimizes maintenance costs. VET is commonly found in public areas, and is widely used in schools, healthcare settings and retail spaces as well. It, too, conforms to ASTM F-1066.

Increased vinyl content in Vinyl Enhanced Tile provides the superior durability and easy maintenance needed in environments such as public libraries.

Solid vinyl tile (SVT) is characterized by a vinyl content even higher than vinyl-enhanced tile. Solid vinyl tile typically has a binder (vinyl) content in excess of 34 percent, giving it the advantage of longer wear, and maximum resistance to indentation and stain resistance. Its initial cost is slightly higher than VET, and because SVT requires special adhesives, its installation cost is also slightly higher than for VET. Solid vinyl tile conforms to ASTM F-1700. The material is most often found in corporate and hospitality projects and also is frequently seen in manufacturing as well as retail and healthcare settings.

Luxury vinyl tile (LVT), laminated with photographic or print film, is characterized by a clear wear layer, and an inner print film over either solid (SVT) or composite (VCT) backing. Common visuals in the luxury vinyl line include wood plank, stone, metallic and ceramic images that mimic, with sometimes surprising realism, natural materials. Luxury vinyls are governed by ASTM F-1700, and are found today with increasing frequency in retail and public spaces, healthcare and hospitality spaces and are making their way, increasingly, into residential projects.

Static dissipative tile (SDT) that dissipate static charges through either dissipative (1 billion to10 billion ohms) or conductive (less than 1 million ohms) means are available in limited color ranges for use in electronic manufacturing sites, computer labs, pyrotechnic manufacturing and healthcare facilities where potentially flammable gases are in use. Dissipative tile, governed by ASTM F-1066, will require, in most cases, special adhesives and ground materials that increase installation cost.

Slip-retardant tiles, manufactured with a surface grit, a surface embossing, or both, benefit from an increased coefficient of friction, and are, therefore, recommended for ramped surfaces or for wet or dry applications to reduce slips and falls. Manufacturers note, however, that even slip retardant tile is not a substitute for good maintenance and that proper maintenance prevents accidents and minimizes liability to a greater extent than slip retardant tile.

Sheet Categories

Inlaid sheet flooring combines inlaid vinyl chips in a matrix that is usuall attached to a felt (or vinyl, or fiberglass) backing, frequently with a protec topcoat. With inlaid sheet flooring, the color or pattern is an integral part wear layer. It is specified as an ASTM F-1303 Type II flooring.

Cushioned sheet flooring is overlain by a printed foam layer that creat textured surface that can replicate, for instance, a brick design. The impri the foam layer is accomplished through what is known as "ch cal embossing." Its application is mostly in residential and lig commercial projects like doctor or dentist offices. Cushioned ucts, because they are generally very soft, may not wear as we other products and because of the foam layer, may not meet code requirements for large commercial projects.

"Homogeneous" sheet flooring is characterized by a cons color and pattern throughout the thickness of the flooring. I what is known as a solid wear layer. The wear layer equals th thickness of the product. Homogeneous flooring must have binder (vinyl) content of at least 50 percent.

"Heterogeneous" sheet flooring is a laminated product, n often topped by a clear wear layer, frequently simulating woo stone, or other natural materials. It may be cushioned to enh sound absorption and/or underfoot comfort.

Performance-backed sheet flooring is another laminated uct, either homogeneous or heterogeneous in manufacture w backing of closed-cell PVC foam from 40 mils to a half-in. in thickness for use in applications where increased shock abso sound control or warmth are factors.

Slip-retardant sheet flooring, either heat-welded or flash coved, offers a seamlessness not available with tile. It also, ty has a higher resistance to staining than tile. Some manufactu offer a higher degree of stain resistance. These products are u urethane-enhanced.

Static-control sheet flooring offers the same dissipative characteristics SDT flooring, but is more sanitary. Common applications are hospital op ing rooms and clean rooms.

The Green Revival

Linoleum was the industry standard surface material of the 1950s, but by mid-70s, the market for linoleum had virtually disappeared. Today, some million worth of linoleum, all of it manufactured outside the U.S., is insta here, and the number is on the rise, say industry sources.

Manufactured using wood pulp, cork powder, limestone, linseed oil, p tree resin and pigments, linoleum has come back into vogue because of it ural ingredients and durability.

Linoleum is manufactured at only four plants in the world—all in Eu and is generally available only in sheet form, although some manufacture offer linoleum in tile form. Linoleum is offered in a broad range of colors patterns and offers the designer infinite design possibilities. It also posses excellent "green" credentials.

"It's great stuff," Bassetti's Rindal says of linoleum. "You can do all kinds of with it. The same product can be used underfoot and on countertops. Starb uses it on counters and tabletops. You wouldn't use it on your countertop at home—because it is generally too soft to cut on—but it is tremendously ver

"'Environmentally preferable,' a phrase that goes to issues like indoor quality, etc., has become a buzzword in our industry, but until recently ha been a concern of hospitals. Now, it is becoming a larger issue," says Lisa Brandt, a resource specialist Newport Beach, Calif.-based Taylor & Associ Architects, a firm strongly devoted to healthcare.

"Designers are still early in the learning curve in considering 'green' is with regard to floorcoverings," says Brandt, partly because there have not a great number of new hospitals built. But, at least in California, new hos construction is seeing a resurgence, primarily as a result of recently-passe Senate Bill 1953, which requires all facilities to meet new seismic codes.

"The result is a huge growth in new facilities, all with new emphasis on incorporating 'green' technology. The flooring industry, especially manufacturers of resilient flooring, are testing the water to determine how best to accommodate that new demand," says Brandt. "There was evidence of that at the recent 'Surfaces' trade show in Las Vegas," she says, "and I think that in the next 18 months to two years, we will see a lot of new products that address 'green', as well as lifecycle cost issues."

Interestingly, Brandt says, end users are now attending the same trade shows interiors specialists are and, as a result, are much better informed than ever before. "You don't want to be sitting across the table and be uninformed," she says.

Taylor & Associates is working now on design of a women's pavilion for the Newport Beach Hoag Hospital, scheduled for completion in 2005. "Because the facility will be marketed directly to women, we are looking to create a 'spa' feel," Brandt says. "The healthcare environment demands a sheet vinyl, but we would like to create a natural feel, maybe a wood look. That was once a problem, but the industry has come a phenomenally long way and now offers products that look really, really good, perform well and don't look 'plastic.'"

Incorporating new processes involving urethane systems that greatly reduce maintenance—and the resultant use of harsh chemical strippers and water usage—a new generation of resilient floorcoverings can help designers qualify for LEED credits on environmentally sensitive projects.

Permanent factory-installed urethane systems can "cut maintenance in half, depending upon the conditions," says one manufacturer.

With respect to indoor air quality, some manufacturers are now working on certification for product lines that will meet GreenGuard emission requirements for volatile organic compounds (VOCs). ■

Click For Additional Required Reading

As part of the required material for this CES section, you are required to read additional online material. To access the material online, go to **archrecord.construction.com/resources/conteduc**. To request a faxed copy, contact Elizabeth Reese at Elizabeth.Reese@domcotarkett.com.

LEARNING OBJECTIVES

- Determine the design and performance criteria for selecting resilient flooring.
- Understand the aesthetic and performance characteristics of tile vs. sheet flooring.
- Develop a comprehensive overview of available resilient floor products.

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 240. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

Q: 1. Which is more easily, less expensively installed and more easily repaired?
A: a. Tile
b. Sheet flooring.

Q: 2. The major components of resilient flooring are vinyl and:
A: a. Plasticizers
b. Fillers
c. Stabilizers

Q: 3. In applications. like cleanrooms, where particulates are a problem, which is a better solution?
A: a. Higher-vinyl content
b. Lower-vinyl content

Q: 4. As a general rule, the higher the coefficient of friction (COF) the lower the maintenance the floor will require.
A: a. True
b. False

Q: 5. The Illuminating Engineering Society of North America recommends that floors in offices have a reflectance factor of:
A: a. 20-40 percent
b. 30-50 percent
c. 20-30 percent

Q: 6. Vinyl flooring products have not been significant contributors to the spread of fire or resulting hazards.
A: a. True
b. False

Q: 7. Higher quality vinyl floors may also utilize which:
A: a. Vinyl wearlayer
b. Urethane wearlayer

Q: 8. Which is used to minimize degradation and discoloration from heat and light.
A: a. Plasticizers
b. Stabilizers
c. Pigments
d. Fillers

Q: 9. The "calendering" process means:
A: a. Components are mixed together then fed through a series of rollers to achieve the desired gauge.
b. Melt-compounding the ingredients at high temperatures then molding into the desired shape.

Q: 10. Which account for roughly 80 percent of all installed resilient flooring?
A: a. Vinyl composition tile (VCT)
b. Vinyl enhance tile (VET)
c. Solid vinyl tile (SVT)

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HOMELAND SECURITY

SUMMIT & EXPOSITION

May 14, 15 & 16, 2003
Hyatt Regency Crystal City, Arlington, VA

Interdependence: Assessing New Risks and Sharing the Costs

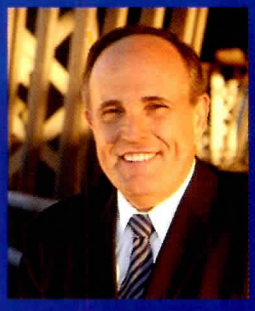
The Critical Crossroads

Homeland Security is at a critical crossroads—the spending boom on expensive, security-based build improvements that was forecast in the months following Sept. 11 has not materialized. So what are the n steps that architects and engineers must take to secure the built environment? How are they addres interdependent factors like insurance costs and building codes—while calculating a level of risk that is accepta to the public? And as architects and engineeers respond to security threats, they must calculate how m security is realistic (and palatable) in the real world, where design and security meet developer and insu

These issues only scratch the surface of the future and depth of homeland security. Attend this confere to gain specific solutions to these topics and more, including:

- Learn how architects, engineers, developers and owners calculate the risk equation
- Understand the government's role—beyond setting and enforcing standards—in motivating builder more actively and creatively mitigate risk
- Gain insight on how strategic application of additional security has also enhanced functionality and producti

Featuring



Guest Speaker
The Honorable Rudolph W. Giuliani

Speakers Include:

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F.A.I.A., R.I.B.A., J.I.A.,
Chairman
RTKL Associates

Robert Prieto
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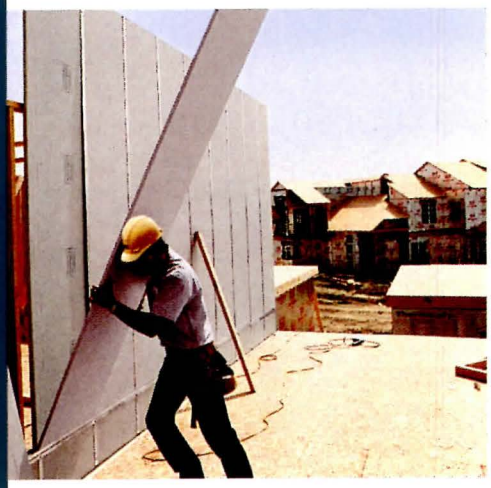
GYPSUM ASSOCIATION

THE GYPSUM ASSOCIATION PRESENTS

The Gypsum Advantage In Area Separation Walls

Effective fire resistance and sound attenuation have long been important considerations for those involved in the design and construction of townhouses and apartments. To satisfy these requirements, a growing number of architects and builders are switching to lightweight gypsum board area separation walls. Gypsum board systems are easy to erect and secure, meet all building code requirements, and provide economical fire protection and sound control.



UING EDUCATION

Use the learning objectives below to focus your study as you read **The Gypsum Advantage In Area Separation Walls.** one AIA/CES Learning Unit, including one hour n safety welfare credit, answer the questions on 5, then follow the reporting instructions on page o to the Continuing Education section on *rd.construction.com* and follow the reporting ions.

NG OBJECTIVES

ding this article, you should be able to:

- *w the applications and installation of light-weight and cavity-type gypsum board area separation s in townhouses and apartments.*
- *erstand fire protection capabilities of gypsum d systems and fire resistance ratings and tests.*
- *ew sound control features and parapets of gypsum d systems.*

When it comes to defining area separation–type walls and how they are to be constructed in townhouse and apartment applications, all roads lead through the national model building codes. And whether the codes define a wall system as a "fire wall," "party wall," "area separation wall," or "townhouse separation wall," it must meet the same requirements. Namely, it must be a wall that:

- Is continuous from the foundation to the underside of the protected roof sheathing or continues through the roof to form a parapet, and;
- Is designed to allow for collapse of the construction on the side of the wall exposed to fire without collapse of the separation wall.

Area separation walls made of gypsum board have been deemed suitable for use by every model building code because of their ability to effectively withstand fire and attenuate sound.

Often called drywall, wallboard, or plasterboard, gypsum board consists of a noncombustible core, primarily gypsum, and a paper facing on the front, back, and along the edges. Its sturdy, noncombustible core distinguishes it from products such as plywood, hardboard, and fiberboard. Once all joints and fastener heads are covered with a joint treatment material, gypsum board provides a smooth, continuous surface that is both aesthetically attractive and easy to work with.

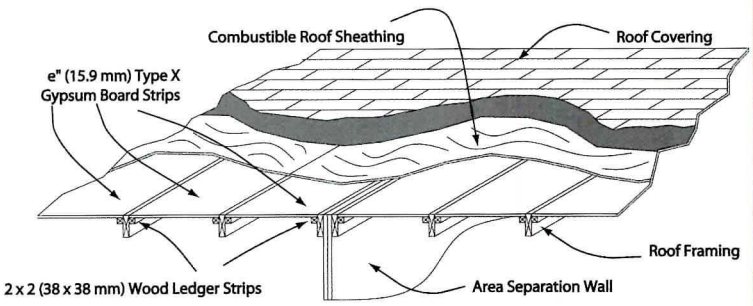
What is Gypsum?

Gypsum is a mineral found in sedimentary rock formations. It occurs in a crystalline form known as calcium sulfate dihydrate ($CaSO_4 \cdot 2H_2O$). One hundred pounds of gypsum rock contains approximately 21 pounds of chemically combined water.

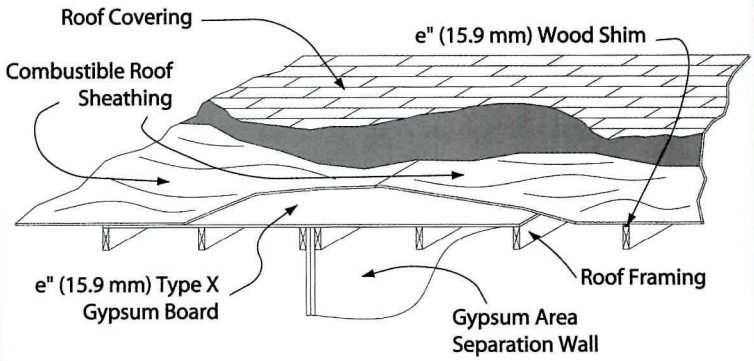
To obtain gypsum suitable for manufacturing, the gypsum rock must be crushed and ground into a fine powder, then heated to about 350 degrees Fahrenheit. The heating process, called calcining, drives off about three-quarters of the chemically combined water.

Gypsum board is produced by mixing calcined gypsum with water and various additives until a slurry is formed. The slurry, in turn, is fed between continuous layers of paper on a "board" machine. As the board moves down a conveyer line, the calcium sulfate (gypsum) rehydrates and the gypsum crystals reform into their original rock state. During this process, the paper surfacing is chemically and mechanically bonded to the core to form a gypsum board. The gypsum board is subsequently cut to length and conveyed through dryers to remove any excess moisture.

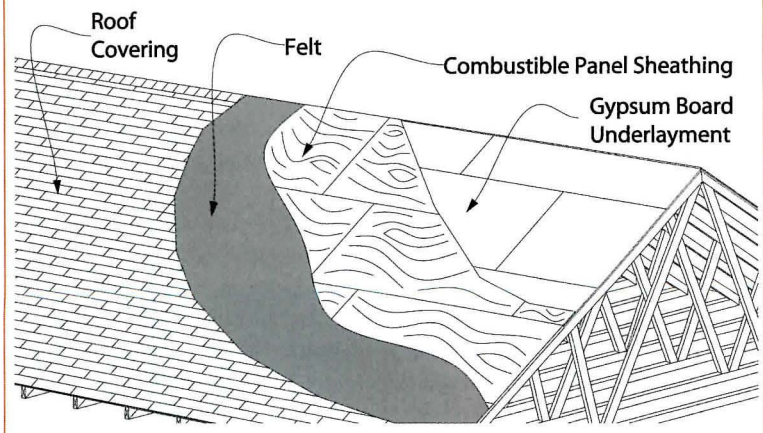
Though gypsum has inherent fire-resistive qualities, each model building code mandates that any system used as an area separation wall must first be fire tested based on the requirements of a specific test standard, such as ASTM E 119,"Standard Test Method for Fire Tests of Building Construction and Materials," or its equivalent. These test standards produce numerical ratings that can be used as a benchmark for comparing and evaluating fire-resistive systems. Fire-resistance classifications are the results of tests conducted on assemblies made up of specific materials put together in a specified manner; therefore, variation from the test conditions, or the specimen construction, including, but not



Ledger - Strip Roof Underlayment Method



Partial Roof Underlayment Method



Full Roof Underlayment Method

limited to, the type and size of materials and the method of construction w affect the fire-test response.

Model building codes usually require townhouse units to be separated by a two-hour fire-rated system. This is achieved by installing a single two hour–rated wall such as a gypsum board area separation wall. In some circumstances, such as those defined in the International Residential Code (IRC) or the Uniform Building Code (UBC), the required fire separation rating may also be attained by installing two parallel, adjacent one-hour w

Gypsum Board Area Separation Wall Components

Gypsum board area separation walls must be installed using the compone and installation methods described in the corresponding fire test or listing The installation should not deviate from that described in the test report, should the system include materials that were not evaluated in the origina test. Though materials cannot be substituted, the application of additional layers of gypsum board to a wall system is permitted since this will not compromise the wall's durability or fire performance.

Since they were first introduced in the townhouse and apartment construction market, gypsum board area separation walls have gained a reputation for being easy and convenient to install and secure. For examp liner panels and metal components can be easily stacked, allowing the separation wall to be inserted during the framing phase of construction.

Gypsum board area separation walls are typically manufactured in eith a solid (H-stud) or cavity-type design. The solid variety consists of three b components:

- Gypsum liner panels that are 1-inch thick, 24- inches wide, and either 8-, 10-, 12- or 14-feet long.
- Metal framing members consisting of 2-inch-wide H-studs and U-shaped track.
- "Break away" L-shaped aluminum clips that soften at relatively low temperatures.

Solid systems are erected vertically one floor at a time. Two layers 1-inch-thick liner panel are secured at the foundation by being insert into 2-inch-wide tracks. The panels are held in place by 2-inch H-stu and are erected sequentially along the track. Each completed floor (st of area separation wall is capped with an inverted piece of track. Following the erection of the adjacent structural building frame, new is installed on the top of the completed floor of panels and the stacki process is repeated.

Cavity-type area separation walls are constructed with components typically incorporated into either steel stud partition systems, or gypsum board shaft wall enclosures, such as those used to enclose an elevator sha duct shaft in a multistory building. As with solid systems, cavity-type are separation walls are erected vertically, beginning with the installation of t at the foundation.

Gypsum board area separation wall systems are attached to the adja structure by L-shaped aluminum clips. The clips are fastened to both si of each stud at each floor or roof/ceiling intersection and provide latera support for the wall. The clips maintain their full integrity until expose temperatures in excess of 1100 degrees Fahrenheit. When one side of th system is exposed to a fire of that intensity, the clips will soften and bre away, allowing the adjacent structure on that side of the system to colla without pulling down the fire-resistive separation wall. The clips on the opposite side of the area separation wall remain intact, since temperatu on that side will be far below the point at which the clip will soften. Consequently, the fire-resistive wall system will remain standing, sparin the adjacent living space from significant damage.

The clips must be manufactured from aluminum in a thickness and sh

ed Section of Solid Wall.

conforming to the requirements established by the representative fire test and the manufacturer of the area separation wall system. Use of a noncompliant clip, or elimination of the clips altogether, may result in the failure of the system to work as intended.

