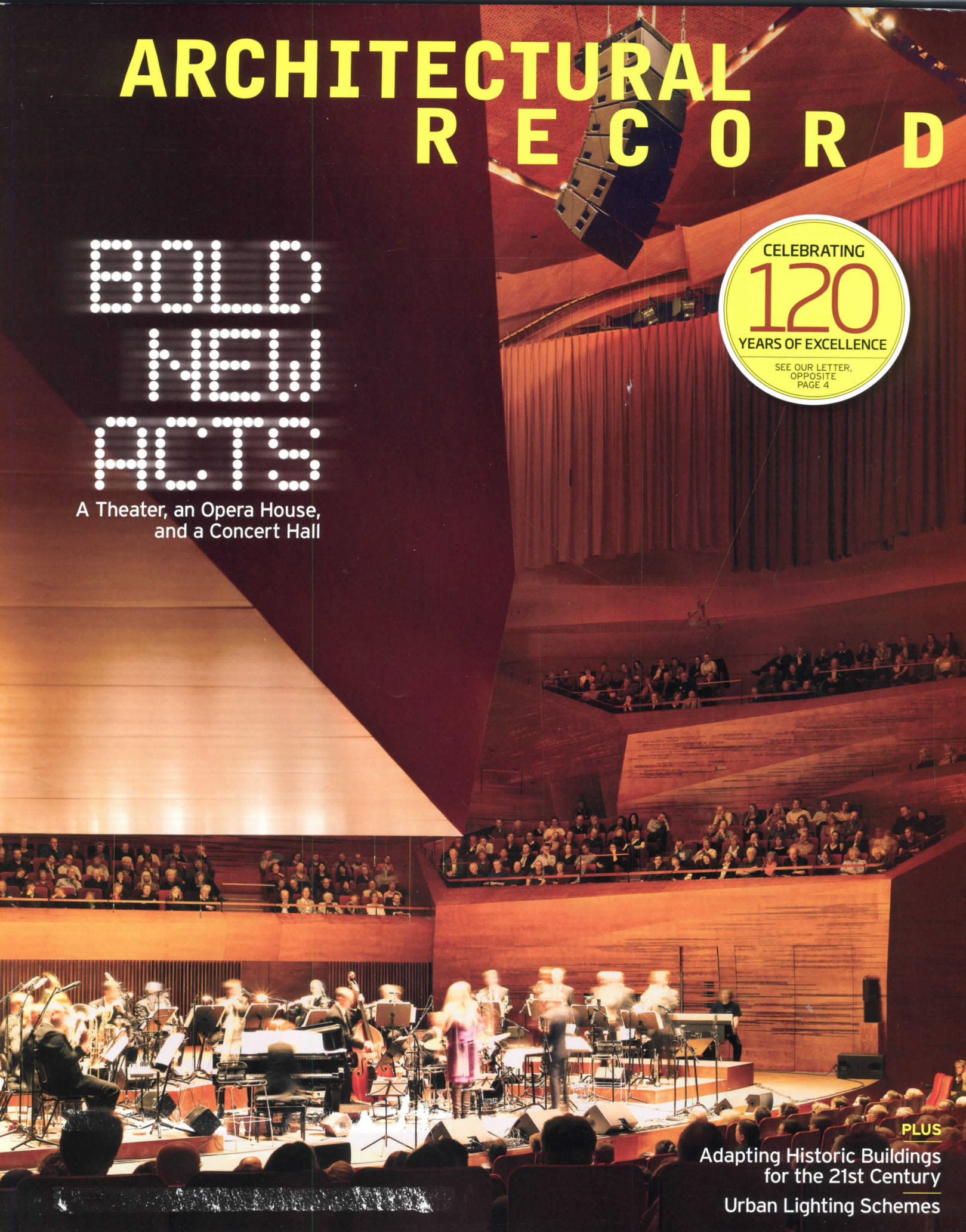

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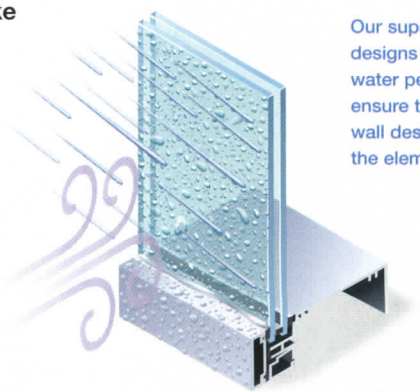

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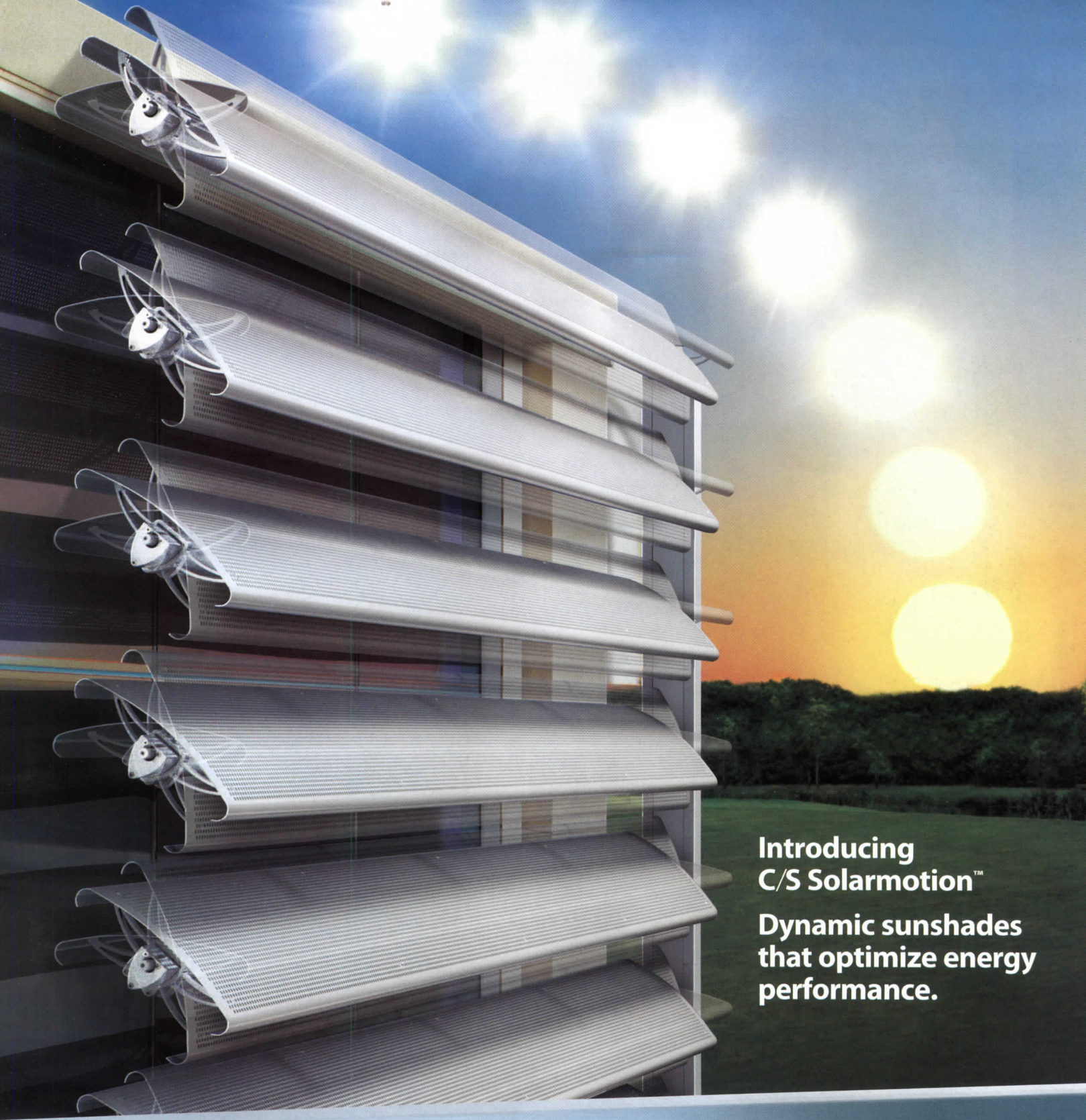

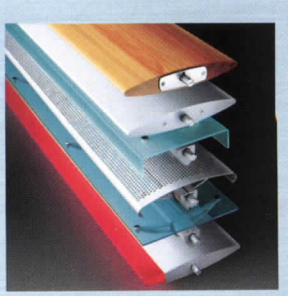

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PROJECTS

BUILDING TYPES STUDY 897

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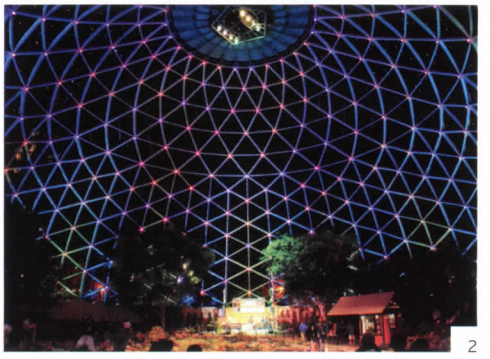


2

LIGHTING

3

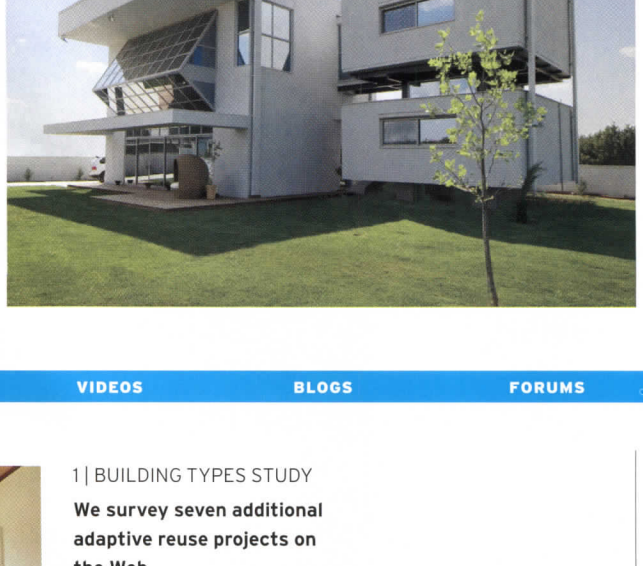
1. **Wyly Theatre, Texas, by REX/OMA,** *page 60.*
2. **Mitchell Park Conservatory, Wisconsin, by Donald Grieb,** *page 101.*
3. **CCQM/CCTQM/ECCLQM embedded column caps, by Simpson Strong-Tie,** *page 44.*

ON THE COVER: Copenhagen Concert Hall, by Ateliers Jean Nouvel. Photograph © Roland Halbe.

Expanded coverage of Projects, Building Types Studies, and Web-only features can be found at **architecturalrecord.com.**

THIS MONTH ON architecturalrecord.com

This month on our Web site, read ongoing news coverage of architects' responses to last month's devastating earthquake in **Haiti**, watch a **video** of the radically reconfigurable performance space in Dallas's new Wyly Theatre, browse our expanded **Building Types Study**, and more.

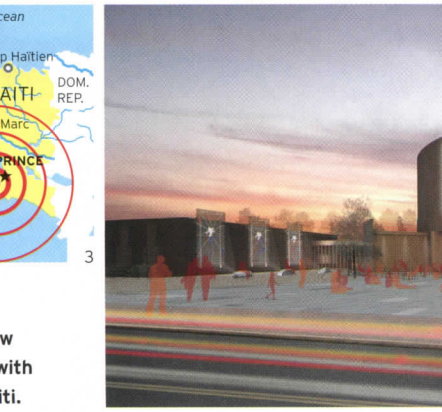


[HOUSE OF THE MONTH]

A home in Greece by Christina Zerva may occupy a site inhabited since the 10th millennium B.C. and look out on Mount Olympus, but with photovoltaic panels, recycled materials, and LED modules throughout, the house is anything but ancient in its design.

ONLINE EXCLUSIVES

GALLERIES | VIDEOS | BLOGS | FORUMS | RESOURCES



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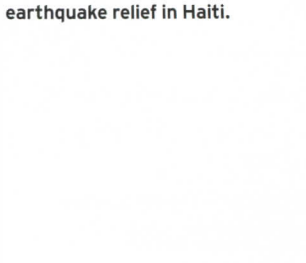
1 | BUILDING TYPES STUDY

We survey seven additional adaptive reuse projects on the Web.



3

3 | RECORD NEWS

Read updates about how architects are helping with earthquake relief in Haiti.

2

2 | THE FIRST WORD

With this blog, we take an early look at new projects and – in a single word – explain what about each design caught our eye.

[READER'S FORUM]

"Seeking a multimillion dollar lawsuit is a lost cause. Just seeking some restitution or being put back on part of the job has some hope. The university is going to fight to the bitter end to hold on to its money."

— Anonymous on the Record News story "Architecture Firm Sues Former Client"

EXPANDED COVERAGE

PROJECT PORTFOLIO

Watch a video showing the configurations of the performance space at the Wyly Theatre.

AR2

We profile Graypants, a Seattle firm specializing in furniture, lighting, and architecture.

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READER'S **GALLERY**

Every month, our online readers vote for their favorite images from our Web galleries. The top three photos appear on this page. To vote for photos and to share your own, visit **architecturalrecord.com** and click on Community.

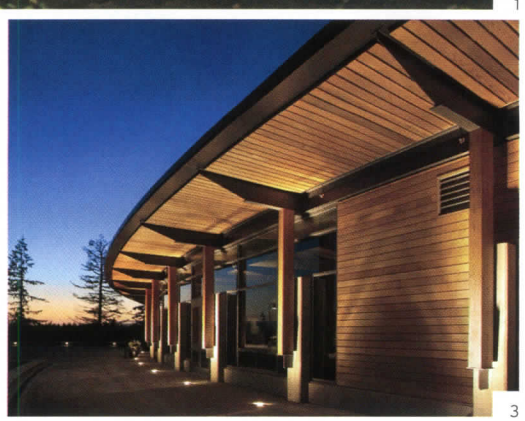
1

1. **Le Corbusier's Sainte Marie de La Tourette near Lyon, France. Photo submitted by "l.a.doll."**

2. **The Gudmundur Jonsson–designed Casa G in Iceland. Photo submitted by "gjonsson."**

2

3. **ARC Architects' LEED Silver Sammamish Commons in Sammamish, Washington. Photo submitted by "park."**



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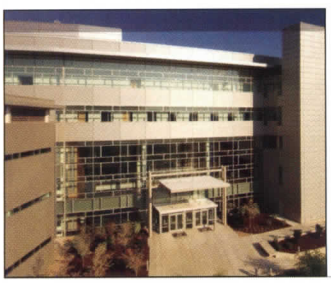

ECO-METALS: The Sustainability of Metal Wall and Roof Systems

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Architectural Stone Veneer: Invisible but Measurable Difference

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Built-In Refrigeration

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Rolling Overhead Door Systems

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Reaching the Roof: Specifying Fixed Access Aluminum Ladders for Safety and Efficiency

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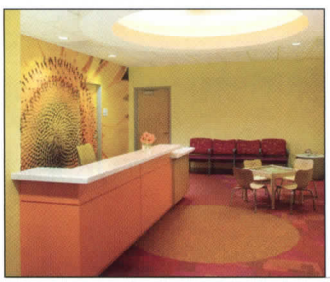

Therapeutic Healing Color Strategies and their Implementation in the Healthcare Environment

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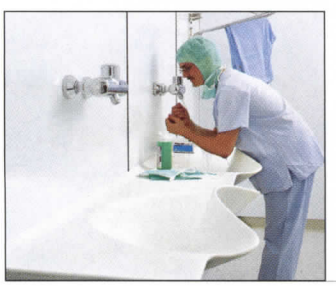

Infection Control in Healthcare Facilities: Creating an Environment for Healing

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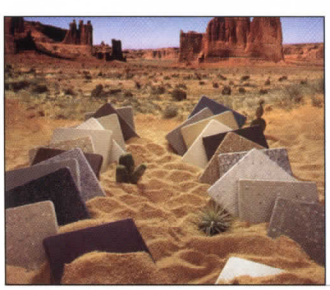

Sustainability Design

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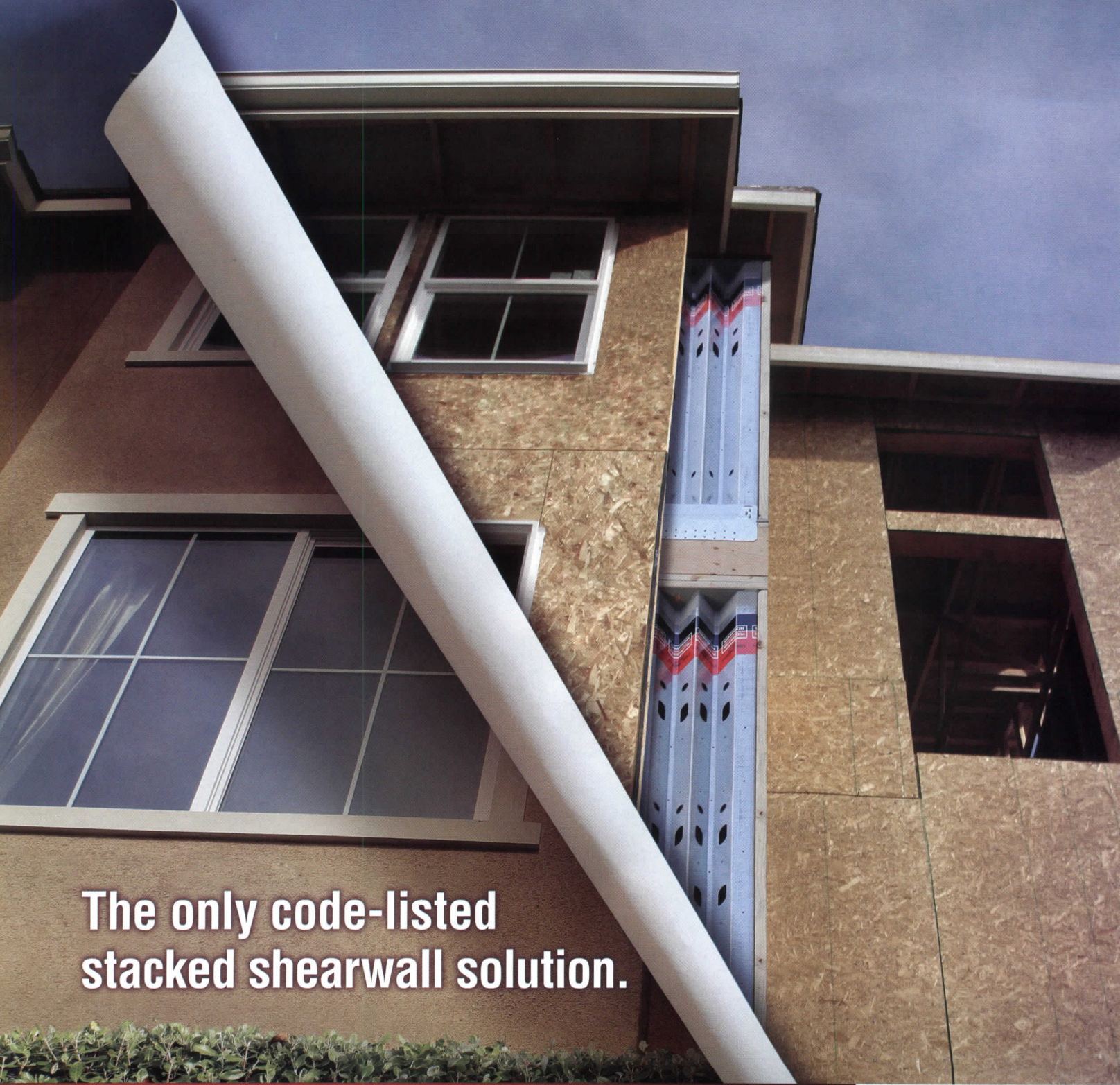

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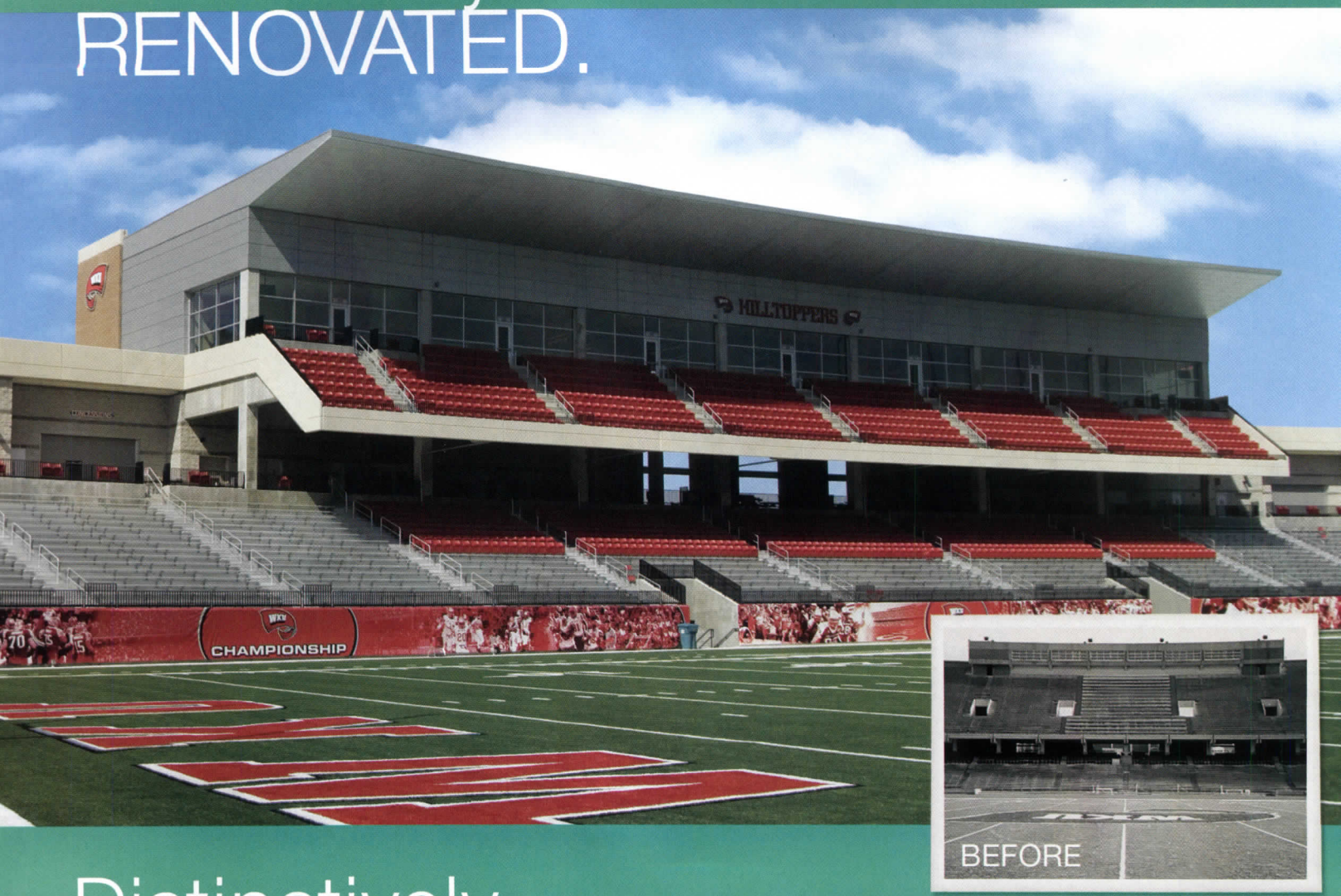

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CIRCLE 09

Aftershock

What can we learn from Haiti?

BY ROBERT IVY, FAIA

TRAGEDY HAS STRUCK HAITI AGAIN. On Tuesday, January 12, at 4:53 p.m., a magnitude 7.0 earthquake struck 10 miles from the heart of Port-au-Prince, Haiti's capital, along the fault line that stretches from the Dominican Republic to Jamaica, rendering entire quadrants of the hilly, coastal city in ruins. As of this writing, approximately 3.5 million persons out of a total population of approximately 9 million have been affected in a country roughly the size of the state of Maryland. The dead number at least 50,000, with some estimates as high as 200,000. All this in a politically plagued country trying to recover from the 2004 overthrow of former president Aristide. These are the facts.

In the aftershocks, we have all been glued to the media – whether television, the Internet, or the newspaper – live witnesses to unspeakable human tragedy. Who will ever forget the images of human hands reaching out for help from the accumulated detritus of pancaked buildings, or the grief of mothers at the death of children, crushed in falling rubble? The proximity to our continent, coupled with satellite links, brought it home with horrific power.

Some help has already arrived. Yet architects, engineers, planners, and others responsible for the built environment have to wonder about the implications of this natural event for their own work: Other than the obvious acts of reconstruction required for a troubled Caribbean island, the social and political needs that lie at the heart of this particular place, and the human emotions we feel, what lessons can we take from the Haitian experience?

First, and most obviously, the Haitian earthquake underscores the necessity of building codes. Buildings killed the people of Haiti, and most were poorly constructed. In the face of such elemental forces, as much as 40 percent of major areas of the city literally fell down, leaving up to one million residents in need of shelter. The United Nations estimates that following the quake, hundreds of thousands of people were living in the streets, an untenable situation.

All types of buildings failed. Both the poor, in ramshackle housing, and the rich lost their homes. Eight hospitals were destroyed or significantly harmed. Apparently no one was exempt: The earthquake leveled the United Nations Peacekeeping Mission, a five-story building, in which 40 persons had been confirmed dead as of January 17, including the mission's head, the Tunisian diplomat Hedi Annabi.

The inexorable, 30-second movement brought down hundreds of thousands of structures within and outside Port-au-Prince, whether built of unreinforced concrete, stone, concrete block, or wood. At the presidential palace, an immense wedding cake of a structure, designed in 1912 by Haitian architect Georges H. Baussan, the second floor collapsed onto the first, creating an indelible image of building failure at the highest level. President René Préval and his wife escaped unharmed.

Second, the quake underscores the importance of infrastructure. By examining a place with woefully inadequate services, their importance is heightened and clarified. The list below reports on several of the most important or obvious requirements.

Port. The port facilities at Port-au-Prince lie in shambles, the U.S. Coast Guard has reported. When a wharf collapsed, five cargo cranes, which could have aided the relief effort, lay broken and submerged, having fallen into the harbor, blocking other shipping. Without a clear port, access for large vessels, and the water, food, and life-giving aid they might bring, becomes problematic.

Airport. The Aeroport International Toussaint L'Ouverture consisted of only one runway and limited fuel supplies. Planes filled with life-giving medical supplies or medical personnel were forced to circle the small, crowded field, then sometimes diverted to other airports, such as in the Dominican Republic, where supplies could then be trucked in over the mountains, a tedious task.

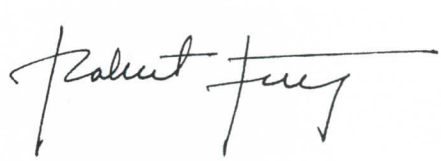
Roads. Earlier studies by the World Bank stated that compared to the U.S. average of 59 percent paved roads, only 24 percent of Haiti's roads were paved at all. The few that remained quickly became impassable when blocked by wrecked autos and building detritus.

Power. Few Haitians enjoyed electricity. Again, the World Bank estimate suggests that only 34 percent of the population had any electricity at all. The quake's disruption to both transmission and distribution was significant, with major harm to the almost negligible communications system.

We in America feel a certain kinship to the Haitian dilemma, having recently experienced massive failure during Hurricane Katrina in 2005. Images of thousands of people being herded into the New Orleans Superdome, or living on overpasses above flooded streets, or guarded by security forces, have been indelibly inscribed in our national consciousness. (Ironically, New Orleans and Louisiana have explicit, symbiotic societal, trading, and transportation history with the French territory of Sainte-Domingue, later Haiti.) There, infrastructure and government failed us – whether levees or pumps or power – so Haiti may seem closer than its literal distance of 681 miles from Miami, Florida.

If the scale of Haiti's extreme poverty and political struggles magnify its immediate problems in the aftermath of this earthquake, it can also serve as a wake-up call to those of us in the design and building professions to mind our work. Contemporary science allows us to build almost wherever we choose, if we do not neglect the laws of building safety, and ensure the construction and maintenance of our vital infrastructure. One fact is certain: The inexorable pressure of demographics, including the accumulation of large populations in challenging natural environments, whether in hurricane zones or along fault lines, will continue. Will we be ready?

This essay relied in part on reporting by Tom Sawyer from *Engineering News Record*.



PHOTOGRAPH: © ANDRÉ SOUROUJON

Back to the future

There is a sci-fi grimness about Steven Holl's Linked Hybrid project in Beijing, featured in your January 2010 issue [page 48], that is worrisome as it relates to the ultimate course of Modernism. I sincerely hope that the people who inhabit this soulless place may find human refuge in the vibrant parts of old Beijing, much like the characters in Jacques Tati's 50-plus-year-old film *Mon Oncle*, who found a similar refuge in the heart of old Paris.

James A. Gresham, FAIA
Tucson, Ariz.

What hogwash! Sustainable is a skywalk with no purpose? Cantilevers for no reason? A total underutilization of a site? Dreadful is simply not adequate! You are committing a great disservice to architecture (and the Chinese) by fawning over such a ridiculous project!

Jerome Morley Larson, Sr., AIA
Red Bank, N.J.

In his article on Steven Holl's Linked Hybrid, Clifford Pearson characterizes the Minneapolis sky bridge system as a development that "strangled street life." This oft-repeated denunciation has become conventional wisdom, but it is based on a superficial glance, and it is false. Minneapolis's downtown is among the healthiest in the nation, in spite of a cold climate that favors suburban commercial development, with its free parking conveniently near building entrances. Developers and corporate decision makers are drawn to Minneapolis by its extensive skyway system, which enables the area to compete with suburbs for employers and employees. In fact, the city's central business district has grown to 26.5 million square feet, one of the nation's largest among metropolitan areas of similar population. Observe Minneapolis's downtown and you will see pedestrian activity greater than that of most American downtowns, because Minneapolis has a skyway system.

Steve Belmont, AIA
Minneapolis

Friend or foe?

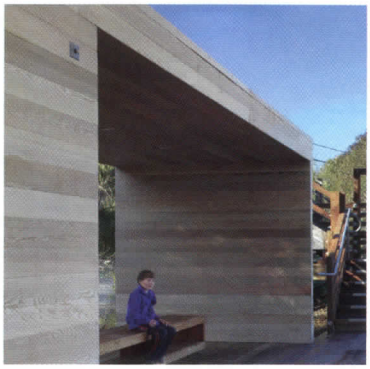
Robert Ivy writes in his January editorial [page 15], "Architects will look, amazingly, to government in 2010, not as Big Brother, but as partner ..." This statement highlights why you are out of touch. The reality is that the architectural profession is unsustainable unless the federal government's wasteful spending spree doesn't continue.

Lawrence G. Kownacki
Erie, Pa.