Ensuring a Successful Application

It is critical that the components of a gypsum board area separation wall system be protected from adverse weather and extreme or continuous moisture during and after the installation. Gypsum panels must also be shielded from sustained temperatures eding 125 degrees Fahrenheit / 52 degrees Centigrade. Consequently, um board should not be installed in a sauna, or steam room, or where ll be directly exposed to the immediate heat produced by heat-producing ances, such as a wood-burning stove.

oints and fastener heads in the face layers of a gypsum board area ration wall system should be finished to comply with the requirements e corresponding fire test. Where joint finishing is required by a fire test, ically can be accomplished by applying a single coat of joint treatment oint tape to the face layer board joints (Level 1 as described in ommended Levels of Gypsum Board Finish, GA-214") and a single coat int treatment to the fastener heads. Additional joint treatment may be ed to satisfy aesthetic requirements. Joints between individual pieces of panel in a solid system are protected by the H-studs and do not require pplication of joint treatment material.

olid area separation wall systems must be disconnected from adjacent oustible framing members to be fully code compliant. The space irement is easily met by setting the adjacent wood framing members at 3/4-inch to one inch away from the liner panels; the specific distance is established by the representative fire test. If the space requirement cannot be met, the visible faces of the H-studs must be covered with 6-inch-wide gypsum board batten strips, full sheets of gypsum board, or mineral fiber insulation.

Building codes typically require the space between the area separation wall and the adjacent floor joists to be fireblocked to prevent fire from spreading vertically between floors. This can be achieved easily when building with gypsum board area separation walls by inserting continuous pieces of one-inch gypsum board liner panel, mineral fiber insulation, or other code-allowed material into the gap between the wall assembly and the adjacent floor joists. To ensure that it remains securely in place, fireblocking material should be firmly attached to adjacent construction.

Advantages of Gypsum Board Systems

Both solid and cavity-type area separation wall systems weigh no more than 10 pounds per square foot when erected—far less than comparable solid area separation walls made of masonry or concrete. In most construction, gypsum board's light weight eliminates the need for costly footers or foundation modifications, and it allows the systems to be erected directly onto a poured concrete slab.

Gypsum board area separation walls can be erected up to four stories in height, but should never be used as structural elements of a building. Due to variations in limiting height between systems, architects should consult with the manufacturer to determine the maximum height attainable with a specific system.

Load-bearing walls, finished with a layer of gypsum board to provide enhanced aesthetics, are typically erected immediately adjacent and parallel to gypsum board area separation walls. For concealed spaces above finished ceilings and other areas where appearance is not critical and load-bearing walls are not needed, the adjoining walls can be eliminated without compromising the fire resistance of the area separation wall system. If a specialized end-use is intended for a finished area of a dwelling unit, the gypsum board applied to the interior finish walls may be water-resistant gypsum backing board, veneer base for gypsum plaster, or other gypsum specialty materials, provided that the replacement board has the same thickness and core as that described in the representative fire or sound test.

Gypsum board area separation walls can readily accommodate code-compliant electrical and plumbing systems without the installation of additional framing or furring. Code requirements will dictate the correct installation of electrical and plumbing systems and fixtures.

Sound Control Requirements of Area Separation Walls

Townhouse and apartment complexes rely heavily on area separation walls not only for safety, but also to limit the transmission of sound between individual residential units. The model codes typically require walls separating

psum Board: An Environmental Asset

hen it comes to making good use of recycled materials or by-products m manufacturing operations, it's hard to top the gypsum board industry.

More than 40 years ago, long before recycling became popular, the sum industry began recycling newsprint and other paper to manufacture paper facing for gypsum board. Today, nearly 100 percent of the fiber d in the manufacture of gypsum board face and back paper comes from wsprint and post-consumer waste materials.

psum manufacturers also rely increasingly on "synthetic" gypsum as an ective alternative to natural gypsum ore. The former is a by-product, waste material, from other manufacturing processes, primarily the nufacture of titanium dioxide used in paint and the desulfurization of e gases in fossil-fueled power plants. Located primarily in the eastern United States, these manufacturing or power-generating facilities are more than pleased to ship a steady stream of "production waste" to nearby gypsum board manufacturing facilities.

Other "green" sources of gypsum are production waste from the gypsum board manufacturing plants and board waste from new construction. Gypsum plants throughout the United States and Canada reclaim usable gypsum by feeding production overruns or materials damaged during production back into the manufacturing cycle. New construction gypsum waste is also reclaimed in some areas and is, after reprocessing, fed back into the board production cycle.

Regardless of the source, "synthetic" or "reclaimed" gypsum meets the same quality standards as natural gypsum, helps to control production costs, and eliminates a costly waste disposal problem. ■

townhouse units to maintain a minimum Sound Transmission Class (STC) rating of 45 to 50 to ensure that sound attenuation occurs between occupied units. To achieve these ratings, it is imperative that the following procedures be followed:

- All system components must be installed as designed. Any deviation from the recommended design or the addition of components not specified by the manufacturer can significantly reduce the sound attenuating ability of the separation wall.
- Wall areas must be free of gaps or voids in insulating material.
- Flanking paths through which sound can travel must be eliminated.
- Systems must be airtight. Perimeters of gypsum board face layers, outside edges of all membrane cutouts, and all penetrations must be fully caulked. Openings for fixtures and outlets must be cut to the proper size and sealed.

Solid area separation wall systems can easily be constructed to provide STC ratings in excess of 60. Cavity-type area separation walls can also be constructed to achieve STC ratings that exceed model building code requirements.

Building Codes Require Parapets For Area Separation Walls

The model building codes generally require area separation walls to be constructed with a parapet—a vertical segment of the wall that extends through the roof to a specific height, usually 30 to 36 inches above the roofline. Gypsum board area separation walls can be constructed with parapets so long as the total erected height of the wall system does not exceed the manufacturer's established maximum and the parapets are protected from the elements by a code-compliant cladding or finishing system.

Building codes usually allow builders to eliminate parapets in townhouse construction if the proper combination of the following conditions is met:

- The roof is covered with a code-defined minimum (usually Class C) roofing material and;
- The roof decking or sheathing is constructed with noncombustible material, or approved fire-retardant–treated wood, for a minimum dis of four feet on each side of the firewall or;
- A layer of 5/8-inch-thick type X gypsum board is installed immediatel beneath the roof sheathing for a distance of at least 4 feet on either sid the townhouse separation wall.

Summary

- Model building codes allow the use of gypsum board area separation v in townhouse and apartment applications.
- Gypsum board area separation wall systems are fire tested using code required test standards, such as ASTM E 119, "Standard Test Method f Tests of Building Construction and Materials."
- Gypsum board area separation walls are designed to comply with code requirements that define the required integrity of an area separation w
- Gypsum board area separation walls can be constructed in either solid cavity design, depending on their intended use.
- Gypsum board area separation wall systems are light in weight, use fe components, and are installed as the building is framed.
- Gypsum board area separation walls can be erected up to four stories i height (depending on manufacturer limitations), but should never be as structural elements of a building.
- Gypsum board area separation walls can be constructed to satisfy typi building code standards for sound attenuation between townhouse or apartment units.
- Gypsum board area separation walls can be constructed with or witho a parapet.

Gypsum Board Roof Underlayment: A Code-Compliant Alternative to Roof Parapets

The use of 5/8-inch thick type X gypsum board as an underlayment for combustible roofs in townhouse and apartment construction is an effective way to resist the spread of fire from unit to unit over the top of area separation walls. This approach to fire protection is a code-compliant alternative to the use of roof parapets for separating dwelling units.

Building codes generally allow for the elimination of a parapet in townhouse or apartment construction when the roof is covered with a code-specified minimum (usually a Class C) roofing material and the roof is constructed with either noncombustible material or fire-retardant-treated-wood, or the roof incorporates a layer of 5/8-inch-thick type X gypsum board as a roof sheathing underlayment. If type X gypsum board is used, it must be placed immediately beneath combustible roof sheathing for a distance of at least four feet on either side of the area separation wall.

The gypsum industry has developed three code-compliant methods for installing a gypsum board roof underlayment: the ledger strip method; the partial roof underlayment method; and the full roof underlayment method. Although model codes generally permit any of these methods to be used as an alternative to parapet construction, individual code provisions may vary.

Ledger-strip Method

In the ledger strip method, 5/8-inch-thick pieces of type X gypsum board are applied to the top side of nominal 2-inch by 2-inch ledger strips that have been attached to the sides of the roof framing members so that the upper surface of the gypsum board is flush with the top of the trusses or rafters. Ledger strips are cut and attached to form a continuous strip.

The gypsum board is cut to fit tightly between the roof framing, supported by and attached to the ledger strips with minimum 1 1/4-inch long fasteners spaced a maximum of 48 inches on center. Care must be taken to ensure that gypsum board end joints that span between framing members fit together snugly.

Partial Roof Underlayment Method

In this method, 5/8-inch-thick sheets of type X gypsum board are installe under the combustible roof sheathing on both sides of the area separatio for the minimum distance required by the appropriate building code, typi at least four feet.

The gypsum board is applied on top of the roof framing prior to the installation of the combustible roof sheathing. All gypsum board edges or parallel to roof framing members should occur over and be supported by roof framing. Gypsum board must be nailed to each framing member usi least two nails. At a minimum, nails must be 1 3/8-inch long gypsum boar nails or 4d common nails. In addition, board end and edge joints should f together snugly.

Trusses and rafters not covered with gypsum board must be shimmed provide a straight and uniform base for the attachment of the combustibl sheathing. Sheathing applied over the gypsum board underlayment must installed with sheathing joints offset from the gypsum board joints, and fasteners must be increased by 5/8 of an inch to account for the thickness gypsum board and shims. The roof membrane is applied as specified by t manufacturer. As an alternate to shimming, two different sizes of roof fra members may be used to achieve a uniform roofing surface.

Full Roof Underlayment

The full roof underlayment method offers a number of advantages over the pa roof underlayment and ledger strip methods. First, it provides the greatest deg fire protection. Second, it is the least complicated of the three methods to insta finally, it is generally the most cost effective when the additional labor costs of other methods are factored in; particularly in developments where individual housing units are relatively narrow.

The full roof underlayment method requires an application of 5/8-inc thick type X gypsum board over the entire roof area. The gypsum board i applied perpendicular to and on top of roof framing members before the

combustible roof sheathing is installed. All gypsum board end joints should occur over and be supported by roof framing members.

Nailing methods and nail types and sizes are identical to those used in the partial roof underlayment method. Fasteners used to attach the roof sheathing must be increased in length by 5/8-inch to account for the thickness of the gypsum board. Roof sheathing must be attached to the roof framing so that sheathing joints are offset from joints in the gypsum board.

Additional Concepts

Unlike gypsum board systems that provide wall and ceiling fire-resistance ratings, the joints between gypsum boards installed in the three methods previously described need not be finished with joint treatment materials. In addition, there is no requirement to treat the nails used to secure gypsum board pieces or sheets to framing members.

Screws may substituted for the prescribed nails when the length and head diameter of the screw equal or exceed those of the nails specified and the screw spacing does not exceed the spacing defined for the nails.

Areas where gypsum board is used as an underlayment should be adequately ventilated to control moisture and reduce temperature. Roof framing used to support gypsum board should be installed so that spacing does not exceed standard wood industry criteria. In addition, gypsum board must be protected from inclement weather during installation and until the roof membrane installation is complete. ■

Click for Additional Required Reading

As part of the CES Learning Activity, you are required to read additional material online. To access the material on gypsum area separation walls, fire testing, and gypsum board roof underlayment systems visit **archrecord.construction.com/resources/conteduc**. To obtain a faxed copy of the supplemental material, please call the Gypsum Association at (202) 289-5440. The test below includes questions derived from the online material.

LEARNING OBJECTIVES

- Know the applications and installation of light-weight solid and cavity-type gypsum board area separation walls in townhouses and apartments.
- Understand fire protection capabilities of gypsum board systems and fire resistance ratings and tests.
- Review sound control features and parapets of gypsum board systems.

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 240. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on *Record's* website—*archrecord.construction.com*—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

Q: 1. Area separation-walls must:

A: a. Be continuous from the foundation to the underside of the protected roof sheathing
b. Continue through the roof to form a parapet
c. Both A and B
d. Either A or B

Q: 2. Area separation walls made of gypsum board have been deemed suitable for use by every model building code because of their ability to effectively withstand fire and attenuate sound.

A: a. True
b. False

Q: 3. In the manufacturing process, calcining the gypsum rock drives off about how much of the chemically combined water:

A: a. 1/4
b. 1/3
c. 1/2
d. 3/4

Q: 4. Gypsum board is made by mixing calcined gypsum with:

A: a. Water
b. Slurry
c. Plaster

Q: 5. Fire-test response depends on the method of construction and not the type and size of materials.

A: a. True
b. False

Q: 6. Model building codes usually require townhouse units to be separated by a _____ fire-rated system.

A: a. 90 minute
b. Two-hour
c. Three-hour

Q: 7. The Uniform Building Code (UBC) allows a required two-hour fire separation rating to be attained by installing two parallel, adjacent one-hour walls.

A: a. True
b. False

Q: 8. The application of additional layers of gypsum board beyond what is described in a test report is permitted?

A: a. True
b. False

Q: 9. The L-shape aluminum clips work by:

A: a. Maintaining the integrity of both sides of the structure
b. Breaking away allowing one side of the system to collapse

Q: 10. Joints between individual pieces of liner panel in a solid system require the application of joint treatment material.

A: a. True
b. False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Digital Practice

IN THIS SECTION: Europe's cultural capital struts its stuff with a new arts center (this page); technology helps rebuild the Winter Garden (page 178) • Inspecting the inspection of Columbia University's Low Memorial Library (page 181) • Digital Architect: One firm's technology use (page 187)• New digital tools include photo-management software (page 188). *Deborah Snoonian, P.E.*

BYTES

ternational Alliance for perability (IAI) is hosting "Industry o demonstrate the exchange of ng information among multiple are packages on Wednesday, 4, in Alexandria. Virginia. Visit ibs.org for more information.

will be no A/E/C Systems rence in 2003. The show will be ned *Technology in Construction* ocated with the *World of Concrete* in Orlando, Florida, in early 2004, ding to Hanley-Wood, the show's wner.

riglyph Architectural Organization, onwide network of 12 independ- owned architecture firms that orate to deliver client services, ecently opted to standardize on isoft's ArchiCAD platform to ease haring of design data among s.

Terrain Modeling manufactured a 31-foot 3D model of the Hudson and surrounding areas for an tion, *Hudson Riverama*, which ed in February at the Hudson Museum, in Yonkers, New York. odel was designed and fabri- with the help of computing ology such as satellite imagery ighly accurate topographic Site features are imprinted e high-density foam model by al printers.

w York's new Museum of Sex, rchitecture firm Cleanroom ed the facade with a layer of dex stretched tightly over uter-generated aluminum ribs, which are projected light shows nimations visible from the street.

In Graz, Austria, a new arts center will speak its own digital language

It's not often that a city searching for an architectural landmark turns to a design that looks like a digitally active digestive system.

Of course, not many towns are like Graz, Austria, a provincial capital that is filling its skyline with modern buildings and has been named the 2003 cultural capital of Europe by the European Union Ministers of Culture.

The city is constructing several new projects, including a town hall, concert hall, literature museum, airport, children's museum, and urban gathering space. But one of the most prominent new works is the Kunsthaus, or Art House, a contemporary art-exhibition space on the city's riverfront. The project was conceived by London architects Peter Cook and Colin Fournier, along with Austrian architectural firm Arge Kunsthaus. Standing across the Mur River from the city core, the Kunsthaus is Graz's most visible new project, and the town hopes it will help revitalize the neglected neighborhood it resides in.

The Kunsthaus will occupy a prominent site in a downtrodden Graz neighborhood (above). Curators want artists to create digital animations for the building's skin (below).

The building, to be completed in September 2003, can be described as biomorphic, thanks to an irregularly shaped mass reminiscent of a pancreas, liver, or stomach, as well as elongated skylight nozzles emerging from the building's exterior. Its smooth facade is composed of blue acrylic panels, most of which are opaque. The architects say this "sleek cocoon" shape was formed primarily to let the space "flow" into its uneven site boundary along the Mur River.

Another source for the shape, explains Arge Kunsthaus's head designer Neils Jonkhans, was a desire to mesh with the surrounding neighborhood's scale and historic character. "If we had designed a conventional building with an orthogonal volume, the building mass would have been out of proportion with the old surrounding [structures]," said Jonkhans. "We wanted to create a building with varying appearances from different perspectives: Depending on distance and viewing angle, Kunsthaus will appear different."

The building's facade literally speaks to the heart of the city through its digital display skin composed of about 1,000 computer-controlled circular fluorescent light tubes that send out messages and animated displays. Known as BIX (a cross between the words "big" and "pixel"), the layer of light tubes is mounted behind a layer of outer acrylic glass, which covers most of the eastern facade and curves along the contours of the building.

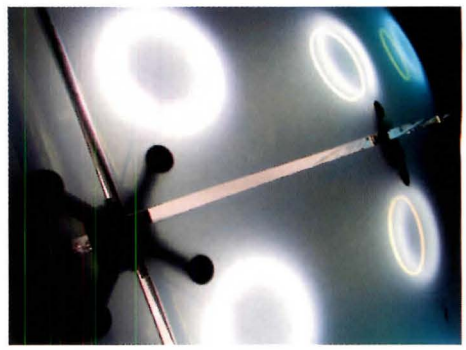
Realities:United, the Berlin firm that created the skin, points out that the screen's organic, built-in nature and its large, low-resolution "pixels" (i.e., the fluorescent tubes) distinguish it from the digital screens mounted on many other buildings, such as those in Times Square. The firm's cofounder, Jan Edler, is "gloriously incapable" of projecting most

Digital Practice

typical television and film sequences. such as ads and movie trailers. Instead, it will display work designed specifically for the building and catered to the owners' or artists' intentions. "If company XYZ is going to sponsor an exhibition, they will not be able to just take the latest company [information] and show it on the facade. It will just not work," said Edler. "There will always be the basic requirement to work with this special BIX format—and in this way, to work with the special architecture of the building itself."

Software developed by Realities:United called BIX.OS lets artists design programs for the facade by creating features such as repetitions, random/shuffle options, and automatic timers. Kunsthaus's curator Peter Pakesch is now conceiving of several projects for the building with designers and writers.

The building's flexible gallery space is fitted with more than 1,000 cyberports for multimedia art installations and to let visitors connect to the Internet. The museum will also host digital artists in residence.



Exterior "pixels" are circular fluorescent tubes.

Graz, points out Fournier, is already an established cultural and industrial hub that is known currently for its Schlossberg, a medieval castle hill. But the city still sought an iconic building, "one more little jewel in a town that has a l history of culture," he said. It has already attracted widespread attention thanks to its placement in last year Venice Biennale. Its unusual nature, the architects predict, will endear it to the city, despite the fact that it's far from indigenou As Cook noted in a recent lecture, "It may be full of a concepts, but they are concepts that have to do with integration, and the only question is how long before it becomes incorporated in the city." *Sam Lubell*

Project team relied heavily on digital collaboration to rebuild the Winter Garden quickly

After the Winter Garden suffered extensive damage on September 11, 2001, the owner turned to Cesar Pelli & Associates, the original architect, for help. With ambitious plans to reopen the building by the following September 11, the architect had only nine months to redesign the celebrated glass dome, order new materials, and rebuild the entire east facade. According to the project team, digital design techniques and collaboration were key factors in meeting a tight deadline.

The $50 million restoration project included replacing nearly 70 percent of the arched ceiling, half of the grand staircase, and the marble flooring. A sheer wall of "U" glass that spans from floor to ceiling and overlooks West Street replaced the ruined facade. Setting back a lobby wall by 15 feet expanded the lobby to create a more spacious gathering area that was no longer just a throughway to the now-absent twin towers. "We had to change the entire character of the Winter Garden in a short period of time," said Rafael Pelli, the head architect on the redesign. "And we had to make the new wall work with the old details and to create good transitions between the new and the old." Pelli and design team leader Craig Copeland, AIA, agreed that technology-enabled cooperation between architects, subcontractors, and manufacturers made the project possible.

Adamson & Associates, the architects of record, digitized the original contract documents from the 1980s by scanning them and using them as an "underlay" to create CAD drawings. Once in digital format, the architects used these drawings to verify key dimensions and structural elements with the contractor, Turner Construction. "There were no as-built drawings done, but in this manner we ended up creating a set of as-builts and then using those to move forward with the design," Copeland said.

Renderings of the Winter Garden's new exterior and interior were used to help select materials.

Digital designers dboxstudio of Manhattan created a variety of images of the Winter Garden as it underwent redesign. Using scanned photographs of the building before it was damaged in the terror attacks, designers at Cesar Pelli Associates did hand sketches of proposed changes, then turned them over to dboxstudio, which uses software like 3D Studio VIZ and Photoshop to create visualiz tions. They made a 3D frame of project onto which were overlaid different materials and facade designs. "It was the most effecti and expedient way to evaluate materials and to help the client and contract understand what the goals were," said Copeland. Added Pelli, "The [subcontractors] were able to construct better and quicker because they had inpu the design method. Th made the process sup rior from the standpoi design and constructability."

No collaboration software w used; the players merely shared AutoCAD and other files via e-m Renderers at dboxstudio mainta a project Web site, where clients could log on to comment on thei work. "The circumstances were particular for this project that ev body was in a mind-set of true collaboration," said Copeland. "If could ever re-create these circu stances in a more typical project say these methods worked well." *Victoria Rivkin with D.S.*

londestructive Testing Probes Dome's Safety

ONE OF THE WORLD'S LARGEST UNREINFORCED MASONRY DOMES SAFE JUST BECAUSE IT LOOKS SAFE?

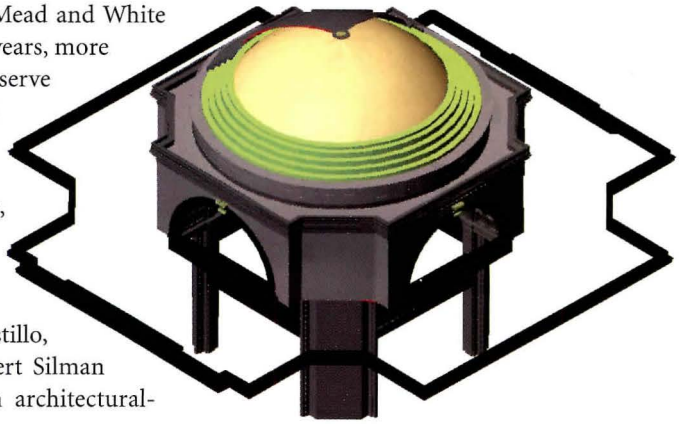
Charles Linn, FAIA

n 1890, Seth Low, Columbia's president, championed the relocation of that small college from Midtown Manhattan to Morningside Heights far to the north. When donors balked at the expense, Low decided to lead by example. He pledged $1 ion to build a library to anchor the new location. The building ld honor his father, a tea trader and owner of a fleet of clipper s. Low Memorial Library is the centerpiece of McKim, Mead and te's 1894 master plan and is still regarded by many as the most ninent building on campus. Charles McKim designed the library to onstructed entirely of masonry, without a steel superstructure. It is k-cross shaped in plan, with a central rotunda covered by a pair of es that nest one on top of the other. The inner dome is made of er on iron-frame-supported metal lath. The outer dome, whose n is supported by monumental arches and pendentives, is thed with limestone panels. Until recently, the composition of its porting structure had gone unstudied.

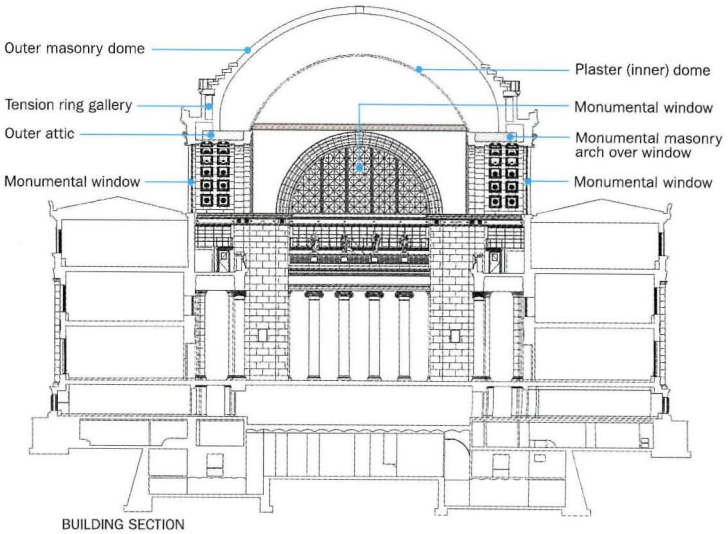
It is little wonder that the administration of Columbia versity considers its collection of 24 McKim, Mead and White dings to be one of its greatest assets. In recent years, more $170 million has been spent to repair and preserve e architectural treasures. When attention turned ow, a study of the stability of the dome was riority. But the structure is complicated. versity architect Irwin Lefkowitz, AIA, admits, didn't know where to start." When Helpern itects was hired in 1999 to create plans for ernizing Low's infrastructure and renovating s of the building, Helpern partner Margaret Castillo, and consulting engineer Ed Meade, of Robert Silman ciates, found themselves in the midst of an architectural-neering detective story.

"We had no idea what was up there," says Castillo. "We had written accounts of it and drawings, but all of them turned out to accurate." The only indication on Low's final ink-on-linen working vings was a pair of concentric arcs from which the dome's location proportions could be inferred. Construction photographs were not lpful as the architects and engineers might have wished. One image vs construction on the stone inner portion of one of the arches n it was just finished, with the centering still in place. The next in eries shows the dome all but finished.

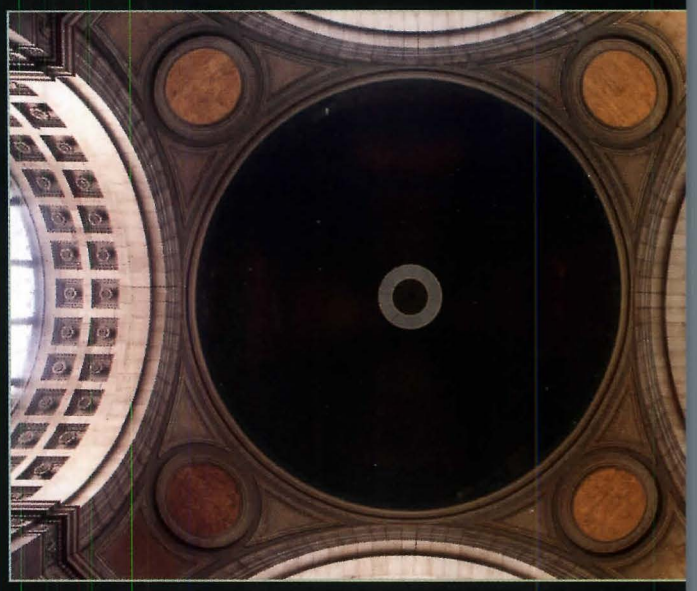
While searching through boxes of correspondence written e the building was under construction, Castillo discovered that the sions about the outer dome's construction were made in a fashion would be called "fast-tracking" today. She found correspondence veen the contractor, Norcross Brothers of Massachusetts, and the im, Mead and White office that revealed that even as the great es and pendentives that would support the exterior dome were er construction, *exactly how* it would be built was still being dis-

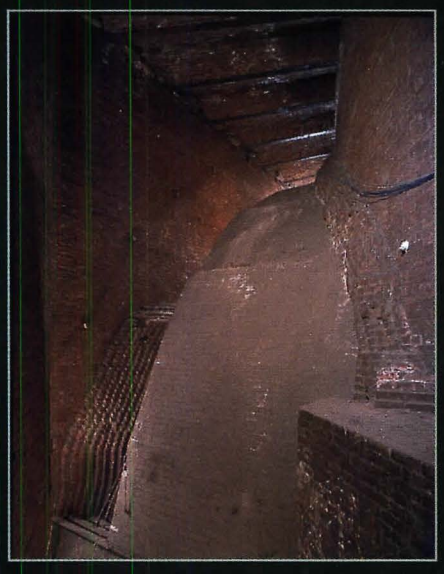


A photograph of Low Memorial Library taken not long after its completion gives an indication of the dome's overall size. Millions of measurements taken using a laser surveying instrument were transformed into AutoCAD models (left) and construction drawings (below).



BUILDING SECTION





The monumental stone arches visible inside the rotunda only do a small part of the job of supporting Low's masonry outer dome. Huge brick arches (right) built on top of the stone ones do the real work. These can only be seen from inside Low's lower attic. In the upper attic, Low's brick outer dome can be seen arching over the iron and lath that support the plaster inner dome (opposite, lower left). The CAD-rendered axonometric detail section (opposite, lower right) was created by corroborating information from original working drawings with data gathered using laser surveys, visual inspections, and hand-taped measurements.

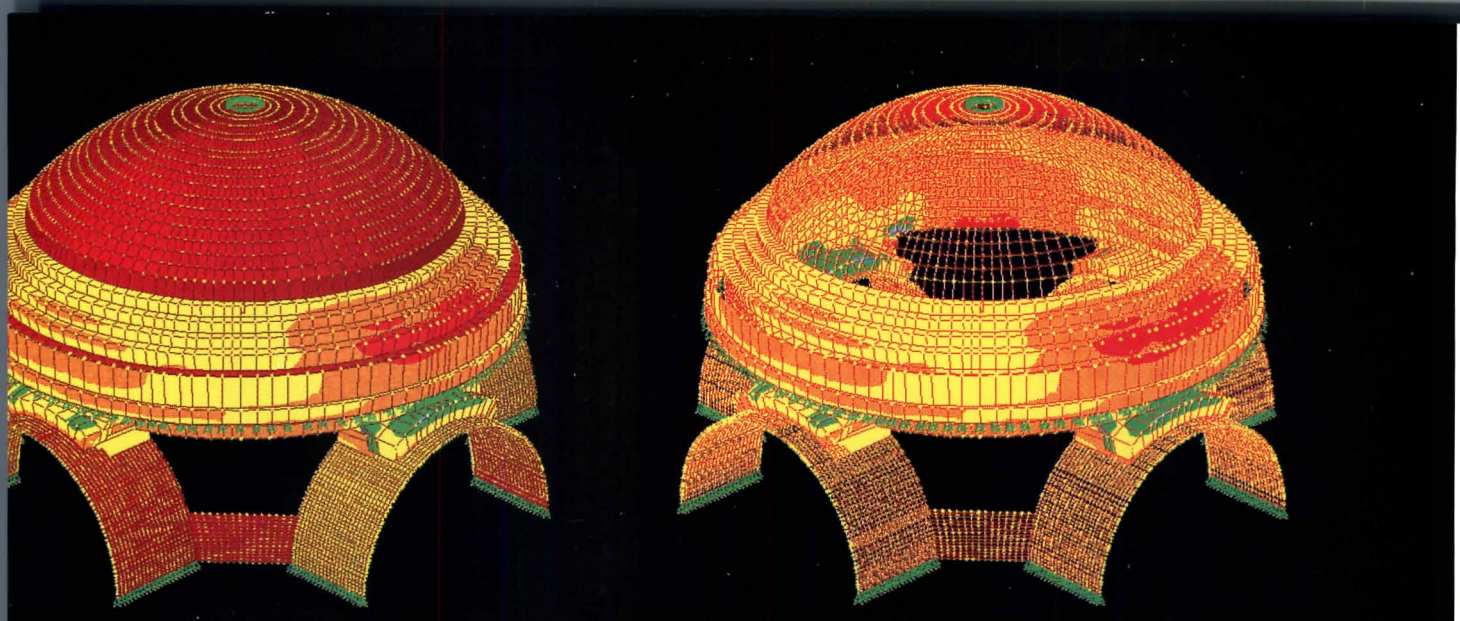
cussed. Guastavino tile was actually shown on drawings discovered by Castillo, but according to a letter she located, Norcross declined to guarantee Guastavino's work. Another proposal drawing showed that thin-shell concrete was considered, but by the time the city building department had approved it, winter weather had set in, making it too cold to execute such work.

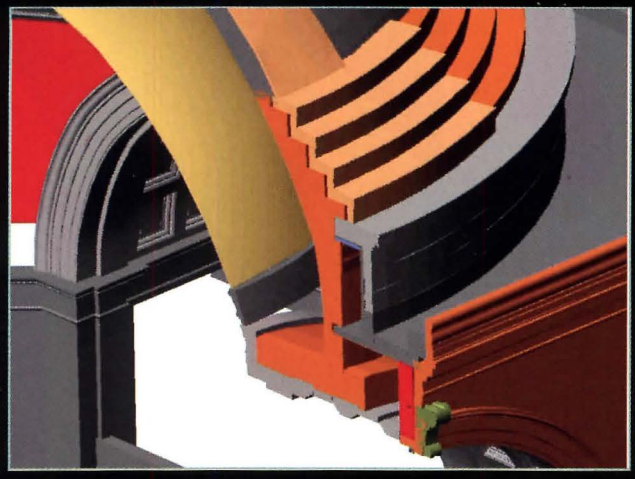
When Castillo and Meade began their initial visual survey of Low's upper reaches, university workers led them up a series of narrow circular staircases into the a huge, pitch-black attic space between the inner and outer domes. There, the flashlights on their miner's helmets revealed that the outer dome was actually made of brick, not the steel framing that they had been led to expect by drawings that have appeared in reference materials about McKim, Mead and White buildings. Evidently, the masonry was laid up over wooden centering which had been covered with roofing felt—fragments of it were still stuck to the mortar inside the dome more than 100 years later.

Learning that the dome was brick encouraged speculation about a number of other issues. Was this a wholly masonry structure, or were metal reinforcing or other layers of material being concealed inside it? If metal reinforcing or anchors had been used to reinforce the dome, was it corroding and therefore prone to failure? How much did the dome move over the course of a year, and above all, was it safe? T had been cracks in the arches that support the dome for as long as one could remember, and the cast-iron window frames under the arch had been deformed for decades. "What was alarming," says Cas "was that there were reports of sand coming down on the people occupy two of the four balconies under the great arches. Why w that be happening after 100 years?"

Nondestructive testing techniques

Determining whether the dome over Low was safe required the use variety of nondestructive testing methods. These allowed the tea "see" within the dome's structure without having to penetrate it chisels, drills, or probes. Silman Associates hired GB Geotechni Cambridge, England–based firm that specializes in nondestructive ing, to help. The firm used two techniques at Low: impulse radar electromagnetic testing. Impulse radar uses an instrument to measur speed at which high-frequency electromagnetic waves applied to a su bounce back. It is convenient to use in locations that are difficult to r because it only requires access to one side of the material being te Experts viewing the instruments' output can determine if voids or tiple layers of different materials are present in the area being sam





The wire-frame diagrams above were created using SAP2000 Plus. The one on the left is simply a rendering of the dome's structure. The one on the right uses color to indicate the level of stress distribution. Red and orange tones are tensile stresses. Other colors indicate compression. Red also represents the high-tensile zone that corresponds to the cracked region identified from the visual exam and nondestructive testing surveys. The upper portion of this dome has been made transparent for clarity.

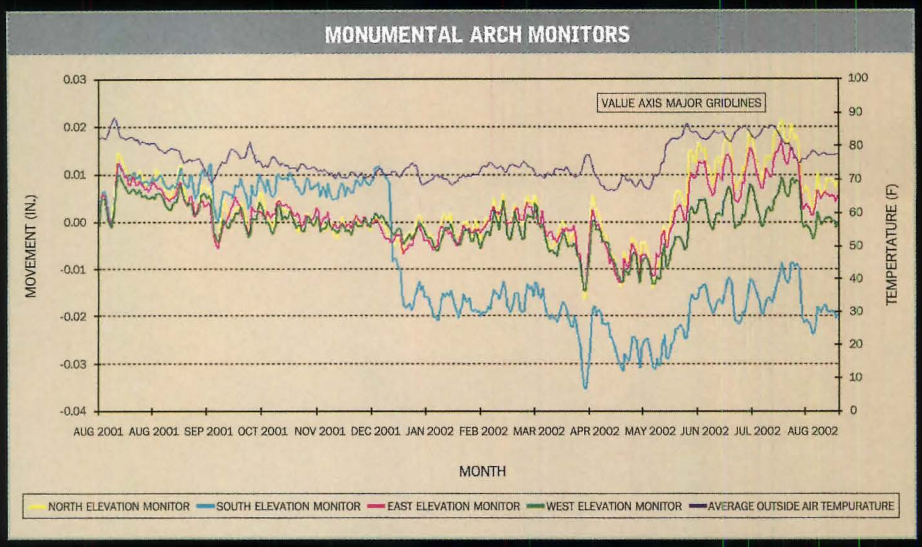
Electromagnetic detection was also used. This employs an rument that passes an alternating electrical current through a coil netallic wire that, in turn, creates a magnetic field. When the coil is sed over a surface and the instrument indicates that its magnetic d has been disturbed, the presence of a ferrous material like steel or is indicated. As impulse radar and electromagnetic detection were lied to the exterior surface of Low's dome, engineers concentrated reas where it was likely that reinforcing would be found, if it ted. They were able to determine that, in fact, the dome is made rely of unreinforced brick and is likely the largest of its kind in the . From the nondestructive testing and visual inspections alone, the ne appeared to be solid and stable.

er survey simplifies CAD drawings and structural analysis

an Associates used version 7.44 of SAP2000 Plus, a program for static dynamic finite element analysis of structures, to verify where tensile sses would be high in the outer dome and its supporting structure. s would show the engineers the obvious places where they should look cracking. In order to use the program, the engineers needed to be able reate a mathematical model of the geometry of the dome and its port and to assign loads to this hypothetical structural system. This required an extensive set of drawings, and estimates from the engineers of the size of the dome's dead load—wind and live loads were considered to be negligible—and how it was distributed.

But the team couldn't just tape off these measurements. The space is very complicated, and most of it is impossible to access. The apex of the plaster dome is more than 100 feet above the rotunda floor. GB Geotechnics quickly established dimensions by positioning a laser surveying instrument in a number of locations in and around the building: inside the dome's attic, outside on the roof, and in the rotunda proper. The locations of millions of points were recorded by the survey. These were supplemented by handmade measurements, all the points referenced back to a single station, and the data compiled in a way that allowed AutoCAD drawings to be made.

Once the dimensions of the dome, arches, and piers were known, and the volume of material in the dome calculated, loads could be estimated by using the known density of the type of brick the dome was made of. Among the graphical options for SAP2000 Plus are wire-frame axonometrics that use different colors to represent different kinds of stress. These showed a surprising amount of tension in the dome's lower portion, which surely would have failed if not for a pair of monumental 1-inch-by-12-inch iron tension rings that encircle its base. Elsewhere,



The graph shows how much movement has been measured by crack meters installed on all four arches, plotted against temperature, over the course of a year. Each crack meter (lower left) is attached by a cable to the data logger. Kent Diebolt, of Vertical Access, is shown installing one of the meters on the vertical face of one of Low's monumental arches. Diebolt also did a visual survey using video, and "sounded" the inner plaster dome.

cracks did appear where the computer model led engineers to expect them: at the tops of the supporting arches. So far, there were no surprises. The last question was whether the cracks were getting worse.

Measuring movement

To determine how much Low's dome is moving, Silman Associates had Vibra-Tech, a Mount Holly, N.J.–based consulting firm, install a remote vibration monitoring system. Eighteen devices, called vibrating wire crack meters, were installed at Low. These can accurately monitor changes in the width of a crack of only one hundredth of an inch. The ongoing readings from each are recorded by a computer called a data logger every 15 minutes throughout the year. The data logger is connected to Silman's office by modem for study. Temperature and moisture meters were also installed around the building so that movement can be corroborated against changes in the weather.

It was especially important that crack meters be installed over open joints in the faces of the arches, at their apexes, which are presumed to have existed from the time when construction of Low was just complete. The erection of a scaffold would have taken months, cost hundreds of thousands of dollars, and prevented the use of one of the university's most important gathering spaces. It was impossible to bring a cherry-picker into the rotunda—there simply wasn't any way to maneuver it into the space the team called upon Kent Diebolt, whose New York City–based comp Vertical Access, specializes in inspection and nondestructive testing "extreme locations," to install these sensors. Diebolt also used his high-w act to support himself in midair while "sounding" the plaster dome—i is, striking it with a hammer to determine that the plaster was still secu attached—and to conduct a video survey of areas that would have b impossible for other team members to see.

Helpern Architects and Robert Silman Associates have conclu that Low's dome is quite safe. Cracks are present where computer anal indicates that they should be expected, and according to data recorded fr the remote monitoring system, they are stable. Has the testing therefore b a colossal waste of money? Hardly, considering that the building is i placeable, and safety is a concern—the rotunda is often filled with hund of people. Prior to the initiation of this project, no one could really say if dome was safe. It is a bonus that it has probably been studied more th oughly than any unreinforced masonry dome besides that of the Duom Florence. What has been learned will contribute much to structural e neers' understanding of masonry dome behavior. Irwin Lefkowitz a "Low has served Columbia University well for more than 100 years. We w to ensure that it will serve us for 100 more." ■

Digital Architect

Interview: A Visit with BKSK Architects

Deborah Snoonian, P.E.

nded in 1985, BKSK Architects is a 30-person, four-partner firm Manhattan. About a third of their work involves high-end residen- design, either for individual clients or for developers and owners convert entire buildings from industrial to residential use. The nce of their projects involves a variety of building types, including lic and institutional buildings, child-care centers, and places of ship. RECORD sat down recently with partner Joan Krevlin and ciate Todd Poisson to discuss the firm's technology.

CHITECTURAL RECORD: *First gs first—Mac or PC?*

N KREVLIN: We're all on Macs . We chose our CAD package, metschek's] Vectorworks, ause we felt it was more tive to use and easier to learn other CAD programs. And orworks is Mac-compatible, so g Macs was a natural choice for We do maintain one PC in the e, to translate some AutoCAD into Vectorworks and to use AIA's Contract Documents soft- . I really wish that package on the Mac platform. [Editor's note: the AIA plans to make this product dual-platform in the future.]