Corrections

January's Practice Matters column ["A Stimulus Success Story," page 39] incorrectly stated the dollar figure associated with the American Recovery and Reinvestment Act. The legislation allocated roughly $787 billion for stimulus measures, not $787 million. A statement in the January editorial ["Through the Looking Glass," page 15] implied that Daniel Patrick Moynihan was a United States senator in 1962. In 1962 he was an assistant secretary of labor and was not elected to the Senate until 1976. The same editorial implied that the United States Coast Guard and the Department of Homeland Security are separate entities. In fact, the Coast Guard is a service within the Department of Homeland Security.

Send letters to rivy@mcgraw-hill.com.



Marin County Day School
Architect - Mark Cavagnero Associates
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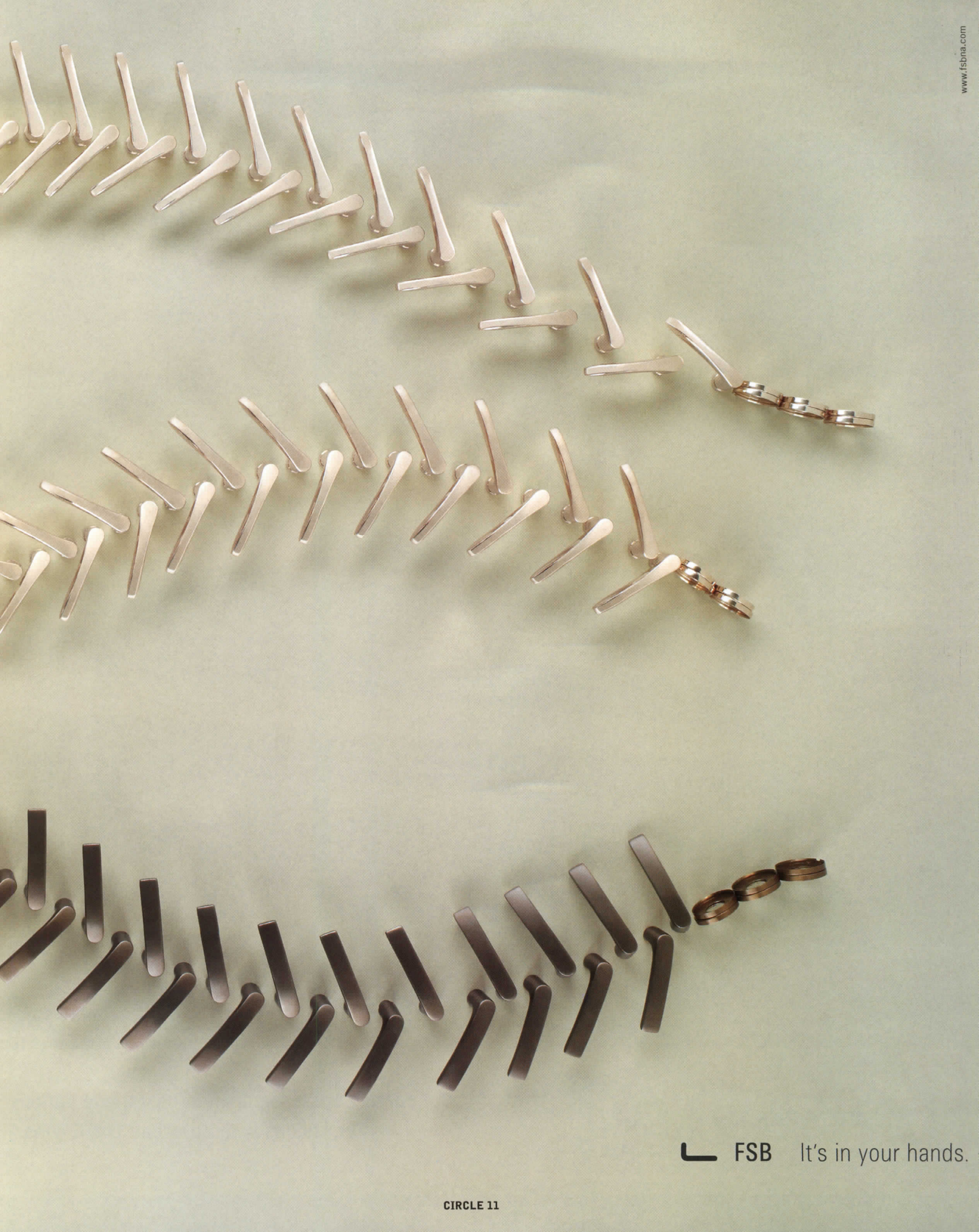

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CIRCLE 13


1 OLYMPIC STADIUM


2 AQUATICS CENTRE


3 OLYMPIC VILLAGE


4 VELODROME

In east London, the 608-acre Olympic Park – with venues by Zaha Hadid, Populous, and others – is taking shape, as this July 2009 aerial photo reveals.

[IN PROGRESS]

London Zooming Toward 2012 Games

AS VANCOUVERITES ENJOY THE WEALTH of new venues realized for the 2010 Winter Olympics, Londoners are beginning to see a host of sporting venues, transit links, and other facilities spring up for the Summer Games. Unlike the halting, delayed construction that characterized Athens's preparation for the 2004 event, London's £8 billion Olympics building program is moving along at a humming pace. "We are right on track and budget," says Jerome Frost, head of design at the Olympic Development Authority (ODA), "and the skyline of east London is already changing."

Since mid-December, for example, commuters on Britain's Southeastern rail line have been alighting at the glassy Stratford International in east London. There, they are getting one of their first tastes of the 2012 event: The train station will serve as the terminus of the 7-minute-long Javelin shuttle transporting sports fans between downtown and the Olympic Park, located 5 miles northeast of the City of London.

The 608-acre park is quickly taking shape. Within days of the train station's December 14 opening, the cable-net roof of the Olympic Stadium was lifted into place; architect Populous's scheme for partly covering that armature in fabric will come to fruition this spring. The double-curved roof and concrete diving pool of the Zaha Hadid–designed Aquatics Centre are already finished, and the 17,500-seat facility should be ready for test events in 2011. The curved wafer topping Hopkins Architects' velodrome building, which expresses the geometry of the bicycle track, also is nearing completion.

Moreover, the structure for the first apartment block in the Olympic Village – comprising 300 units and designed by development manager Lend Lease's in-house architectural panel – is built. Ultimately, the village will house 23,000 athletes and officials in 11 buildings, and those dormitory units will be converted to 2,800 homes after the Games.

The ODA has stressed efficiency over spectacle, opting for buildings that not only meet today's timelines and budgets but also promise to last for the long haul. As a result, the organization has forced repeated cutbacks on the Aquatics Centre, which was selected by competition in 2005. "London, it seems, is taking no chances," *Guardian* architecture critic Jonathan Glancey wrote in 2007, upon the unveiling of the "safe, sensible and pragmatic" Olympic Stadium design.

Frost has said, "You have to be very, very rigorous to make sure that you are not building something you can't afford," and he has called Herzog & de Meuron's Bird's Nest [RECORD, July 2008, page 92] for the 2008 Beijing Olympics "inappropriate" for the British economy. London's cautious attitude toward its Olympics venues echoes the design decisions made in Vancouver, and foreshadows the investments that will be made in Rio de Janeiro for the 2016 Olympic Summer Games, where more than half of sporting facilities are preexisting – suggesting, too, that Beijing's wonders may have marked the tail end of an architectural comet. *David Sokol*

ON THE WEB
Daily updates and expanded stories are available online at architecturalrecord.com/news.

View additional images online.

[ACCOLADES]

AIA Announces Honor Award Winners

IN JANUARY, THE AIA ANNOUNCED the recipients of the 2010 Honor Awards, which recognize excellence in architecture, interior architecture, and regional and urban design. This year's juries selected 28 projects from hundreds of entries. Visit us online to see the complete list of winners, and look for more coverage in a future issue of RECORD.

The AIA also announced the three winners of the 2010 Thomas Jefferson Awards for Public Architecture, which honor practitioners who have made notable achievements in the public realm. The recipients are Curtis Fentress, FAIA, founder of Denver-based Fentress Architects; Les Shepherd, AIA, chief architect of the General Services Administration; and Ken Greenberg, Assoc. AIA, founder of an eponymous architecture and urban planning firm. The winners will be recognized during the AIA's national convention in June. *Jenna M. McKnight*

1

1. **Outpost, by Olson Kundig Architects.**

2

2. **A Civic Vision for Central Delaware, by Wallace, Roberts & Todd.**

3

3. **Vera Wang Boutique, SoHo, by Gabellini Sheppard Associates.**

[WINTER GAMES]

2010 Olympic Medals Make Waves

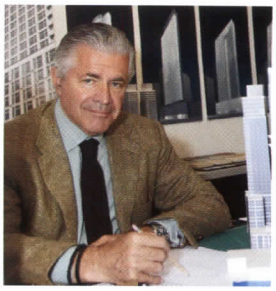
LONG BEFORE THE ATHLETES GO for the gold at the 2010 Olympic Games in Vancouver, native son Omer Arbel has won the commission to design the medals the winning competitors will sport around their necks. Trained as an architect, Arbel divides his time equally between designing buildings and objects since founding his own firm, Omer Arbel Office, in 2005. The medals, however, are a first for Arbel, whose industrial design projects consist mainly of furniture and lighting. "We've never done anything like this before," he admits.

Arbel's design is also a first for the Olympics, since each medal is unique. Produced by the Royal Canadian Mint, each of the 4-inch-wide medals, in solid bronze, silver, and gold plate, is laser-etched with a cropped section of a larger artwork by Canadian artist Corrine Hunt – an orca whale on the 615 Olympic medals, and a raven on the 399 medals for the Paralympics (taking place in Vancouver in March). Like a puzzle, it takes all of the individual medals to complete the artwork.

The medal's undulating surface evokes the iconic sea and mountains of the Vancouver-Whistler landscape, but developed from Arbel's initial design concept of a locket – its bulging form containing a secret compartment in which to store a personal keepsake from the Games. While manufacturing and cost constraints prevented Arbel from pursuing his early idea, he is pleased with the final outcome. "With the exception of Torino in 2006, every medal design for past Olympic Games has relied on allegory," he explains. "With this design, the recipients will respond emotionally to the medal's tactile quality rather than a symbol inscribed on it." *Josephine Minutillo*

[LAUNCH]

Kondylis Dismantles Firm, Starts Anew



ARCHITECT COSTAS KONDYLIS, AIA, who is perhaps best known for the Manhattan high-rises he designed for Donald Trump, has broken up his longtime firm and formed a new one. In December, he announced the launch of Costas Kondylis Design, a New York–based practice emphasizing sustainable architecture. His former firm, Costas Kondylis and Partners, founded in 1989, dissolved in August.

In an unusual arrangement that acknowledges market stresses, Kondylis's new practice has partnered with investment firm Lynx Finances Group for a financial cushion. It could also generate leads: Lynx, based in Luxembourg, controls a stake in CP-Solar, a major solar-panel manufacturer.

Kondylis, who designed the 72-story Trump World Tower, New York's tallest completed residential tower, says he is working on master plans in Saudi Arabia, Vietnam, and Algeria, but wouldn't give specifics. He says that his new firm, with 20 employees, allows greater creative control than his old one, which at its peak had 175 employees. "I was the conductor of the symphony orchestra," he says. "Now I can play the piano myself."

While Kondylis and his former partners agree their split was amicable, Stephen Hill, AIA, who subsequently founded Goldstein, Hill & West Architects, attributes it to competing visions. Kondylis wanted more international work while Hill sought to focus on local projects. *C.J. Hughes*

[MERGER]

Vanguard Studio Joins Venerable Boston Firm

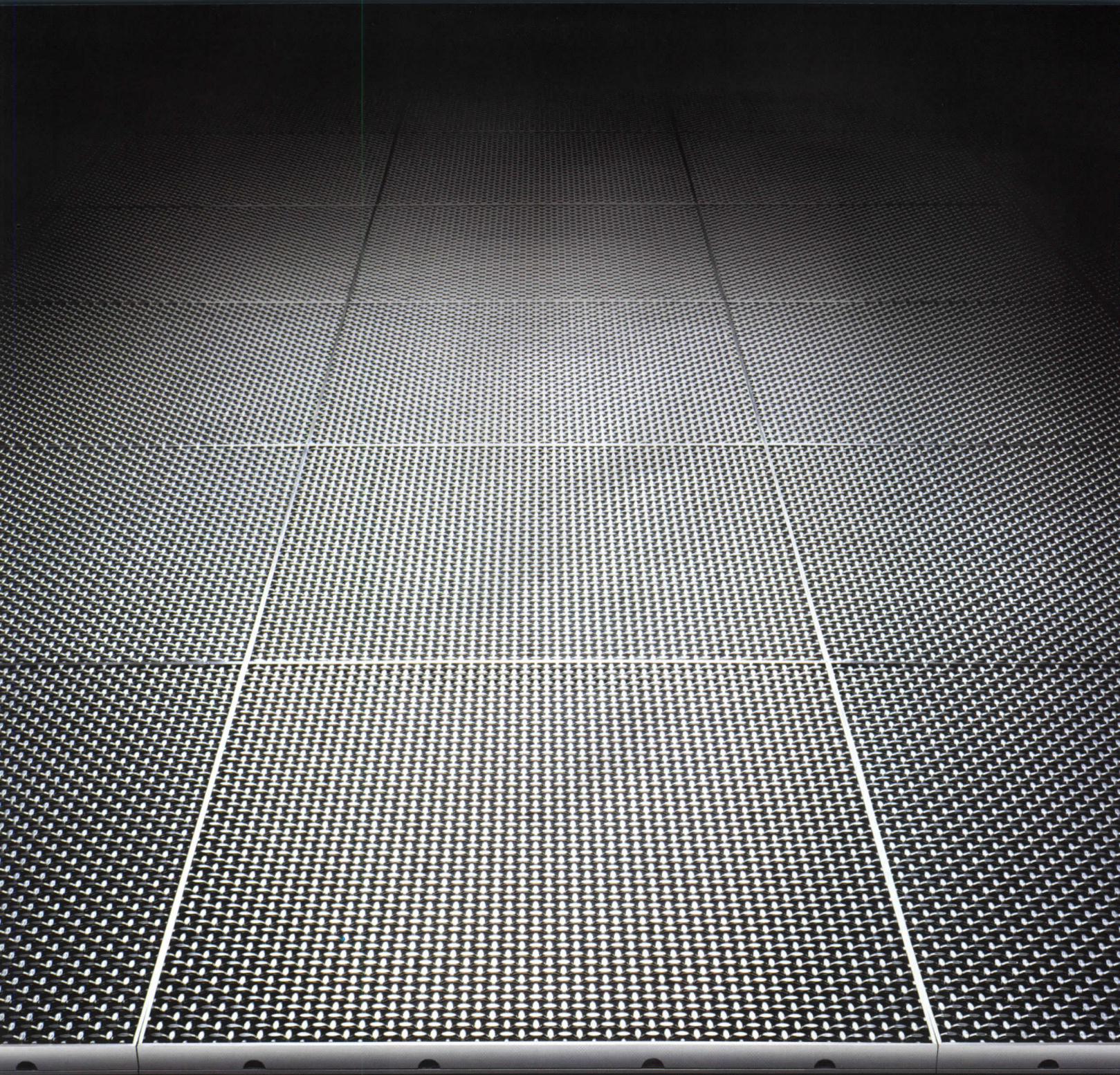
ONE OF THE COUNTRY'S OLDEST architecture firms has teamed with one of its youngest, betting on expansion while other practices scale back.

In early December, Shepley Bulfinch Richardson & Abbott, established by H.H. Richardson in 1874, acquired Merzproject, a Phoenix-based studio that RECORD recently named a Design Vanguard firm [December 2009, page 76]. Founded in 2004, the young practice remains in Phoenix, Arizona, with its two principals, Joe Herzog and Chris Nieto, still at the helm. The office has taken on a slightly new name: "Merzproject, a studio of Shepley Bulfinch."

For the large East Coast firm, whose 130 employees are based in a single Boston office, the merger lands Shepley Bullfinch a key beachhead in the Southwest, which should be a growth area once the current recession eases, says firm president Carole Wedge, FAIA.

The firm may also have a chance at less-traditional undertakings if it follows the lead of Merzproject, known for more contemporary, smaller-scale projects. Its portfolio includes the Galleries at Turney, a series of modular-style homes in Scottsdale, and After Hours, a combined art studio, wine cellar, and residence in central Phoenix. *C.J. Hughes*

PHOTOGRAPHY: © TIM BIES/OLSON KUNDIG ARCHITECTS (1); WALLACE ROBERTS & TODD (2);



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CIRCLE 14

[URBAN PLANNING]

New Vision for Dallas

If all goes as planned, a "green" mixed-use project covering a full city block will be constructed in central Dallas.

In December, Portugal-based Atelier Data and MOOV were named the winners of Re:Vision Dallas, an international design competition sponsored by the Central Dallas Community Development Corporation (CDCDC), an affordable housing organization, and Urban Re:Vision, a national nonprofit that advocates for responsible city planning.

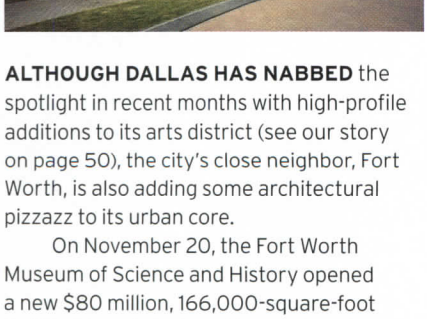
Launched in January 2009, the competition brief asked entrants to design a complex with residential, retail, and commercial space that would be built on a 2.5-acre site across the street from Dallas City Hall. The scheme needed to offer a new "urban framework" and address issues such as energy, waste, transportation, sustainable construction, and the health of local economies.

In total, 174 entries were received, representing architects and planners from 26 different countries. The winning concept, "Forwarding Dallas" (above), features a series of mountainlike towers with integrated green space and urban farms. The jury included members from Architecture for Humanity, organicArchitect, and Arup, among others.

While it has yet to line up funding, the CDCDC aims to have shovels in the ground by January 2011. The budget is expected to be between $30 million and $60 million, which the organization hopes to raise through a mix of grants, tax credits, loans, and even sponsorships from green technology companies. *Tim McKeough*

[GRAND OPENING]

Legorreta Museum Bolsters Texas Arts District



ALTHOUGH DALLAS HAS NABBED the spotlight in recent months with high-profile additions to its arts district (see our story on page 50), the city's close neighbor, Fort Worth, is also adding some architectural pizzazz to its urban core.

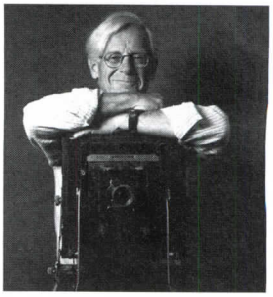
On November 20, the Fort Worth Museum of Science and History opened a new $80 million, 166,000-square-foot facility (above) designed by Mexico City's *Legorreta + Legorreta* with local firm Gideon Toal. The museum is located within the city's cultural district, just west of downtown, and joins a number of other notable buildings by Tadao Ando, Louis Kahn, and Philip Johnson.

The new facility replaces the museum's former home – a 1954 building that was demolished – and includes galleries, a children's museum, classrooms, an IMAX theater, and a planetarium. Clad in local red sandstone and brick, the building employs Legorreta + Legorreta's signature use of basic geometric forms and bright colors. At the main entrance is the building's most distinctive element: the Urban Lantern, a 76-foot-tall tower topped by a cube made of yellow fritted glass. At night, it glows various colors via an array of LEDs and compact-fluorescent lamps.

Inside, the museum is organized "like a village," says firm partner Victor Legorreta, with a central indoor "street" connecting the various programmatic elements and linking to outdoor courtyards with walls painted vivid shades of purple, pink, and yellow. "Some art museums are more contemplative, but this one is for families and kids," says Legorreta. "It's a happy building." *Tim McKeough*

[OBITUARIES]

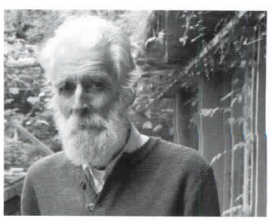
In Memory



ROBERT LAUTMAN, 85, Architectural Photographer

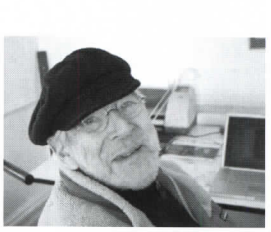
Robert C. Lautman, Hon. AIA, died of pancreatic cancer in Washington, D.C., on October 20, 2009. His work was published in RECORD and other magazines and books, and his photographs of the Pension Building, now the National Building Museum, are credited with helping save it from demolition. In 2006, he donated his archive of 30,000 prints, negatives, and transparencies to the museum.

Lautman's sense of humor was legendary. He was fond of saying that his job was easy: All that an architectural photographer had to know was where to stand and what time to stand there. Among the vocations listed on his business card: "Lunch." *Charles Linn, FAIA*



MALCOLM WELLS, 83, Green Pioneer

Malcolm Wells, a green design pioneer best known for his underground, or "earth-sheltered," buildings, passed away on November 27, 2009, in Brewster, Massachusetts. A New Jersey native, he became an architect in 1953, after achieving a perfect score on the licensing exam. He designed the RCA Pavilion for the 1964 World's Fair in New York City and, following a personal revelation, went on to become an advocate for environmentally sensitive architecture. He focused on partially or completely subterranean structures, and later taught environmental design at Harvard and lectured at schools across the country. He also wrote a number of books that have influenced, and continue to influence, contemporary green builders. *Alanna Malone*



JAMES ROSSANT, 81, Urban Visionary

James Rossant, architect and illustrator, died at his home in Normandy, France, on December 15, 2009. A New York native, Rossant received a master's in urban planning from Harvard Graduate School of Design and led the architecture firm Conklin and Rossant from 1967 to 1995. His most notable work came in the form of large-scale planning efforts, such as his 1963 scheme for the new town of Reston, Virginia. A prolific illustrator, Rossant produced vivid drawings, including those featured in his 2009 book, *Cities in the Sky*. He also taught at Pratt Institute and Harvard, among other schools. His wife and four children survive him. His son, Tomas Rossant, is a partner at Polshek Partnership. *Aleksandr Bierig*

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CIRCLE 15

[LITIGATION]

Ohio Firm Sues Former Client

IN A CASE THAT COULD have larger implications for the architecture profession, an Ohio firm has sued a client for firing it, with the hope of being put back on the job.

Karlsberger, a 70-employee firm based in Columbus, claims that nearby Ohio State University acted in bad faith last fall when it terminated a contract for a $1 billion, 1-million-square-foot expansion of its medical center. The glassy, soaring addition, which is to feature 480 beds and a cancer center, is the largest construction project on campus to date.

Health-care-focused Karlsberger, which was the architect of record on the project, alongside design firm HOK, won the commission in September 2008 through a public bidding process. But a year later, university officials suddenly asked the firm to drop the project voluntarily without providing an explanation. Because Karlsberger refused, the firm was officially let go on November 4. HOK, on the other hand, was retained, and another local firm was brought on board.

The lack of a stated cause violates open-government laws, says Karlsberger. The firm should be reinstated since its contract wasn't properly terminated and remains "in full force and effect," according to the eight-count complaint.

Karlsberger was the architect of record for a medical center at Ohio State University.

Short of that, the firm is seeking damages of $32 million, or its share of the commission, although the suit also alleges that Ohio State owes Karlsberger $1.29 million for already-completed drawings.

"I don't think anyone ever wants to go out and sue a big institution," says Mitchel Levitt, president and chief executive of Karlsberger. "But any firm has to protect its organization when a client is taking advantage of it, from a reputational standpoint."

For its part, Ohio State acted aboveboard, as its contract with Karlsberger clearly states that it could fire the firm at any point, university officials say. As for the allegedly unpaid invoices, Ohio State has shelled out $681,930, which covers all work performed, according to university spokesman Jim Lynch. "We understand that the company is upset with our decision," he says. "But there is absolutely nothing improper about a party exercising its right to terminate a contract."

In the meantime, on December 10, after requests for a new round of proposals, Ohio State announced that HOK will expand its duties to become the project's architect of record. Joining it is Moody-Nolan, a Columbus practice with a health-care emphasis that competed against Karlsberger in 2006 for the medical-center commission. The firm has designed other Ohio State projects and is currently teamed with HOK to design a hotel for Columbus's convention center.

While the HOK-Moody-Nolan team was picked from a whittled-down list of three candidates, the fix was in for the pair from the get-go, alleges Karlsberger in its suit. The new request for proposals was "written in such a way as to give an improper advantage to HOK and firms friendly to HOK," the suit says. An HOK spokesman declined to comment while the case is pending.

Without knowing particulars, some legal experts predict Karlsberger, like any rejected party in a contract, has a steep hill to climb to win its case. "It's highly implausible to say, 'You must use these people,' just as it would be with any football player, or actor," says Stewart Sterk, a real estate law professor at Cardozo Law School in New York. "Normally, you can't take steps to harm the other party in a contract. But how is that different than acting in your own self-interest?" *C.J. Hughes*

[HELP WANTED]

Dia Plans N.Y.C. Homecoming

THE DIA ART FOUNDATION, established in 1974 to support large-scale, site-specific art, recently announced that it will construct an exhibition space in Manhattan, at 545 West 22nd Street, just steps from a facility it shuttered in 2004. The nonprofit group has not yet selected an architect.

Director Philippe Vergne says he would like a space that integrates with the streetscape and provides "artists with the largest amount of flexibility." The project could partner an artist to an architect, similar to Robert Irwin and OpenOffice's collaboration on Dia:Beacon, a refurbished printing plant in the Hudson River Valley where the foundation's permanent collection has been displayed since 2003. *David Sokol*

ON THE BOARDS

Orchestra Hall Renovation

LOCATION **Minneapolis** ARCHITECT **Kuwabara Payne McKenna Blumberg**

Toronto-based KPMB has been commissioned to design a renovation and expansion of Orchestra Hall, designed by Hardy Holzman Pfeiffer and completed in 1974. In addition to refreshing the Modernist concert hall, the firm plans to rewrap it, emphasizing bolstered lobby space. The expansion will connect to, but not encroach upon, Peavey Plaza, an adjacent sunken public space. The $40 million project is slated for completion in 2013.

North Jutland House of Music

LOCATION **Aalborg, Denmark** ARCHITECT **Coop Himmelb(l)au**

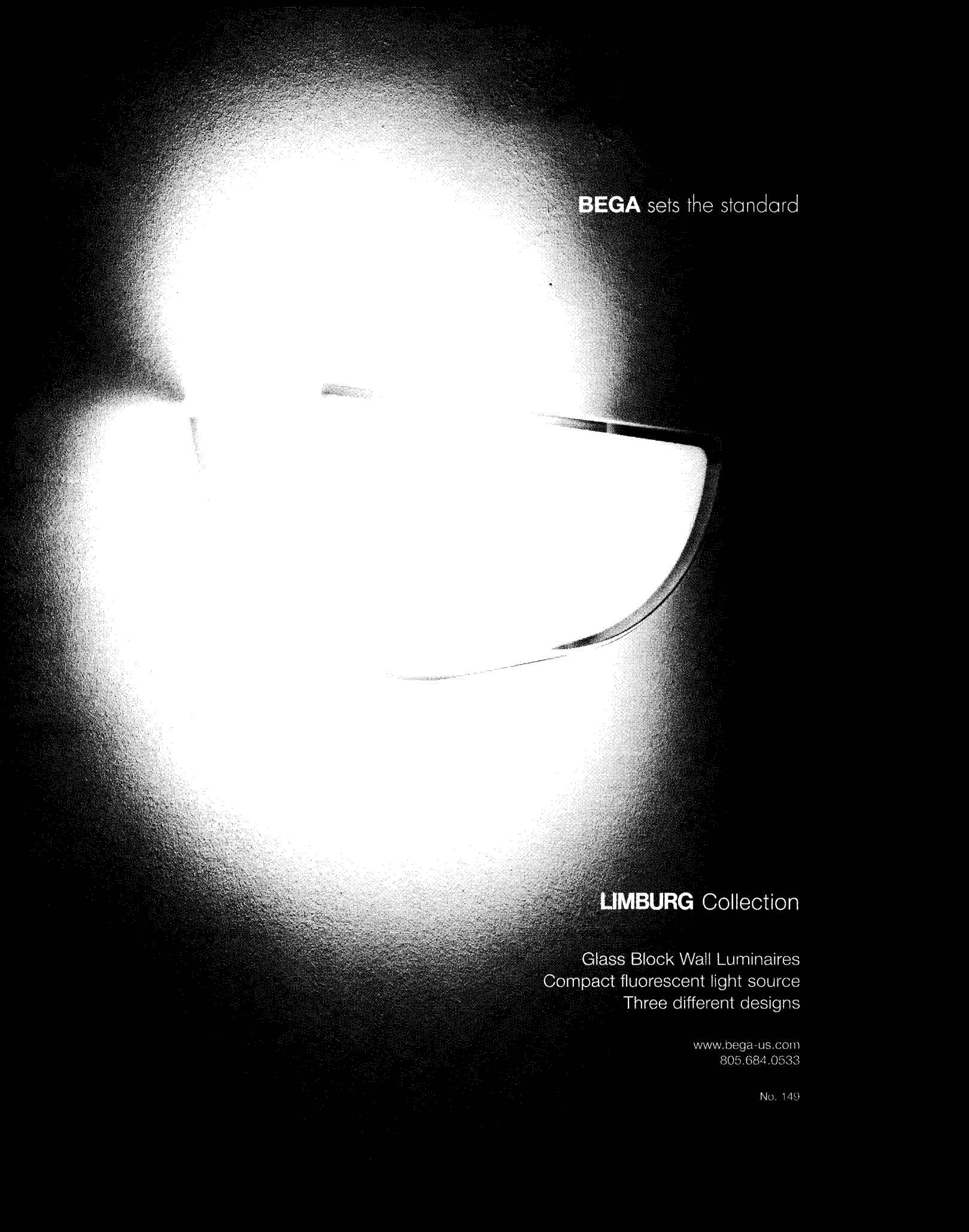
Coop Himmelb(l)au won the competition to design this concert hall in 2001, but the project has been slow to progress. Last fall, the Vienna-based firm unveiled its latest scheme: a collection of stacked volumes that contain a 1,300-seat auditorium, a restaurant, and various educational and performance spaces. The center will overlook a plaza and a fjord.

Cantos National Music Centre

LOCATION **Calgary, Canada** ARCHITECT **Allied Works, BKDI**

Oregon-based Allied Works Architecture, paired with the Calgary firm BKDI, won this commission in September 2009. Their design beat those of four other firms, including Diller Scofidio + Renfro and Jean Nouvel Workshop. The 80,000-square-foot building will feature a live music venue, research center, museum, recording studios, and a radio station. The competition was overseen by the Cantos Music Foundation, a nonprofit arts group.