AR: *Do you employ anybody on staff for technical support?*

JK: No, but we have an on-call consultant, Rick Bernstein, who does this work for us: maintains workstations, installs software, trains the staff. We find we get better service by hiring tech support people on a contract basis.

TODD POISSON: Rick is an irreplaceable asset. He steps in to do presentation renderings for us when needed, as well. And he teaches periodic classes to small groups of us, to keep us up to date on various types of software. We also try to appoint one person as an "expert" in each of the software packages, so we can go to that person when we have questions.

AR: *Who designed your Web site? Do you maintain it in-house?*

JK: A company called the Brooklyn Digital Foundry designed our site (www.brooklynfoundry.com). We chose them because we really admired the sites they'd built for other architecture firms, like Tod Williams Billie Tsien. The Foundry also designed a very user-friendly interface to allow us to upload text and photos ourselves.

TP: We ran into an interesting conflict when we were designing our Web site. AOL doesn't support Flash 6 [used to create animated Web pages], so we had to create both HTML and Flash versions of our site. We have a lot of residential clients that use AOL to access the Internet, so we need our site to be accessible by all possible venues.

AR: *Is there a difference between younger and older staff when it comes to technological proficiency?*

TP: Yes. And the older/younger divide changes continuously—it seems to happen in 10-year increments. Heavy-duty software prowess is the domain of the younger junior architects, who learn by doing things over and over or from school experience. There isn't a project with a big enough budget for me to learn Form-Z, but I'd love to master that program.

AR: *What's the biggest technological challenge your firm faces?*

JK: I'd say it's color printing. Getting the colors to display correctly on-screen and on paper is tougher than it sounds, and the printers are expensive to buy and maintain.

AR: *If you could create any pie-in-the-sky application or techno-toy for your practice, what would it be?*

TP: We'd like to find database software that can be shared officewide.

JK: We really need an application that will let us maintain a list of contacts, leads, past clients, things like that. We just haven't found anything yet that's Mac-compatible and easy to use. ■

BKSK's partners (from left): George Schieferdecker, Stephen F. Byrns, Joan Krevlin, and Harry Kendall.

vw For more information on nology for architects, including ews, vendor lists, and links, o Digital Architect at hitecturalrecord.com.

BKSK upgrades its hardware continuously—none of their computers is more than three years old.
Apple Macintosh G4, from $1,499
www.apple.com

The firm uses digital cameras to document site conditions and construction.
Canon PowerShot S200, $299
www.usa.canon.com

Partner Harry Kendall and associate Todd Poisson rely on Handspring Visors to organize their days.
Handspring Visor Pro, $199
www.handspring.com

Digital Products

From rendering tools to reading on the

By Deborah Snoonian, P.E.

Contract Documents 3.0 Plus
AIA
800/242-3837
www.aia.org

AIA continues to make changes to its popular Contract Documents software. On this go-around, the improvements include 11 new or revised contracts and forms; improved formatting to emulate the look and feel of paper contracts; faster printing with the "draft" watermark in place; and a document-recovery utility that allows documents to be retrieved during printing crashes (a bug that has plagued the software in the past). The upgrade is available free of charge. Despite architects' pleas for a Mac-compatible version of the software, no such product has yet materialized, although the AIA is said to be considering it. Windows-only.

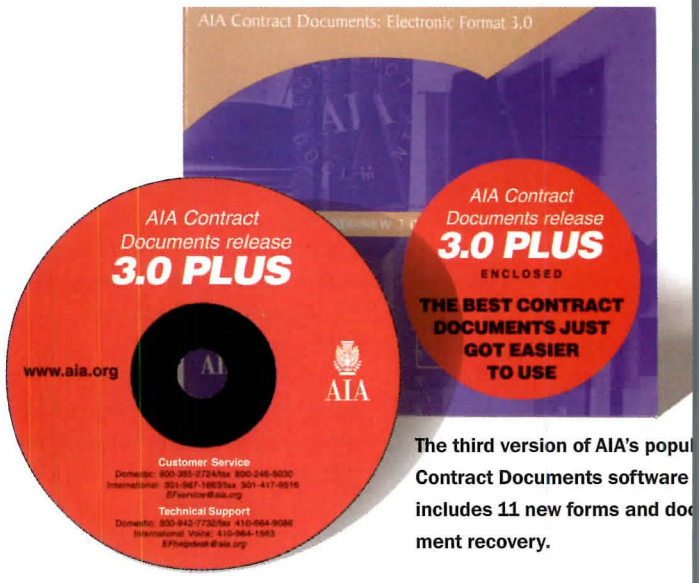
Form-Z 4.0
autodessys
614/488-8838
http://www.formz.com/

Form-Z is one of the most commonplace 3D design tools in an architect's arsenal, and the newest release won industry recognition in 2002, when it was still in beta form. Version 4.0 adds several new features and capabilities, including extra NURBS operations for the creation of complex shapes; new blend and fillet tools for editing 3D objects; more dynamic surface editing and operations on parametric curves to make form generation easier; and a wider selection of textured surfaces, with user-definable surface styles due out in a few months. Lights and light groups can now be included in symbol definitions to easily create light fixtures that can be reused in other projects. It also permits networked machines to render images simultaneously, reducing production time. Windows and Mac OS.

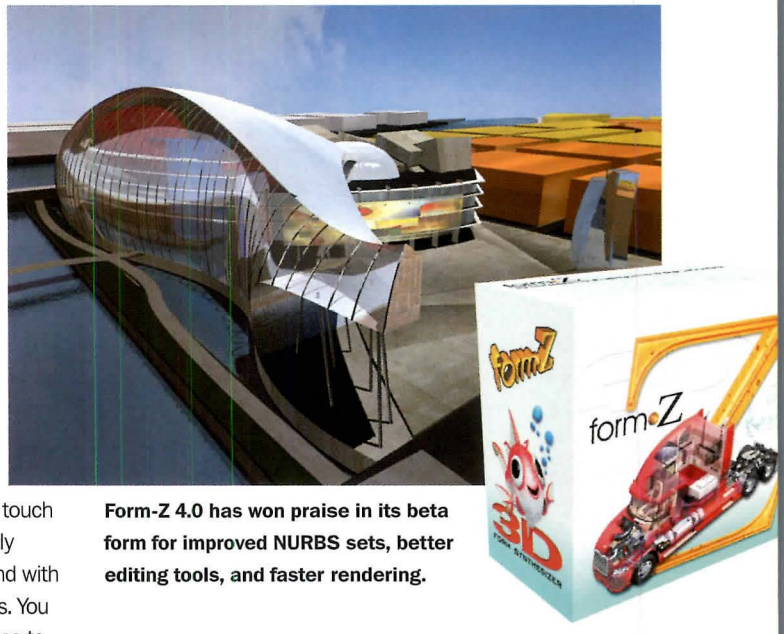
Picasa
Lifescape
617/867-7000
www.picasa.net

Taking digital photographs may be a snap, but saving and managing them is a challenge—and the vendor-specific software that comes bundled with digital cameras is often hit-and-miss on functionality and ease of use. Enter Picasa, an affordable image-management solution to this common problem. It scours your own computer as well as network drives for image files, including JPEGs, TIFFs, BMPs, and PSDs, and video files like MPEGs and AVIs. Files are displayed by name, date, size, or other criteria you specify. Then the fun begins: You can create slide shows, crop to popular sizes (like 4 inches by 6 inches), attach pictures to e-mails, and touch up photos without permanently changing the original picture and with no need to save multiple copies. You can also use the Picasa interface to launch a full-featured image editor, like Photoshop. Users who have downloaded the 15-day free trial version say it's so easy to use they'll never go back to their old software. And at $30, buying a few copies won't clean out your bank account. A handy tool for firms that shoot lots of digital images. Windows only.

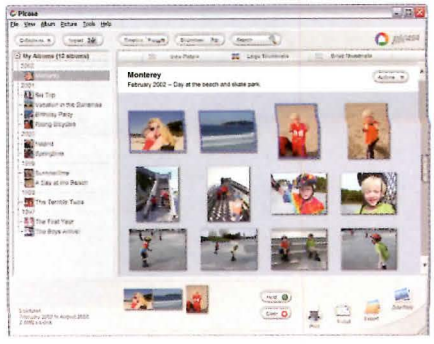
(continued on page 190)



The third version of AIA's popul Contract Documents software includes 11 new forms and doc ment recovery.



Form-Z 4.0 has won praise in its beta form for improved NURBS sets, better editing tools, and faster rendering.



Organizing digital photos on hard drives and networks is simplified by Picasa—at $30 an indispensible tool for firms of any size.


Autodesk Revit happens here.
NCEPT
REALITY
Oculus, Inc. does a last-minute redesign of a library facade and turns around a new set of bid documents by the original deadline. True story.
Make a radical, eleventh-hour change on a public project, get the board to approve it, and have the revised construction documents—including 56 sheets of drawings—out to bid on time.
Read how the Autodesk® Revit® building information modeling solution helped make it happen. And see the possibilities for yourself, by ordering a free trial CD. Visit www.autodesk.com/revithere.
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Digital Products

The Brazil Rendering System gets high marks from architects for its interfa

Brazil Rendering System

SplutterFish
310/822-3337
www.splutterfish.com

This plug-in to popular rendering programs 3D Studio MAX and Autodesk VIZ is geared to the film and broadcast industries, but architects have been adopting the tool as well for modeling their work. Users claim its simplified interface and intuitive set of tools are its primary selling points. A test version is available free of charge from the company's Web site, and SplutterFish intends for the software eventually to run on other rendering platforms and perhaps as a standalone program. Windows OS only.

FacilityCenter 8i

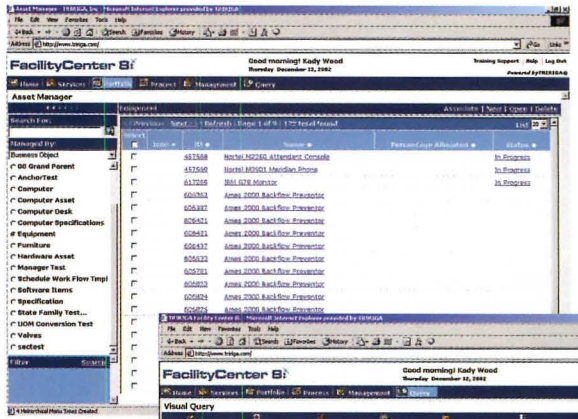
TRIRIGA
888/874-7442 or 702/932-4444
www.tririga.com

For firms that help clients manage their real estate assets, FacilityCenter 8i offers a Web-based platform in which users can enter, view, and manage life-cycle information such as capital improvements and operation and maintenance activities. The system is capable of tracking information about not only real estate assets, but locations and key personnel as well. Users can customize features such as entry fields, data forms, and work-flow sequences, as well as establish built-in "triggers" to automate tasks such as scheduling of maintenance activities or regular assessments of key holdings. Las Vegas–based TRIRIGA developed the tool after acquiring the FacilityCenter product from Peregrine Systems last year.

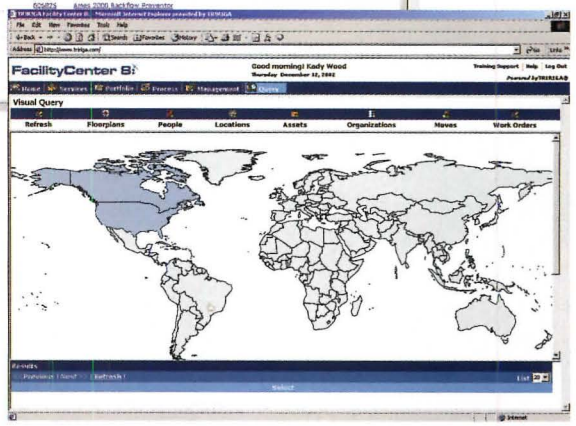
REALS

Kajima Corporation (Japan) and University of Utah Graduate School of Architecture
813-3404-3311 (in Japan)
www.reals3d.com

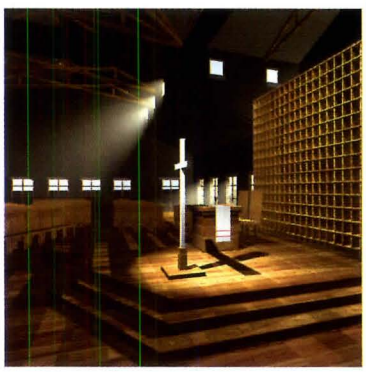
This rendering program is the result of an ongoing collaboration between a leading Japanese software company and the graduate school of architecture at the University of Utah. Available in beta as a free download, REALS will debut as a commercial product this May. The developers claim that the main selling point is that the program was developed by designers for designers, meaning it's not saddled with hundreds of complex functions only special-effects directors need. Its "canvas," the rendering window, is large enough to fit multiple images and views of the same project for comparison. The developers claim that compared to similar software, REALS has faster mouse response time and quicker rendering of spaces lit by multiple sources. REALS can convert files and information from popular design software such as ArchiCAD, Form-Z, AutoCAD, ADT, and Rhinoceros. Windows OS only.



The main feature of TRIRIGA's FacilityCente 8i is the Portfolio, whe real estate managers can enter and view info mation about propertie people, and locations.



REALS was developed by architects and isn't burdened with some of the co plex functions they don't use or want.

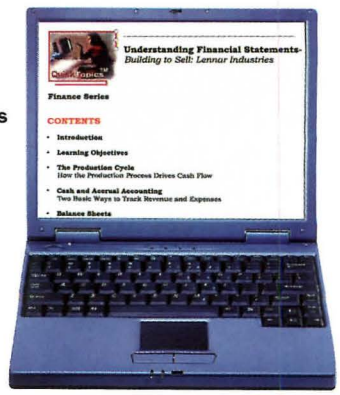


QuickTopics eBooks

Ballantine & Company
800/536-6677
www.ballantine-inc.com

Architects who want to start their own firms often need to brush up on business basics. Quick Topics eBooks summarize case studies from leading business titles and assemble them into short, simple-to-read primers that use case studies, including those from the design and construction industry, to illustrate key principles. Books are provided in PDF format. Topic areas include understanding financial statements and billing. A bonus for busy solo practitioners who lack the time (and perhaps the inclination) to stay afloat of current business practices. Windows and Mac OS. ■

For architects on the go, QuickTopics eBooks offer a fast way to stay afloat of how to run their firms.



Interiors

From fashion retail stores to furniture showrooms, interior architecture burnishes brands

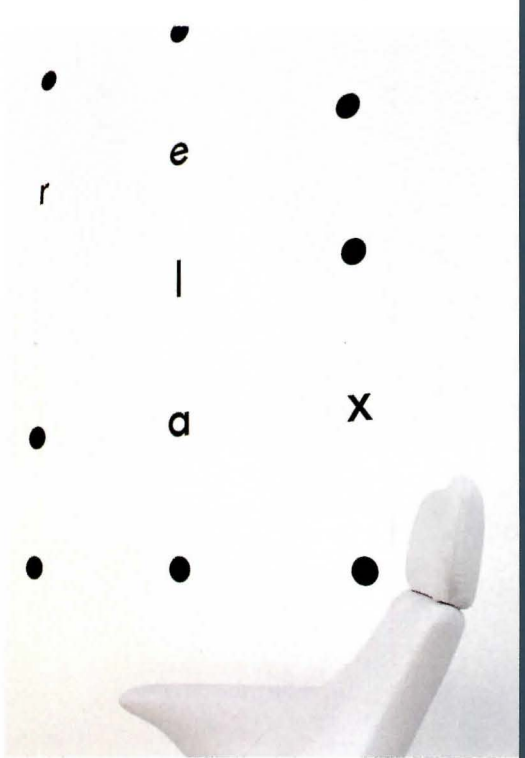
BRIEFS

In February, the Office of Thierry W. Despont unveiled its design of *Vincent's Choice*, an exhibition at the Van Gogh Museum, in Amsterdam, celebrating the 150th anniversary of the artist's birth on March 30. Continuing through June 15, the architect's installaton juxtaposes works that Van Gogh admired—from Old Masters to Impressionists—in a sweeping, "operatic" setting. **The Angelo Donghia** Materials Library and Study Center at Parsons School of Design, in New York City, designed by architect Christoff Finio, is a new research resource for students, faculty, and scholars, with an exhibition gallery open to the public.

CONTENTS

In the correlative worlds of furniture and fashion design, where trends in color and form are sometimes shared (or knocked off), there's an often-repeated refrain that "it's all about the brand." Whether or not consumers follow the work of an individual furniture designer or couturier, long-term brand loyalty secured by a manufacturer or retailer goes a long way toward weathering economic ups and downs.

Historically, it has been the quality of the merchandise, the attention to detail by customer service, and the image-conjuring romance of advertising that has driven the engines of retail stores and to-the-trade showrooms. Today, perhaps more than ever before, the architectural interiors of such spaces are literally helping to build the brands. While many fashion houses and furniture purveyors spent much of the past decade creating spare, white boxes, architects and interior designers are now enlisted to captivate customers via environments with a sharpened point of view.



For Allsteel, regional vernacular styles supported by palettes of indigenous materials distinguish a series of client resource centers across the country. Gensler kept the brand consistent by implementing corporate standards such as ceiling and conference-room treatments. At B&B Italia in London (right), the Minimalist style of John Pawson warms to a more inhabited feeling through his collaboration with furniture designer and architect Antonio Citterio. Retailer Burberry, meanwhile, is sprucing up a staid image with a broader line of more progressive wares, and as a crucial strategic move, by constructing more progressive store interiors. Architects are even creating their own brands: Two companies showcased this month were founded by architects to sell furniture designed by architects. Remember their names during the global rollout: ray20 and TRUCK. Consider yourself branded. *William Weathersby, Jr.*

Wire pendants strur
lights evoke fancifu
bleweeds floating a
Texas pecan tables
Allsteel Resource C
Local materials suc
limestone, barn woo
steel are expressed
Modern Meets Rura
(opposite).

ensler fashions a resource center for **Allsteel** in Dallas hat incorporates regional architectural influences

ohn Peter Radulski

ollowing its successful design of the Allsteel headquarters in Muscatine, Iowa [a Business Week/Architectural Record Award winner; see RECORD, November 2002, page 96], the San Francisco office of Gensler was tapped by the office furniture ufacturer to create four new resource centers across the country. A year-old company now under a new corporate parent, HON, Allsteel ght to express its Midwestern core values while reflecting each new local vernacular design influences.

As Gensler partner in charge Collin Burry explains, the urce centers in Los Angeles, Chicago, Washington, D.C., and Dallas designed to provide dealers, specifiers, and other end users with e than a traditional furniture showroom experience. "Regardless of ocation, the client wanted each facility to serve the local design com- ity with meeting spaces where professional organizations, such as the and International Interior Design Association, could gather," Burry Functional flexibility was wed to interior finishes and furnishings visually allude to each geographical location. "We created spaces with regional soul but not so vernacular in spirit that they overwhelm Allsteel's furniture designs or brand image."

While the circulation pattern in the Washington, D.C., resource center, for example, subtly alludes to that city's monumental Capitol rotunda and the historic street grid developed by Pierre Charles L'Enfant, the Dallas facility speaks with a restrained Texan twang.

The 8,400-square-foot, street-level space on McKinney Avenue has an irregular, nine-sided footprint with a shape that can be likened to a dumbbell. Burry took advantage of this unpromising rental space by drawing on a common mid-19th-century Texas residential type called a dog-trot house: two cabins separated by a 10-to-15-foot-wide covered breezeway that provided shade and a place for family dogs to sleep. At

Peter Radulski is the former editor of Hospitality Design *magazine. He is a r and design consultant based in Westport, Conn.*

Project: *Allsteel Resource Center, Dallas*
Architect, interior designer: *Gensler, San Francisco—Collin Burry, principal; Sophie Custer, Kate Clemens, Thom Shelton, Frank Lin, Dian Duvall, Nao Etsuki, Kevin Sawyers, project team*
Engineer: *Schmidt Stacy*
Consultants: *Architecture & Light—Rudy Rodriguez (lighting); Studio 585 (graphic design)*
General contractor: *Constructors Dallas*

The informal communit center helps bring clie and the larger design community together. A fireplace set into a bar wood wall is a focal po Allsteel's Terrace grou workstations sits in fro of a stone wall quarrie locally (at rear in photo

Allsteel Dallas, the architects placed the main street entrance on axis with the narrowest portion of the resource center to create a bridge between the two larger functional areas.

Recently housing a nightclub, the space was gutted, leaving 17-foot-high ceilings and a concrete slab floor. While some existing HVAC

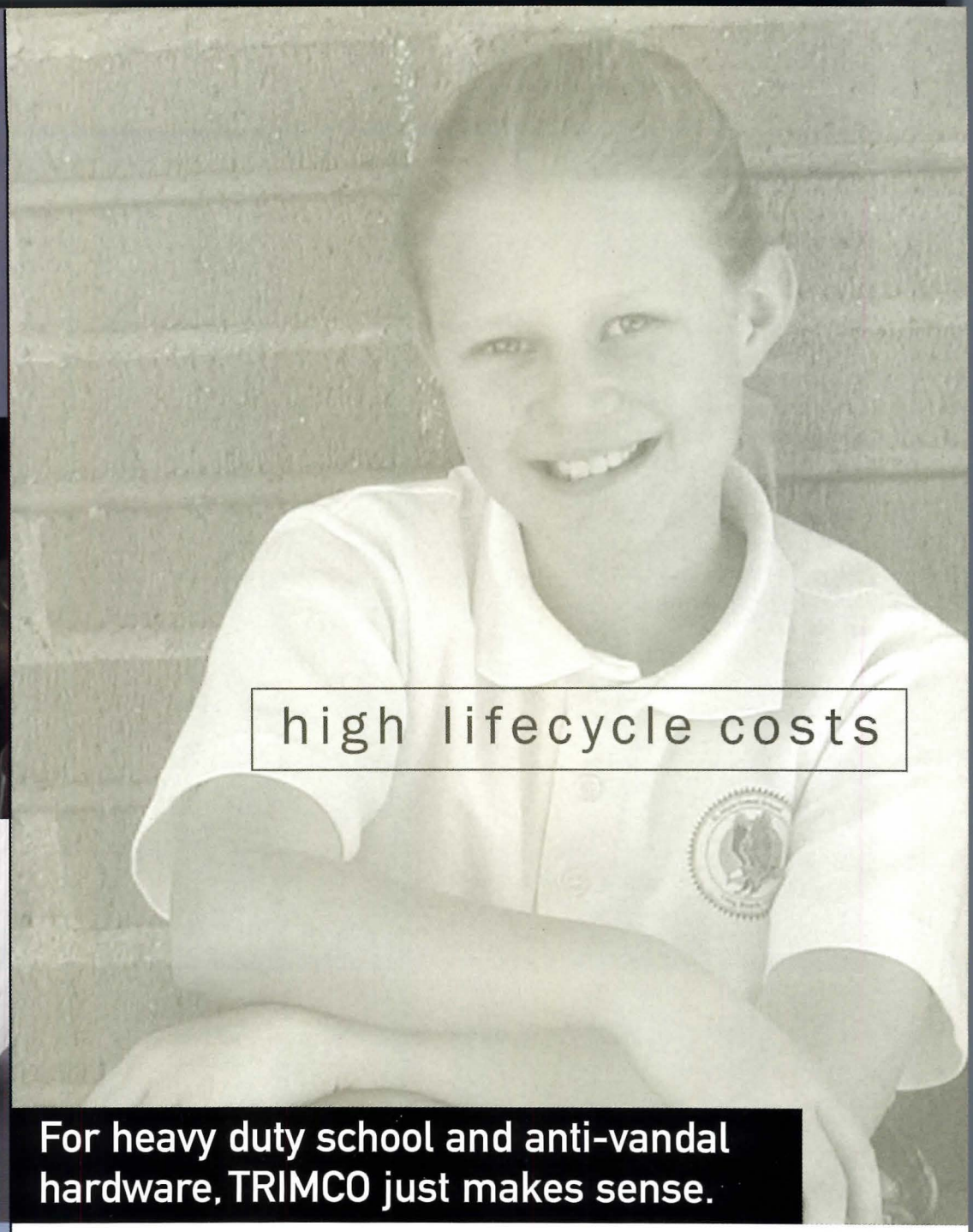
LEATHER, SUEDE, STONE, AND BARN WOOD SPEAK IN A TEXAN TWANG. A DOG-TROT LAYOUT EVOKES THE LOCAL HERITAGE.

systems were salvaged, most components are newly installed and left largely exposed along with structural elements overhead, a theme continued from the headquarters design and throughout all the resource centers.

A galvanized-steel waterfall opposite the entrance was retained from the space's nightlife role. The company name is spelled out in steel letters for immediate brand recognition, while the cascading water creates consistent aural and visual interest. A Parsons table–style reception desk in front of the water feature is constructed of Texas pecan and faced leather panels for a contemporary edge. This central space serves as a between meeting rooms, education areas, offices and computer stati and furniture display areas. To one side is the so-called community ce where visitors can sit at a coffee bar, settle into lounge chairs or a so front of a fireplace (made by a HON subsidiary), or meet informally large conference table, also made of Texas pecan. The fireplace wa faced with reclaimed barn siding for an appropriately rustic appeara In a Texan mode, the rug and pillows are cowhide, while dark-w framed furniture is upholstered in leather and suede.

The conference table is ringed by Z-shaped steel stools desi by Martha Sturdy. Adjacent glass walls afford a panoramic view of doors and become a branding beacon at night. The visible HVAC sy along the ceiling helps to rein in the room's expansive height, and ove steel-wire spheres intertwined with lights add a sculptural element w whimsically referencing tumbleweeds.

An enclosed 10-seat conference room is located on one si



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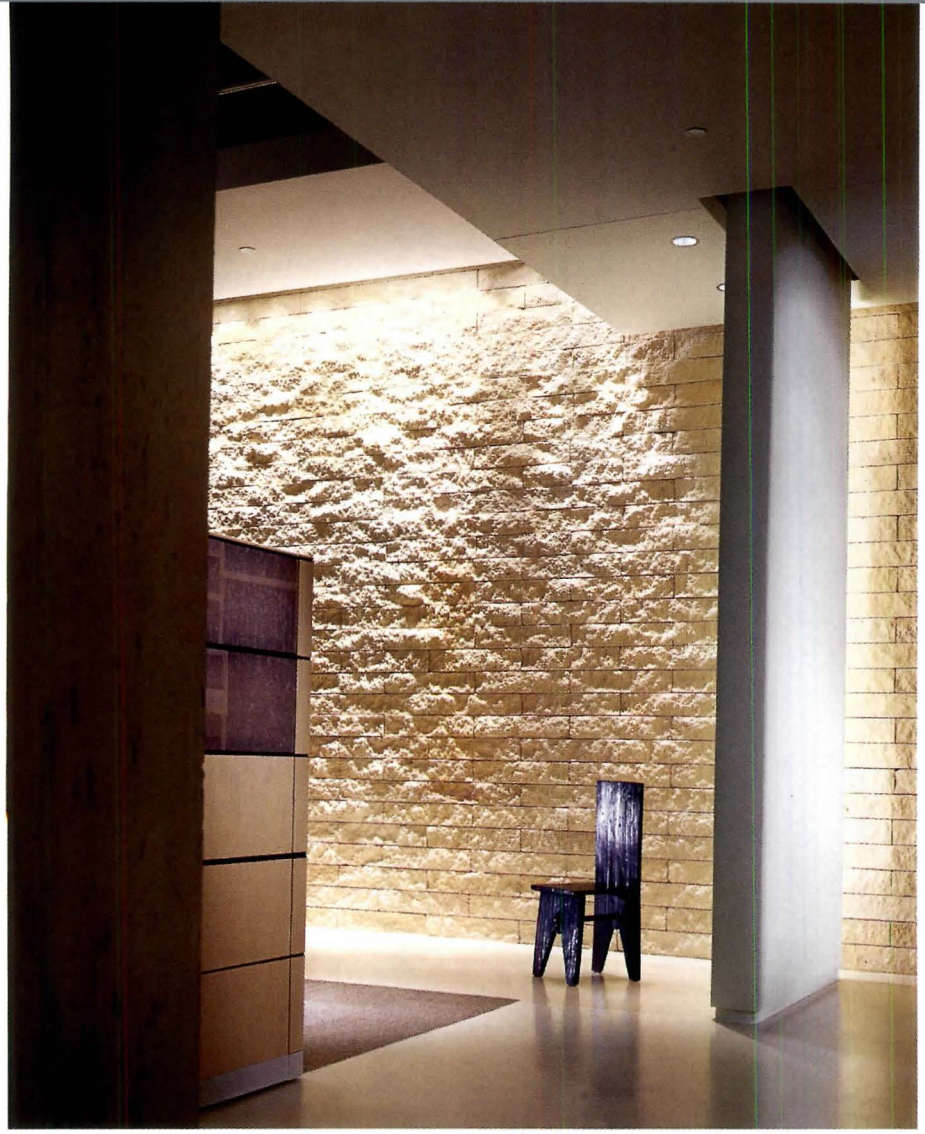
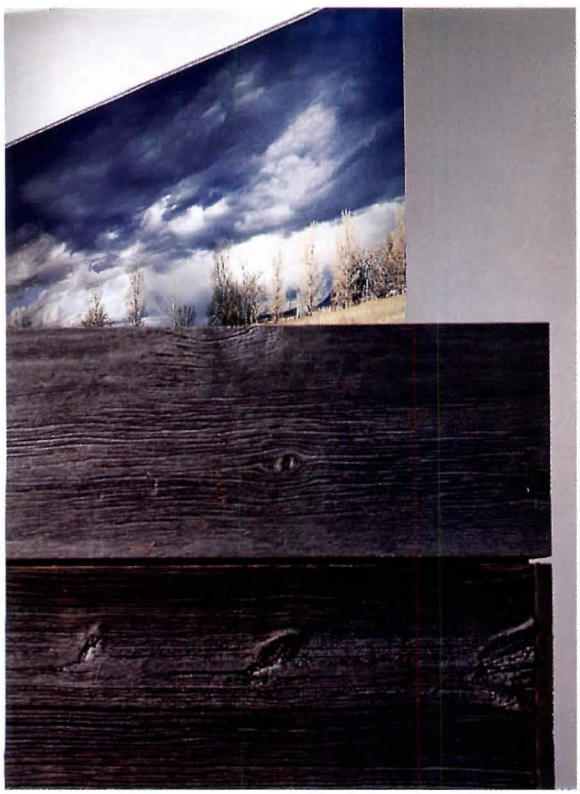


Beyond the fireplace (below) is a guest services area where mirrors take the shape of 10-gallon hats and hairdos. An oculus pierces the wall to add a sense of openness. A rough-hewn Texas-limestone wall se as a backdrop for chan furniture displays (left) while murals of the Texa landscape flank three v above product displays (bottom left).



the common area and is sheathed in hot-rolled steel with a blue Pocket barn doors are fabricated from prominently grained Texas pe

To the other side of the entrance are Allsteel worksta vignettes outfitted for use by clients. A photomural depicting the T landscape wraps the upper portion of three walls like postcards fron frontier. The balance of earth tones and hard and soft materials—a f wall sheathed in rough-hewn Texas limestone; minimally textured w carpet tiles set within smoothly finished, tinted concrete flooring; ove lounge seating and tables—brings a refined, updated ranch style to d business in Texas. "We have strived to create an environment that fa tates interaction and networking," says Timothy Smith, Allsteel president of marketing services. "We hope our clients will see the reso center as the answer to those needs." ■

Sources

Paneling: *Carlisle Restoration Lumber*
Laminates: *Abet Laminati; Formica*
Carpet: *Interface*
Paints and stains: *Benjamin Moore; ICI; Richard James*
Lighting: *Lightolier*
Furniture: *Custom; Allsteel; ROOM; Chista; Martha Sturdy; Tucker Robbins*
Upholstery: *Maharam; Edelman*
Hardware: *Dorma; Hafele; Form Surfaces; Schlage*
Specialty surfacing, fixtures: *Ardex; Catellani & Smith*
Fireplace: *Heatilator*

WWW For more information o the people and products involve this project, go to Projects at **architecturalrecord.com**.

The famous Burberry plaid is expressed along the grand staircase in oak and steel.

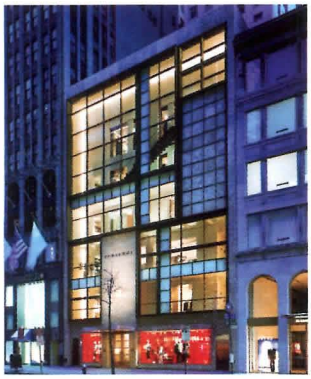
rchitectural abstractions f plaids, herringbones, nd pinstripes thread the aditions of **Burberry** rough its new flagship

By William Weathersby, Jr.

The Burberry trench coat—with its distinctive plaid lining of camel, black, red, and white—is an icon of British fashion. Founded in 1856 by Thomas Burberry (the inventor of gabardine and later the trench coat style during World War I), the retailer has sold coats worn by Captain Roald Amundsen on his trek to the South Pole, Bogart and Bergman on the tarmac in *Casablanca*, and Audrey Hepburn in *Breakfast at Tiffany's*, not to mention legions of international travelers. Since 1997, under the guidance of new chief executive Rose Marie Bravo, Burberry has sought to leverage that legacy into a loftier position as a purveyor of a broader range of luxury clothing, perfume, accessories, and housewares.

The classic Burberry crest is inscribed with the motto *Prorsum*,

Contributing editor William Weathersby, Jr., is a freelance writer based in Manhattan. He edits the lighting and interiors special sections of RECORD.



The facade, by Gensler (left), is an abstraction of the Burberry plaid in glass, stone, and burnished metal. The entry's mosaic tile floor and marquetry table interpret the same motif (below). Wood flooring in the men's suits section evokes pinstripes (right).

Latin for "forward." As Bravo explains, a centerpiece of the new business strategy is a forward-looking rollout of new flagships and the overhaul of Burberry's more than 70 existing stores. Following the opening of new locations in London, Barcelona, Orlando, Coral Gables, Florida, and New York City's SoHo, last fall the company unveiled a new flagship on Manhattan's 57th Street where the architectural and interior design details serve as their own calling card for the brand. The existing Burberry store at the site was gutted and combined with an adjacent town house to the east that had been a flagship for Escada. The resulting six-story, 24,000-square-foot Burberry store is threaded with abstractions of the trademark plaid, plus interpretations of herringbones, pinstripes, and other weaves in materials such as wood marquetry, mosaic tile, and glass. It's a haberdasher's eye peering through the lenses of engineering and building crafts.

The store's new facade, designed by the New York office of Gensler, serves as a Burberry billboard of sorts, as well as a preview of interior collage of pattern and texture. Translating the trademark plaid an abstracted grid of Magny Jaune stone, glazing, and bronze metal m the facade animates the building and dramatically doubles Burbe frontage on the shopping boulevard. (RECORD Building Technology present more details on the facade's design and engineering in May.)

Inside, Gensler, the architect of record for the building core shell, worked with retail interior specialists Barteluce Architect Associates to weave the floor plates of the two existing buildings in seamless whole. Replacing the roof and removing the party walls, team inserted a new steel structural grid and tackled floors where t was sometimes a 2-to-7-inch variance in the levels of the two buildi Sections of the ceiling were recessed and many interior walls remove create open spaces that flow from front to back at a town-houselike s

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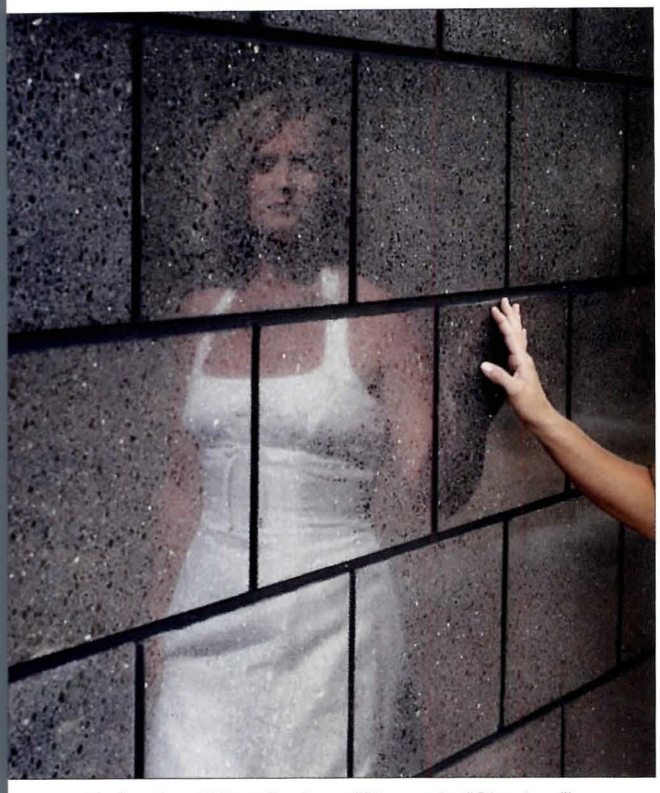

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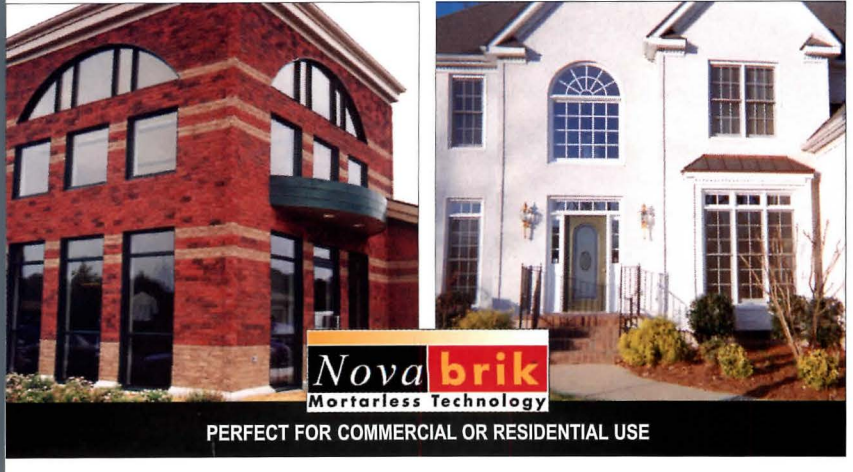

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A dark-stained oak floor with a herring bone pattern contra with the white plast envelope on the six floor (left). Furnitur designed by Randa Ridless includes Lucite-framed loun chairs (below left) a steel-based "library tables" (below right

For interior furnishings and finishes, Burberry's in-house visual and store planning team collaborated with interior designer Randall A. Ridless in New York and Mark Pinney Associates in London to fashion spaces with the feeling of an English club. Each floor has a distinctive look, from woven-leather rugs in the men's sportswear department on level six to a red Plexiglas wall punctuated by steel cubes that hold teapots in the Mad Tea Cup café set near the facade on three.

Signaling a dash of wit regarding the Burberry heritage, the foyerlike entry is paved with mosaic glass tiles that write the plaid large. A custom wood marquetry table designed by David Linley continues the play on plaid. Beyond the accessories area, a focal point is a grand staircase whose scale is based on those found in English country houses, but translated into a modern idiom. Rising three floors to an illuminated glass ceiling, the floating staircase is a play of oak, steel, and red plaster.

Elsewhere, white oak floors and paneling evoke the buff color of the Burberry trench, while floors inlaid with accents of macassar ebony wood and amber glass lend a bespoke, tailored feeling. Furnishings custom designed by Ridless include parchment and polished steel tables, Lucite lounge chairs, and sculptural, ebony-edged vitrines.

"It's not always easy to translate the look of fabric or fash details to an architectural medium," Ridless says. "We wanted the c nections to be subtle rather than literal, with the richness coming f the materials and craftsmanship." Mad for plaid, Burberry makes its n escorting architectural motifs past nostalgia toward a modern edge.

Project: *Burberry, 57th Street, New York City*
Architect of record: *Gensler*
Interior architect of record: *Barteluce Architects & Associates*
Interior designers: *Randall A. Ridless; Mark Pinney Associates*
Lighting designer: *Johnson Schwinghammer*

Sources
Cabinetry, woodwork: *Modern W Crafts*
Wood flooring: *Architectural Sys*
Furniture: *Custom; David Linley*
Hardware: *FSB; 555 Design*

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

hn Pawson and Antonio Citterio team to transform former car dealership into a showplace for **B&B Italia**

Hugh Pearman

The swooping metal roof hints of curves within the B&B Italia showroom (above). Inside, a glass-framed staircase with oak treads ascends from the Portuguese white limestone floor (right).

Renowned as the éminence grise of modern Minimalism, British architect John Pawson is in great demand by retailers seeking his particular brand of what he describes as oting a Japanese phrase) "exquisite restraint." He has ome virtually the house architect for Calvin Klein nd the world and is at present working on a new ercian monastery in the Czech Republic. But how Pawson's sometimes star-gly austere approach mesh the more mainstream dern design tradition of manufacturer B&B Italia, ch sells upscale furniture ugh showrooms featur-elaborate room settings?

The answer, as seen B&B's combined London vroom and U.K. head-ters, is by pairing the architecture of Pawson with the rior design sensibilities of Antonio Citterio, who—as e Italian way—studied architecture before embarking career as a leading furniture designer. With much of utput made and marketed by B&B, Citterio's stamp ld be on this interior anyway: His furniture and light-designs are strongly architectural. His presence in don also provides a degree of continuity with other vrooms for the company around the world, most of ch Citterio had a hand in designing.