IMAGES: COURTESY WIKIPEDIA (TOP AND CENTER TOP);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Aid to Haiti

In the days following the January 12 earthquake in Haiti, architecture-related nonprofit groups quickly mobilized to help. In addition to collecting monetary donations, the organizations have laid the groundwork for long-term initiatives. *Jenna M. McKnight*

ARCHITECTURE FOR HUMANITY has vowed to supply pro bono design and construction professionals, who will focus on building community structures and transitional and permanent housing. The organization will partner with other groups, including Yéle Haiti, a nonprofit founded by musician Wyclef Jean.

HABITAT FOR HUMANITY is "addressing shelter solutions for low-income families" affected by the earthquake. "We are closely monitoring the situation and have been in contact with Habitat for Humanity Haiti. We will begin Habitat's recovery efforts as soon as possible," said Torre Nelson, vice president of Habitat for Humanity International's Latin America and Caribbean Area Office. The organization has been working in Haiti for 26 years.

THE U.K.-BASED CHARITY ARTICLE 25 has called on architects to contribute to the long-term rebuilding effort. Stephanie Johnston, the group's communication officer, notes that architects can "play a crucial role in delivering safe, sound, innovative design solutions to alleviate the extreme distress caused by losing one's home and livelihood." The organization was founded by Maxwell Hutchinson, director of the Archial Group and former RIBA president, following the 2004 Indian Ocean tsunami.

Perkins + Will Expands Again

SHORE TILBE IRWIN & PARTNERS, an 80-employee Toronto practice founded in 1945, has merged with Perkins + Will. No layoffs were reported.

Perkins + Will, ranked no. 6 in RECORD's most recent list of the top 250 U.S. firms, now has 19 offices in North America, including two in Canada. In 2004, it acquired Busby + Associates Architects in Vancouver.

With this recent acquisition, the firm not only gains a strategic position in eastern Canada, says C.E.O. Phil Harrison, AIA, but also strengthens its expertise in the sports and recreation sector, which accounts for roughly half of Shore Tilbe's portfolio. "*There* was a very obvious gap in our geographic and knowledge network," Harrison explains, "and we think Shore Tilbe will fill that gap beautifully."

For Shore Tilbe, the merger presents an opportunity to expand. "In the long run, we'd like to develop this office into a national brand," says D'Arcy Arthurs, the firm's managing director. For now, the office will practice under the name Shore Tilbe Perkins + Will, although the partners indicate they may eventually drop Shore Tilbe. *Tim McKeough*

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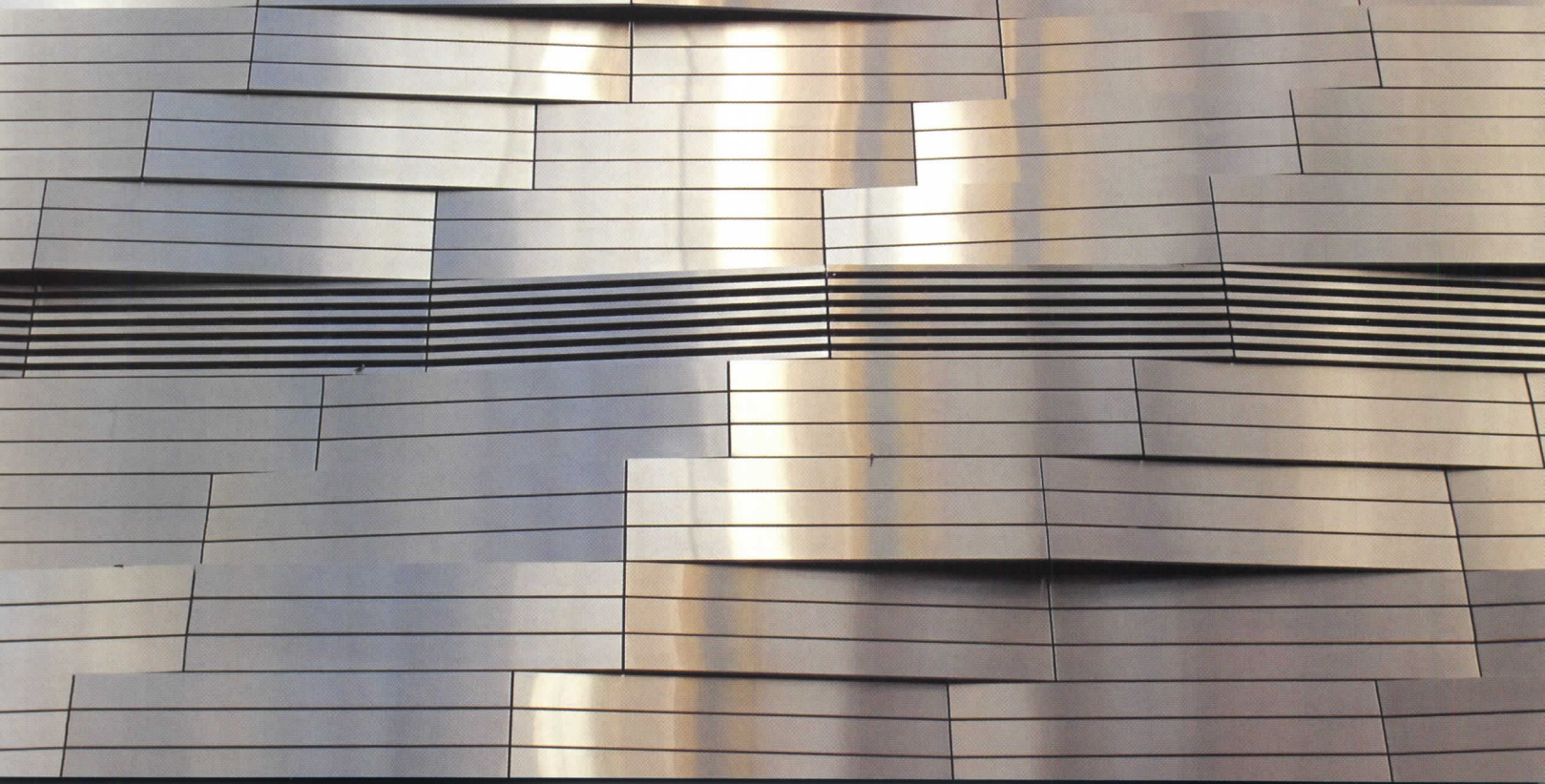
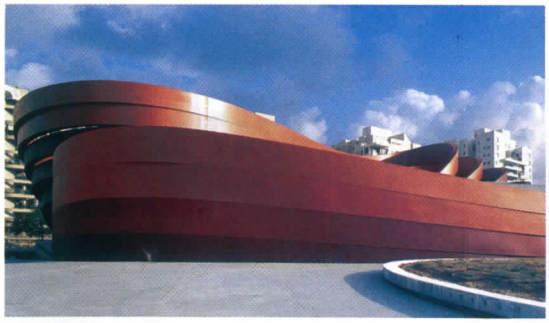


Most Building Sectors Slow to Recover

A REPORT BY THE URBAN LAND INSTITUTE (ULI) and PricewaterhouseCoopers projects that most U.S. development sectors will not recover until 2012 or even 2013. The office, industrial, retail, and hotel sectors will all fare poorly, according to the study, which was released November 5 during the ULI's annual conference in San Francisco. The report did offer hope to some: Niche sectors, including medical, senior housing, and student residences, could buck the otherwise dire trend, and apartment development could resume by late 2011. The report adds that urban infill and transit-oriented projects will be the first to break ground once the upturn arrives. *Tamar Wilner*

New Leader for Cooper-Hewitt

SMITHSONIAN'S COOPER-HEWITT, National Design Museum in New York City has announced that Bill Moggridge will be its new director, effective in March. He succeeds Paul Thompson, who served as the museum's director for eight years before resigning last summer to become the rector of the Royal College of Art in London. Moggridge, 66, is cofounder of the design firm IDEO. *Jenna M. McKnight*



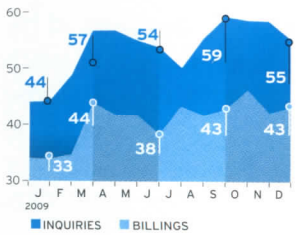
Arad Museum Opens in Israel

FIVE UNDULATING HORIZONTAL ribbons of weathered steel – in bright orange, deep red, and rust brown – wrap the Design Museum Holon, Israel's first museum of design. Created by Ron Arad Architects, the 38,000-square-foot building is set on a gentle slope and is part of a large cultural complex in Holon, 4 miles south of Tel Aviv. After nearly four years of construction, the two-story, $17 million building opens February 2.

In contrast to the sculptural skin, the building's interior features two rectangular main galleries – one about 5,400 square feet and the other about 2,100 square feet. These volumes are set at an angle to each other, forming a triangular courtyard. The museum also includes an education area, design archive, and café. *Esther Hecht*

Architectural Billings

The index inched to 43.4 in December, up slightly from November's 42.8. The inquiries score was 55.3. AIA chief economist Kermit Baker says lack of credit remains a key problem, adding that "the longer this situation persists, the more dire the news for the architecture profession, which is struggling at unprecedented levels."



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CIRCLE 17

The emerging architect

1

1. **Hip retailer Poleci's New York City flagship store and showroom called for crisp lines and a gallery feel.**

2. **A collaboration with Showtime yielded a 200-square-foot space meant to capture the spirit of modern media.**

3. **Warm, sophisticated materials and clever built-ins create an organic layout in this 3,000-square-foot New York City apartment.**

2

3

IT TAKES A CERTAIN AMOUNT of audacity for a 26-year-old Italian architecture student to write a letter to Jacques Herzog and Pierre de Meuron detailing the reasons they should hire him. Tenacity paid off, and Luca Andrisani, that plucky student, went to work at the famed Swiss firm right after receiving his M.Arch. from the Royal Institute of Technology in Sweden (his undergraduate degree came from La Sapienza University in Rome).

Principal for the past six years of his own eponymous, New York City–based firm, Andrisani looks back at the two years he spent at Herzog & de Meuron with pride and some wistfulness. "The way they ran their firm, their quality of listening to what each person, both clients and employees, had to say, it's stayed with me," he says, admitting that while he has no regrets about leaving the firm to follow his dream of moving to New York City, his time there has informed his practice decisions on many levels. Not to mention the fact that the projects he worked on while a senior architect at Herzog & de Meuron – most notably Prada projects in Tokyo and Italy – gave him valuable experience in the realm of high-end retail environment design.

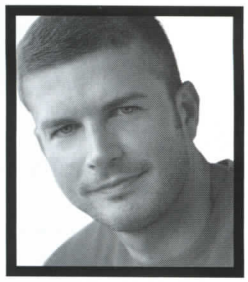
Andrisani admits that after flying high those two years, he wasn't quite ready for what was in store for him in New York, where he secured a position working for Rafael Viñoly Architects. "I was used to communicating with the partners every day," he says, "and not accustomed to working in a big loft with hundreds of computers lined up. It was just a very different experience for me." And not one he wanted to continue. "For me, the goal was always to start my own firm," he says. "It was just a question of when."

After a year in the big loft, Andrisani went to work for Peter Marino Architect, a smallish firm known for its innovative approaches to luxury retail shops. "One of the great things about working with Peter was experimenting with different materials." For Andrisani, it was all part of *the mix*, and although he was in his element, he itched to run the show. "It was always the plan," he says.

Still ambitious, still tenacious, the 36-year-old does

design

Luca Andrisani Architect



PRINCIPAL: Luca Andrisani

LOCATION: New York City

FOUNDED: 2004

DESIGN STAFF: 4

WORK HISTORY: Peter Marino Architect, 2003–06; Rafael Viñoly Architects, 2002–03; Herzog & de Meuron, 2000–02

EDUCATION: The Royal Institute of Technology, Sweden, M.Arch., 1999; La Sapienza University, Rome, B.Arch., 1998

KEY COMPLETED PROJECTS: Platinum Salon, New York City, 2009; Poleci, Las Vegas, 2008; Poleci, New York City, 2007; Lalique, San Francisco, 2006; Kornfeld Residence, New York City, 2008; Erns-Jansen Residence, New York City, 2007

KEY CURRENT PROJECTS: Awadalla Residence, New York City, 2010; MKG Productions, New York City, 2010; Atlantic City Boardwalk Holocaust Memorial, unbuilt

WEB SITE: lucaandrisanidesign.com

IMAGES: COURTESY LUCA ANDRISANI ARCHITECT

View additional images online.

admit to a little more reserve in his practice and in his designs. "There is a place and a time for everything," he says, "and though I appreciate how little fear I have had in my career, I acknowledge that there was a bit of irresponsibility there, too. I don't regret it." And he shouldn't. His four-person firm has completed a number of retail and residential projects, including flagship stores for hip clothier Poleci in New York City and Las Vegas, a store for Lalique in San Francisco, and a number of New York City residential projects. His architectural aesthetic is clean and Minimal, but never "dry or empty. I appreciate contrasts between materials – fragile with hard, then earthy. Juxtapositions are a good way to create emotion, I think." Andrisani also says his gutsy inclinations are less about his own ambition these days. "You tend to want to succeed alongside your clients," he says. That success, he says, starts with inspiration. "I'm inspired by travel, by constantly competing for projects, and by just always talking to people. The client is always inspiring, as well as everyone around me. I strive to run my practice like Jacque and Pierre run theirs. The ability to pay attention to people and never be closed to anything is always the highest standard. It's something to aspire to." *Ingrid Spencer*

work

Graypants

PRINCIPALS: Seth Grizzle, Jon Gentry, Jonathan Junker

LOCATION: Seattle

FOUNDED: 2008

DESIGN STAFF: 6

EDUCATION: Grizzle: Kent State University, B.Arch., 2005, and B.S. in Architecture, 2004; Gentry: North Carolina State University, M.Arch., 2003; University of North Carolina at Charlotte, B.Arch., 2001; Junker: Kent State University, B.Arch, 2005, and B.S. in Architecture, 2004

KEY PROJECTS: Graypants live/work studio renovation; scrap lights; Slice Chair

KEY CURRENT PROJECTS: Plywood Slice line; flat-pack design; sustainable infrastructure for smart buildings and products

WEB SITE: graypants.com

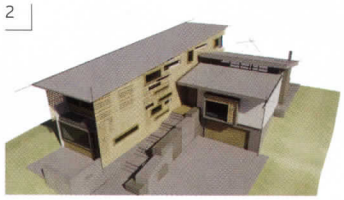
1

SITTING IN A SOFTLY LIT café in New York or San Francisco, you would probably never guess that the exotic light fixture you've been admiring used to be a cardboard box. Repurposing discarded items into something both useful and elegant is what inspires the resourceful designers of Graypants. "We love to use our hands and build stuff," enthuses Seth Grizzle, one of the founders of the Seattle-based design firm.

Graypants was born in 2008 when Grizzle, 28, and Jonathan Junker, 30, decided to realize a shared dream of creating their own design studio. They first met in the architecture program at Kent State University and have recently added their good friend Jon Gentry to their design team. The three now share a loft space in Seattle's Capitol Hill, where they live and work together, brainstorming and implementing new ideas. "We believe ideas shouldn't be treated preciously," suggests Junker. "Throw them out there and let them evolve. Let the ideas purify themselves."

After several years working in architecture firms, they all realized they were missing the process of designing, drawing, and using their hands to make useful things. In their off hours, they collected discarded materials and began to experiment with creative ways to repurpose them. Responding to a call for sustainable chairs for a local gallery exhibition, they crafted their entries from old boxes and newspapers. With the leftover chair scraps, they created what is now their popular line of scrap lights. Soon to follow were tables made from discarded shipping pallet slip sheets as well as chairs from plywood scraps. Junker says, "We never got together and said 'let's make a company about recycling.' You don't have a choice."

2



3

1. **Cardboard for the DISC line of scrap lights is gathered from local businesses in Graypants' Seattle neighborhood.**

2. **This residence has a flexible program that can easily open up to accommodate large events and frequent visitors.**

3. **The Slice Chair, made of CNC-routed maple plywood with an ottoman that nests within, will be available for purchase this year.**

Both Gentry and Junker work for award-winning Seattle firm Olson Kundig Architects, while Grizzle operates the Graypants machine full-time. To those young designers lucky enough to have a job in this unpredictable economy, Gentry advises, "Have an outlet for your ideas, so you don't let things fall by the wayside at work." Agreeing with him about the pitfalls of day jobs, Junker adds, "Graypants is about inspiring people to do stuff on their own." Grizzle likes to sum up their collective approach to work with this quote from Persian poet Rumi: "Let the beauty of what you love be what you do." *Kurt Butterfield*

IMAGES: COURTESY SEAN WATSON (PORTRAIT); MARIUS NITA (1,3); GRAYPANTS (2)

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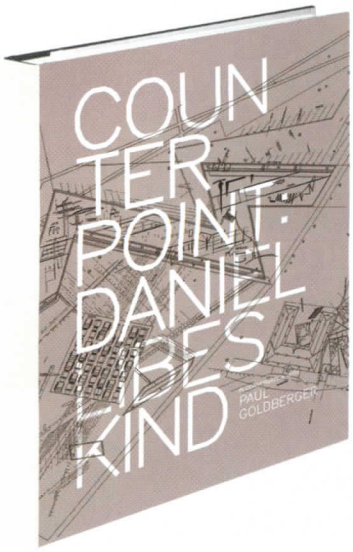
CIRCLE 18

Talking Heads



Counterpoint: Daniel Libeskind in Conversation with Paul Goldberger.
New York: Monacelli Press, 2008, 392 pages, $60.

Conversations with Frank Gehry,
by Barbara Isenberg.
New York: Alfred A. Knopf, 2009, 290 pages, $40.

We think of ourselves as living in the Information Age, yet in some ways we are an undocumented era. Nobody keeps a diary anymore, nobody writes informative daily letters. E-mails and text messages are, usually, inconsequential chats. Even if they're saved, they quickly disappear, victims either of changing technology or of electronic decay. One wonders where future biographers and historians will go for their sources.

One possible answer is the recorded conversation, the so-called oral history. These two books, both about famous contemporary architects, can stand as the yin and yang of that new medium. One gets everything right and the other gets everything wrong.

The good one is Barbara Isenberg's wonderful job on Frank Gehry. This is a book in which the personality of an amazing architect and human being comes through in full. Isenberg isn't afraid to ask probing questions, and she's not afraid of stage directions, either, letting us know when Gehry seems angry or upset. Like any good writer, she fills us in on the setting, too, describing Gehry's rather madcap office and the worktable at which he and she sit for the interviews. There are informal photos of the office, and some of Gehry growing up. You come away feeling you know this guy, where he comes from, how he developed over time, and how he works today. For those who want only a quick sample, I recommend the chapter titled "Gehry at Work." It's worth the price of the book.

By comparison, the Libeskind book feels naked. No editor or book designer is listed; there's no index; and nothing is said about the site or the circumstances of the so-called conversation. Did Paul Goldberger and the architect meet face to face? Or did they merely exchange e-mails? We're never told. Basically, the book is a glorified office brochure. The exchange with Goldberger takes up 14 of 392 pages. The remainder is a series of spreads of Libeskind's architectural projects. These spreads are color pictorials, containing little information. Captions are few and minimal, and they appear to have been stripped over the photos at the last minute.

Weirdest of all, each new building is introduced by a single page of text that contains one question by Goldberger (most are adapted from those earlier 14 pages) and one answer by Libeskind. Goldberger's question is always printed in tiny upper-/lowercase letters, and Libeskind's answer is always printed in huge capitals. The effect is that of a timid milquetoast question and a loudly roared reply. And unlike Isenberg's, Goldberger's questions do not probe. Most serve merely as prompts for whatever Libeskind wants to say.

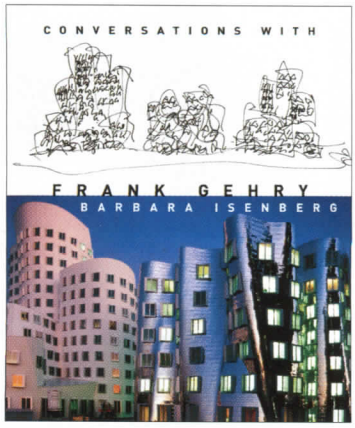
> Where Gehry talks about people and things, Libeskind talks about generalized concepts.

All that said, it is interesting to compare the two architects, both of whom I admire and both of whom I like personally. As they present themselves here, they appear to be radically different. Where Gehry talks about people and things, Libeskind talks about generalized concepts and ideas. Where Libeskind, for instance, speaks of "developers" and "owners" and "clients," Gehry chats about Marshal Rose and Bruce Ratner and Barry Diller. Like the Angelino he is, Gehry manages to drop an amazing number of celebrity names: David Niven, Brad Pitt, Jennifer Jones, Esther Williams, Candace Bergen, Jeremy Irons, Tony Curtis, and many more. Libeskind names Bach and Mies and Schoenberg, but mentions no living person except his wife Nina and, in one brief reference, three architects he's working with in Milan.

Gehry cites, as formal inspiration, physical artifacts: a sculpture by Bernini, paintings by Bosch and Vermeer, and of course the fish. Libeskind, by contrast, draws inspiration from a nonvisual art, music – and from conceptual metaphors: The Imperial War Museum is a globe sliced up by conflict, the Jewish Museum in San Francisco takes its form from the Hebrew letters *Yud* and *Chet*, the characters for the word meaning "Life." Where Gehry talks a plain, hockey-pal kind of language, Libeskind often rises into a rarefied, Kahnlike Mandarin. Sample Mandarin (all caps, of course): "I DESIGN BUILDINGS AS EXPRESSIVE MUSICAL COMPOSITIONS. THROUGH PRECISE VIBRATIONS I AIM AT EMOTIONAL RESONANCE." Oh. Thanks, Daniel, for that enlightening comment.

Both guys are, of course, playing to the crowd as well as just being themselves. They're telling us not only who they are, but who they want to appear to be. That's part of the fun of reading. You get to play the game of figuring out what's for show and what's for real.

Both books are worthwhile. Buy the Gehry, but borrow the Libeskind. *Robert Campbell, FAIA*



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AMERICAN EXPRESS OPEN

Managing Layoffs

Making the worst task slightly easier for all

BY B.J. NOVITSKI

COUNTLESS TIMES LAST YEAR, ARCHITECTS were called into a principal's office and told they were being laid off: the depressed economy brutalizing the blameless. That thousands of professionals have lost their jobs is bad enough, but the psychological harm to the firm and those lucky enough to remain can also be damaging. With the possibility that more layoffs will occur this year, how can firm principals make staff cuts less painful? To what extent can and should you delay the inevitable? When everyone knows the ax is about to fall, how do you maintain staff morale? How do you conduct the dreaded conversation? How can you make a person's departure less painful?

Firm principals and industry consultants offer a variety of suggestions. Hugh Hochberg, a principal of the Seattle-based consulting firm The Coxe Group, says he has observed several strategies for postponing the day of reckoning. These include across-the-board salary cuts, shortened work weeks, unpaid furloughs, outright layoffs, and combinations of these. Voluntary early retirements have been less viable this year than in the past because retirement funds were slashed in the banking crash. In a professional services firm, where the greatest expense is payroll, there are few options for belt-tightening.

Inevitably, the day comes when the existing or expected workload doesn't match the number of employees. Who should go? Hochberg says the choice depends on how many staff members have left already. "The first round of layoffs," he says, "tends to target people at a low level in the firm; they are more 'expendable' because someone else can do their work. The second round tends to go after some of the more senior people. And in the third round, firms need to consider laying off principals." Hochberg points out that principals might be expert in delivering large, complex projects, but none of these appear on the firm's horizon. Senior principals may be especially vulnerable if they are not adept at lower-level work like building information modeling.

The New York firm Cooper, Robertson & Partners suffered a 30 percent loss of staff in 2009. Because the firm nurtures a strong sense of family, these cuts were extremely painful. To decide who to lay off, president Karen Cooper recalls, "We looked at the work the firm had in hand and the work we thought the firm would be doing. Some staff could be transferred to other studios because of their skills, but others just didn't mix with the existing work."

As management contemplates whom to lay off, staff is busy worrying about the outcome. They invariably speculate about whether they're vulnerable. This guesswork can be devastating for morale. The advice Hochberg gives his clients is, "Tell the firm what's going on rather than let them form their own ideas; they won't all be right." Cooper's firm does this in monthly staffwide meetings. "In addition to our usual announcements and project reviews, we give an update on our financial status. It's not in the same depth as the update we provide our ownership, but it gives people a sense of where we are in the business cycle. It helps because then there are no real surprises. Some sadness, but no surprises."

Allan Kehrt, a partner of KSS Architects in Princeton, New Jersey, has a similar approach. His firm lost 20 percent of its staff in 2009. "After a round of layoffs, we want to make sure everybody understands we don't want to do this. We tell the remaining staff: 'We're done for the time being. We're in reasonable shape for the next six months; please relax.' " Nevertheless, he points out, staff suffers survivor guilt and goes through a mourning process. He makes a point of discussing these feelings openly.

Architectural intern Beth Schaffer is one laid-off worker typical of many. She was not cut in the first round of layoffs, but even though her firm tried hard to maintain staff morale, she still worried. "It's hard to play the guessing game: Who will go and who will stay? You can't figure out what to expect."

Telling a staff member they must leave the firm is painful for

ILLUSTRATION: © MATTHEW HOLLISTER

the employer but devastating for the employee, so employers should treat the announcement with tact and sympathy. Although some firms call together a group of those to be laid off and tell them all at once, consultant Hochberg believes it's better to have the conversation in a private setting. "We'd never do this in groups," says Cooper. "A studio head plus one of our senior people meet with everybody individually. You get a gamut of responses, and I think the fair thing to do is allow those people to speak and ask questions." Most important, according to Kehrt, is not to beat about the bush. "We tell them we have to let them go and explain why. I don't know if there's a right way or a wrong way; you just have to be very straight with people."

This meeting is an opportunity for management to offer assistance. This can come in the form of a letter of support, a promise to rehire when possible, and severance pay, if feasible. Firms are surely pinching pennies by the time they lay off valued workers, but many offer at least token severance payments. Cooper reports that her firm gives varying amounts based on the employee's tenure and position in the firm. Kehrt bases the amount on an employee's vacation time. He explains: "If someone has been around long enough that they get three to four weeks of vacation, they get three to four weeks of severance pay." The worst thing, Cooper believes, is to put people on unpaid leave instead of cleanly laying them off. On leave, they are ineligible for unemployment compensation.

A federal law, known as COBRA, requires firms over 20 in size to provide access to health insurance to laid-off employees. The American Recovery and Reinvestment Act of 2009 provides a 65 percent subsidy for premiums for up to nine months. Whether the employer pays any portion of the remaining 35 percent is optional, but some employers subsidize these premiums to help their former employees.

A low-cost but much appreciated parting gift an employer can give a laid-off employee is information about what to do next. This is especially important for young people who have never experienced the bureaucracy of unemployment. Schaffer recalls: "I didn't know what to do. How do you file for unemployment compensation? What exactly does it mean? I didn't understand what COBRA was. There's a lot of paperwork, but I felt like I left uninformed." She did appreciate being given a few days to tie off loose ends, remove her belongings from the office, and say good-bye.

Different firms do things differently, but Hochberg says he's observed one common mistake: firms waiting too long before beginning the painful process of laying off staff. "They risk losing the firm as well as the employees," he says. Cooper agrees. "We lagged in making any layoffs as we tried every measure to avoid doing so. If we had made the layoffs sooner, perhaps we wouldn't have had to cut as deeply and could have saved a position or two. And those being laid off could have gotten into the market sooner and perhaps had a better chance of reemployment." Unfortunately, there's always a next recession to try and get things right. ■

B.J. Novitski writes frequently about practice and sustainabilty. She can be reached at bjn@efn.org.

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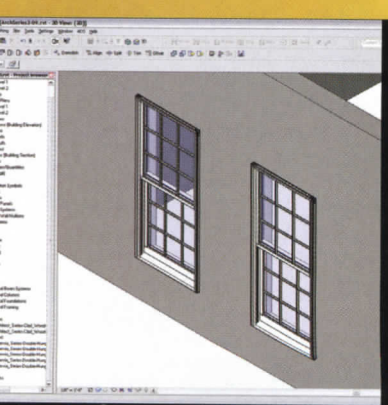

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CIRCLE 22

Putting a fresh face on concrete panels

A new technology for prefab concrete is one of the latest innovations in the concrete and masonry arena

BY RITA CATINELLA ORRELL

FOR THE HÄMEENLINNA PROVINCIAL ARCHIVE building, located in a small but historically remarkable city located about 60 miles north of Helsinki, Finland, Heikkinen-Komonen Architects was required to design a repository for historic documents dating from the 16th century that would also play a significant role in the cityscape.

In order to help communicate the role of the building in the community, the team covered the facade with archival "graffiti" through the use of a technology from Finnish concrete design firm Graphic Concrete. "The narrative decoration has been taken from the historic documents, stamps, and writings found in the archive," explains Markku Puumala, project architect with Helsinki-based Heikkinen-Komonen. The archive portion of the building is located in a solid archive box three stories high covered with graphic concrete elements on four exterior walls and one interior wall. "Concrete is a good material for archive use because of its stability and ability to even moisture," adds Puumala.

According to Jutta Telivuo, head of communications and marketing for Graphic Concrete, the patterns on the surface of the archive result from the contrast between the fair-face concrete surface and the aggregate of the exposed surface. The Graphic Concrete technology involves applying a surface retarder to a special membrane in order to slow the hardening of the concrete in certain areas. After the membrane is spread on the mold, the concrete is cast on it. The next day, the concrete element is lifted into an upright position and the membrane is removed. The unset, softer concrete surface is then high-pressure washed, revealing the fine aggregate finish of the design. The concrete for this project, a black aggregate with white cement, is commonly used in Finland. While normally the patterns are "washed visible," the team reversed the process, washing the background visible. "The main reason for this was to get as much contrast as possible between background and patterns and to have black facades," says Puumala.

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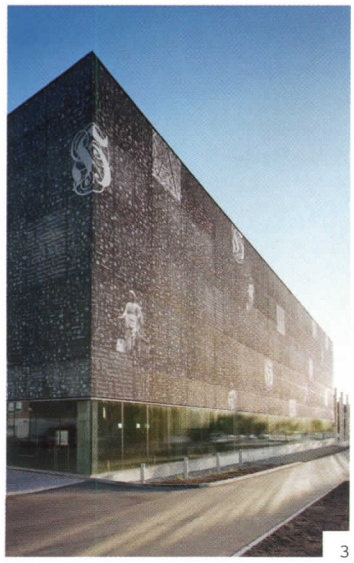

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1. **Surface retarder is applied to a special membrane that is spread over the mold table.**

2. **The contrast between the fair-face and the exposed fine aggregate finish creates the pattern. This panel shows a detail from the archive's historic documents.**

3. **The front facade of Finland's Hämeenlinna Provincial Archive.**

While Graphic Concrete prints the membranes in Finland, they can be shipped directly to U.S. factories. "We have a technology-transfer process for training all new precast factories starting to use the technique," says Telivuo. For the company's pilot U.S. project, designed by Foster + Partners, the technology helped create patterns for curved white interior walls in the Project Honor development located on the SC Johnson headquarters campus in Racine, Wisconsin. Graphic Concrete, Helsinki. www.graphicconcrete.com **CIRCLE 200**

For more information, circle item numbers on Reader Service Card or go to **architecturalrecord.com/products**.

PHOTOGRAPHY: © COURTESY GRAPHIC CONCRETE (1,2); JUSSI TIAINEN (3)

1 | product **CCQM/CCTQM/ECCLQM**
manufacturer **Simpson Strong-Tie**
strongtie.com

The new *CCQM/CCTQM*/ECCLQM embedded column caps are designed for use in raised-pier foundations and applications where heavy timbers rest on concrete or concrete-block columns. The heavy-gauge beam seats and SSTB anchor bolts provide the high uplift and lateral resistance needed to help resist high-wind events. CCQM (bottom left; shown installed, top right inset) is intended for use along a floor support beam and noncorner locations. CCTQM (bottom right) is for use along a floor support beam and noncorner locations with a side bucket that accommodates intermediate support beams coming in at 90°. ECCLQM (top left) is intended for use at the corners with a strap to make the connection to the wall framing above. **CIRCLE 201**

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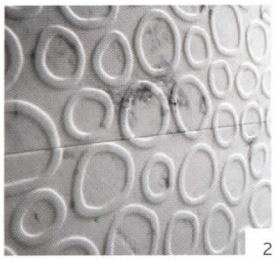

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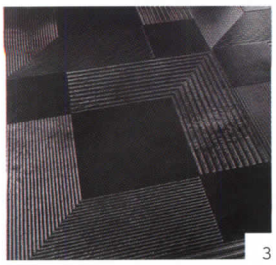

3

2,3 | product **Rugiada/Optical**
manufacturer **Q-bo**
Q-bo-project.it

Q-bo makes precious-stone and marble wall and floor coverings created through specially developed equipment and technologies. An exclusive process of sandblasting transforms Rugiada (2), shown here in white marble, into irregular 3D rings of various sizes in a brushed or polished finish. The dynamic Optical pattern (3) is available polished, brushed, or natural, and is shown here in Ardesia Ligure (anthracite). **CIRCLE 202**

4 | product **Masonry Light Wall**
designer **Hanney & Associates Architects**
haarchitects.com

Martin Hanney, AIA, of Wichita-based Hanney & Associates Architects, designed an innovative way to bring light through a solid masonry wall for an elementary school project. Acrylic dowels spaced at 8" centers, both vertically and horizontally, are laid in the mortar bed of an exterior masonry wall. As people walk past the wall, they create a pixilated light display for those inside. **CIRCLE 203**

4

5 | product **ADVA 400 Admixture Series**
manufacturer **Grace Construction Products**
graceconstruction.com

The time-releasing polycarboxylate technology included in the 400 Series admixture has been tailored to maintain constant dialed-in slump flow for more than two hours without extended set, allowing for predictable transit and job-site workability, minimizing the need for slump-flow adjustment at the job site and reducing costs. **CIRCLE 204**

5

6

6 | product **Precast-concrete fencing**
manufacturer **Artisan Precast**
artisanprecast.com

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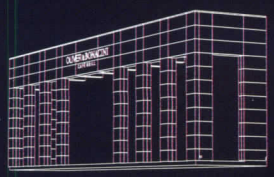

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2

2 | product **Pulp glass imaging**
manufacturer **Pulp Studio**
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1 | product **mySurface app**
manufacturer **DuPont**
apple.com/webapps

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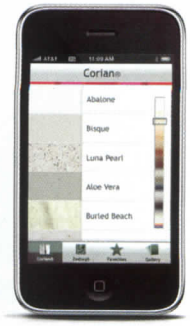

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3 | product **Lamontage**
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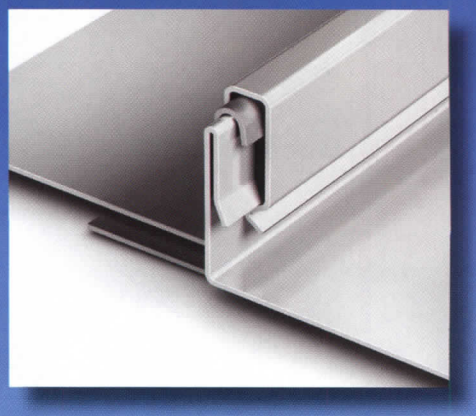

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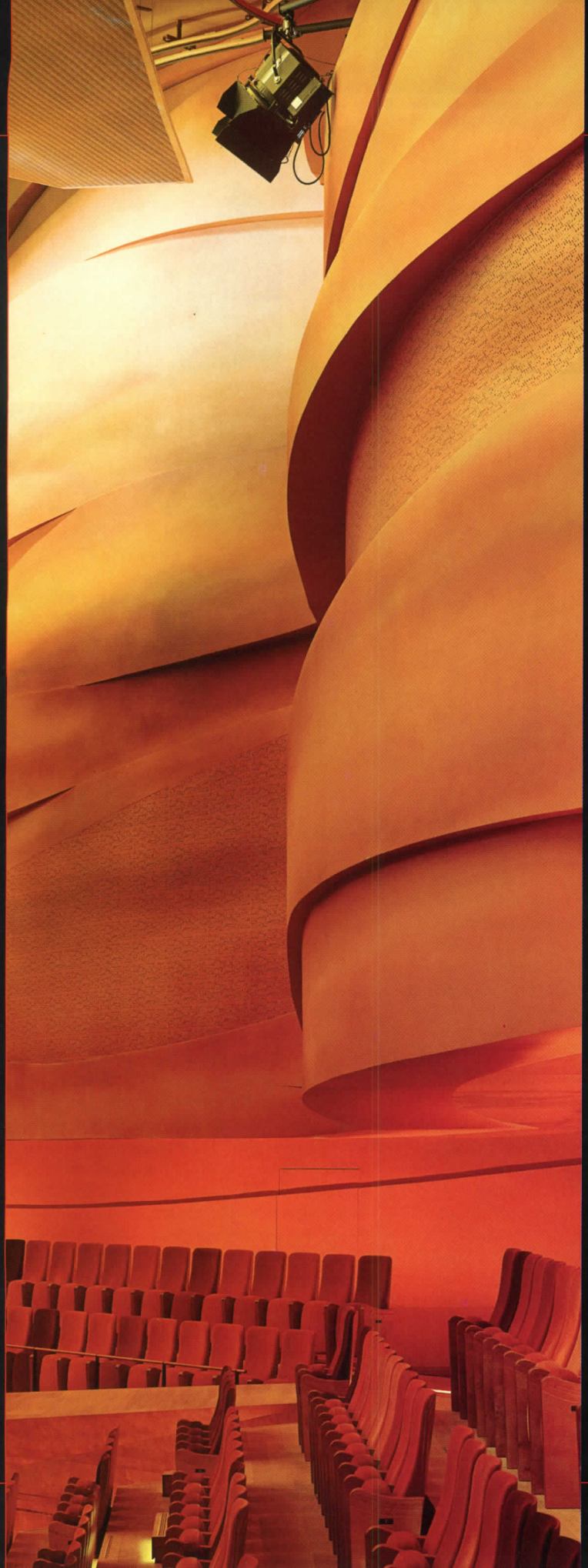


PERFORMING ARTS CENTERS

Bold New Acts

IN THE HALCYON YEARS before the harrowing arrival of the current recession, new performing arts centers seemed to be rivaling museums as the architectural building type du jour. Now that spurt of activity may dwindle as cultural and academic institutions scramble to shore up their budgets. But in this moment of enforced reflection, we can at least examine some of the fruits of architecture's golden decade up to 2009 to see how they perform urbanistically, architecturally, and acoustically.

The Dee and Charles Wyly Theatre by REX/OMA, the Margot and Bill Winspear Opera House by Foster and Partners (both part of the AT&T Performing Arts Center in Dallas), and the Copenhagen Concert Hall by Ateliers Jean Nouvel each attempt to advance the state of the art of a distinct building type. The Wyly Theatre's complicated structural solution reflects the desire for purely flexible stage maneuvering. Nearby, the Winspear Opera House inserts in a modern architectural setting a horseshoe plan first developed in Venice when Carlo Fontana remodeled the Teatro SS. Giovanni e Paolo for an opera house in 1654. To present symphonic music to its audience, Danish Radio's Copenhagen Concert Hall looks only to 1963 to adapt a vineyard plan that Hans Scharoun first developed for the Berlin Philharmonie in Berlin.

All three buildings – a theater, an opera house, and a concert hall – demand different acoustical solutions for mostly unamplified sound, within unconventional architectural envelopes. Because of these complexities, RECORD brings together the acoustical analyses of each for its Continuing Education feature, as explained below. *Suzanne Stephens*

Continuing Education

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/AIA Continuing Education articles. To earn one AIA learning unit, including one hour of health, safety, and welfare (HSW) credit, read the following project stories and their tech sidebars, "Performing Arts Centers and Acoustics," on **pages 57, 66,** and **74**. To receive credit, turn to **page 114** and follow the instructions.

Learning Objectives

1. Understand and define diverse acoustical terminology.
2. Explain acoustical characteristics appropriate for various types of performance spaces.
3. Describe acoustical analysis and modeling methods.
4. Explain strategies for improving acoustical quality.

Dallas ARTS District

Does an impressive collection of buildings add up to a truly urban neighborhood for the arts?

BY DAVID DILLON

THIRTY ONE YEARS AND $1 BILLION after it began, the Dallas Arts District is nearing completion. The October opening of the AT&T Performing Arts Center, featuring an opera house by Foster + Partners and a theater by REX/OMA, capped three decades of committed, if at times confused, planning and building. Add existing museums by Edward Larrabee Barnes and Renzo Piano, a concert hall from I.M. Pei, and a new Arts Magnet high school by Allied Works Architecture and you have one of finest collections of contemporary art and architecture anywhere – less monolithic and overbearing than Lincoln Center, more coherent and accessible than Los Angeles's Grand Avenue, even with Frank Gehry's Walt Disney Concert Hall. Four Pritzker Prize winners – count 'em, four! – strut their stuff on Flora Street, the district's main drag, while a fifth, Thom Mayne, is designing the Perot Museum of Nature and Science a few blocks away. As a concentration of marquee architects, this is hard to top.

The district's goals from the start were to legitimize Dallas's claim to be a "city of the arts," revive its moribund downtown, and create a grand civic destination where everyone would feel welcome even without a ticket. The first is within reach, the other two still years away.

The catalyst for this huge investment was a 1978 report by Carr Lynch Associates that called for relocating the city's major cultural facilities – museum, symphony, and opera – from Fair Park, a beloved but marginalized site in predominantly black South Dallas, to a played-out stretch of car dealerships and parking lots on the northern edge of downtown. The rationale was a mix of cultural ambition, economic desperation, and faintly disguised racism.

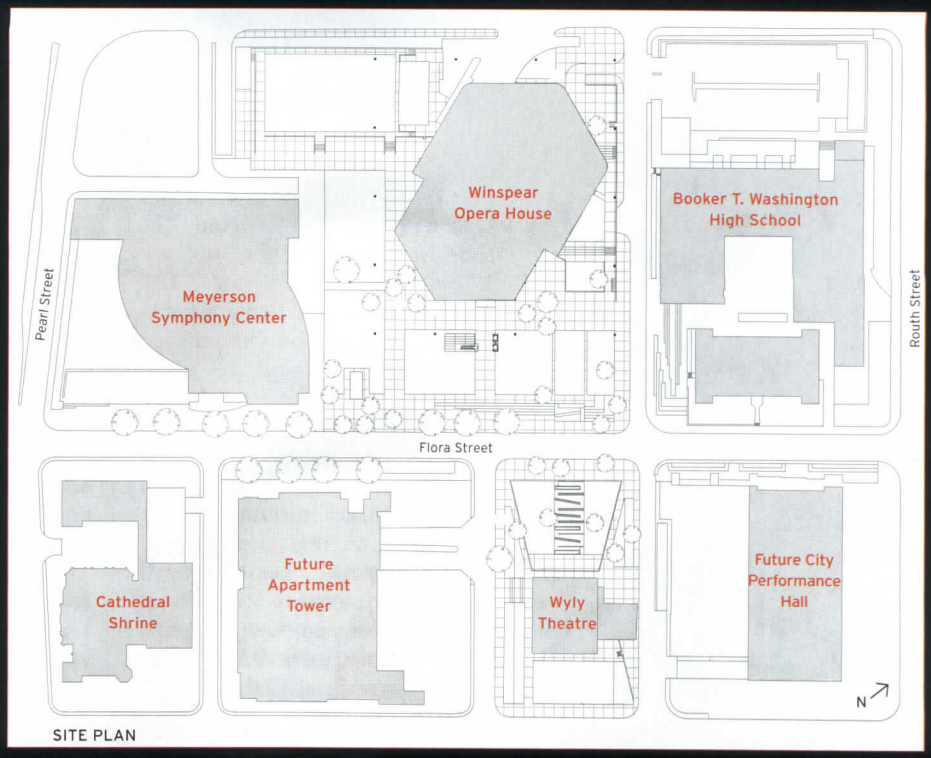
Dallas voters rejected the proposal in 1978, only to approve it a year later after furious lobbying by arts organizations and city officials. The Dallas Museum of Art moved first in 1984 with a barrel-vaulted limestone building by Barnes that combined 19th-century civic-mindedness with 20th-century programs and exhibition spaces. Pei followed five years later with the Morton H. Meyerson Symphony Center, acoustically a dream but politically and financially a nightmare. Then came the privately funded Nasher Sculpture Center in 2003, one of Piano's most refined designs. The Booker T. Washington High School for the Performing and Visual Arts opened in 2008, and the $354 million AT&T Center last fall. A city performance hall, by SOM Chicago, will open in 2011.

The most surprising thing about AT&T is that it happened at all. Historically, the Arts District had been a one-step-forward, two-steps-back proposition because of turf wars, budget crises, and political ineptness at city hall. AT&T could have suffered a similar fate. Instead, a cadre of hard-driving arts supporters, led by John Dayton, Deedie Rose, and Bill Lively, took control of the project. They selected the architects, developed the program, and generated new and broader financial support.

"When we built the art museum, the supporters were mostly visual-arts people," recalls Rose. "With the Meyerson, it was mostly symphony people. This time, we had million dollar donations from people who had never been big arts supporters, but who believed that the project was important for the city." Among them were philanthropists Charles Wyly and Bill Winspear, whose names are now attached to the theater and opera house, respectively.

The Winspear and the Wyly have different constituencies and dramatically different personalities. One is traditional and formal, the other edgy and experimental. One recalls La Scala and Covent Garden, the other turns conventional theater inside out and upside down, putting the lobby in the basement and the rehearsal hall on top. Whereas the Wyly celebrates industrial materials and technology, the Winspear offers classical proportions and geometry.

While it is too soon for definitive critical judg-



SITE PLAN

LEFT: **The Winspear Opera House with its bright red drum and expansive solar canopy stands across Flora Street from the more vertical Wyly Theatre (left in photo) and adjacent to I.M. Pei's Meyerson Symphony Center on one side and an arts high school by Allied Works Architecture on the other.**

ABOVE: **Site plan shows the reach of the Dallas Arts District after 31 years and $1 billion of construction.**

ments, initial reports on both buildings have been favorable. The Winspear's acoustics, by Sound Space Design, have received enthusiastic reviews from music critics such as Anthony Tommasini of *The New York Times* and Heidi Waleson of *The Wall Street Journal*. And its glowing red drum has been an instant hit with a public famously attracted to spectacle. Most of the complaints have been operational: bottlenecks in the lobby, narrow corridors, long lines on the escalators, and a shortage of restrooms.

The Wyly is getting high marks from directors and performers for its technological versatility, which allows seats and sets to be rearranged at the touch of a button, and the stage to be transformed even between acts. At the same time, some patrons have complained about the tough industrial interiors, and more about the steep concrete ramp leading down to the grim lobby.

Yet, as Carr Lynch pointed out in 1978, architecture is only one piece of an arts district. The goal is not to create memorable buildings or support real estate development, but "to bring the arts into the lives of the people of Dallas, in an immediate and personal way, in the course of everyday life."

And it is here, at the level of everyday life, that the Arts District has work to do. For all the talk about an "urban neighborhood for the arts," it is still a collection of fiefdoms, each commanding its own block up and down Flora Street. Although the arts institutions occasionally work together on exhibitions and concerts, they mostly advance their own agendas – a situation that needs to change.

"To create a real arts district, we need to think outside the walls of our own institutions," says Nasher director Jeremy Strick. "Public art; outdoor performances; short, quick-hit exhibitions: whatever overcomes institutional inertia." A management organization, called simply Dallas Arts District, has recently been created, and basic marketing tools such as joint ticketing and a one-stop Web site are being explored for the first time.

Street life remains a fantasy, however, with no shops and cafés, only a handful of restaurants, and few public events outside the walls of the cultural institutions. What buzz there is comes mainly from the 800 students in the Arts Magnet high school, and then for only a few hours a day. Most nights and weekends, the "urban neighborhood" is dead.

More housing of all types would instantly energize the district. Right now, it contains only 62 luxury condos in a single high-rise. An apartment building is going up nearby, and a second luxury condo tower may eventually be built. But the district needs several thousand residents, not several hundred, and it is a long way from that goal.

It also needs more and better connections to the rest of downtown. DART and the city dropped the ball by not including several light-rail stops in the district.

Twenty-five years after the Dallas Museum of Art opened, the Arts District is unquestionably an architectural success. Its individual cultural buildings are all intelligently designed and handsomely crafted, serious rather than merely trendy, the kind of work that helps us to see the city differently. What's less clear is whether all this high design will come together to create a real place where art and daily life meet, or devolve into an architecture fair, a splashy curiosity, that attracts tourists and turns up on the covers of design magazines but does little to nourish the life of the city.

Architecture can do only so much. Without sensitively designed streets, plazas, and landscapes – a so-called "public realm" – even great buildings end up as solitary objects, wonderful to look at but lifeless and forbidding. Dallas has clearly got the architecture piece right. It is the civic and urban design elements that still need work. ■

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

Opera Reaches Out

Using a Modern vocabulary, Foster + Partners reinterprets the traditional music hall to create the Margot and Bill Winspear Opera House

BY VICTORIA NEWHOUSE

WITH A STEEL-FRAME CANOPY STRETCHING well beyond its performance hall, the Winspear Opera House reaches out to other constituents of the AT&T Performing Arts Center. As designed by Foster + Partners, the building reflects the values of Bill Winspear, the Canadian-born entrepreneur who donated $43 million to the approximately $150 million project to share his passion for music with as many people as possible and make sure the hall's acoustics would be excellent. Certainly, the second goal has been realized, and the opera house's design encourages the first.

Attitudes toward the arts have changed radically since the initial plan for the center respectfully aligned each institution along a single street (Flora). Today, generous open spaces intended to attract crowds of nontheatergoers are considered

1

2

PREVIOUS: **The 63-foot-high solar canopy shades a pedestrian plaza and reaches out to the city.**

1. **The canopy's aluminum louvers are set at fixed angles that follow the path of the sun.**

2. **The opera house sits on the north side of Flora Street with I.M. Pei's Meyerson Symphony Center (left in photo) to the west and REX/OMA's Wyly Theatre (not shown in photo) to the south.**

as important as the buildings themselves. To encourage this democratization, the architects enlivened the plan with new axes that link the buildings with plazas and the surrounding streets—notably a north–south path perpendicular to Flora. Consequently, the Winspear now shares with I.M. Pei's Meyerson Symphony Center (1989) an inviting 10-acre park and an orientation rotated 30 degrees from the street.

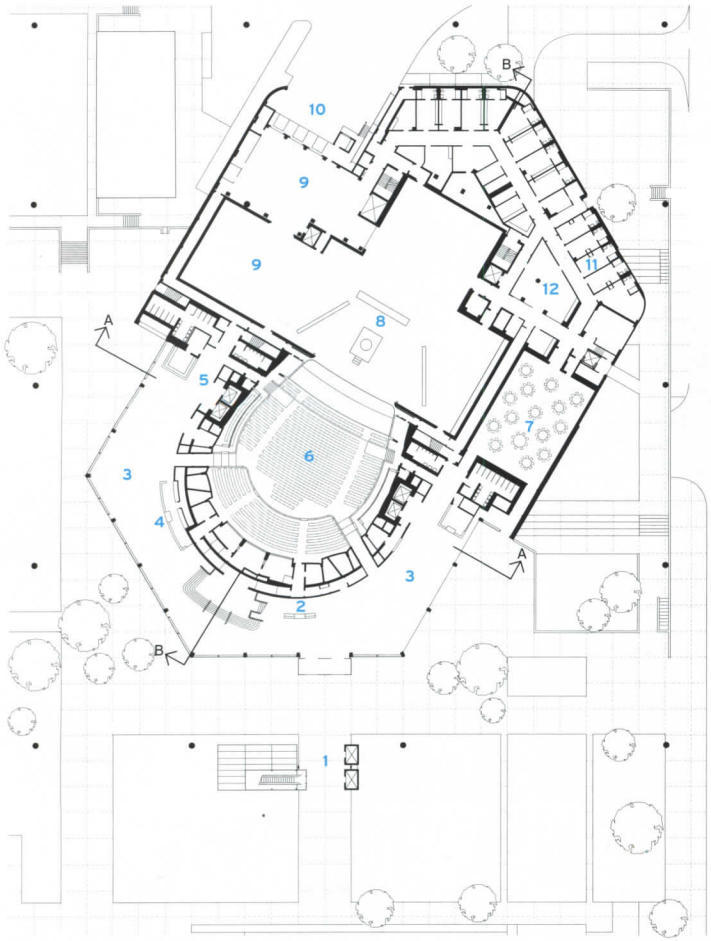
The horizontal thrust of the Winspear's massive solar canopy provides a nice contrast to the verticality of the Wyly Theatre by REX/OMA across Flora Street. Stretching 463 by 378 feet, the canopy surrounds the red-glass drum that encloses the building's auditorium, stage, fly tower, and cooling towers. A steel structure with anodized-aluminum louvers set at various angles to follow the sun's path, it offers solar protection for a public plaza and the 60-foot-high glass walls wrapping around the building's lobby. In good weather, sliding glass panels running the entire length of the east side of the lobby open so visitors in the restaurant and café can sit or mingle outside.

By creating a temperate outdoor oasis, the canopy reduces heating and cooling loads on indoor spaces. The architects employed a number of other energy-saving strategies, including a displacement ventilation system in the hall that pumps air from the floor—cooling people but not all the space above them. They also landscaped the shady refuge under the pergolalike structure with squares of lawn and wildflower plantings and a black-granite reflecting pool where a film of water hovers above the names of donors, flush with the surrounding pavement. While the canopy's enormous grid extends the building's reach outdoors and helps to define an enlarged public realm, its scale and rigidity are oppressive.

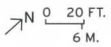
Reversing the traditional color scheme for opera houses, Foster put red on the outside, not the inside, of the hall, making it the district's most prominent constituent. The firm clad the Winspear's concrete drum with bright ruby PVB (polyvinyl butyral) interlayers laminated between two sheets of glass. By illuminating the colorful skin from both the back and front, the designers were able to create bold signage in the daytime and at night, when the house is washed in a red glow of light.

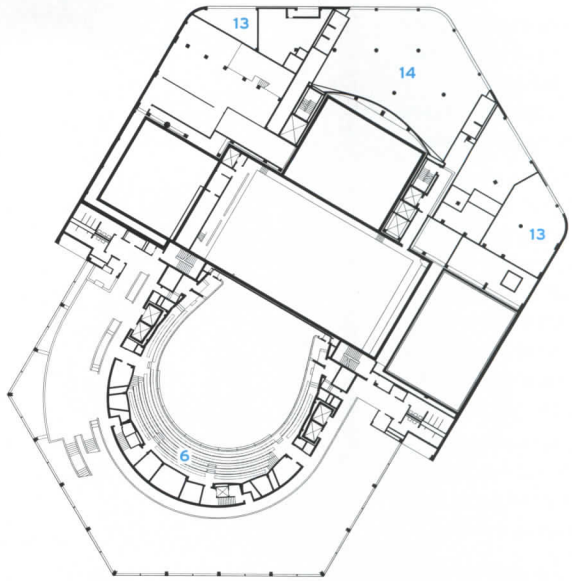
In a daring gesture in car-centric Dallas, the architects placed egress from underground parking in the landscaped plaza outside the building, forcing all patrons to enter through the same set of doors on grade. However, what might have been a dramatic processional fails to materialize because the entrance aligns with the arts center's new north–south axis rather than the opera house's main axis. So visitors enter to one side of the grand stairway that anchors the enormous lobby, an arrangement akin to slipping in the side door. Furthermore, the performance hall's red-glass

1 Access from parking
2 Reception
3 Lobby
4 Long bar
5 Box office
6 Seating
7 Reception hall
8 Stage
9 Scene dock
10 Truck dock
11 Dressing room
12 Green room
13 Plant
14 Offices
15 Parking

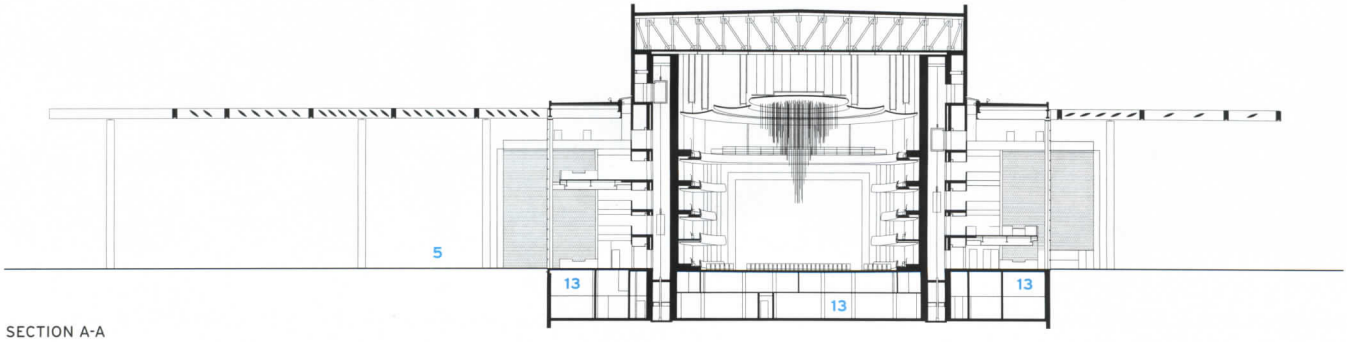


ORCHESTRA LEVEL





TIER ONE LEVEL



SECTION A-A

SECTION B-B

1. **The glass-and-metal grand stair serves as a sculptural element in the enormous lobby while providing access to all of the seating levels.**

2. **The architects clad the drum of the performance hall with two layers of glass and an interlayer of bright red PVB. Lit from the back and the front, the drum's skin offers a variety of signage opportunities both during the day and at night.**

3. **Portions of the 60-foot-high curtain wall can open so crowds in the lobby can spill outdoors in good weather.**

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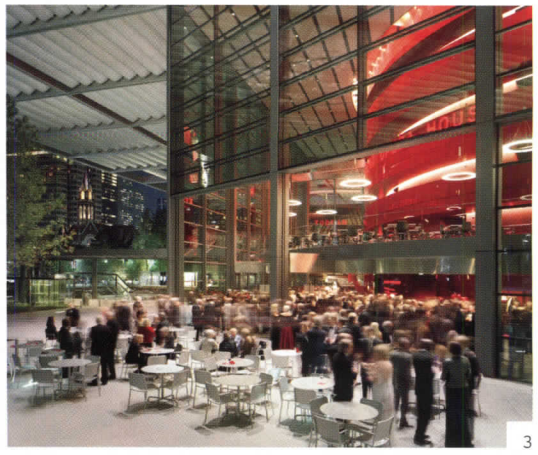


3

panels, while effective from the exterior, fail to warm up the rather cool feeling of the lofty glass-and-aluminum lobby. Circulation nevertheless appears to be efficient, via elevators and wide stairs that hug the theater's curve, with bars and cafés on the first and second levels.

The theater itself offers a warmer environment. Like many new auditoriums, it has double doors to isolate sound at every level. It employs a traditional horseshoe configuration, which Bob Essert, the opera's acoustical consultant, deems "a guarantee of good acoustics." Four gently sloped tiers of seating only 90 feet from the stage make the hall feel exceptionally intimate. The glass-fiber-reinforced-concrete fronts of these balconies, which look like crinkled ribbons when illuminated, stand out against the dark brown, textured-plaster peripheral walls and make the 2,200-seat theater feel smaller than it is. By continuing the balconies' top tier in a ring in front of the barely noticeable proscenium, the architects further enhanced this effect. A fire curtain designed by Argentine artist Guillermo Kuitca protects the main stage, which is supplemented with an ample rear stage and wings, all equipped with state-of-the-art technology. A 70-foot-tall retractable chandelier made of 318 thin, acrylic light rods, along with charcoal-gray Ultrasuede upholstery and burnt walnut floors, complete the house's elegant decor.

Following Bill Winspear's insistence that the new house be first and foremost for opera (with other kinds of performance, such as dance and touring shows taking second place), Essert aimed for a warm, voluptuous sound best suited for the mainstream 18th- and 19th-century

[SECTION 1 | **WINSPEAR OPERA HOUSE**]

When size matters

A hall reproduces old-world sound in a larger modern setting

BY JOANN GONCHAR, AIA

AN OVERARCHING GOAL for the design team behind the new Margot and Bill Winspear Opera House in Dallas was to re-create the experience found in some of Europe's much-loved opera venues. One of the Winspear models was the Classical-style, horseshoe-shaped hall at Munich's National Theatre (1818). The sought-after acoustical qualities were strength, intelligibility, and warmth, says Bob Essert, director of Sound Space Design, the project's acoustician. "The objective was to envelope the listener with orchestral sound while maintaining the clarity of the singers' voices," he adds.

One important factor for opera is a hall's size. Since the medium depends on the power of the human voice and of instruments to "excite" the room without amplification, "smaller is better," says Essert.

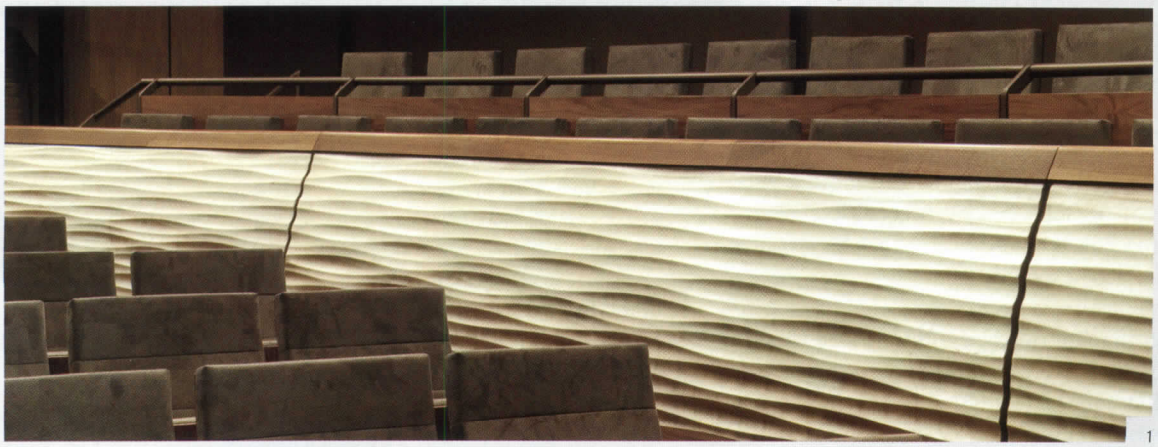
However, the Dallas venue is larger than its European predecessors. Munich's early-19th-century hall, rebuilt substantially according to the original's plans by Karl von Fischer after a World War II bombing, holds almost the same number of people as the 2,200-seat Winspear. But despite comparable capacity and a similar horseshoe layout, Dallas is about 25 percent bigger due to current codes and patron preferences, says Richard Pilbrow, founder of Theatre Projects, a Winspear design consultant.