Pawson is not typically yoked with anyone, still often imposed upon by a corporate ethos—which explain why this is not one of his better-known nt interiors. But the outcome, by two men from very rent backgrounds who are near-contemporaries in early 50s, is architecture of a high order. Pawson ed the leading role. He made all the big moves and gned most of the details, including finishes. Citterio dressed the space, employing largely freestanding ngements of furniture and some unusual hanging ngular glass panels currently used to display down-s by Philippe Starck. The project architect was ton Corker Marshall, with a team led by Stephen Quinlan.

To Pawson fell the task of making sense of an extraordinarily ward site: long, thin, and landlocked with a relatively small entrance

Project: *B&B Italia, London*
Architect: *John Pawson and Antonio Citterio, with Patricia Viel*
Project architect: *Denton Corker Marshall—Stephen Quinlan*
Client manager: *David Zimber*
Contractor: *John Richards Shopfitters*

n Pearman is a freelance writer based in London. He frequently writes for RD *about European architectural and interiors projects.*

Some furniture vignettes rest atop stacks of oiled natural oak (above). The long, vaulted space is a versatile backdrop for changing furniture displays (near right). Its volume is screened by an angular foyer (far right). Roomlike orange containers showcase new lines (opposite).

de at one end, and the other—400 feet away—abutting a sunken rail- line of London's subway system. Nor could any windows be placed g the flanks of the building because they adjoined properties to either . Despite such constraints, the location (previously used as a Porsche ership) is prime. A showroom frontage in the area, known as mpton Cross, a haven of upmarket design and fashion shops in an ent neighborhood close to the South Kensington museum district, is luable to a company like B&B Italia.

Spatially, the showroom is a tour de force. Patrons arrive in a ble-height lobby, its limestone-framed glass frontage forming part of ger trabeated composition that includes another store unit alongside. n this reception lobby, a long ramp of oak set in a steel tray gently ends to the main showroom floor through a single-height space. Set beside and slightly below the ramp is a linear display area. From this compressed introductory space, one is released into the main double-height showroom, dominated by a bravura column-free curving and tilted roof that is plastered and tinted white. Light, both daylight and electric, is brought into the showroom through glazed slots running along each edge of the roof. A mezzanine gallery runs along the higher side of the space. The composition terminates with a glazed, angled end wall where the building abuts the sunken subway tracks.

Materials are simple—limestone flooring, slate tiles cladding the side wall, varnished oak on the open-tread stairs to the mezzanine, glass and stainless-steel balustrades, and white-painted plasterwork. Display areas on the main floor are indicated by low platforms of dark-stained oak, interspersed with room-size freestanding display cabinets with a

shiny orange finish. Thematically, the display is arranged by Citterio as a series of "atmospheres," or living areas—sleeping, living, dining, and breakfast—plus a section tucked under the black-ceilinged mezzanine devoted to Citterio-designed kitchens made by Arclinea. Another section at one end of the main showroom space is devoted to Flos lighting.

The display on the mezzanine level is again Citterio-designed furniture, but this time it's a collection of his more conservative, predominantly timber-based pieces for Maxalto, a B&B subsidiary brand that sells well in Britain and France.

The zoning of the showroom creates a rhythm that breaks up the long main space while preserving its drama. The presence of many nodding forms of Achille Castiglione's famous Arco lamps reinforces the theme of the pure curve. Offices are tucked away behind the scenes; the showroom functions as B&B's U.K. headquarters for both retail and contract sales, but this activity is not allowed to spill out into the public areas.

For its showrooms and offices worldwide, B&B Italia's policy is to enlist the finest architects from each country where it is represented while maintaining a corporate ethos through the presence of Citterio. In the case of this extraordinary London showroom, mutual respect is apparent. It is very John Pawson in its calm simplicity and play of light. Yet in its bold consumerist aspects it is also recognizably Citterio. This collaborative work is something of a hidden gem. ■

Various furniture lines are distinguished by a change in the material serving as a foil, such as dark tiles (above) or a painted wall graphic and stone floor inset (below). Citterio, who also designs furniture, styles the showrooms.

Sources
Furniture: *B&B Italia; Maxalto*
Lighting: *Flos; Via Bizzuno*
Tiles: *Ascot*

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On a smaller scale, **architects are designing furniture** for two inventive companies, ray20 and TRUCK

ray20, Long Island City, New York
Part of the ray20 stable of designers, New Zealander Simon James (above left) studied spatial design before focusing on furniture full-time. New York City artist Chris Ferebee and design journalist Laurice Parkin (above right) collaborate on furniture with sinuous architectural curves under the name Five Twenty One Design. Run by architects, ray20 can be contacted at www.ray20.com.

The Jetson Sofa by Simon James comes in three sizes and three standard upholsteries.

The Hive Modular by Five Twenty One Design features walnut veneer over molded plywood. Legs are turned aluminum.

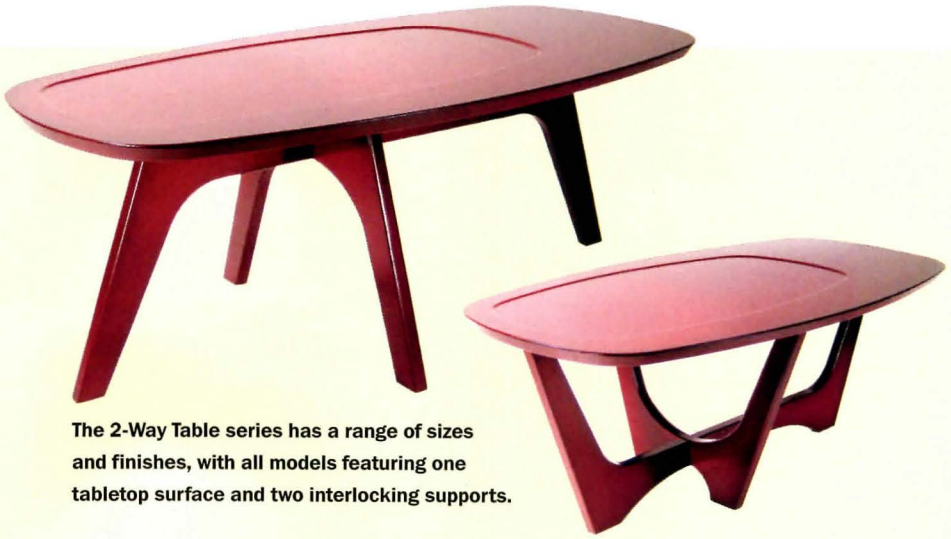
James's curving L4 Table is available in white la dark-stained veneer with exposed plywood edg

urniture designed by architects" calls to mind limited editions for well-heeled clients on one hand, or feats of imaginative assembly forced by meager budgets on the other. In the New York City area, new companies founded by architects—ray20 and TRUCK product itecture—are bringing an entrepreneurial edge to the creation of iture and interior accessories, attracting retail customers with a range fordable, innovative designs.

Founded last year by architects Cheri Caso and Paul Withers, 0 is a new furniture source whose platform is a quarterly catalog. king with a global network of designers—including Swedish architects Jonas Lindvall and Marten Claesson—the duo curate the collection as a catalog-cum-compendium; besides products and prices, there are reading lists, short essays on topics like Scandinavian Modern, and odes to such Great Design Moments as the inventions of Velcro and the Bikini.

TRUCK, meanwhile, ventured out of the gate in 2001 as a spin-off of Rogers Marvel Architects. "The furniture designs grew out of our retail interiors work for Kate Spade," says principal Jennifer Carpenter. With leather provided by Spade, the studio first designed a set of molded calfskin place mats, and product lines quickly expanded. The pieces are available at retail stores nationwide. *William Weathersby, Jr.*

TRUCK product architecture, New York City
Architects Jonathan Marvel, Jennifer Carpenter, and Rob Rogers (above) chose the name TRUCK for its connotations of reliability and functionality. Product architecture describes their approach to materials and form. The products are all made in the U.S. by craftspeople from specialties including glassmaking, leatherworking, and scientific-lenscrafting. Go to www.the-truck.com.



The 2-Way Table series has a range of sizes and finishes, with all models featuring one tabletop surface and two interlocking supports.

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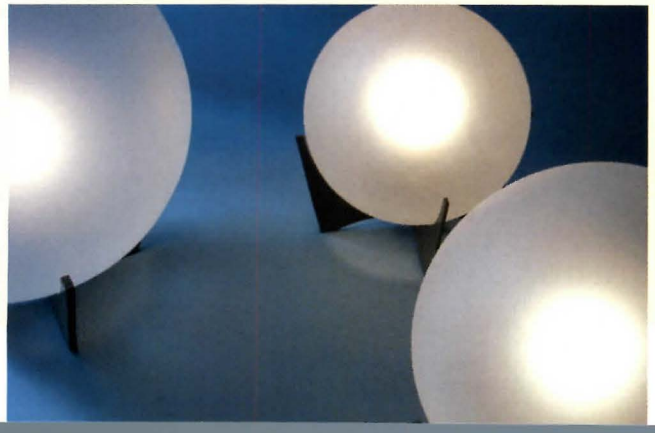

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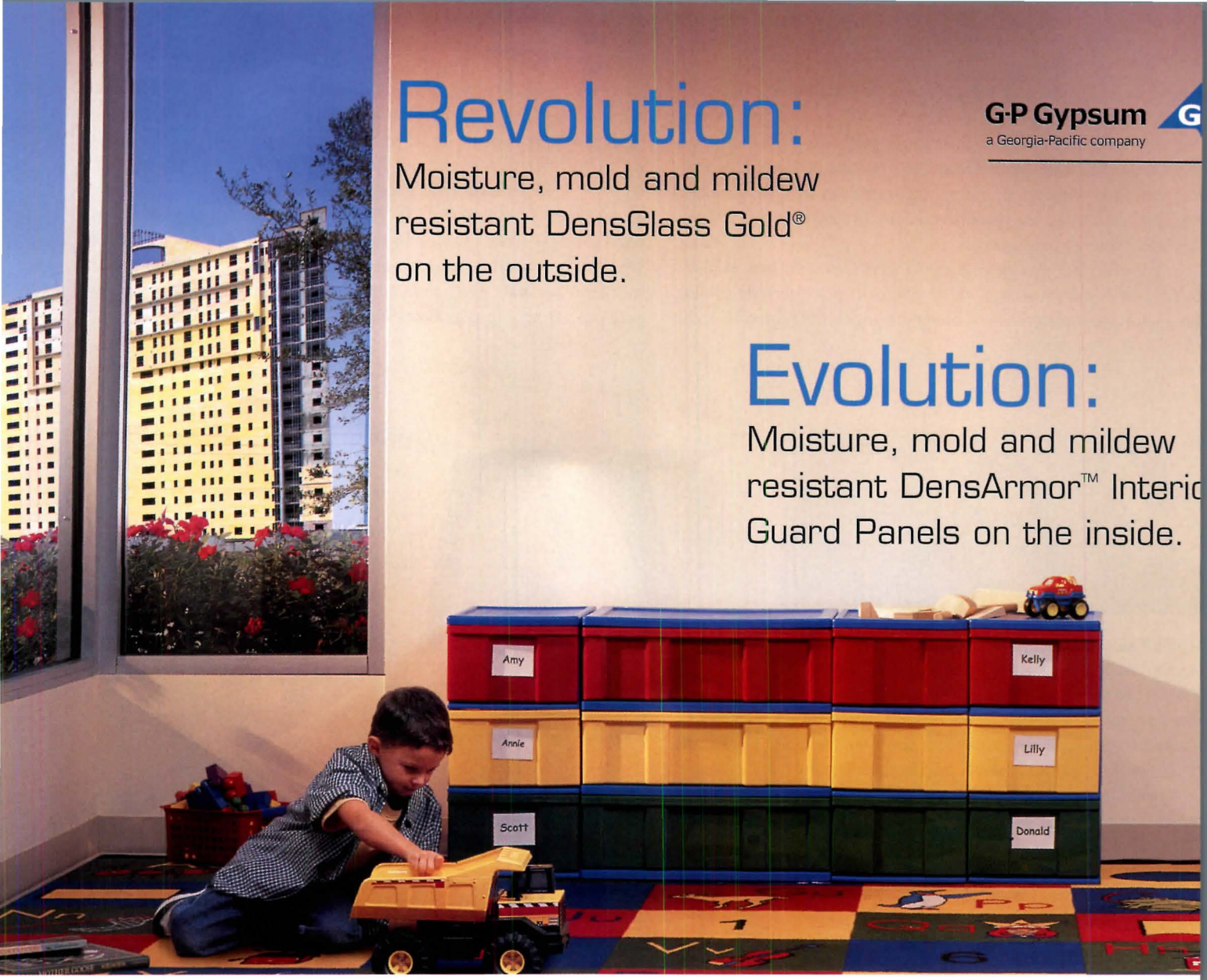

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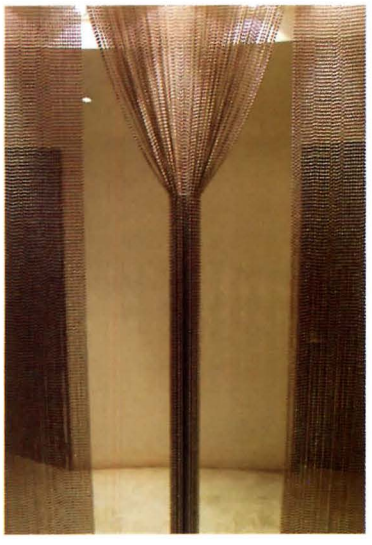

he new face of Neutra

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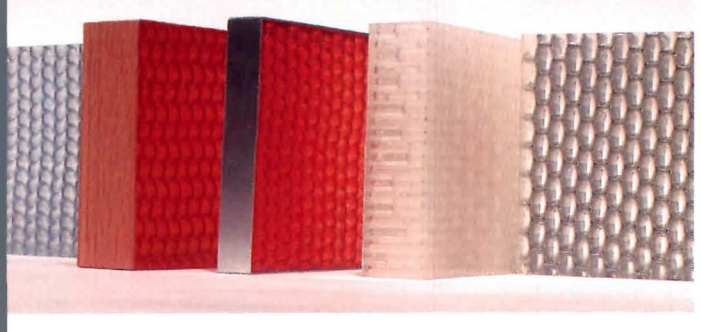
borated to make a limited
on of chairs available
her genuine walnut
aple finish. House also introduces a series of modern
v pillows and the Neutraface font collection,
red by the Modern master. 800/888-4390.
se Industries, Yorklyn, Del. CIRCLE 202



dgier panel offering

itects can specify any of Panelite's resin-faced Polymer Series translucent honey-
b panels to the size they need and Panelite will cut and edge them according to
om specifications. This new offering makes the panels ideal for furniture, shelving,
standing walls, or any other application where an applied frame is not desirable or
signer wants to have a "floating edge." The panels are available in 1" and 2" thick-
ses. 212/343-0995. Panelite, New York City. CIRCLE 203

Showroom of the Month Boffi, Los Angeles

Italian architect Piero Lissoni (above) transformed a former furniture and piano showroom built in the 1920s in Santa Monica, California, into a dramatic, Minimal space for Boffi's contemporary kitchen and bath products. Lissoni, who also serves as Boffi's creative director and premier product designer, opened up the 10,000-square-foot space by adding skylights and partially carving out the second floor to allow views of the area below. The ground floor offers seven complete kitchen displays, while the upper floor offers 10 bathroom installations with staff offices located at the rear. A shiny black epoxy coating on the ground floor offsets the other materials used for the showroom and its products on display, including steel, aluminum, matte and glossy lacquer, wood, and stone. Three sweeping expanses of glass panes on the facade serve to bring both sunlight and passersby into the new showroom. 310/458-9300. Boffi Los Angeles, Santa Monica, Calif. CIRCLE 201

▲ Hip to be square

Over 350,000 square feet of Amtico flooring was used as part of the refurbishment of a three-story Karstadt department store in Mülheim-Heissen, Germany, designed by Chicago architect Jordan Mozer and Interstore B. Heiden. The project includes more than 105,000 square feet of the subtle iridescent Century product in pearl and copper, as well as a selection of Amtico's Design Colors that create the retrostyling on the 20' wide walkways. 800/370-7324. Amtico International, Atlanta. CIRCLE 204

Interiors Products

▲ Ups and downs

An eye catcher at last year's Milan Furniture Fair and Promosedia chair exhibition, Ron Arad's RON-ALDOup and RON-ALDOdown chairs express the creative spirit of their designer. The chairs feature a flexible chrome-plated steel structure in which the seat and back appear to be independent of one another. The upholstery comes in fabric, leather, or Alcantara, and the optional footrest can be used as an alternative seat, transforming the chair into a modern chaise longue. 415/925-2701. Leif Petersen Inc. International Furniture, Larkspur, Calif. **CIRCLE 205**

► Engraved walls

Intaglio, named after the term—derived from the Italian *intagliare*—which means to cut or engrave, is a collection of vinyl wall coverings developed by designer Lori Weitzner for Pallas Verticals. The three designs in the collection are Type II, 54" wide, 100 percent vinyl, 20-ounce wall coverings for contract and residential applications. Crossings is inspired by a woven jacquard in Pallas Collection, Pleats Please has the 3D look of pleated silk, and Velveteen emulat the look of crushed silk velvet. 800/4-PALLAS. Pallas Textiles, Green Bay, Wis. **CIRCLE**

► Wood-grain laminates

Lamitech has increased its product line with the addition of nine new alternatives in wood grains for the American market, including Cherry, Oak, and Maple veneer. The laminate's post-formability permits rounded and elliptical edges for numerous possibilities i kitchens, baths, and commercial and institutional applications. 800/922-9692. Patrick Industries, Mishawaka, Ind. **CIRCLE 207**

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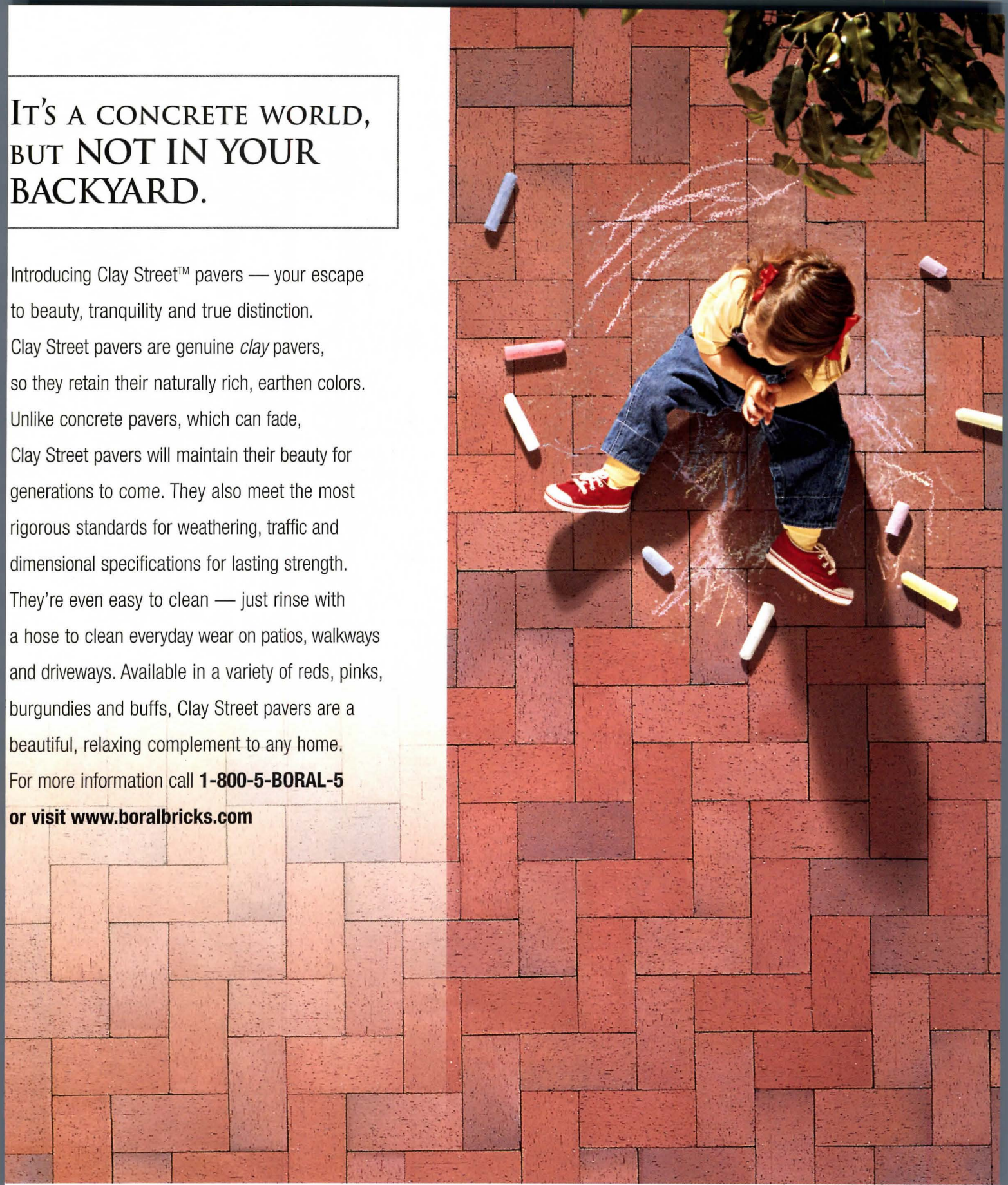

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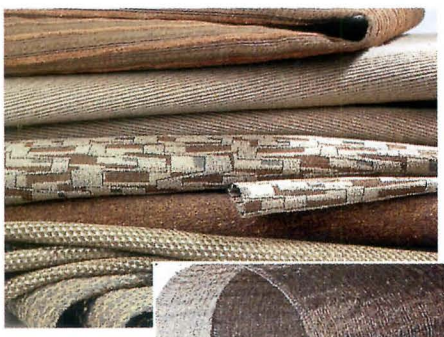
003 Boral Bricks Inc.