To create a sense of visual and acoustical intimacy at Dallas that belies the hall's size, Foster + Partners and its consultants carefully adjusted the five levels to make the configuration as compact as possible and manipulated finishes and geometry. The perimeter walls and the balcony fronts are fundamental to this strategy: A rough plaster coat covers the concrete block walls, while the balconies include a wavelike relief pattern in glass-fiber-reinforced plaster. These surfaces, together with slightly convex profiles, help evenly disperse sounds, especially those at high frequencies, between 3,000 and 6,000 hertz. Sounds in this range are key for the transmission of consonants, explains Essert.

The team also needed to consider ambient noise, such as the hum of mechanical systems. To minimize such potentially distracting sound, designers located equipment in remote areas of the building, specified attenuation in ducts, and opted for displacement ventilation. Because the system introduces cool air from below the seats at low velocities, it operates more quietly than one that would rely on forced air from above.

The Winspear sits not far from a busy freeway, so noise from the exterior environment was also a concern. While the lobby surrounding the auditorium provides some protection, its glass enclosure includes an 84-foot-wide section that opens to Sammons Park, thereby compromising the space's ability to act as a buffer. To compensate, the walnut doors on either side of the "sound-and-light lock" between the lobby and the hall were thickened to 3 inches. And to prevent the sound of jets taking off and landing at nearby Love Field from penetrating the auditorium, the penthouse above the stage has three layers of smoke-evacuation hatches, instead of just one or two.

Although the Winspear was conceived primarily for opera, it will also host other types of productions that might depend on amplified music. To allow the "drying up" of the hall for those instances, Theatre Projects devised a retractable banner system that follows the curve of the perimeter walls. When deployed, the curtains shorten the room's reverberation time without changing its fundamental architecture.



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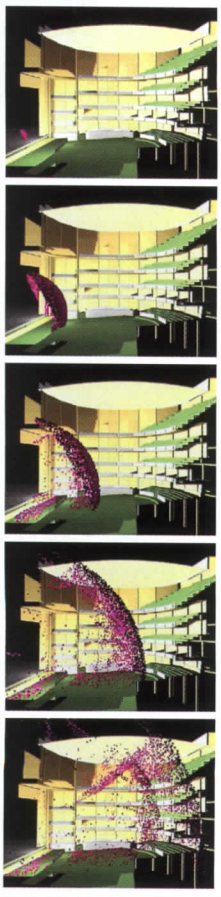
1. **The balcony-front relief pattern reinterprets opulent Classical-style decoration and helps disperse sound. "Rather than covering the surfaces with cherubs, we applied [decoration] in new ways," says James McGrath, a partner in Foster's office.**

2. **Computer modeling helped the project team investigate and illustrate the progress of sound waves from the stage toward the rear of the room.**

2



1. **A 70-foot-high chandelier made of acrylic rods retracts during performances.**

2. **The hall normally seats 2,200 people but can accommodate 2,300.**

3. **A traditional horseshoe in plan, the hall keeps all of its balconies within 90 feet of the stage and has impressed most critics with its rich and resonant sound.**

operas featured by the Dallas company. He achieved this and more, as attested by *New York Times* chief music critic Anthony Tommasini, who cited the Winspear's exceptional combination of "richness and resonance" and its bright, clear sound. But for those who heard Foster's garbled comments on opening night, some fine-tuning is still needed when amplification is used.

Spencer de Grey, one of Foster's senior partners, points out that his team made many decisions with acoustics in mind. So they built the hall basically of timber on concrete with hard textured plaster walls on masonry in the theater to reinforce bass response, and designed slightly convex peripheral walls to help disperse sound and prevent echoes. A large, open orchestra pit—which can be raised and lowered on two lifts—accommodates up to 100 musicians.

De Grey is particularly enthusiastic about an outdoor performance space currently under construction that aims to reinforce the building's reputation for reaching out to the public. Connected with the opera house and protected by the solar canopy, this outdoor square will continue a tradition of pop concerts and fiestas that for decades have attracted as many as 5,000 people a night.

The Winspear stands in a long line of opera houses that reserve innovation for the exterior rather than for the theater inside. Jørn Utzon's Sydney Opera House (1973) in Australia, and more recently Snøhetta's Norwegian National Opera House in Oslo (2009) come to mind in this regard. Most of these schemes employ the horseshoe configuration established by Carlo Fontana in Venice more than 300 years ago and championed by Essert today; one of the few exceptions is Zaha Hadid's unbuilt Cardiff Bay Opera House (1994–96).

For half a century, cultural institutions have served as linchpins for urban renewal and expansion. So in addition to its success as a superior home for opera and its ability to adapt to other genres, the Winspear will be judged on how well it can overcome the elitist isolation of an earlier era and connect with the city around it. ■

Victoria Newhouse, known for her writing about museums, is currently preparing a book on new spaces for the performance of classical music.

Project: Margot and Bill Winspear Opera House, Dallas

Architects: Foster + Partners – Norman Foster, Spencer de Grey, Stefan Behling, Michael Jones, James McGrath, Bjørn Polzin, Laszlo Pallagi, Morgan Fleming, Leonhard Weil, John Small, Ingrid Sölken, Hugh Whitehead, Francis Aish

Architect of record: Kendall Heaton Associates

Engineers: Buro Happold, Thorton-Tomasetti (structural); Battle McCarthy, CHP & Associates (services)

Consultants: Michel Desvigne, Kevin Sloan, JJR (landscape); Claude R. Engle (lighting); Sound Space Design (acoustical); Theatre Projects Consultants (theater)

General contractor: Linbeck Construction

SOURCES

Curtain wall and exterior glass: Seele

Roofing: Anchor Roofing

Canopy louvers and metal cladding: A. Zahner Company

Interior glass: DGB Glass

Red drum cladding and glass: Haley Greer

Ambient lighting: Louis Poulsen

PHOTOGRAPHY: © IWAN BAAN (2, 3)

3

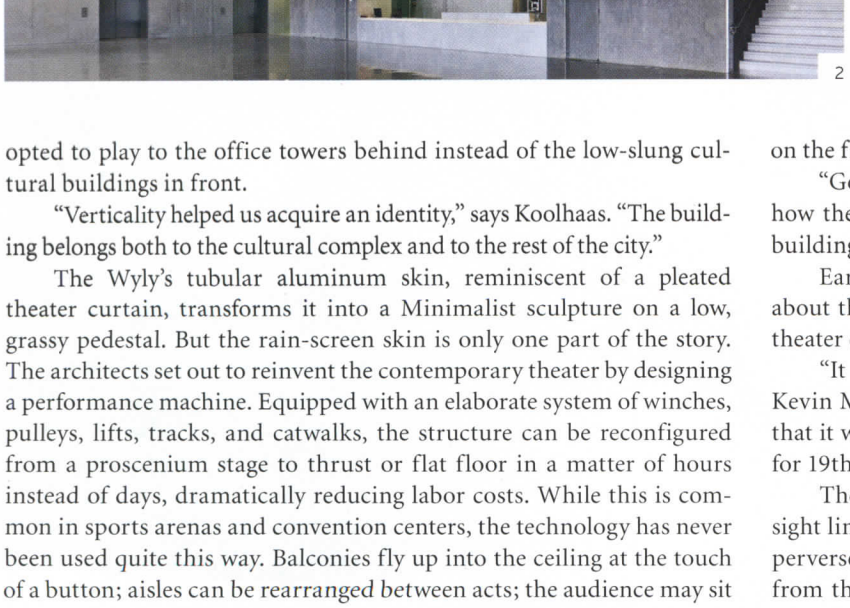
Vertical Theatrics

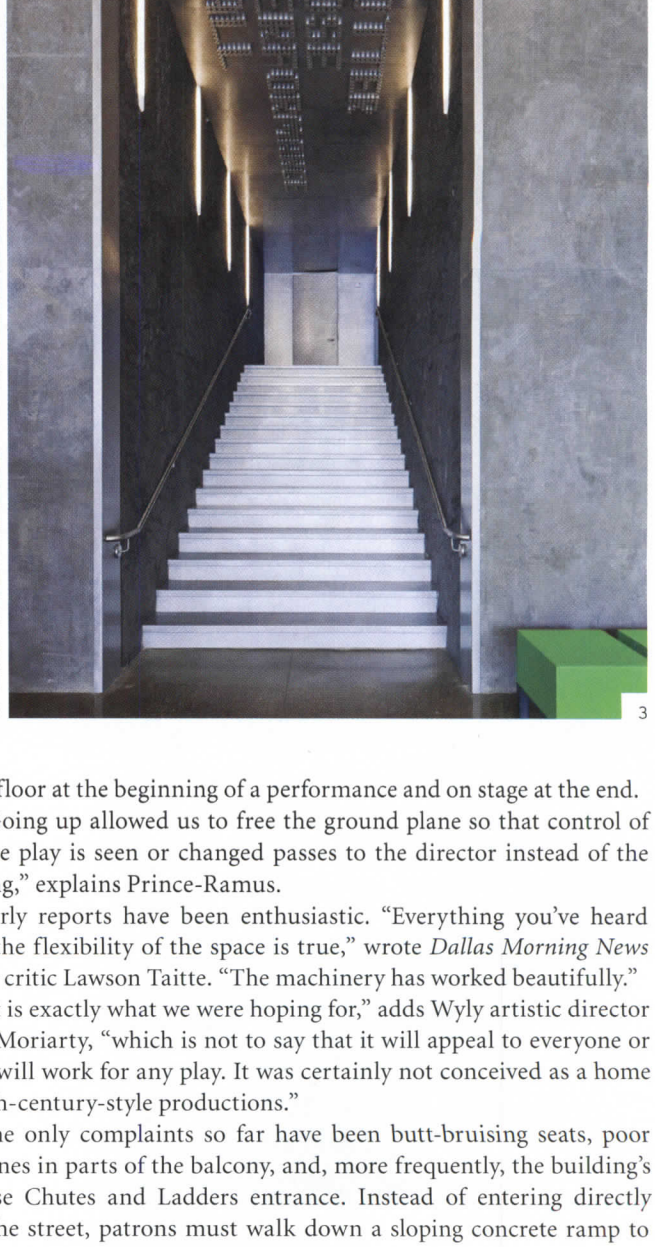
The mechanistic tower of REX/OMA's Wyly Theatre enhances the flexibility of the performance along with connection to the world outside

BY DAVID DILLON

WITH ITS RIPPLING ALUMINUM FACADE and crisp cubic form, the Dee and Charles Wyly Theatre is an edgy presence in Dallas's refined brick-and-stone Arts District. Corners peel back to expose massive X braces; floors cantilever at gravity-defying angles. Instead of flowing out like a traditional theater, with the stage in the center and support spaces to the sides, the Wyly pushes up, nine stories, with the lobby in the basement, the stage on the street, and rehearsal studio, costume shop, offices, and classrooms snapped together above like a transformer. The "vertical city" meets the Texas prairie.

A centerpiece of the $354 million AT&T Performing Arts Center, the Wyly is a surprisingly small building, barely 90,000 square feet. Across the street stand I.M. Pei's swirling Meyerson Symphony Center and Foster + Partners' Winspear Opera House, with its thrusting sunscreen and blood-red performance drum. Knowing that their building would be upstaged by its more flamboyant neighbors, Joshua Prince-Ramus and Rem Koolhaas





PREVIOUS: **The varying sizes of the extruded aluminum tubes give the west facade of the theater a dimensional effect even at night.**

1. **By day, the *north* (entrance) facade looks like a fabric screen.**

2. **The entrance lobby blends reinforced concrete, stainless-steel panels, and vertically hung fluorescent-tube lighting.**

3. **The narrow stair from the lobby to the Potter Rose Performance Hall dramatically displays the hall's name on the ceiling.**

opted to play to the office towers behind instead of the low-slung cultural buildings in front.

"Verticality helped us acquire an identity," says Koolhaas. "The building belongs both to the cultural complex and to the rest of the city."

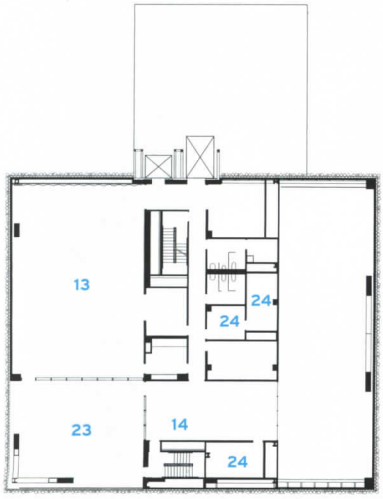
The Wyly's tubular aluminum skin, reminiscent of a pleated theater curtain, transforms it into a Minimalist sculpture on a low, grassy pedestal. But the rain-screen skin is only one part of the story. The architects set out to reinvent the contemporary theater by designing a performance machine. Equipped with an elaborate system of winches, pulleys, lifts, tracks, and catwalks, the structure can be reconfigured from a proscenium stage to thrust or flat floor in a matter of hours instead of days, dramatically reducing labor costs. While this is common in sports arenas and convention centers, the technology has never been used quite this way. Balconies fly up into the ceiling at the touch of a button; aisles can be rearranged between acts; the audience may sit on the floor at the beginning of a performance and on stage at the end.

"Going up allowed us to free the ground plane so that control of how the play is seen or changed passes to the director instead of the building," explains Prince-Ramus.

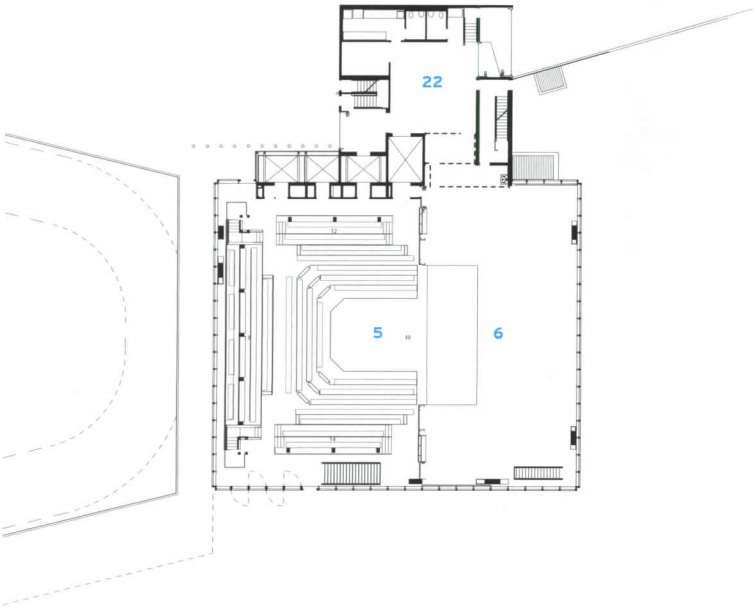
Early reports have been enthusiastic. "Everything you've heard about the flexibility of the space is true," wrote *Dallas Morning News* theater critic Lawson Taitte. "The machinery has worked beautifully."

"It is exactly what we were hoping for," adds Wyly artistic director Kevin Moriarty, "which is not to say that it will appeal to everyone or that it will work for any play. It was certainly not conceived as a home for 19th-century-style productions."

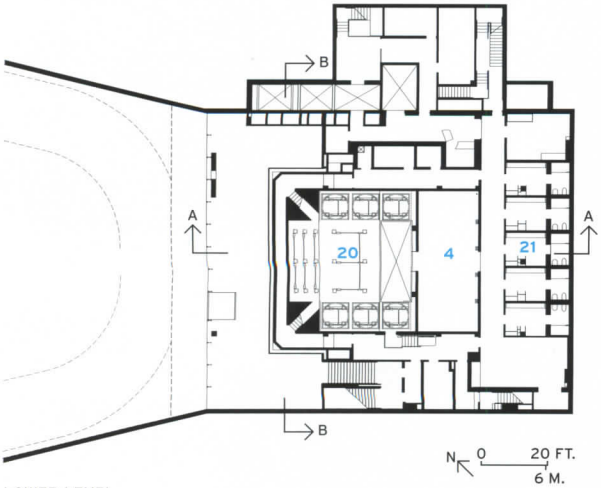
The only complaints so far have been butt-bruising seats, poor sight lines in parts of the balcony, and, more frequently, the building's perverse Chutes and Ladders entrance. Instead of entering directly from the street, patrons must walk down a sloping concrete ramp to



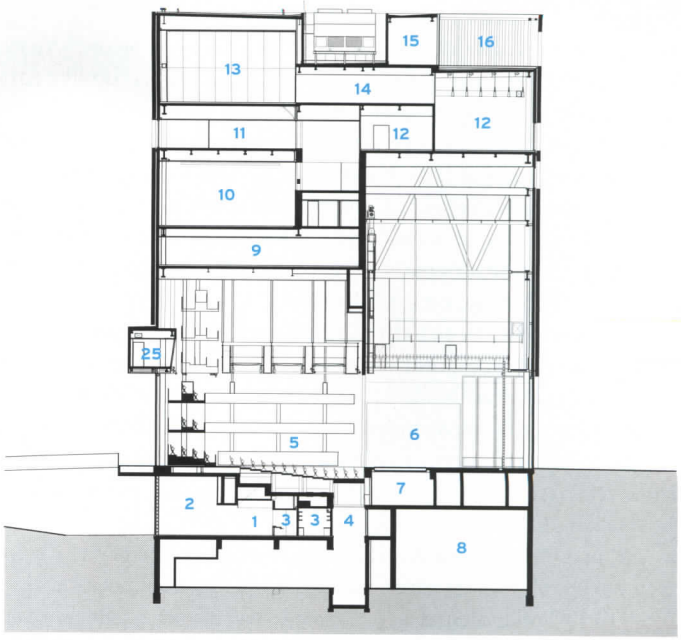
LEVEL EIGHT



LEVEL ONE THRUST

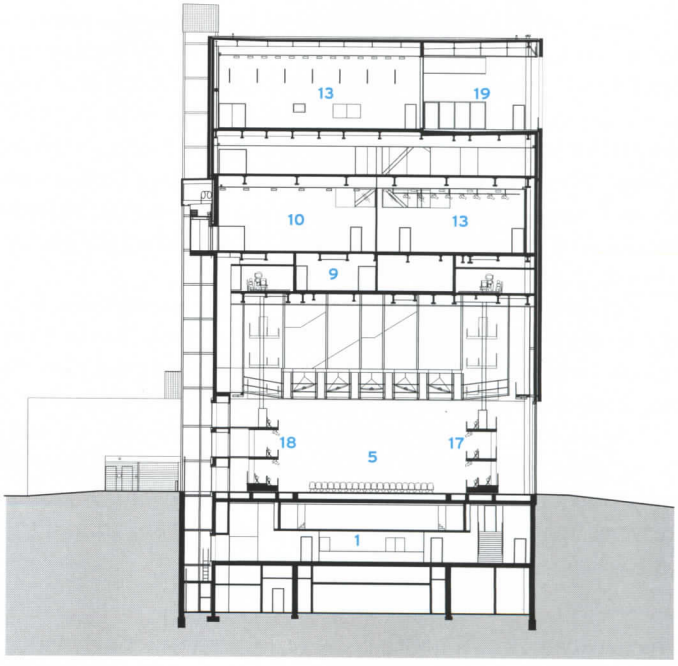


LOWER LEVEL



SECTION A-A

0 20 FT. 6 M.



SECTION B-B

1 Lobby
2 Gift shop
3 Box office
4 Orchestra pit
5 Performance hall
6 Main stage
7 Trap room
8 Mechanical
9 Electrical shop
10 Patrons lounge
11 Offices
12 Costume area
13 Rehearsal room
14 Education center
15 Staff lounge
16 Roof terrace
17 West seating tower
18 East seating tower
19 Sky lounge
20 Floor lifts
21 Dressing room
22 Scene dock
23 *Terrace*
24 Mechanical
25 Spot booth

the lobby, then back up a narrow interior staircase to their seats. This sequence stemmed from the architects' desire for a totally flexible performance space, which meant that the lobby had to go below. (An early scheme showed the glass walls wrapping the stage folded up like garage doors, allowing patrons to spill out onto the plaza at intermission.) "Their thinking was that five minutes of inconvenience in the lobby was worth two hours of excitement onstage," says Kevin Moriarty.

Yet the ramp is steep, hard, and unwelcoming, and with cars entering and exiting, dangerous as well. It also makes a large curb cut on Flora Street, the district's main drag, while eclipsing views of the Winspear and the Meyerson on the other side.

Once inside, however, patrons find a sophisticated high-tech space. No sofas, velvet drapes, and warm, soothing colors here—only mute concrete floors and walls; sleek, stainless-steel-paneled overhangs; and bare fluorescent tubes suspended from the ceiling like light sabers. This is tough, "take that" interior architecture, occasionally crude in its execution yet carried through with the consistency of a serious aesthetic rather than a glib decorator flourish.

And in spite of its aloof, self-absorbed attitude, the Wyly still manages to engage the city at several levels. When a performance ends and the curtains part, audiences get a framed view of the passing parade on Ross Avenue, a major gateway to the Arts District. Likewise, the black-box theater on the sixth floor offers a synoptic glimpse of the rest of the district, with the Winspear bracketed by the Meyerson and Allied Works' new Booker T. Washington High School for the Performing and Visual Arts [RECORD, January 2010, page 100]—classical music, opera, and theater doing a line dance. And from the balcony of the 9th-floor rehearsal hall, trimmed out in green artifical-grass carpet and fiberglass trellises, visitors have a panoramic view of downtown Dallas, with the historic Guadalupe Cathedral in the foreground and the skeletons of spec office buildings off in the distance. Past, present, and future, art and commerce are compressed into a single image.

With only two productions so far, one the opening gala, it is too early to say how the Wyly will ultimately perform. Kevin Moriarty predicts it will take five years to know what it can and cannot do. "We're going to assault the building relentlessly to discover its limits," he says.

It is clearly a director's theater, a laboratory for the new and surprising, and it will certainly redefine what a night at the theater means for Dallas audiences. Like much of both architects' work, it is provocative rather than pretty, a gutsy roll of the dice. In a 21st-century arts district, that's a good role to play. ■

Project: Dee and Charles Wyly Theatre, AT&T Performing Arts Center, Dallas

Architect: REX/OMA – Joshua Prince-Ramus, partner in charge, and Rem Koolhaas, in collaboration with Kendall-Heaton Associates

Engineers: Magnusson Klemencic Associates (structural); Transsolar Energietechnik (m/e/p design); Cosentini Associates (m/e/p)

Consultants: Theatre Projects Consultants (theater design); DHV (acoustics); Front (facades); Tillotson Design (lighting)

SOURCES

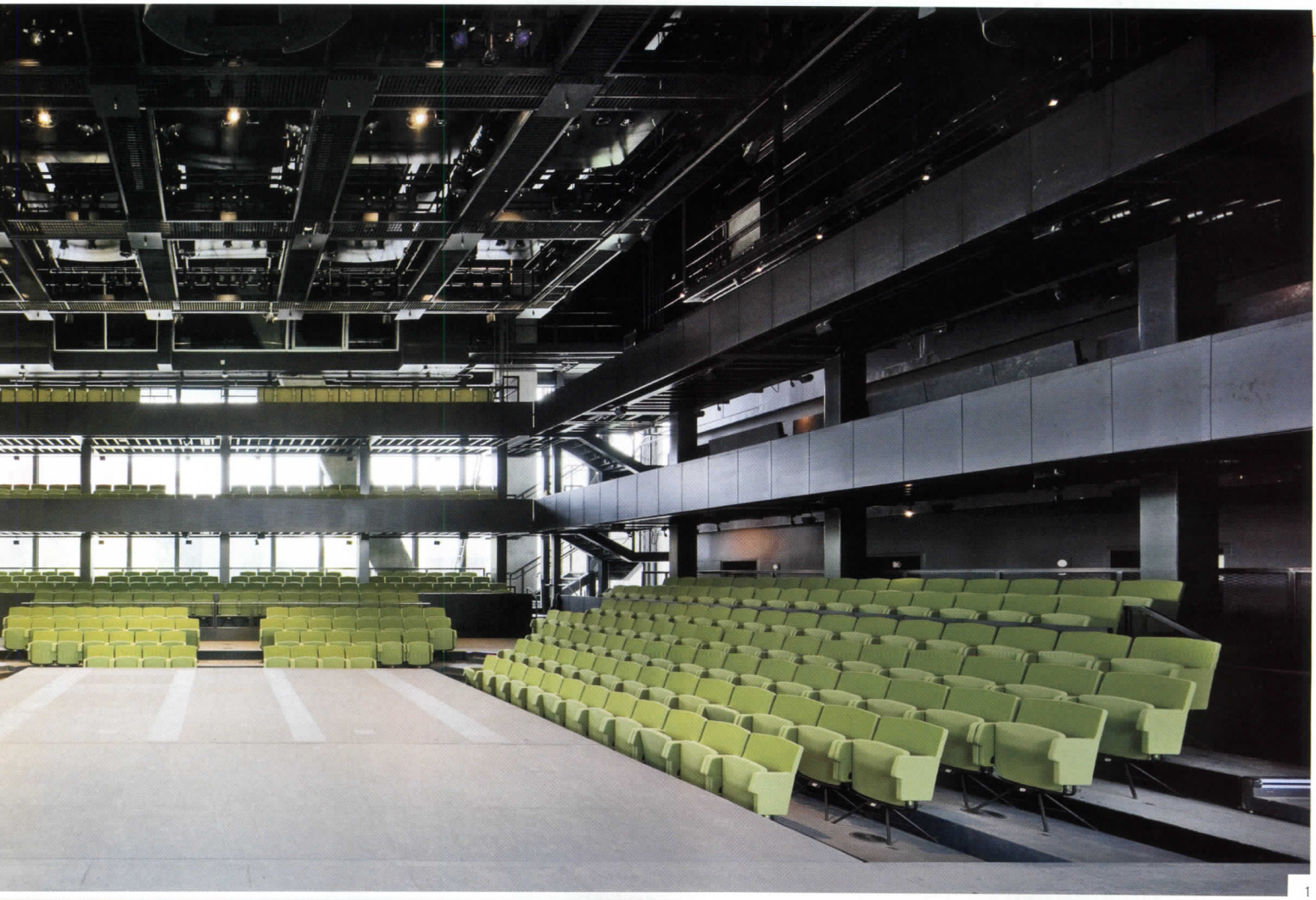
Aluminum exterior tubes: Tisi Estructural Metalicas

Glazing: Kawneer

Metal cladding: A. Zahner Company Architectural Metals

Ballast fluorescent lighting: Lutron (lobby)

PHOTOGRAPHY: © IWAN BAAN (1, 2, 4); TIMOTHY HURSLEY (3)



1. **The performing arts hall offers eight stage configurations.**

2. **In the vertically stacked tower, the education center overlooks the costume area.**

3. **The open-air lounge on the roof, carpeted in artificial turf, offers a view past the trusses to the west.**

4. **The catwalk and pulley system seem to float above the main stage.**

[SECTION 2 | **WYLY THEATRE**]

Dramatically reconfigurable

A machinelike hall depends on inventive structural and acoustical solutions BY JOANN GONCHAR, AIA

WHEN ARCHITECTS FROM REX/OMA conceived Dallas's Dee and Charles Wyly Theatre, they envisioned the ultimate flexible performance space. The building is designed so that the theater's interior can be radically reconfigured by a small crew of stagehands from a proscenium layout to a thrust-stage arrangement or a flat-floor room in just a few hours. Blackout shades can be pulled up to reveal its three facades of glass and to open the chameleonlike, 109-by-94-foot hall to the city. Auxiliary programmatic elements are piled above and below (but mostly above) the ground-level performance chamber to create a 132-foot-tall tower. Instead of the horizontal layout more typical of theaters, functions are stacked "like a giant game of Jenga," says John Coyne, a principal of Theatre Projects, the Wyly's theater consultant.

An unconventional structure, with no interior or corner columns, allows for the theater's flexibility, as well as its transparency and verticality. The tower rests on six perimeter supercolumns, four of which incline dramatically, and a perimeter shear wall. A belt truss that spans from levels 4 through 7, augmented by a series of smaller interior trusses, completes the building's frame.

Within the Wyly's performance chamber, the project team hoped to create acoustical conditions that would provide a short reverberation time in the range of 0.8 and 1.4 seconds. Reverberation – the persistence or lingering of sound within a space after the sound source has stopped – is considered less desirable for drama, which depends on the intelligibility of speech, while longer reverberation is preferred for music.

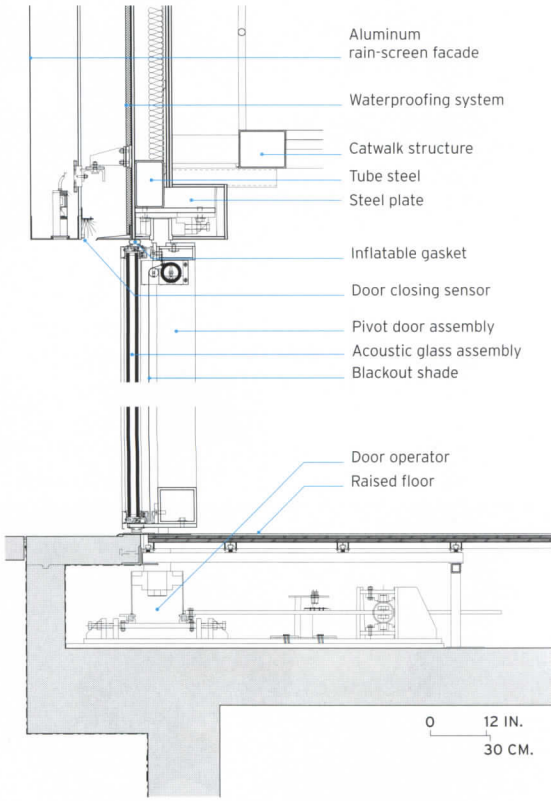
But creating the acoustical qualities best-suited to dramatic productions was complicated by the Wyly's programmatic and structural gymnastics. Since reverberation time is inversely proportional to the amount of absorptive finishes (and directly proportional to a room's volume), designers needed to add material that would dissipate acoustical energy. But with three walls of glass, and stage and seating configurations in constant flux, there were few fixed surfaces that they could treat. One of the few available areas was the chamber's ceiling. Here, within a grid that accommodates catwalks and equipment for lighting, sound, and rigging, the project team installed acoustical reflectors of smooth fiberglass board curved to help distribute sound evenly to the seating below. They applied the same material to fly-space walls.

Intelligibility is not only dependent on controlling reverberation. Sounds from outside the performance space can detract from the audience's experience. And at Wyly, which is near a highway and under an airport flight path, there was plenty of such potentially distracting noise to contend with.

Dampening the low-frequency sounds from traffic and airplanes, while maintaining the transparency integral to the building's parti would have been fairly straightforward with an envelope of two glass walls separated by an air space several feet wide, explains acoustician Renz van Luxemburg, a principal consultant at engineering firm DHV. However, budget and architectural constraints required that the building envelope provide sufficient sound attenuation within the depth of a typical insulated glazing unit (IGU).

Working with facade consultant Front, DHV developed a 2 3/8-inch glass assembly that combines clear and low-iron glazing and sandwiches a 1-inch air space between exterior and interior laminated lites. Each lamination includes an acoustical interlayer with more rigidity than a typical PVB (polyvinyl butyral) interlayer. This stiffness, and the air space, which is about twice as large as that in a standard IGU, along with an asymmetrical buildup of glass of different thicknesses, help dampen sound transmission, says Brian Guerrero, Front project manager.

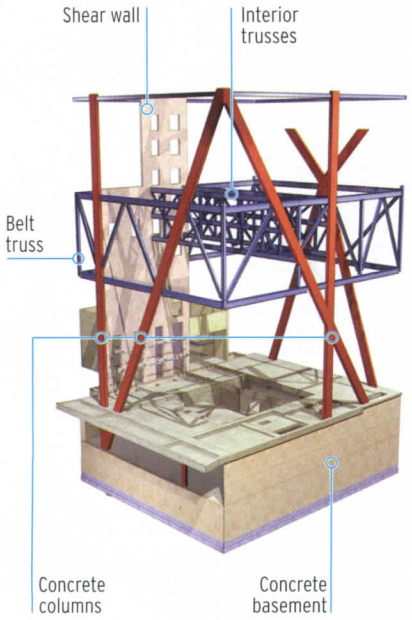
A standard IGU has a sound transmission class (STC) rating of about 35, depending on the frequency range. An STC is a measure of how well a building component, such as a wall, partition, or window, attenuates airborne sound. At Wyly, the IGU, along with its aluminum frame, has a significantly improved STC of about 50. This level of insulation "won't eradicate the sound of a 747 completely," says Guerrero. "But it will considerably mitigate it."

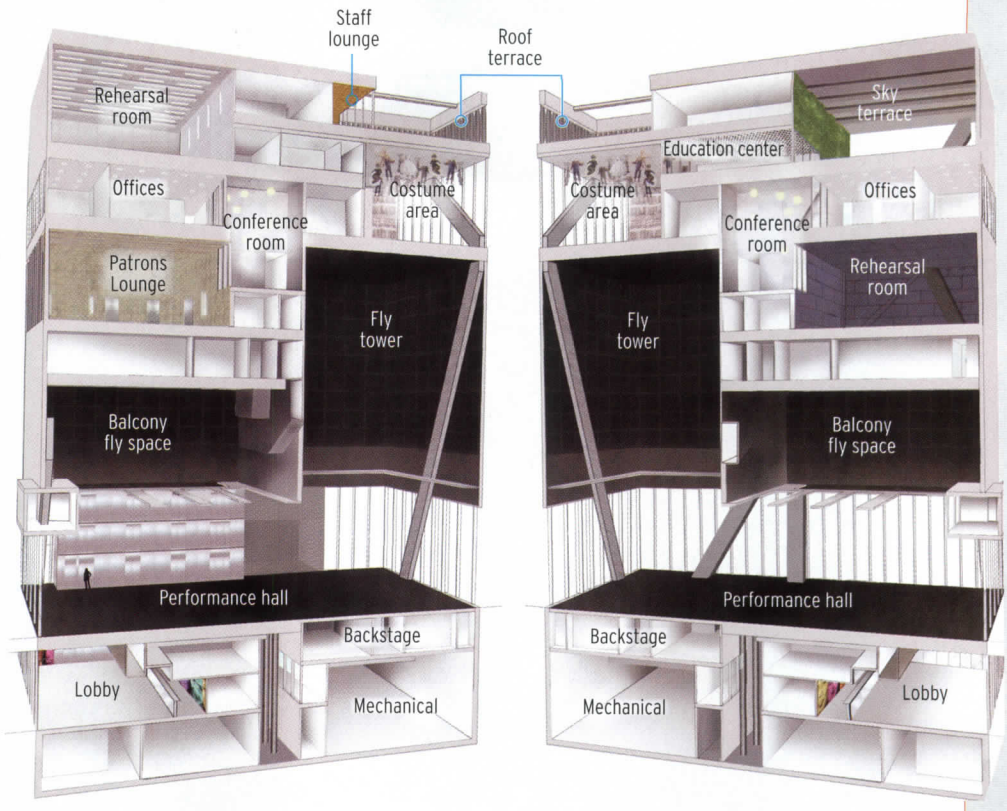


PIVOTING ACOUSTIC DOOR SECTION

ACOUSTICS

Because the performance chamber has three walls of glass and an interior configuration in constant flux, the ceiling offered one of the few fixed surfaces that could be treated with acoustical material. Here, designers incorporated coffered sound reflectors into a technical grid (top). One especially tricky portion of the facade was an area on the west elevation with two operable glass panels (above) that pivot to create a 20-foot-wide, 27-foot-tall opening to the outside. Pneumatic gaskets, inflated by a compressor when the doors close, help mitigate exterior noise penetration.





STRUCTURE AND PROGRAM

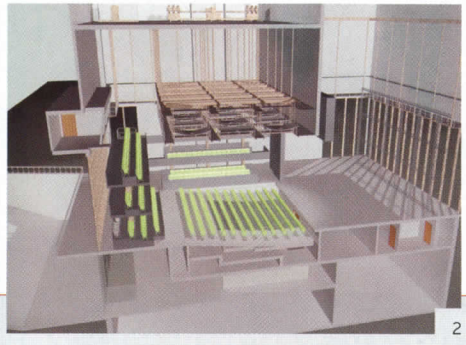
The 132-foot-tall tower rests on six perimeter concrete supercolumns, four of which incline dramatically, and a perimeter concrete shear wall. A belt truss, from levels 4 through 7, augmented by a series of smaller interior trusses, completes the building's "composite global frame." Many of the elements in this unconventional system perform dual duty. For example, the raked columns act as belt-truss webs. The result is a ground-floor performance space with no interior columns, 44-foot-deep corner cantilevers, and little perimeter structure, allowing the blurring of audience and stage, inside and out. Above the theater, programmatic elements are stacked like interlocking puzzle pieces. Only one floor, level 7, is continuous.

STAGE CONFIGURATIONS

The theater's interior can be radically rearranged by a small crew of stagehands from a flat-floor room (1) **to a proscenium layout** (2) **or a thrust-stage arrangement** (3) **in just a few hours. Lifts, mechanisms, and storage chambers above and below the performance hall allow balconies to be moved in or out. Seating wagons can rotate and move up and down, to facilitate storage and theater reconfiguration. The flexibility should permit the director to decide how best to present a play, since the theater layout is not dictated by the architecture.**

Watch a video of the Wyly's transformation at architecturalrecord.com.


1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3

AIA / ARCHITECTURAL RECORD CONTINUING EDUCATION

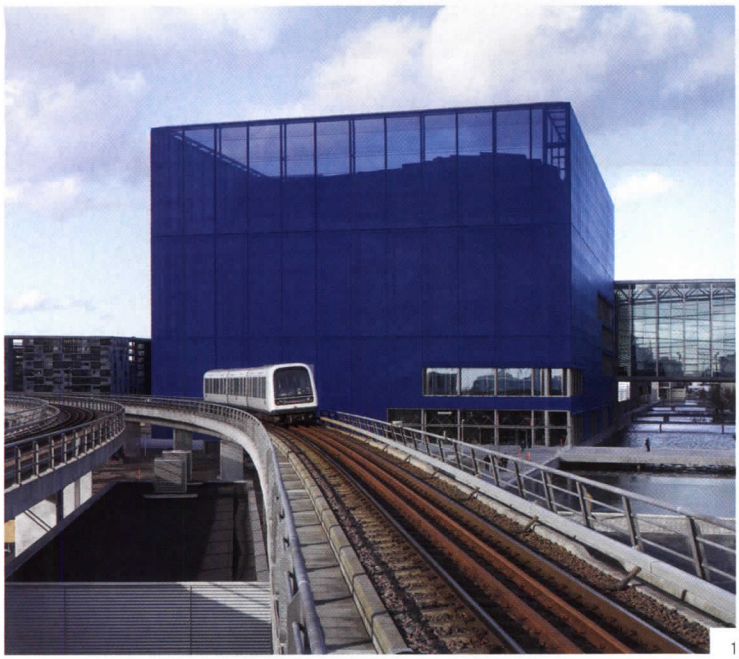
To earn one AIA learning unit, including one hour of health, safety, and welfare (HSW) credit, read the project stories and accompanying tech sidebars, "Performing Arts Centers and Acoustics," on **pages 57, 66,** and **74**. For learning objectives, go to **page 49** and take the quiz on **page 114**.

Blue Notes

Ateliers Jean Nouvel devises an ethereal container for the Copenhagen Concert Hall

BY SUZANNE STEPHENS

HOW YOU REACT TO THE Copenhagen Concert Hall, which opened last January, depends on when you see it – and what you are expecting. Because of Ateliers Jean Nouvel's design approach, both the container and the auditoriums and spaces within assume a vastly different character depending on the time of day you visit. The building, which belongs to Danish Radio and is the home of the Danish National Symphony Orchestra, sits on the outskirts of historic Copenhagen. From the outside in bright light, it looks like nothing more than a large rectangular box that for some reason is swathed in electric-blue scaffolding net and plopped down in an industrial landscape. When the sun goes down, it is transformed into an ethereal, dematerialized object with images of musicians eerily flitting across the screens of glass fiber with a PVC coating. The multilevel interior foyer also changes personality by day and by night. In broad daylight, the main lobby looks like an airport from a 1940s war movie, where sun streams through large window walls and illuminates the



1

4

3

PREVIOUS: **At night, projections of musicians play across the diaphanous blue screen of the concert hall.**

1. **The metro linking downtown Copenhagen and Ørestad swings past the concert hall and DR City.**

2. **The gypsum-board panels cladding the curved underside of the auditorium become screens for light and video projections.**

3. **Furnishings designed to look like flight crates for musical instruments emphasize the monumental scale of the lobby.**

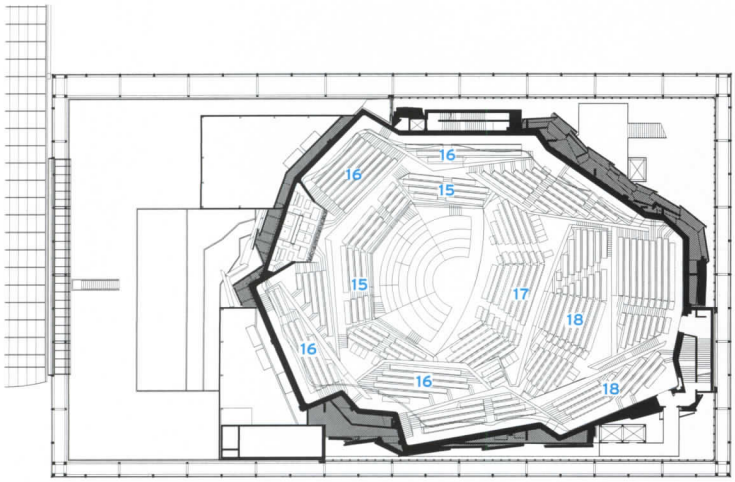
4. **A café/restaurant occupies the southeast corner of the main lobby level.**

dark concrete floor and military-style furnishings designed to resemble flight crates for musical instruments. At night, the tough-glam lobby takes on the iridescence of a multimedia nightclub, with projections splashing polychromatic patterns and videos across various surfaces.

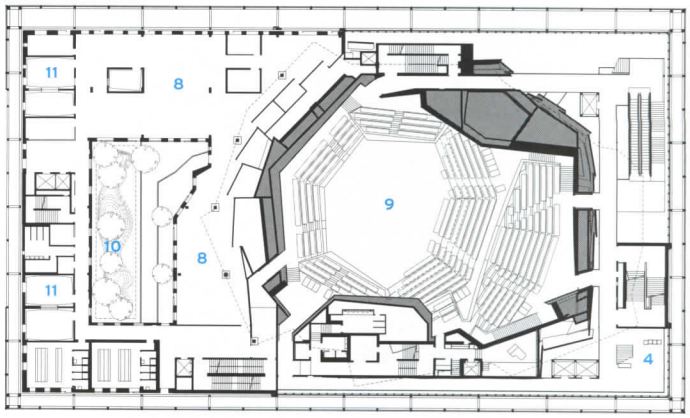
Neither its day- nor nighttime persona gets you ready for the large concert hall. Seating 1,809 and raised above the lobby, it looks in section like some giant clam caught among pilings within a huge (190 by 315 feet) blue cage, 148 feet high. Yet when you enter the auditorium, you discover an expansive and warmly resplendent interior.

Here in the orchestra hall, trays of seating fan out from the stage in the vineyard formation that Hans Scharoun pioneered with his Berlin Philharmonie (1963) and that Frank Gehry handsomely reprised in his Disney Hall [RECORD, November 2003, page 134]. The Danish client was enamored of Scharoun's Berlin solution, where seats in balconies wrap the stage and create a more intimate listening experience. Nouvel called in Yasuhisa Toyota of Nagata Acoustics (page 74), who was also the consultant on Disney Hall, to design a space that could provide the right mix of direct and reflected sound with the appropriate reverbera-

PHOTOGRAPHY: © ROLAND HALBE, EXCEPT AS NOTED



LEVEL EIGHT



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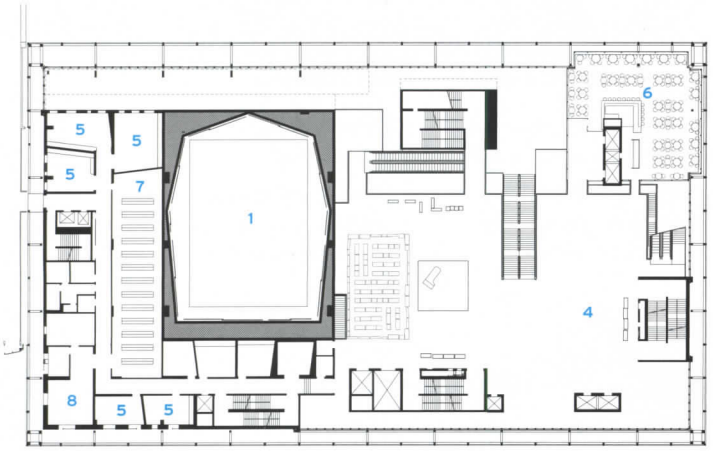
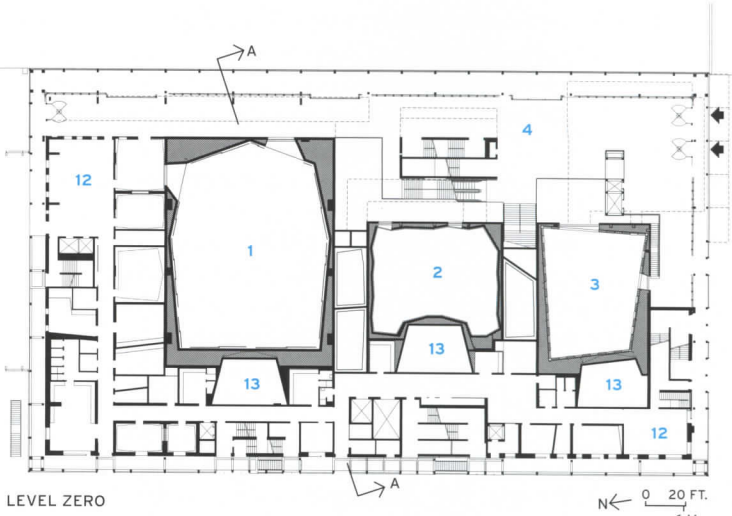
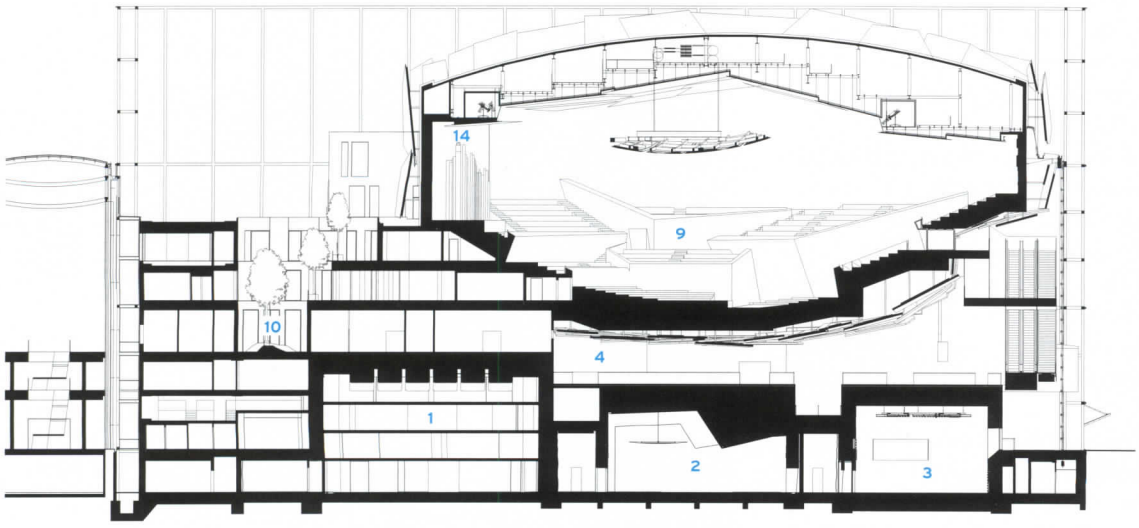


LEVEL ONE



LEVEL ZERO



SECTION A-A

1 Studio 2
2 Studio 3
3 Studio 4
4 Lobby
5 Music rooms
6 Restaurant
7 Archive
8 Offices
9 Grand hall *(Studio 1)*
10 Courtyard
11 Production control
12 Lower-level lounge
13 Lighting control
14 Organ
15 Orchestra
16 Terrace
17 Parterre
18 Balcony

tion time, and ensure a sense of clarity without dryness. Angled walls of CNC-milled birch-veneer board with textured grooves provide reflectivity and absorption, supplemented by "wave" walls of layered gypsum board in the upper part of the auditorium. In addition, lacquered birch-veneer panels on the ceiling and a sound reflector canopy over the stage modulate the acoustics in the hall where the ceiling soars to a height of 77 feet. With the birch walls stained a warm chestnut tone and the wave walls imbued with lush reddish and ocher tints by decorative painters Alain Bony and Henri Labiole, the room has the roseate candlelight glow of traditional concert halls.

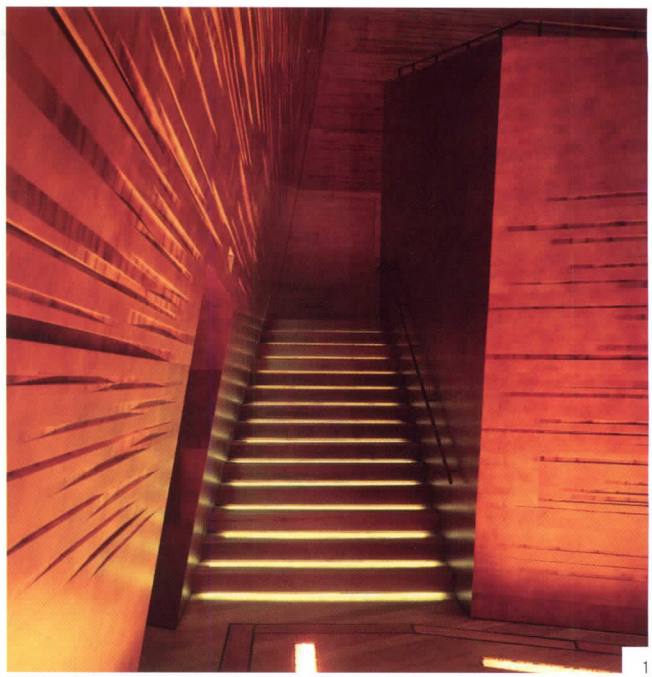
While Nouvel placed this largest hall in the upper reaches of the building, he sank three smaller music spaces about 8 feet below grade. The largest is a 540-seat rehearsal and concert hall (Studio 2); the next is a flexible black box (Studio 3), which accommodates 170 people standing or sitting for various musical fare; and a small, red concert hall that doubles as a production studio for 180 people (Studio 4). The three ancillary performance halls reveal distinct acoustical capabilities. Four strata of birch-paneled sliding doors in Studio 2 heighten the reflectivity of sound for orchestra rehearsals. In Studio 3, black gypsum-board wall panels open to absorb sound and provide a short reverberation time. Finally, in Studio 4, red aluminum-and-felt panels pivot for acoustical flexibility, for both recording and rehearsal use. Numerous music rooms, offices, and archives placed on the north end of the building supplement the performing arts spaces, and receive additional light by virtue of an elevated, outdoor courtyard.

Jean Nouvel won the competition (over Rafael Moneo, Rafael Viñoly, and Snøhetta) to design the approximately 592,000-square-foot concert hall in 2002, a fourth component of DR City, a 1.42-million-square-foot complex for Danish Radio's offices, TV, radio, and orchestra productions. Clustered on a barren site being developed by Copenhagen, DR City acts as a gateway of sorts to Ørestad, the new residential, office, and school development connected to downtown by an elevated metro that whizzes by the concert hall. As the area fills in, it might look more appealing, but now it's stark: You can't help thinking some of the concert hall's facades would be better off with the vertical vegetal wall Patrick Blanc created for Nouvel's Musée Quai Branly in Paris [RECORD, February 2007, page 86].

Nouvel's strong performing arts reputation rests on his well-received Cultural and Congress Center built in Lucerne in 1999 and the massively sculptural cobalt blue Guthrie Theater in Minneapolis [RECORD, August 2006, page 108]. Here in Copenhagen, Nouvel continues his interest in surface play à la Guthrie, where photos of historic theater luminaries appear screen-printed on the aluminum-paneled skin. Here, Nouvel opts for a dematerialized envelope, where the glass-fiber skin is draped over a steel Vierendeel frame and a tension-cable-grid system supporting glass panels.

The poured-in-place concrete structure for the concert hall enables the largest auditorium to be carried like a basket by three stair cores of poured-in-place concrete. Between the south and west cores, a bridge of poured-in-place concrete supports the weight of the bowl above, which spans 115 feet. Additional steel supports fill out the structural framework for this bold form.

In creating a parti where the concert halls are discretely articulated masses embedded within a glass-fiber-and-steel cage, Nouvel uses lighting to further blur the boundaries between the contents and the container. Working with lighting designer Yann Kersalé, Nouvel makes elaborate use of a fusillade of equipment, including 1,600 LEDs embed-

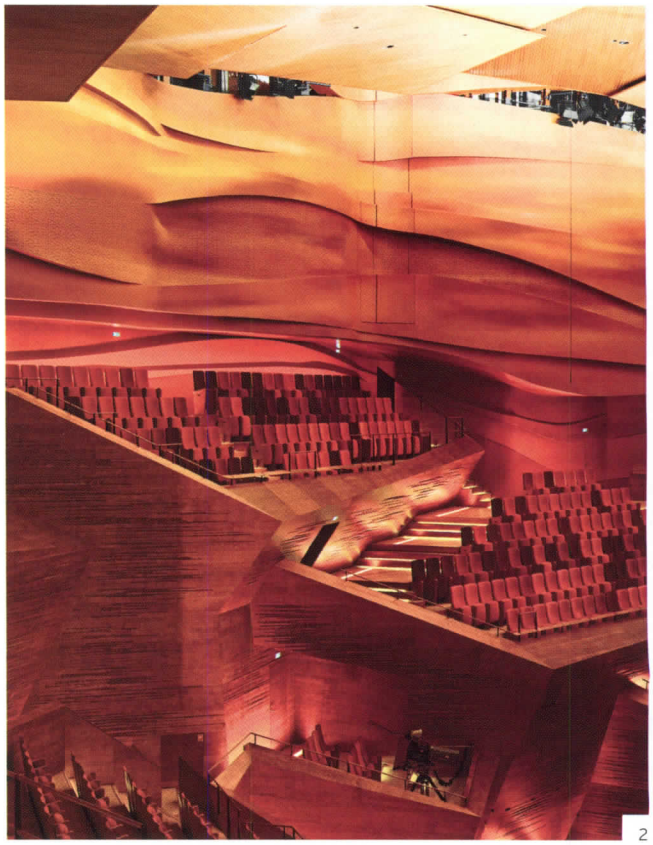


1

1. **Light slots in the floor and stair risers dramatize grooved, stained birch-veneer walls.**

2. **Contoured "wave" walls of layered gypsum board are painted sunset hues and softly lighted.**

3. **The vineyard plan in the auditorium arranges terraces of seating around the stage.**



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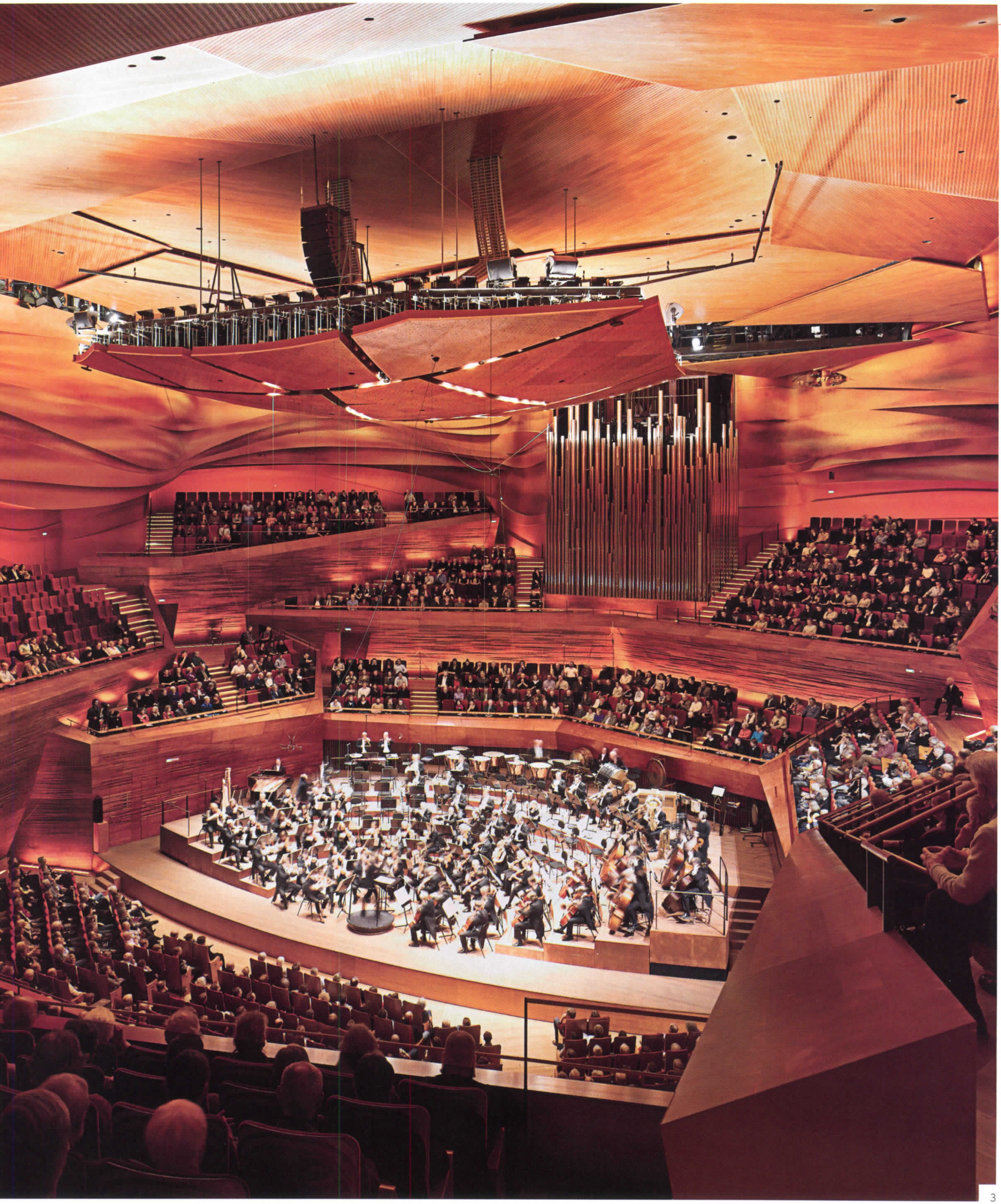


3

[SECTION 3 | **COPENHAGEN CONCERT HALL**]

Model behavior

A not-so-miniature version of the real thing helps tune a design BY JOANN GONCHAR, AIA

FROM THE EARLIEST STAGES of the project, the client for Jean Nouvel's Copenhagen Concert Hall, the Danish Radio, had decided that the building's main auditorium should have a so-called "vineyard configuration," or one in which stepped blocks of seating surround the stage. Even though there are many shoebox-shaped halls with excellent acoustics, including Amsterdam's Concertgebouw (Adolf Leonard van Gendt, 1888) and Boston Symphony Hall (McKim, Mead & White, 1900), Danish Radio wanted a vineyard auditorium like the one in Hans Scharoun's Berlin Philharmonie (1963), along with the more dynamic relationship between audience and performers that such a layout could provide.

Vineyard concert spaces – sometimes referred to as arena-shaped or terraced halls – typically have much more challenging geometry than their more orthogonal counterparts, making acoustical design difficult and requiring intensive analysis. Where shoebox halls rely on their long sidewalls to produce early reflections (those reflected sounds that arrive at the listener's location within a short time after the *direct sound*, increasing its apparent loudness), vineyard halls depend primarily on the position and angles of low walls defining each section of seating.

In order to better understand the complex relationship between the room's size and shape and its acoustics, and the contribution of the low walls in particular, consultant Nagata Acoustics conducted computer simulations. Later in the design process, the firm built a 1:10 physical model of the concert hall. Because of the model's size, with an interior more than 7 feet tall, consultants could precisely measure actual sound, helping them take into account characteristics that computer simulations generally don't, such as diffraction and scattering. As a result of the tests, wall angles were slightly adjusted to prevent detrimental echoes. "We typically don't make dramatic changes with the physical model," says Yasuhisa Toyota, president of Nagata Acoustics America. "But we use it to do things we can't do with the computer," he adds.