Interiors Products

▼ Haute couture coverings

The Glam Collection, Pollack's new upholstery and window fabric collection, presents a range of materials for dressing today's interiors with a nod to the world of haute couture. The collection's satins and silks, velvets and herringbones, bouclés and frisés can work in an array of contract projects from casual to sophisticated.



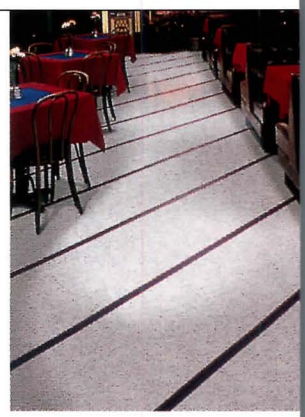
The collection of 19 fabrics ranges from the tailored, suitlike weave of the Suave upholstery to the acetate/silk blend of the Bewitched window covering. 212/627-7766. Pollack, New York City. **CIRCLE 208**

◄ Sitting on the dock

Inspired by techniques used in the construction of wooden docks, the Dock Chair Series is comprise of ergonomically designed wood slats that are laminated to a molded wooden frame Designed by Espen Voll and Tore Borgensen of Oslo, Norway, the high back-stacking and low-back-lounge chairs feature a shell of molded birc with walnut or oak veneer, legs of s chromed steel, and an optional uph stered seat and back cushion. 416/ 762-8129. SkyPad, Toronto. **CIRCLE**

► Hiding your tracks

CortinaStone features 14 new colors with a marble design that are part of Azrock's premium VCT line. Ideal for heavy traffic applications, CortinaStone's marbling effect helps hide slight subfloor problems as well as wear and tear from traffic. A subtle checkerboard effect can be achieved when alternating tiles are installed with a quarter turn. 800/USS-TILE. Domco Tarkett Commercial, Houston. **CIRCLE 210**



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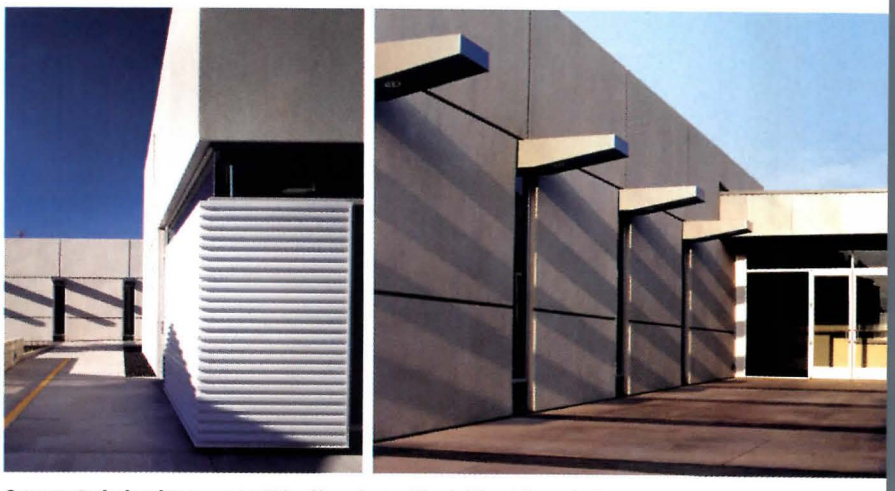
New Produc_s

Baseball-size hail, hurricane-force winds, termites, fungus, and the usual scorching sun and freezing temperatures of the seasons are just a few of the challenges faced by the manufacturers of **roofing and siding** products. Today, offerings such as **reflective roof membranes** are expected to provide greater energy performance, in addition to their role in thermal and moisture protection. *Rita F. Catinella*

terior siding helps keep new dical office building on budget

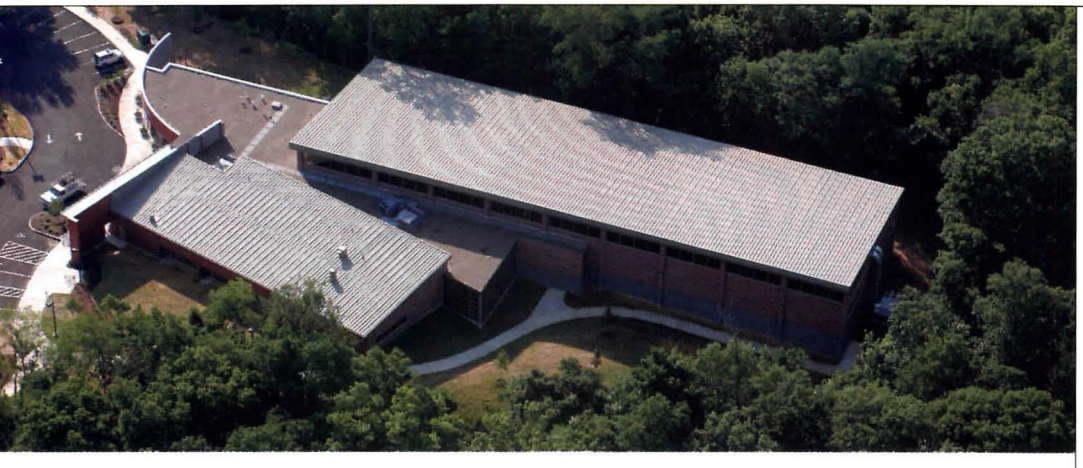
eep the Providence Holy Cross ical Building project within a)-per-square-foot budget, hGroup California selected erials such as Exterior Insulation shing Systems (*EIFS*) and ugated aluminum for the exte- siding. The use of these siding erials in combination with sim- detailing helped the designers g the project in under budget 144 per square foot.

The 24,300-square-foot med- building, located within a hospital pus in Mission Hills, California, ures one elevation facing the n hospital, one facing the indus- plant for the campus, and other s that enclose new courtyards or etween spaces. The design team at SmithGroup felt the combination of EIFS by Dryvit and painted corrugated aluminum from Alcoa Cladding Systems would create a richer building that could respond to these different conditions. EIFS were used on the south side, facing the hospital, while painted corrugated aluminum, which costs about the same as EIFS, was used on the north side, which faces the industrial plant. The walls that face the courtyard areas feature both materials. Instead of capping the corners where two planes of corrugated aluminum meet, the designers developed a welding detail that allowed the material to be mitered.



Corrugated aluminum and EIFS offered an affordable siding choice.

One advantage to using EIFS was the bevel top edge, which permitted a monolithic wall without visible flashing (draining is behind the parapet). Another advantage was the ability to express long, continuous wall surfaces without the undulation and imperfections associated with traditional stucco. 800/556-7752. Dryvit, West Warwick, R.I. **CIRCLE 211.** 770/840-6456. Alcoa Cladding Systems, Norcross, Ga. **CIRCLE 212**



lad of new metal wall panel and roof system offerings

nco Incorporated has intro- ed new metal wall panels and ding-seam metal-roof systems include the TremLock VP, nLock LSP, and TremLock SL ucts.

TremLock VP, Tremco's stan- design panel for new or fitted roof systems, is capable of spanning secondary structural members spaced up to 5' and can be applied to light-gauge-steel framing, plywood, and metal decks. TremLock LSP is designed for a minimum of ¼" slope and can be used in new construction over an open span or in a retrofit construction over structural framing. The last addition, TremLock SL, is a standing-seam metal-roof system for vertical and steep-sloped roofs.

All the TremLock metal roof systems are 24-gauge steel and available in a variety of standard architectural colors. 800/562-2728. Tremco Incorporated, Beachwood, Ohio. **CIRCLE 213**

Redesigned roof trims series

Perimeter Systems has redesigned the Press-Loc Series of architectural copings and snap-on gravel stops. The secure bar design of the gravel stop (below) works on a variety of roof membranes and allows for a leak-proof gravel-stop edge that is resistant to wind-uplift. The new coping features conceal spring-loaded compression cleats that allow the installer to easily snap the coping into position in a vertical fashion. 919/775-7353. Perimeter Systems, Sanford, N.C. **CIRCLE 214**

New Products

▲ Bolder vinyl siding

Heritage Hill vinyl siding features the weather-resistant Geloy material that makes it possible to produce vinyl siding in dark, bold colors without concerns about fading. In addition to being fade-resistant, Geloy does not have the propensity for heat distortion seen in some pure acrylic siding products. Available in traditional and dutch lap profiles, Heritage Hill is an ultra-low-gloss product that features a wood-grain emboss. 800/BUILD GP. Georgia-Pacific, Atlanta. **CIRCLE 215**

▲ Seven-inch solid-core siding

Crane developed CraneBoard7 as a new solid-core siding offering to match the 7" siding profile. CraneBoard7 has a seamless appearance and a ⅜" profile with no visible nail heads. Unlike fiber cement, CraneBoard7 is lightweight and impervious to moisture. The backing has an R-value of 4.0 and carries the Energy Star logo, the only siding that can make this claim, according to the manufacturer. 800/733-8469. Crane Performance Siding, Columbus, Ohio. **CIRCLE 218**

► Fluid membrane

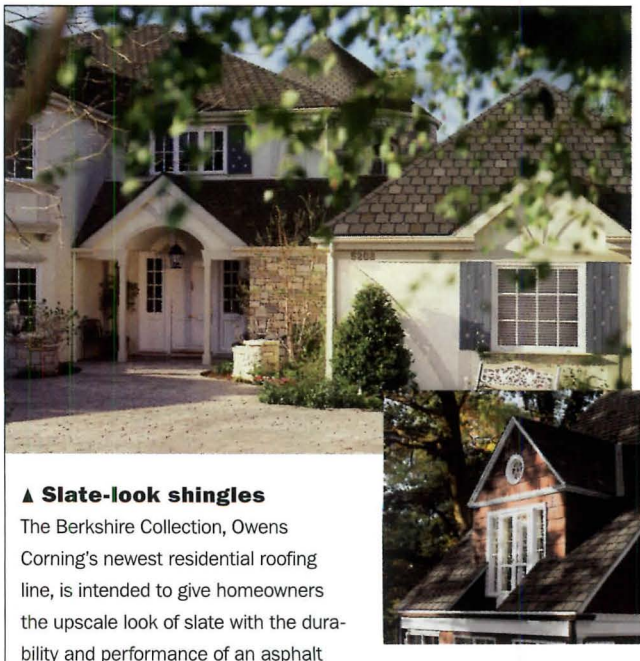
ExoTite Waterproofing is a polymer-enhanced, single-component, fluid-applied asphalt-emulsion waterproofing membrane designed for vertical or horizontal commercial applications. Spray application allows for continuous coverage, even in areas with complex detailing. ExoTite can be applied to concrete, masonry, and other structural substrates. 888/903-KOCH. Koch Waterproofing Solutions, Reynoldsburg, Ohio. **CIRCLE 219**

▲ Reflective modified bitumen membrane saves energy

StressPly EUV Mineral is Garland's latest modified bitumen technology. The high-performance membrane (featuring a fiberglass/polyester reinforcement) has a mineral surface with a reflectivity rating that d bles the standard mine used in the roofing indu today. This specially de oped mineral significan lowers ambient roof ter atures, resulting in ene savings Garland claims no other multi-ply, mine surfaced roof system can match. In addition, the system provides long-te UV weathering resistance while incor rating postconsumer recycled rubber scrap tires. 800/321-9336. The Garla Company, Cleveland. **CIRCLE 216**

► Passed the test

Accelerated weather testing of Honeywell's Millennium membrane system concluded that the membrane portion submerged in water for 6,000 hours had the same low temperature flexibility exhibited by the membrane before testing. The system includes granular surface membranes, smooth membranes, base sheets, adhesives, and r tics. 800/221-6490. Honeywell Commercial Roofing Systems, Cary, N.C. **CIRCLE 21**



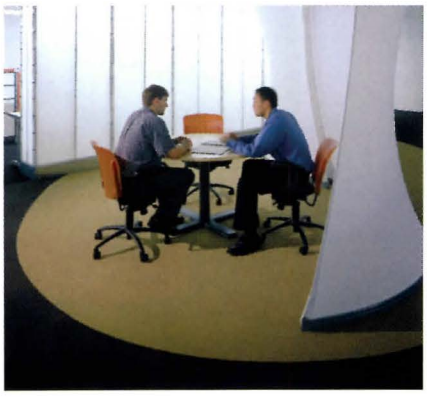
▲ Slate-look shingles

The Berkshire Collection, Owens Corning's newest residential roofing line, is intended to give homeowners the upscale look of slate with the durability and performance of an asphalt shingle. These dimensional premium laminate shingles offer a combination of s colors found in natural slate and five designer colors. Backed by a limited lifetim warranty, Berkshire shingles feature resistance to algae and high winds. 800/G PINK. Owens Corning, Toledo. **CIRCLE 220**

roduct Briefs

arpet awards

olutia Doc Awards com-
on, now in its 14th year,
nizes outstanding
vement in contract proj-
hat include carpet made
olutia Ultron nylon 6,6
The award was given
r firms, including Reza
iri, principal, and her
t team at Wirt Design
, Los Angeles, for the
f Shaw Contract's Visual
nts and Synthesis styles in the Homestore corporate headquarters facility in Lake Village, California (shown). 866/858-7668. Solutia, St. Louis. CIRCLE 221



ommercial faucets

er commercial kitchen and lavatory
ts are vandal-resistant, feature
compliant blade handles, and have smooth lines for easier cleaning. The bodies and spouts are built with heavy cast brass for a range of commercial kitchen and bathroom applications. 847/675-6570. Gerber Plumbing Fixtures, Lincolnwood, Ill. CIRCLE 223

extured copper

Revere Liberty Collection
res a selection of textures
Rigidized Metals Corporation
have been applied to Revere
ic Copper. The collection
e used to create a modern,
tech, or rustic finish on walls,
as, mansards, and any type
chitectural accent. The light-
nt and malleable texture
s for use in applications
ghout the home, including
en counters and back-
shes, as well as fireplaces
wn). 800/448-1776. Revere
er Products, Rome, N.Y.
E 224

Product of the Month
Schindler 400A Elevator

The Schindler 400A traction elevator system eliminates the need for a machine room and unsightly roof penetration. The system's compact machine can be mounted directly to the elevator rails—requiring less building construction interface and less lead time. The system uses advanced permanent magnet drives for a clean, oil-free operation, and it uses up to 40 percent less power than traditional drives. No oil also eliminates the potential for belowground leaks. In the elevator's underslung design, cables run diagonally beneath the cab for optimal balance and less side-to-side vibration. The unit is serviced from atop the cab, which is fitted with safety guardrails.

The 400A is suitable for two to 20 stops, features variable frequency drives, speeds of 200 and 350 fpm, and rises of up to 200 feet. It comes in 2,100 lb., 2,500 lb., 3,000 lb., and 3,500 lb. configurations. 973/397-6564. Schindler Elevator Corporation, Morristown, N.J. CIRCLE 222

▲ Commercial-grade fiberboard panels

LP Specialty Products introduces a new line of commercial-grade Ultra High Density Fiberboard (UHDF) panels as an alternative to ceramic tile, metallic surfaces, and high-pressure laminates in light construction projects including hotels/motels, offices, and commercial laundry rooms. The panels are made from a newly developed UHDF and feature a hard acrylic polymer topcoat that makes the panels water-, stain-, scratch-, and mildew-resistant. They are available in eight different color/finish combinations. 800/866-4323. LP Specialty, Huntersville, N.C. CIRCLE 225

Product Briefs

► New colors for the year

DuPont Corian has added six new colors to its palette, bringing the total offering to more than 110. The introductions include one graphic solid and five soft neutrals: Acorn, Blue Pebble, Delta Sand, Doeskin, and Willow (shown). Graphic Blue is a new addition to the design series in the "brights" subpalette. Corian can be used for applications throughout the home, including countertops, backsplashes, vanity tops, wall cladding, tub and shower surrounds, desktops, and windowsills. DuPont's Zodiaq quartz surfaces introduces four new colors to its palette, bringing that total offering to 25. The new colors are Autumn Light, Cappuccino, Cinnamon Spice, and Copper Sunset. 800/4-CORIAN. Dupont Surfaces, Wilmington, Del. **CIRCLE 226**

▲ Nearly trackless record

The Individual Panel Sliding System consists of discrete glass panels and frames available in wood or aluminum with a wide range of muntin, finish, and glazing options. Unlike other sliding wall systems, the Individual Panel Sliding System is supported from a hidden track above the panels. As a result, c single narrow track is required for the floor; if weatherproofing is not a considera then trackless options are available. Panels can be stacked conveniently out of (top). The system is suitable for restaurants, stores, mall fronts, ski lodges, confe ence rooms, offices, and churches. 800/411-NANA. Nana Wall Systems, Mill Val Calif. **CIRCLE 227**

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lovable files and walls

C-Series Pedestal and Lateral files, from Trendway, feature integrated locks, vy-gauge steel, full-extension slides with steel ball bearings, and adjustable es. Designed for multiple applications, the C-Series Pedestal (below) can stand e, be used under a work surface, or function as a mobile file. The Lateral files two- to five-tier shelving units that can be aligned side by side. Trendway has ated the literature for its movable wall product, Trendwall, in response to a resur- ce of interest in the product. 616/399-3900. Trendway, Holland, Mich. **CIRCLE 228**

▲ Designer glass film

A line of 18 LLumar glass-enhancement films have been introduced as an alternative to glass etching. In addition to providing glass safety and UV-protection, the films now offer a wide range of colors, patterns, designs, and textures, including frosted white, opaque (shown), square and striped designs, and small and large dots. Many of the films can also be used on metal, painted, or other flat and cylindrical surfaces. 800/2-LLUMAR. CPFilms, Martinsville, Va. **CIRCLE 229**

► Melodious seating option

Lyric upholstered stackable guest seating can be used for public reception rooms, training classroom and lecture halls, office guest seating, and food service and general hospitality applications. The chair's seat and back are made of rigid, one-piece, high-impact, blow-molded plastic. Polyurethane-padded and upholstered options cover seat and back or seat only. 972/641-2860. Vecta, Grand Prairie, Tex. **CIRCLE 230**

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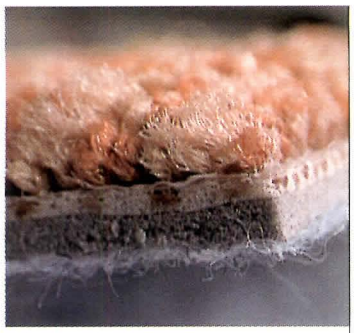
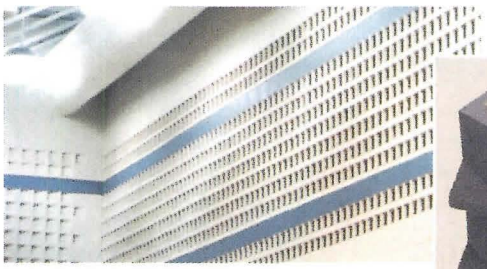
Product Briefs



▲ Soybean backing
Pacificrest's BioBak system integrates BioBalance polymers into polyurethane commercial carpet backings. The special polymers, manufactured with a soybean-based polyol, provide an alternative chemistry for producing polyurethane carpet backings. In addition, up to 5 percent postindustrial content has been added to the carpet-backing composition. 800/522-8838. Pacificrest Mills, Irvine, Calif. **CIRCLE 231**

▼ Electric file system
The MediaStation ELF (electric lateral files) consists of a series of vertically arranged rotating carriers controlled by an electronic keypad or software. By taking advantage of unused overhead space, the ELF can hold the same number of files as traditional four-drawer filing cabinets or lateral files in 50 to 60 percent less space. The system works with FastPic Office records-management software. 800/639-5805. MegaStar Systems, Marietta, Ohio. **CIRCLE 232**