Team members conducted the tests by transmitting specialized signals from two small speakers and recording them at receiving points throughout the room. In order to compensate for the model's scale, they chose frequencies 10 times greater than those that would be produced by an orchestra. And because water vapor in air causes attenuation at such high frequencies, they filled the model with nitrogen to correct this effect. Since air is roughly 80 percent nitrogen, the substitution does not alter important sound characteristics, says Toyota.

Although the model was primarily for acoustical analysis, the architects also found it useful for finalizing design decisions and for explaining the room's geometry to management, musicians, and contractors, says Stefan Zopp, an Ateliers Jean Nouvel partner. "Before building at 1:1," he says, "it helps to have this understanding."

Nagata Acoustics used computer modeling to map the path of early reflections (1) **and understand the relationship between their distribution and the concert hall's geometry.**

Later in the design phase, acousticians built a 1:10 physical model (2) **that allowed for more detailed and precise analysis. By transmitting sounds from small speakers and recording them at various points throughout the room, team members could identify potential problem areas and adjust them during construction of the actual performance hall** (3).

1

2

3

IMAGES: COURTESY NAGATA ACOUSTICS (1-3)

1

2

3

1. **Studio 4 has red aluminum panels that offer acoustic flexibility both for recording and performing.**

2. **The black-walled Studio 3 is designed to have a short reverberation time through lacquered and matte gypsum-board panels that open and close.**

3. **Studio 2, used for orchestra rehearsal and performances, is enclosed by four layers of sliding birch panels silk-screened with images of musicians.**

ded in a perforated acoustical ceiling, plus a range of slide and video projectors for the abstract and figurative imagery. In addition, accent lights in the form of boxy "pillows" illuminate the idiosyncratic concrete wall panels cast with a wrinkled elephant-skin surface. Lighting in the main, 990,000-cubic-foot auditorium is equally important: Floor lamps with frosted-glass coverings emphasize the geometry of the slanted, textured walls, while a band of light in the upper portion of the hall brings out its contours.

But when lighting is everything, the person/machine at the switch plays a dominant role in setting the mood. This observer attended a design awards ceremony in August where the lighting in many areas resembled a New York subway, and the lobby seemed extremely dim, without sizzle. Inside the auditorium, the ambience of a romantically crepuscular setting witnessed in an earlier visit was destroyed by the harsh light emitted from large video screens. Furthermore, spotlighting on the upper wave walls made the decorative painting look straight out of Disneyland.

But that was one particular night, absent a full orchestra concert. In terms of music, the reception to the acoustics seems positive: six months after the opening, Mark Swed, music critic for the *Los Angeles Times*, wrote that it has "Disney's special acoustical cocktail of powerful rich bass, clarity, delicacy, and spine-tingling immediacy."

A visually based assessment will tend to be schizoid—but so is the building, with its scaffoldinglike blue cage by day and fun-house lighting at night. Indeed, you wonder if it was worth the much-talked-about budget overruns (the building reportedly cost $325 million)—except for the grand, lush, major hall, and the handsome, smaller music studios. ■

Project: Copenhagen Concert Hall, Copenhagen

Architects: Ateliers Jean Nouvel – Jean Nouvel, principal; Stefan Zopp, partner in charge; Frédérique Monjanel, Brigitte Métra, project managers; Olivier Bossière, Hubert Tonka, advisers to Nouvel

Associate architect: Niels Fuglsang

Engineers: Terrell International

Consultants: Nagata Acoustics (acoustics); Yann Kersalé (lighting)

SOURCES

Glass-fiber screen: *Bladt*

Cable structure: Waagner Biro (facade)

Light system: Zumtobel

Auditorium seats: Figueras

Ford Assembly Building

RICHMOND, CALIFORNIA

Marcy Wong Donn Logan Architects restores the essence of an aging icon of 20th-century industrial architecture for a viable future

By John King

PHOTOGRAPHY: © BILLY HUSTACE, EXCEPT AS NOTED

Architect: Marcy Wong Donn Logan Architects – Marcy Wong, principal; Donn Logan, FAIA, principal; Kent Royle, project manager; Ketki Shah, project architect; Cari Rosner, Justin Tang, Ramelo Manding, project team

Client: Orton Development

Engineers: The Crosby Group – Ravi Kanitkar (structural); Bay City Mechanical (mechanical); Morrow-Meadows (electrical)

Consultants: SWA (landscape); Architecture & Light, Angie Xanders (lighting); Charles M. Salter Associates (acoustical); Mark Hulbert Historic Preservation

General contractor: Dalzell Corporation – Bruce Hammon

Size: 525,000 square feet

Cost: Withheld

Completion date: August 2009

SOURCES

Exterior cladding: Kreysler & Associates (parapet replacement)

Glazing: Supreme Glass; Paramount Aluminum (skylights, windows)

Solar panels: SunPower

Lighting: Poulsen, Solavanti, Aamsco, Vode, Zumtobel, Translight Sonoma, Shaper (interior ambient); Peerless, Lithonia (office)

THE FORD ASSEMBLY PLANT in Richmond, California, was the largest of its ilk on the West Coast: a 517,000-square-foot factory on the edge of San Francisco Bay supplied by water and conceived as a single linear space beneath a sawtooth roof that flooded the work spaces with indirect daylight. Designed by Albert Kahn in 1931 with minimal ornamentation except for the streamlined deco detailing at either end, the ¼-mile-long behemoth languished after Ford moved to suburban pastures in the 1950s.

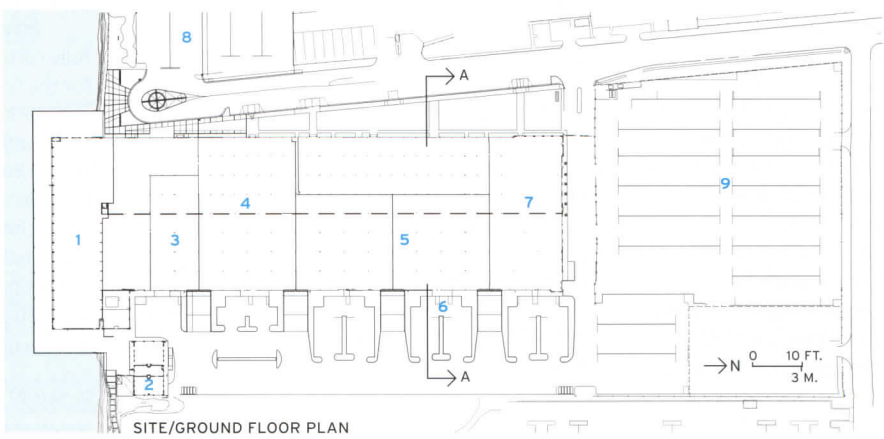
Program

The building was empty when its new owner, the City of Richmond, placed it on the National Register of Historic Places in 1988. One year later, the Loma Prieta earthquake caused major damage. For the next 15 years, the city spent $20 million on seismic upgrades while being courted by developers who arrived with big plans only to edge away. Finally, Richmond sold the building to Orton Development in 2004 for $5.4 million.

The obvious need was to return the time-ravaged structure to a workable condition, but finding a use that made business sense loomed equally large. The vast shell couldn't be easily converted for small tenants or live-work spaces. And Richmond's location on the northeast edge of the bay (along with a reputation for violent crime and bumpy politics) made it a tough sell for the large technology firms that have fueled urban rejuvenation elsewhere in the region.

Orton's strategy was to restore and modernize the shell before trying to court potential tenants who might be drawn to large blocks of unimproved space, so the design team, headed by Marcy Wong Donn Logan Architects, con-

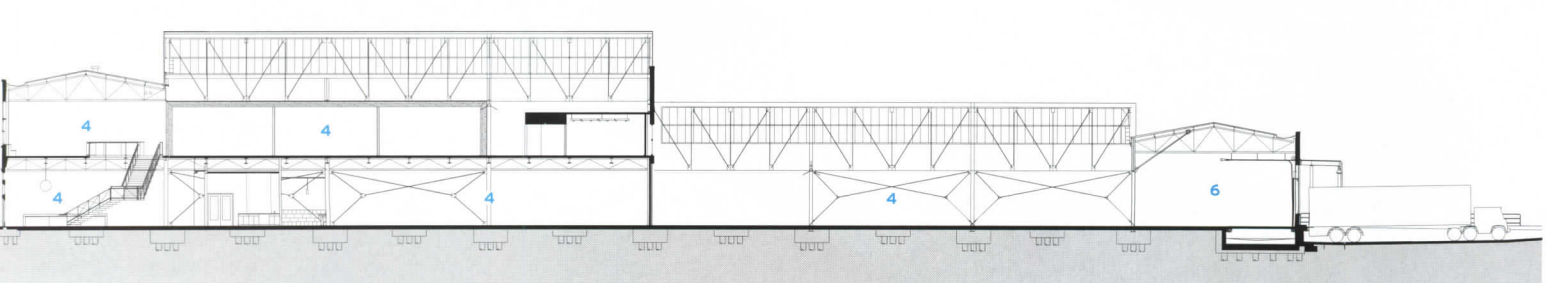
DRAWINGS



SITE/GROUND FLOOR PLAN

1 The Craneway Pavilion
2 Boiler House restaurant
3 Vetrazzo
4 SunPower
5 Other tenants
6 Loading dock
7 Mountain Hardwear
8 Electric-car parking
9 Parking

The Craneway Pavilion, situated on a pier adjacent to the Bay Trail, is an event space that once housed the cranes that transferred raw goods from ships into the factory.



SECTION A-A

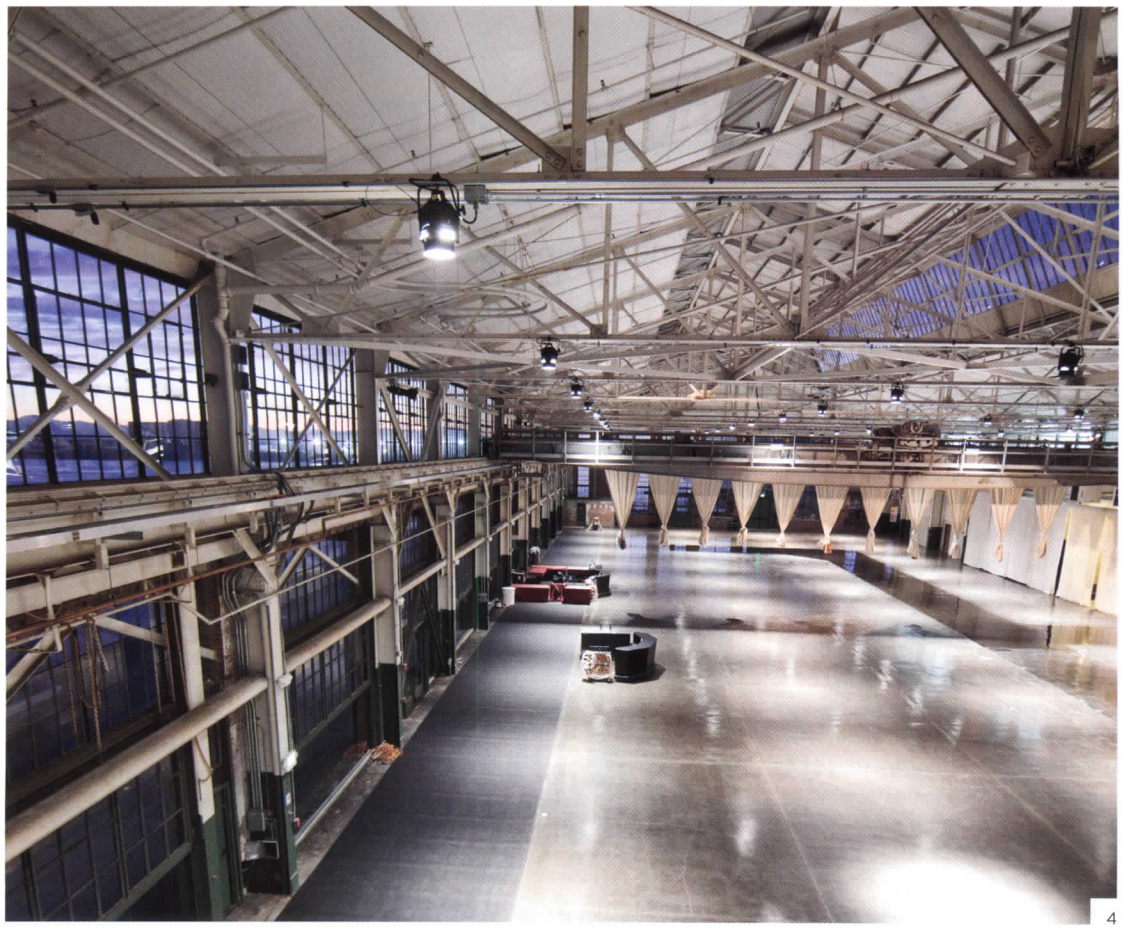
0 20 FT.
6 M.

1. **A *bamboo-wrapped* core houses three conference rooms on SunPower's upper level.**

2. **A series of shed-roofed offices were inserted into the larger existing structure for Mountain Hardwear.**

3. **The Boiler House features 20-foot-long wood-slab tables made from salvaged trees.**

PHOTOGRAPHY: © ALEX VERTIKOFF (2)



4. **The 1-acre interior of the Craneway Pavilion is a vast space with original pulleys and an entire crane (not shown) left as artifacts.**

5. **A suspended, stringerless steel-plate stair dominates the SunPower atrium.**

centrated on the building envelope rather than high design: "There was a lot of broken glass, a lot of rusted-out steel," Marcy Wong recalled. "It was almost like an outdoor environment inside."

Solution

The architects made as few visual interventions as possible – in part to focus attention on the factory's innate dignity but also to ensure that the project would receive the historic tax credits needed for its financing package. All exterior work was done under the eye of the State Historic Preservation Office and the National Park Service, both of which accepted the need for improvisation. With the bands of skylights set into the sawtooth roof, for instance, Wong's team was allowed to replace most of the corroded system with new glass framed in rust-resistant aluminum casements. But for the two bays most visible from the nearby roads, salvageable portions from Kahn's day were consolidated so that they read as intended, with steel casements and wire-fortified glass.

Another trade-off involved the parapet on the end of the building facing the bay. The original limestone cap collapsed in the 1989 earthquake, and regulators at first suggested an exact copy of the original. Cost and weight issues dictated otherwise, and the architects were allowed to replicate Kahn's details in fiber-reinforced polymer.

This end of the building also faced scrutiny from the Bay Conservation and Development Commission, a state agency. The plant's final bay – a space 400 feet wide, 100 feet deep, and 65 feet high where cranes once transferred raw goods from ships into the factory – sits on a pier and thus comes under public control. The developers recast the 1-acre room as a vast event space with original pulleys and an entire crane left (secured) as artifacts. Called the Craneway Pavilion, it has already been used for a Merce Cunningham Dance Company performance as well as private parties, and it can be entered during the day from the adjacent Bay Trail.

The architects had a freer hand elsewhere in the interior: carving an airy manufacturing space for Vetrazzo, which recycles glass into stylish tiles; converting the north bays into offices for the retailer Mountain Hardwear; and accenting the blue-collar past in the Boiler House restaurant. In the lobby of the largest tenant, the solar-panel firm SunPower, the most striking design detail is a grand staircase of thin steel where the handrail doubles as a truss suspended from the ceiling. "There was a very functional reason we came up with the scheme," Wong admitted. "Our engineer warned us not to breach the existing (concrete foundation) slab, because who knows what might happen."

Commentary

The Ford Assembly Plant project has already received an award from the National Trust for Historic Preservation, and with good reason: It demonstrates that a monolithic relic of our industrial heyday can be reimagined for use in today's diverse economy. This doesn't feel like a multitenant structure so much as a cluster of workshops and offices that happen to be within one gaunt shell. There are also palpable, comforting reminders of the passage of time. The facade has its share of cracked or missing bricks, and the event space is a ghostly hint of the past's churning production lines. The plant's story is still being written, and the most interesting chapters might lie ahead. ■

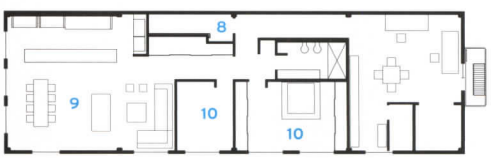
John King is the San Francisco Chronicle*'s urban design critic.*

DRAWINGS

GROUND FLOOR

N 0 10 FT. 3 M.

SECOND FLOOR



THIRD FLOOR

1 Entry vestibule
2 Conference room
3 Fabrication shop
4 Gallery/retail space
5 Freight elevator
6 Upper gallery
7 Office
8 Residence
9 Kitchen/living area
10 Bedroom

1

1. **A gallery wall pivots 90 degrees for flexible spatial configurations.**

2. **New windows and a glass wall over the atrium bring daylight into the office, furnished with solid, ecofriendly walnut desks designed by Larissa Sand.**

2

Sand made her most acute intervention when she sliced through the two lower levels and added steel seismic reinforcements to create a central two-story atrium that brings light into the 7-foot-10-inch-high office and allows workers to observe the shop. The double-height space also allows for the fabrication of the extra-large mock-ups required for many of the studio's custom installations. To provide street access, Sand cut a 12-foot-high opening through the exterior wall adjacent to this area, covering it with massive barn-like doors that she designed out of ipé wood, glass, and steel – a device she repeats in front of the freight elevator at the rear of the building.

Sand, who specializes in such architectural products as doors, hardware, and light fixtures, employed many of her own designs – all fabricated by her company – throughout her new workplace and home. For instance, she designed the smoky steel doors and glass storefronts, fitted with clever pivot hinges to facilitate performance, as well as a chandelier made of etched-glass tubes over the dining table. She also created a rolling ceramic-coated-steel chalkboard that doubles as a window covering, and an ingenious pivoting wall for flexibility with art installations in the gallery. In each case, her design stays true to the restored building.

Commentary

Painted an amphibian green, the Sand Studios restoration project is a welcome addition to a neighborhood that has survived natural and economic catastrophes and struggles to overcome myriad new real estate developments. With its side doors *rolled open*, the building emits the lively sounds of buzzing machines and friendly banter. Activity animates the place day and night.

The Sands have not only revived a spot that might have become another generic condo, they've infused it with a spirit of innovation, rehabilitation, and reuse that embodies San Francisco's history of enterprise and recovery. ■

3

4

3. **The residence features a Larissa Sand–designed glass-tube chandelier and ceramic-coated-steel sliding panel. Other elements include a sculptural espresso machine by Jeff Sand, a Porri table by Piero Lissoni, and a vintage medical cabinet.**

4. **A 16-foot stainless-steel kitchen by Boffi lines the living area.**

Punta della Dogana

VENICE, ITALY

Tadao Ando creates a serene environment for viewing contemporary art within a centuries-old shell

By Joann Gonchar, AIA

Architect: Tadao Ando Architect & Associates – Tadao Ando, Kazuya Okano, Yoshinori Hayashi, Seiichiro Takeuchi, project team

Architect of record: Studio Lagrecacolonna

Associate architect: Equilibri

Client: Palazzo Grassi S.p.A.

Engineers: Studio Lagrecacolonna (mechanical, electrical); Tecnobrevetti (structural, civil)

Consultants: Ferrara Palladino (lighting); Marco Bortoletto (archaeology); Arcadia Ricerche (materials); G.R.C. (restoration)

General contractor: Dottor Group

Size: 46,617 square feet

Cost: $29 million

Completion date: May 2009

SOURCES

Roof tiles: Spaziotetto

Metal work: Costruzioni Metalliche

Skylights: Due Esse Di Sigismondi Silvia

Concrete floors: Europav

Lighting: Erco Illuminazione

THE FORMER CUSTOMS HOUSE in Venice, the Punta della Dogana, occupies one of the city's most prominent spots. The late-17th-century building, with its rusticated-stone and plaster-on-brick facades, sits next to Longhena's domed basilica of Santa Maria della Salute, at the eastern tip of Dorsoduro Island, where the Grand Canal and the Lagoon converge. For hundreds of years, the Dogana received precious cargo from distant lands, but it had been vacant for about three decades when French billionaire and art collector François Pinault's foundation won the right to transform it into a contemporary arts center. In the spring of 2007, the city selected Pinault's proposal over a competing bid by the Solomon R. Guggenheim Foundation.

For the design of the renovation, timed for completion last June to coincide with the opening of the Art Biennale, Pinault chose Pritzker Prize–winning architect Tadao Ando. The two had collaborated on the revamp of the Palazzo Grassi – Pinault's first exhibition space in Venice, which opened in 2006 – and on an eventually abandoned effort to create a museum on the Île Seguin, just outside Paris.

Program

The Dogana's structure made it well suited for conversion to a museum for contemporary art. The building's triangular footprint is organized by nine skylit, parallel bays defined by load-bearing masonry walls and covered with gabled roofs supported by exposed heavy-timber trusses. But over the course of its history, partitions, passageways, and other modifications compromised the generous, navelike volumes, each about 33 feet wide and 23 feet tall, from floor to truss.

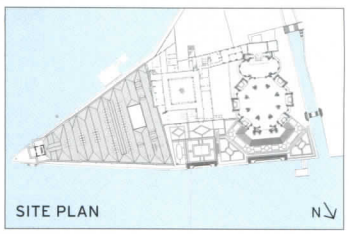
ABOVE AND RIGHT: **The Dogana's ample, skylit bays are well suited to the display of pieces like Maurizio Cattelan's taxidermic horse and Rachel Whiteread's resin sculpture, *One Hundred Spaces*, found in the first gallery.**

Solution

The renovation work included restoration of the exterior facades and the addition of a waterproofing shell to protect the valuable contents from the frequent flooding, or *acqua alta*, that plagues the city. Ando's approach on the interior included removing the additions and reversing the modifications made over the years in order to return the building, as closely as possible, to its original configuration. However, the architect did make one key exception to this strategy: He retained one very large opening between two adjacent bays made during an early renovation. Here he inserted a new "central court," open to the roof trusses and skylights above, but enclosed by four 20-foot-8-inch-tall poured-in-place concrete walls. The resulting 52-foot-6-inch-square room is ideal for large-scale pieces like the four monumental canvases by Rudolph Stingel that are part of the museum's inaugural exhibition, *Mapping the Studio*.

This insertion does more than define space or create large vertical surfaces for the display of art. Because Ando's walls feature his characteristically silky concrete, with every control joint and formwork tie precisely placed, they serve

DRAWINGS

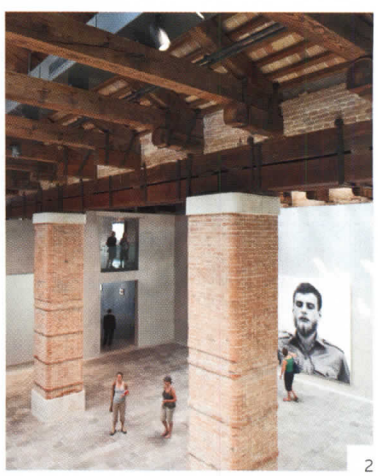


1. **Large-scale pieces, such as the monumental series *Axial Age*, by Sigmar Polke, work well in the Dogana's tall, navelike volumes.**

2. **A "central court" defined by four new concrete walls is Ando's most conspicuous intervention. It surrounds two existing brick columns.**

3. **Stairs on either side of the court provide breathing room between the inserted volume and the historic structure.**

1



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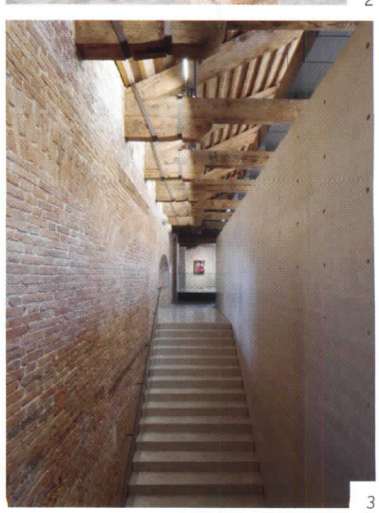


3

4

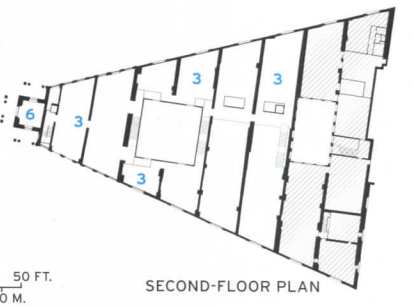
4. **The Dogana occupies the eastern tip of Dorsoduro Island.**

5. **Ando's pristine walls provide an orientation point that visitors can travel through, circulate around, or peer into.**

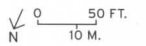
1 Foyer
2 Cloakroom
3 Gallery spaces
4 Central court
5 Bookstore/café
6 Belvedere

SECTION A-A

GROUND-FLOOR PLAN



SECOND-FLOOR PLAN



5

PHOTOGRAPHY: © THOMAS MAYER (1,2,4)

Some of the structural bays have been divided vertically to create intimate spaces, such as the room where Maurizio Cattelan's corpselike marble sculptures are displayed (above), and the gallery that contains a cast of a tree stump by Fischli & Weiss (below).

as a foil to the carefully repaired, but still irregular and textured, surrounding brick. Stairs on two sides of the new volume act almost like an oversize reveal, providing breathing room between the rough existing Dogana structure and the new, pristine geometric object – an object that serves as an orientation point for guests as they travel through it, circulate around it, or peer into it from adjacent galleries.

Commentary

The central court is Ando's most conspicuous intervention. However, other, more subtle moves help make the project a success. For example, even while working within the building's original repetitive framework, the architect provided spatial variation. By dividing the structural bays vertically into two levels in some locations, while allowing others to extend from the ground level to the roof trusses, he created both intimate and grand galleries. These spaces are appropriately inwardly focused, but not completely divorced from the exterior environment: Many of the galleries have views over the water, toward the Piazza San Marco or the Giudecca, framed by existing openings in the historic facades. Some of the views are filtered through new woven-metal grilles inspired by the metalwork at Carlo Scarpa's nearby Olivetti showroom, built in 1957.

The design team has also skillfully integrated potentially obtrusive infrastructure, such as lighting and ductwork, into the building's historic fabric. These services are neatly packaged in enclosures that run the length of the galleries, just above the bottom chord of each truss.

These design decisions create an atmosphere that is both sober and serene. Although there is tension between the almost raw existing structure and Ando's additions, the architecture does not distract from viewing the work on display. The renovation sensitively preserves an important landmark while invigorating it with a new use. ■

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When the office space called 409 and 499 Illinois was planned for San Francisco's Mission Bay area, it faced considerable waterproofing challenges. Two six-story towers were to be constructed over a three-level subterranean parking garage that was adjacent to a filled-in turn-of-the-century shipping channel that provided a water infiltration conduit from the bay to the garage. With a high water table at 8 feet below grade, the possibility of saltwater attack, and a garage design calling for two parking levels at 30-ft below grade, developers faced a serious waterproofing problem.

Aware of the reliable performance of Xypex Crystalline Technology in resisting both extreme hydrostatic pressure and saltwater attack, project engineer Simpson Gumpertz & Heger and designer Dowler-Gruman Architects specified Xypex Admix C-1000 NF to waterproof and protect the below-grade slabs and perimeter walls. Cemex, the project's ready-mix supplier, blended Xypex Admix into the concrete mix at the time of batching and worked closely with Xypex to achieve a 15-hour, problem-free continuous pour of over 8000 cu yd.

CIRCLE 25

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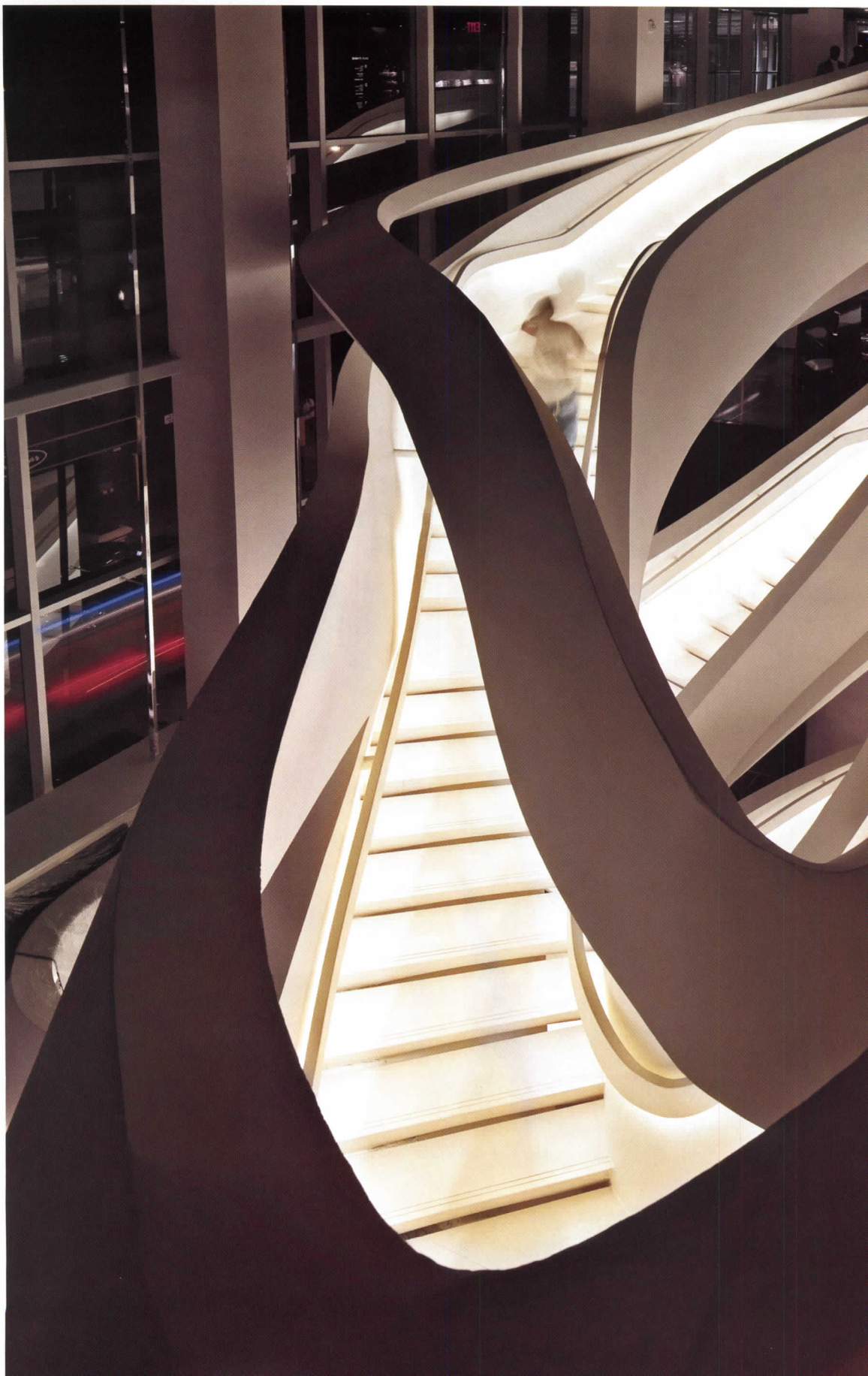
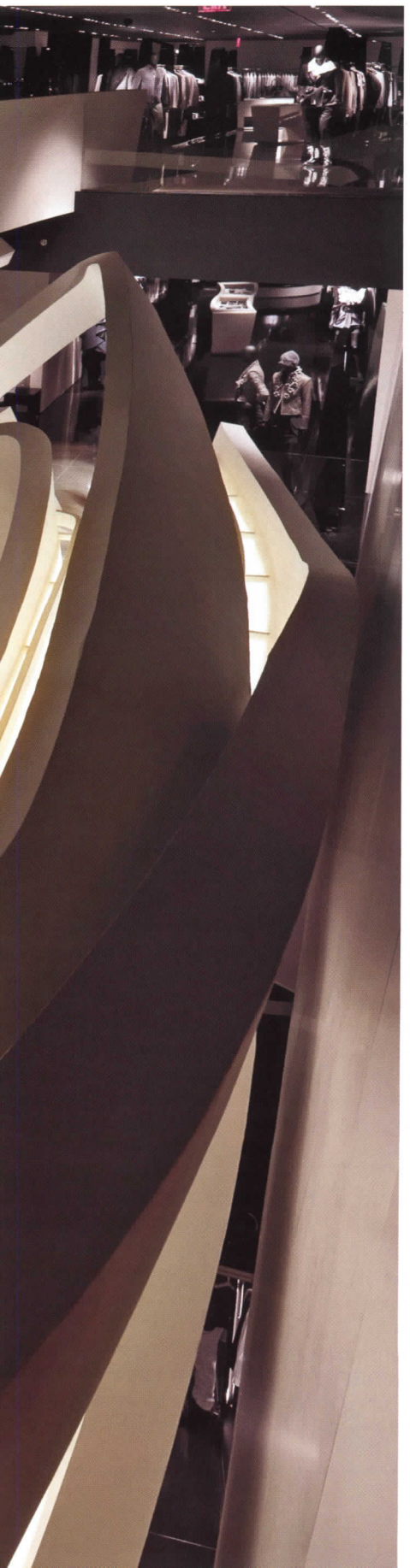
LIGHTING | City Scenes

These days, good lighting plays a defining role in a successful urbanscape. Each scheme that follows reflects the character of the site it is illuminating and reveals the context of its environs. At New York City's Armani flagship, architecture is infused with light, subtle yet distinct. In Vancouver, a simple plan links the work of seven architects for the city's new rapid rail. Finally, stunning effects revive a forlorn landmark in Milwaukee. The upshot in every case is that both client and metropolis benefit.