◄ Certified door line
Marshfield introduces two additions to their family o Environmental Class wood door products—the nonr and 20-minute-rated particleboard core doors, certi by Scientific Certification Systems. The doors are su for use in offices, schools, hospitals, government facilities, and other commercial applications where specifying green products is the goal. 800/869-366 Marshfield DoorSystems, Marshfield, Wis. **CIRCLE 233**



▲ Sound off
Sound Cell sound-absorbing concrete masonry units utilize a skewed internal construction to focus and redirect reflected sound into a sound-absorbing cavity, resulting in lower noise levels. The unit provides multiple levels of noise relief at most frequencies and improves overall sound quality. The units are available in a variety of colors based customers' needs. 800/445-0034. The Proudfoot Company, Monroe, Conn. **CIRCL**

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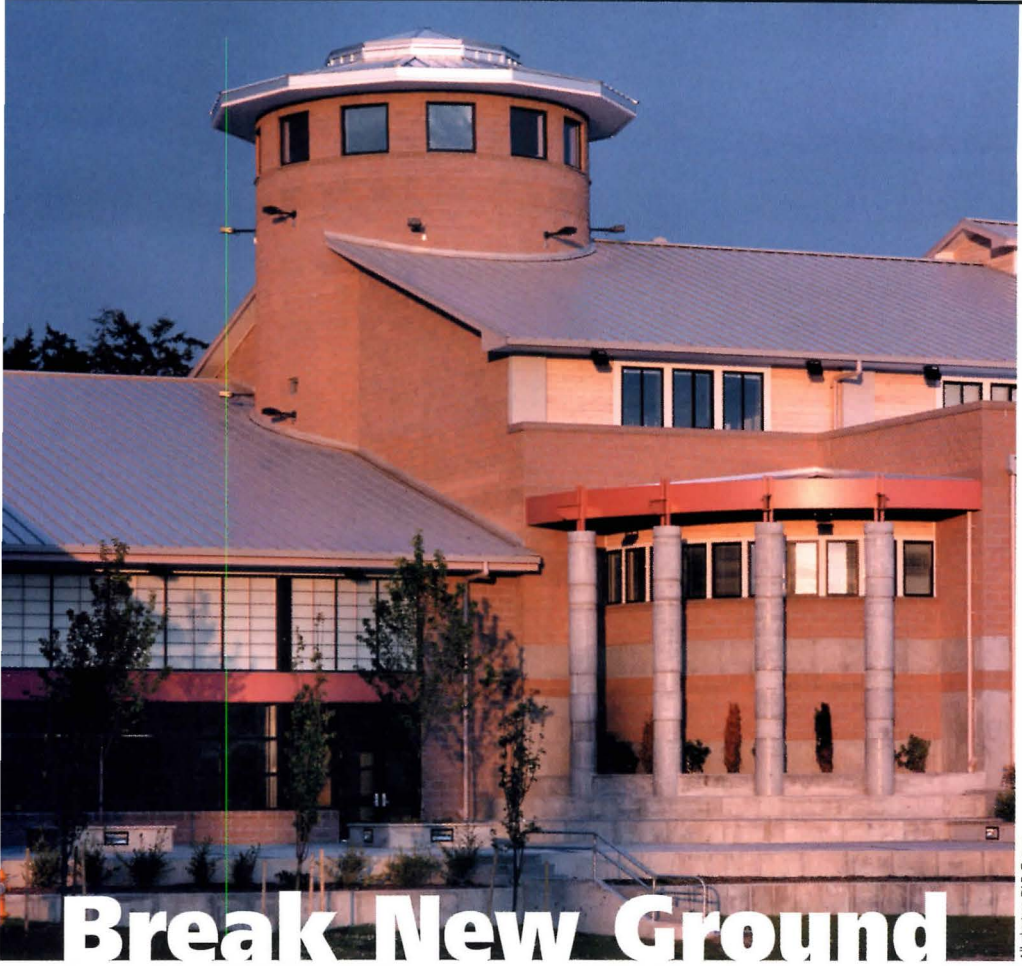

All photos: DLR Group

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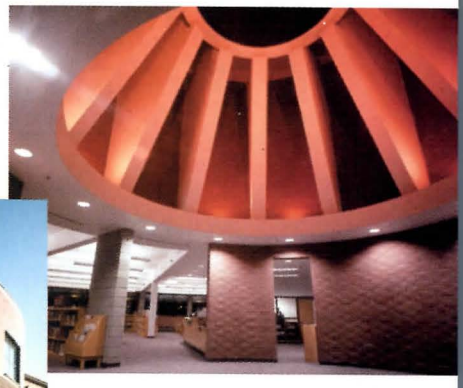

Learn why masonry is in a class by itself

For information, contact the Portland Cement Association.

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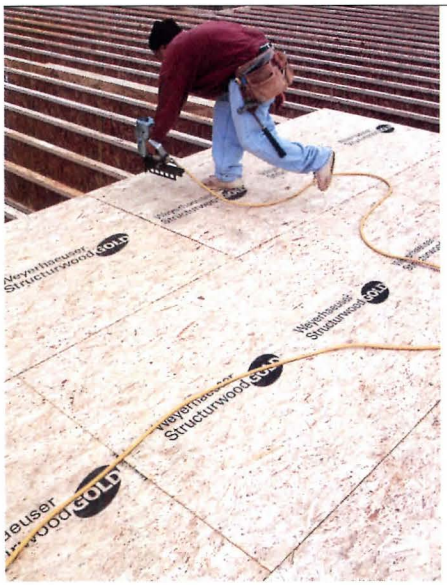
Product Briefs



▲ Professional floor panels
Weyerhaeuser introduces Structurwood Gold professional-grade, single-layer flooring. Structurwood is manufactured flat and installed flat, therefore assuring a more stable floor system. Weyerhaeuser claims that its engineering protects against buckling, cupping, warping, sagging, veneer defects, and delamination, while eliminating weak spots, like core voids. The fully sanded panel is guaranteed not to need edge sanding due to water absorption. The product is produced primarily from wood species such as southern pine, aspen, yellow poplar, and other underutilized hardwoods. For more information on Structurwood, refer to this month's Product Literature section. 877/235-6873. Weyerhaeuser Company, Federal Way, Wash. **CIRCLE 235**

▼ Perpetual motion
HON's Perpetual Seating has been awarded a Good Design 2002 award from The Chicago Anthenaeum: Museum of Architecture and Design. Perpetual Seating feat a frame design manufactured with solid steel wire that allows the seat and back t flex independently of each other, providing automatic adjustment as the individual moves. The Good Design Show—the annual exhibition the winners—is scheduled to open April 1, 2003, at th Anthenaeum. 800/553-8230. The HON Company, Muscatine, Iowa. **CIRCLE 23**

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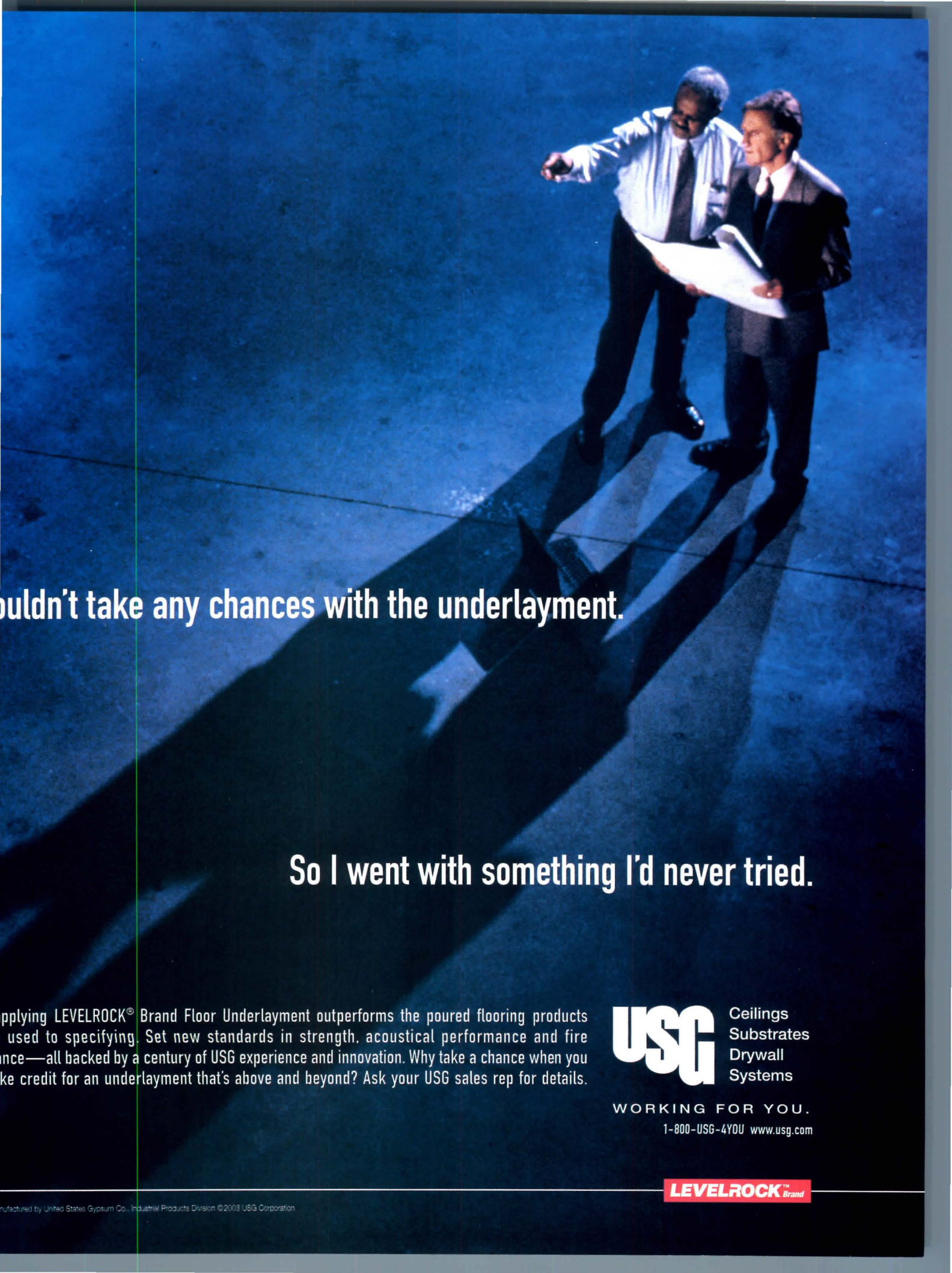
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Product Literature

Ceiling catalog

The new Chicago Metallic 2003 ceiling-product catalog has been redesigned for quick access to information on all the company's metal, panel, and grid products. Browse CSI-formatted technical-product specs, a comprehensive product-applications specifier, fire-rated assemblies, colors, and finishes. 800/323-7164. Chicago Metallic, Chicago. **CIRCLE 237**

Pendant-mounted fixtures

A brochure describing Litecontrol's new family of individual pendant-mounted architectural fluorescent lighting fixtures is now available. The new family of high-performance lighting fixtures offers 21 different product choices with a variety of options, including fixture design, size, distribution, and lamping. 781/294-0100. Litecontrol, Hanson, Mass. **CIRCLE 238**

Flooring kit

Weyerhaeuser offers a Structurwood Gold product-information kit, including product photos, technical information, specifications, and warranty information. For more information on the premium flooring product line, refer to this month's Product Briefs section. 877/235-6873. Weyerhaeuser Company, Federal Way, Wash. **CIRCLE 239**

NEW SITES FOR CYBERSURFING

This site launches Bretford's new brand and design platform **www.bretford.com**

A site that includes virtual building tours and elaborate cutaway product images **www.gp.com/gypsum**

Enhancements of this site include a virtual shower planner **www.kohler.com**

Three new online tools make the process of working with hardwood easier **www.hardwoodcouncil.com**

Environmental responsibility

A new 16-page brochure from Armstrong reviews the Armstrong portfolio of commercial products, including both ceiling systems and floors that contribute to sustainable design. In the area of commercial floors, the brochure explains why linoleum's combination of ingredients and long life cycle make it one of the "greenest" floor coverings available today. 877/ARMSTRONG. Armstrong World Industries, Lancaster, Pa. **CIRCLE 240**

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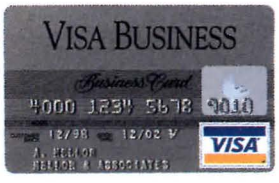

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Product Literature

Sink brochure/CD

Bates and Bates new *Product Pavilion* brochure showcases a collection of marble, metals, and new PVD finishes for the company's upscale kitchen and bath basins for homes, hotels, restaurants, and offices. The brochure comes complete with sink specifications and features utility baskets and sink grids. The company has also produced a multimedia CD that showcases its basins and pedestals crafted from ceramics, natural stone, and metal. The CD presentation also highlights the company's Weathered Collection, Stainless Steel Collection, Alegre Collection, and Problem Solvers Series. 562/808-2290. Bates and Bates, Paramount, Calif. **CIRCLE 241**

Wood office furnishings

CCN International offers a new comprehensive brochure for its Crofton Collection of handcrafted, fine wood office furniture, for management, reception, and conference-room applications. The large-scale photographs show a range of desks, conference and side tables, reception stations, storage credenzas, and display cabinets. 315/789-4000. CCN International, Geneva, N.Y. **CIRCLE 242**

Metal panels

A new 36-page catalog available f
Petersen Aluminum describes the
pany's complete line of architectur
metal for roofing, mansards, and f
The catalog illustrates the use of P
Clad material in a variety of applic
and colors. 800/323-1960. Peters
Aluminum Corporation, Elk Grove V
Ill. **CIRCLE 243**

Wood info CD

The Southern Pine Council, along w
APA-The Engineered Wood Associat
and the American Institute of Timbe
Construction, has introduced an up
version of the *Wood Is Today* intera
CD. Designed for architecture, engir
and building-construction students,
as the education of practicing profe
als and their customers, the CD cor
22 video clips and 132 PDF literatur
504/443-4464. Southern Forest Pr
Association, Kenner, La. **CIRCLE 244**

Mold prevention

Camfil Farr has published an inform
bulletin on the role of air filtration in
control the spread of mold through
systems. 973/616-7300. Camfil Far
Riverdale, N.J. **CIRCLE 245**

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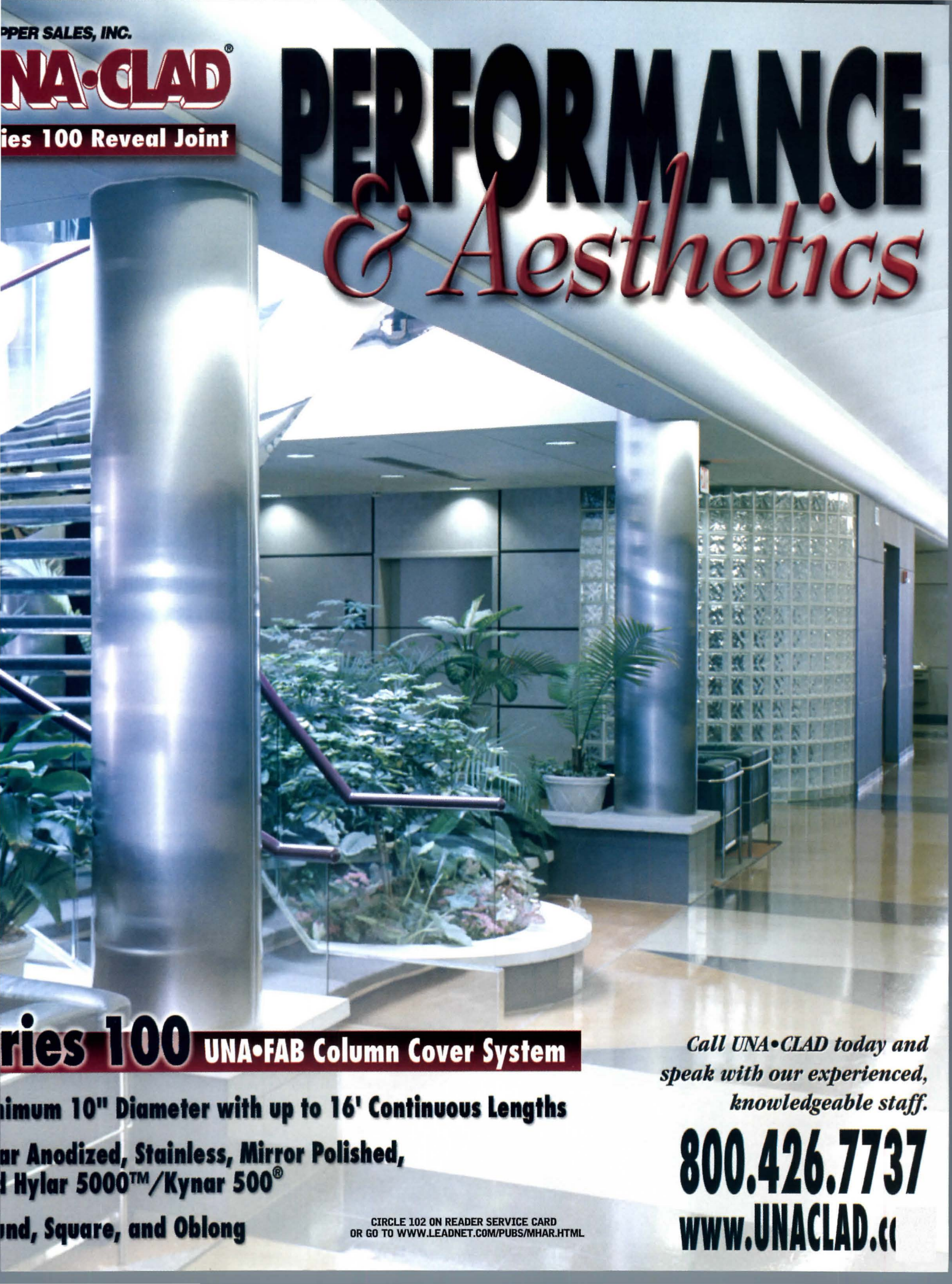
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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

Program title: **"Vegetation Systems Atop Buildings Yield Multiple Environmental Benefits," Architectural Record (03/03, page 149).** 033EDITX
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Lee Bey: From architecture critic to Chicago's City Hall

Interviewed by John E. Czarnecki, Assoc. AIA

Although not trained as an architect, Lee Bey is one of the most influential people when it comes to Chicago's built environment. The City of Chicago's Mayoral Deputy Chief of Staff for Planning and Design since May 2001, Bey was the architecture critic for the Chicago Sun-Times *during the previous four years. A Chicago native, he has taken his knowledge of the city and architecture to City Hall, where he advises Mayor Richard M. Daley on architecture and urban-planning issues, such as downtown development, lakefront protection, parks construction, and architectural preservation. Bey is also the spokesperson for the mayor on issues that are contentious, such as the Soldier Field reconstruction, which the mayor supports.*

Q: *When working with Mayor Daley, who is kn for having a strong interest in city building making Chicago one of the "greenest" cities, how m influence do you have on his policy? Do you find y selves always on the same page on issues?* I didn't s architecture and neither did the mayor, but we approach it in a similar way. We're both natives who to improve the city. There are times, as an adviser, w I am able to challenge a notion or say no.

The face of public housing is drastically changin Chicago. Are you the mayor's voice at the table in cussions on public housing? Yes. And the mayor passionate about this. As the new housing developm get to a stage where they are about to be approved mayor's office weighs in heavily to make sure that buildings are not just attractive but that they make se in the neighborhood.

What has your role been with the redevelopmen Soldier Field? When I started in May 2001, construc hadn't begun yet and we were still pinning down design points—things that the mayor wanted. My originally was to see that those tweaks got in. From point, my role expanded to become the mayor's pe making sure that all of the processes are working that all sides are talking to each other. My role is so enforcer some days, negotiator other days, and h holder other days.

What's the biggest difference between your prior ro critic and your current role working with the ma Compared to work with a newspaper, the stakes are hi here. My actions or inactions can reflect on the mayor. was an adjustment that was tough for me to make. Pe assume that what I am saying are the mayor's words.

When you left the Sun-Times, *the newspaper did replace you with a new architecture critic. Now Chi has only one architecture critic, Blair Kamin [* RECORD *contributing editor], at the* Chicago Trib *In your mind, how important is it for daily newspapers to have architec critics?* I tried my darnedest to get the *Sun-Times* to hire someone else for whatever reason, it just didn't. It's a real loss. Blair and I were the competing architecture critics in the United States. Architecture critics extremely important, especially in these post-9/11 times. People care about the built environment now, and the papers need to pick up on that really seize the moment. The architecture critic can be an advocate and explain the complex world of architecture to the layman. There has to place for criticism—to challenge why things are being built.

Photograph by Fred Baskin

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