PHOTOGRAPHY: © ALLAN TOFT

[ARMANI/5th AVENUE, NEW YORK CITY]

Armani animates 5th Avenue

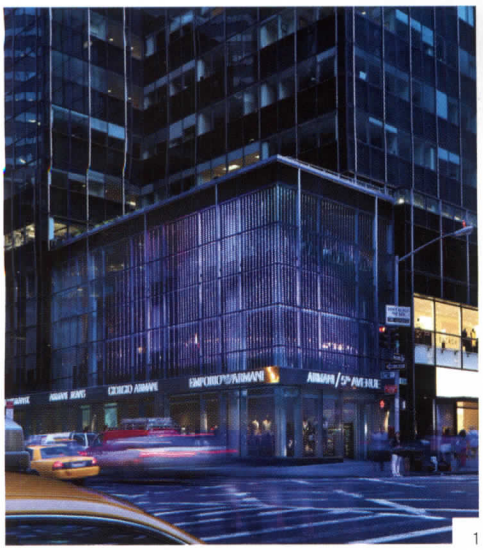
BY LINDA C. LENTZ

ON A CRISP EVENING BEFORE Christmas, New York City's Fifth Avenue was packed with shoppers hurrying to pick up last-minute gifts. The stores – appropriately decked out with the subtle signage and tasteful decorations mandated by the city for businesses here – beckoned customers with softly glittering LED bows, stars, and supersize trimmings. But none conveyed the dynamic aura of the year-old Armani/5th Avenue boutique, a four-story glass-enclosed box on the corner of 56th Street wrapped in a virtual blizzard of LEDs that cast reflections of its fleeting light storm onto the glazing of the adjacent Trump Tower.

The carefully planned display evolved from a close collaboration between the client, Giorgio Armani SpA, and a design team headed by architects Massimiliano and Doriana Fuksas. Working from Armani's own brief, the Fuksases employed a holistic strategy for the 43,000-square-foot shop, a new concept that integrates Armani's numerous fashion brands for men and women. Located in a recent extension of the 1959 Corning Glass Building by Harrison Abramovitz & Abbe, the New York flagship store includes an area for Armani Casa and top-floor real estate for the company's culinary ventures: a sweets shop, Armani/Dolci; and an urbane restaurant, called Armani/Ristorante, with views of Central Park. The architects called upon Speirs and Major Associates (SaMA), a London-based lighting-design firm they had worked with on previous Armani flagships, to assimilate the lighting with the architecture so it would be imperceptible yet effective.

This understated approach begins with the animated facade, for which SaMA devised a 30-foot-high, low-resolution video screen composed of polished-chrome aluminum profiles spaced at methodically plotted intervals around the sides of the building's top three floors. Channeled to accommodate LED pixels that appear to multiply in the mirrored finish, these slender bars are slightly rounded with a radius that provides a 150-degree viewing angle for visibility across the way or down the block. But this enve-

LEFT AND ABOVE: **A continual line of LED tape in the handrails illuminates the sweeping central stair by Massimiliano Fuksas. The elegant Armani/Ristorante on the top floor greets guests with a programmed wall of modulating red light.**



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1. **An animated video screen on the facade conveys the spirit of the shop as well as the neighborhood.**

2. **Sparkling LEDs and strategically directed downlights provide a seductive atmosphere for dining at Armani/Ristorante.**

3. **Clothing displays are crosslit by metal-halide downlights concealed in the ceiling plenum.**

lope was not designed to be signage, says SaMA director Keith Bradshaw. While programmed to treat passersby to parading visions of sugarplums, fashionable accessories, or models in stylish garb, there are no specific logos or brand names in the lit media. "It was given planning consent as an artistic statement in terms of intensity of the light and content," Bradshaw explains.

"It is a way to communicate with the city," explains Doriana Fuksas, the project's interior designer. "Of course, it is also meant to invite people inside." When they enter, visitors are greeted by a deep space that is a study in contrasts. Surfaced in a mix of glossy and matte black, the 45-foot-high volume above the basement level is dominated by Massimiliano Fuksas's monumental white staircase spiraling up a central atrium. Structurally independent, this resin-coated, plaster-clad, steel-and-stone construction serves as the primary access through the store and links the front and back sales and dining areas of the upper levels with ramps and bridges. It is an ideal meeting *place and vantage point* from which to take in the various departments.

"From a lighting perspective, it is very challenging when you get confronted with an object like this," says Bradshaw. "If you make the shadow play too complicated, you create new forms." So his solution was simple – to reveal the shape of the stair in a single movement, with a continuous line of LEDs expertly concealed on the underside of both handrails. The warm (3000K) light bouncing off its treads and walls casts a creamy glow that generates adequate light levels and highlights the stair's occupants and sculptural quality.

To ease the transition into the darker selling floors, SaMA created a buffer zone of medium-level illumination on either side of the stair. The lamping and the fixture configuration are identical to the metal-halide downlights directed at the merchandise displays further away – discreetly tucked into apertures above the baffles in the ceiling plenum – but at a slightly higher wattage. Most of the clothes are crosslit, a tactic used to create "wonderful shadowing that shows off the texture and quality of the material," says Bradshaw. This scheme continues in the dressing room, where Fuksas-designed mirrors edged with cold-cathode backlighting add a gentle light to the viewer's face.

Never obvious, the lighting and architecture at Armani/5th Avenue are cohesive and always defer to the legacy of its eponymous proprietor and his design sensibility, which is classic, elegant, and quietly opulent. Perhaps nowhere in the building is this more apparent than the restaurant, where a sensor-controlled wall of modulating red LEDs greets guests, and a pearlescent glass bar and tabletops shimmer via strategically placed lamps. Even the slender strips of the facade, which elsewhere face outward only, feature a reverse channel of twinkling (nonmotion) LEDs for diners. Diffused by a sheer white shade, this final, luminous detail accentuates the view and – as with the lighting throughout the store – the experience. ■

PROJECT:
Armani/5th Avenue, New York City

ARCHITECT: Doriana and Massimiliano Fuksas

LIGHTING DESIGN: Speirs and Major Associates – Keith Bradshaw, director

SOURCES

LIGHTING: Martin Professional (facade); Osram (handrail LEDs); National Cathode (mirror backlighting); Erco, Lucifer (ceiling); Rosco (millwork)

STAIR: Carpentedil (cladding); Saiv (steel)

PERFORMANCE?

QUALITY?

AESTHETICS? COST?

EFFICIENCY?

COMPLIANCE?

HID? LED?

SOLAR? LEED?

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CIRCLE 26

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[CANADA LINE, VANCOUVER, B.C.]

Total Lighting Solutions lights the way for Vancouver's new transit system

BY KATHARINE LOGAN

***SOFT, TRANQUIL, DIFFUSE* – NOT WORDS** you would expect to describe the light in a subway. Vancouver's new Canada Line, an extension of the city's rapid-rail transit, opened in August 2009, ahead of schedule for the 2010 Olympics, and is already carrying more than 100,000 passengers a day – well above anticipated ridership. Worth about 10 road lanes of transit capacity, the line serves Metro Vancouver's busiest north–south corridor and links the city center to Vancouver International Airport. The line, a partnership of public and private sectors, comprises 12 miles of track and 16 new stations. Outside the city center, elevated stations with glazed walls serve a raised guideway; in a dense cityscape, glass headhouses at street level lead to underground stations. Seven architecture firms designed the stations, including Busby Perkins + Will, Hotson Bakker Boniface Haden (HBBH), Hywel Jones Architect, Kasian Architecture, Stantec, VIA Architecture, and Walter Francl Architect. A unified lighting design serves them all.

The design achieves a quality of calm for the new transit stations. "We wanted the stations to be elegant and disciplined, dignified and environmentally responsible," explains Galina Zbrizher, principal of Total Lighting Solutions, author of the master plan for the Canada Line's lighting scheme, and the lighting designer responsible for the individual stations. "We wanted the public to experience the stations as safe, easy to navigate, dynamic, and an example of public money responsibly spent."

Zbrizher's first and most significant move was to support her client, InTransitBC, in convincing the transit agency to accept modified lighting criteria that would reduce light output quantities in exchange for criteria more focused on the quality of light distribution. "In the past decade, we've learned a lot about how people see," says Zbrizher. "You don't see light, you see surfaces. When you see what is around you, that's when you feel safe." For example, a relatively small amount of light washing a wall makes a space brighter than a large amount without relation to surface. Similarly, independent of the quantity of light, vertical illumination that allows transit users to see the face and body of someone approaching them increases their feeling of safety.

The new standards for the Canada Line reduce light levels to accord with current industry recommendations, relating them to available daylight and the reflectance values of finishes. Additionally, they address light quality – emphasizing visibility, visual comfort, uniform illumination of surfaces, shadow and glare reduction, and the clear demarcation of

ABOVE: **The Vancouver International Airport station by Kasian Architecture is one of eight elevated stops.**

RIGHT: **A mix of fixtures at Walter Francl Architects' Templeton station offers a sense of visual comfort and safety.**


CANADA LINE
Way out
CANADA LINE
Designated Waiting Area
CAUTION
Stand Behind
Yellow Line
DANGER

1

1. **Downlights brighten vertical circulation at Busby Perkins + Will's Lansdowne terminal.**
2. **An uplit cove ceiling enlivens Hywel Jones Architect's Waterfront North Connector.**
3. **The platform edge of the Langara station by HBBH is well defined.**
4. **Platforms, like that of Via Architecture's Waterfront stop, feature T8 luminaires.**

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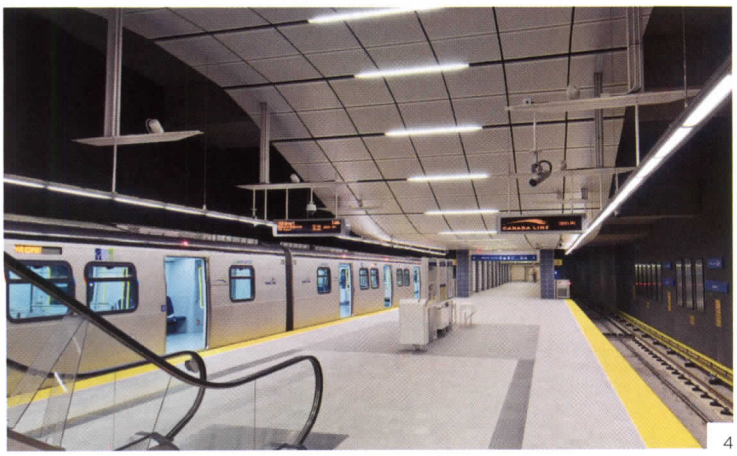

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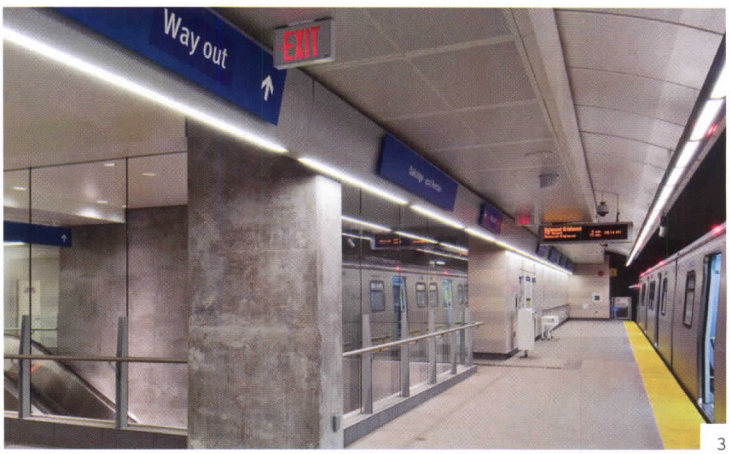

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the platform edge. Compared to the original system, the new design saves 1.5 million kilowatt hours per year. An informal survey of users confirms the effectiveness of the reduced wattage, reports Zbrizher: Although light levels in all areas except the platforms are roughly half of those on Vancouver's existing lines, 80 percent of survey respondents said that the Canada Line stations are brighter, and every respondent said that the stations feel safe.

Once updated standards were in place, Zbrizher developed a systemwide concept based on a limited vocabulary of luminaires and repeated patterns. The concept takes consistency as its watchword. The entire system uses no more than five different lamps in addition to LEDs, and the majority of luminaires use linear fluorescents with a narrow-lensed aperture. Prioritizing safety and visual comfort, the design deploys its luminaires in disciplined patterns that repeat throughout the system.

To improve wayfinding and passenger flow, all luminaires within a station are oriented in the direction of travel. A line of light in the concourses and connectors leads from station entrance to train platform. In each location, an associated pattern of light helps to make orientation intuitive within the stations: a double row of linear fluorescent downlights where fare-paid zones begin; a series of downlights over vertical circulation (fluorescent for shallow areas and metal halide for deeper volumes in fixtures adapted to make the difference virtually undetectable); indirect lighting for the platform ceiling; and a line of light above the platform edge and along the opposite wall.

The lighting provides a strong graphic language that unifies the stations, supports user orientation, minimizes capital and maintenance costs, and adapts to the varied architecture.

As the architects worked independently and on an aggressive schedule, you might expect the lighting to have been applied to, rather than integrated with, the architecture. "Aesthetics and design were as much a consideration as safety and energy," says Zbrizher. To support the variety of expression, fixtures are clean-lined or concealed. It helps that the architectural module is consistent, derived from platform length, so the lighting module can follow suit. Length and spacing of fixtures corresponds to the common interval of columns, mullions, and ceiling elements.

"It would have been easy for me to play," Zbrizher says of the temptation to develop specific schemes in response to the design of each station. But she held to her conviction that the architecture, as well as the users and client, would be best served by a consistent approach. The result is a disciplined set of relationships in which a strong, clean lighting design supports the full range of the stations' architecture. ■

Katharine Logan lives and writes in British Columbia.

PROJECT: Canada Line, Vancouver, B.C.

ARCHITECT: Busby Perkins + Will; Hotson Bakker Boniface Haden; Hywel Jones Architect; Kasian Architecture; Stantec; VIA Architecture; Walter Francl Architect

LIGHTING DESIGN: Total Lighting Solutions – Galina Zbrizher, principal

SOURCES

LIGHTING: Zumtobel, Se'lux, Peerless, Delray, Insight (ambient); Gotham, Acuity Brands, Delray, Sistemalux (downlights); Peerless, Acuity Brands (platform edge)

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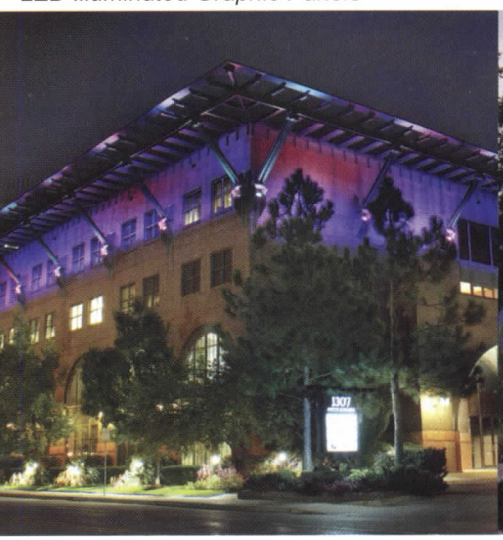

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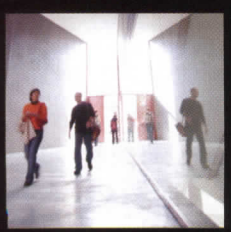

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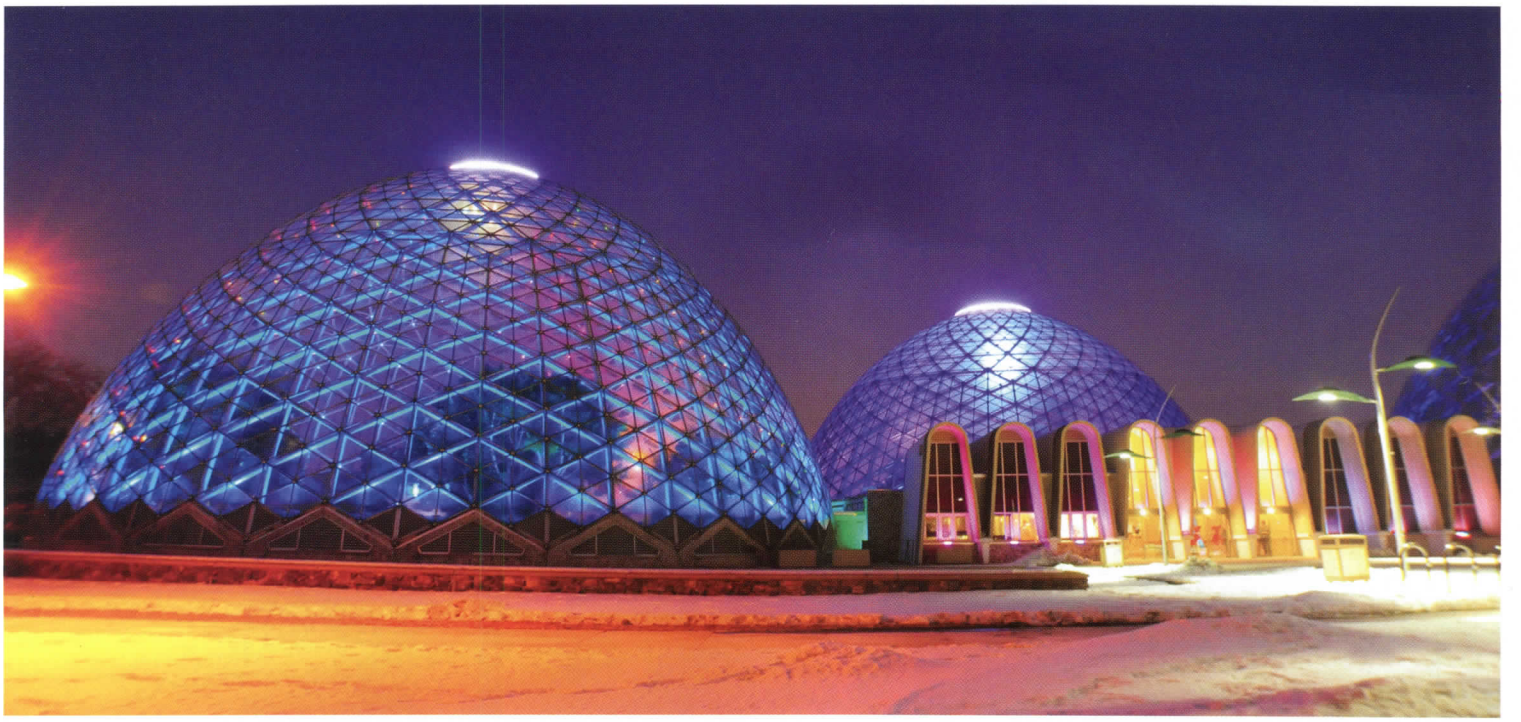


[MITCHELL PARK CONSERVATORY, MILWAUKEE]

CLD-E illuminates a Milwaukee landmark

BY JOHN CZARNECKI, Associate AIA

MILWAUKEE'S MITCHELL PARK Horticultural Conservatory, a complex of three connected structures commonly and affectionately known as "the Domes," needed a significant revitalization.

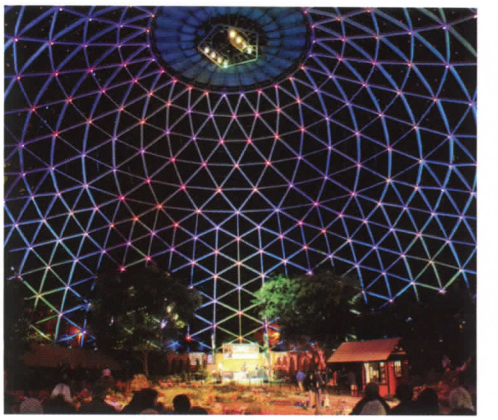
Designed in the late 1950s by local architect Donald Grieb and dedicated at its opening in the mid-1960s by Lady Bird Johnson, then first lady, the conservatory comprises three 15,000-square-foot conoidal domes composed of a precast concrete substructure and aluminum-framed glass. One hundred and forty feet in diameter at the base and 85 feet high, each dome features a distinct climate with a naturalistic setting for the specific flora it houses. One is desertlike, another tropical, and the third accommodates a variety of floral species.

But public interest had waned in recent years due to a number of factors. Not only were the Domes perceived to be dated, but county park budget cuts diminished the structures' routine maintenance and upgrades. So the once-popular landmark saw a steady decline in attendance.

A master renovation plan, written nearly a decade ago, outlined a long list of measures intended to reverse this downward trajectory, including the repair and/or replacement of all the glass panes. A fund-raising campaign was initiated in 2005, and to give the Domes a much-needed boost, Milwaukee County Parks director Sue Black and Mitchell Park Horticultural Conservatory director Sandy Folaron chose to focus on one significant – and reasonably affordable – enhancement that would result in a highly visible impact: lighting. With funding provided by donors under the auspices of the Greater Milwaukee Foundation, they organized a lighting-design competition that was won by Creative Lighting Design and Engineering (CLD-E), a firm based in nearby Germantown, Wisconsin.

CLD-E's concept implements a number of techniques using LEDs and color washes, resulting in a dramatic effect. The firm topped the outside of each dome with a halo created by aligning 3-foot LED strips end-to-end. Lit at night in a range of colors, the halos are a beacon, visible from a great distance.

Moving inside, the lighting designers positioned 24 metal-halide, high-intensity-discharge lamps around the perimeter of the desert and tropical domes to direct a luminous blue wash up toward the apex. Small, low-voltage MR16 lamps tucked into the ground illuminate the flora with white light. However, the highlight of the new



TOP: **Revitalized with light, "the Domes" have been transformed into a beacon for the surrounding area.**

ABOVE: ***The unique* geodesic structures are punctuated by individual LED pixels at each intersection.**

PHOTOGRAPHY: COURTESY CLD-E/MARTY PECK

TOP: **The Desert is painted with white light from glare-free landscape fixtures, plus a mix of blue up- and downlights.**

ABOVE: **The renovated lobby has a leaf-shaped skylight that sparkles with animated LEDs, as well as LED-grazed frosted windows.**

lighting scheme is in the third dome where the lighting designers installed 400 diminutive LED pixels at every connection point of the structure. In combination with 50 LED wall-washing fixtures, these custom-modified luminaires – 2 inches in diameter and 4.5 inches long with frosted-acrylic, caplike diffusers – illuminate the dome with a multitude of computer-programmed lighting displays capable of virtually limitless colorations. "The design inspiration was one of those epiphany moments when you have an idea that you know is right," says CLD-E principal Marty Peck. "We like to work with layers of light and color, and our goal was to animate the classic geodesic architecture with light. Highlighting the triangular mullions with both the uplight wash and the pixels at the intersection seemed the perfect solution."

Painstakingly synchronized by Peck to music ranging from the Beatles' "Lucy in the Sky with Diamonds" to Igor Stravinsky's *Firebird Suite*, these vibrant displays allow visitors to experience the transformed Domes in a whole new light – literally and figuratively.

The lighting design and installation, completed with a modest budget of $500,000, along with a renovated central lobby, are bringing the Domes greater recognition locally. Currently open with extended hours two weeknights every week, the invigorated Mitchell Park Horticultural Conservatory has already attracted about 130,000 visitors during the first six months after the lighting installation was completed. Compared to the previous full year, during which attendance was calculated at about 160,000, this figure indicates a brighter future for this 1960s icon. ■

John Czarnecki, a senior editor at John Wiley & Sons, is a former RECORD *associate editor.*

PROJECT: Mitchell Park Conservatory, Milwaukee

ARCHITECT: Donald Grieb

LIGHTING DESIGNER: Creative Lighting Design and Engineering (CLD-E) – Marty Peck, principal; Teresa Haas, project manager; Garrett Maas, designer

SOURCES

LIGHTING: Color Kinetics (LED); Contrast (downlights); ETC Pharos System (controls)

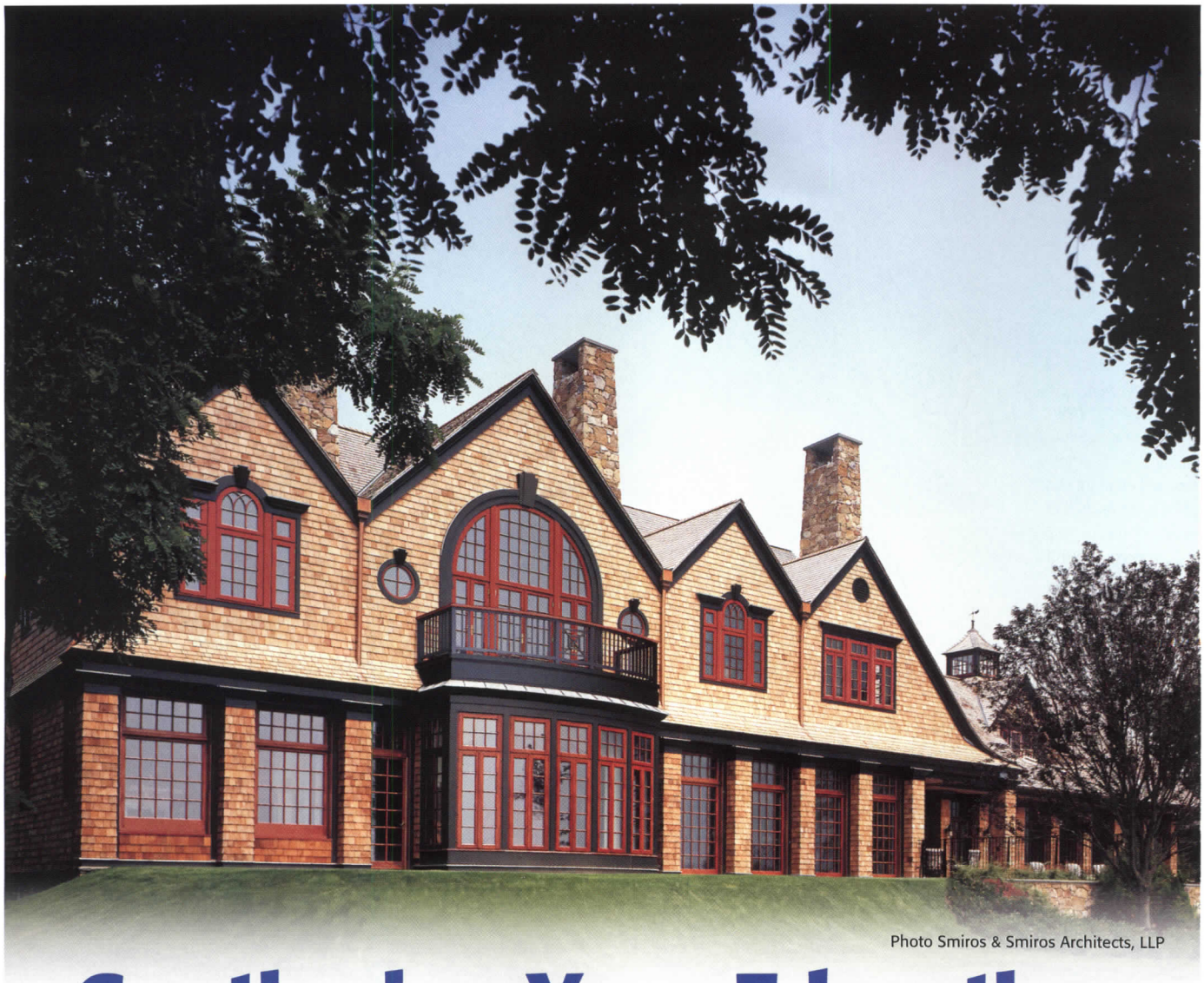


Photo Smiros & Smiros Architects, LLP

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1 | PRODUCT **Starbrick**
MANUFACTURER **Zumtobel**
starbrick.info

A collaboration between artist Olafur Eliasson and lighting manufacturer Zumtobel, the Starbrick "light art" piece is made of injection-molded polycarbonate components, including semitransparent, yellow, reflective surfaces at its octahedron-shaped, LED-backlit core. The 21.7" x 22" x 18.1" modular unit can form pendants, floor or table lights, or architectural elements such as walls. The units (priced at 2,450 euros each) start shipping from Europe this month. **CIRCLE 211**

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2 | PRODUCT **NR63 (R20) LED narrow flood lamp**
MANUFACTURER **Philips**
philips.com

Philips Lighting's new 7-watt AmbientLED NR63 (R20) LED Flood Lamp (above) is an LED-based approach to recessed downlighting and track lighting for the retail and hospitality segments. The lamp offers a rated average life of over 40,000 hours and offers outstanding color consistency. It is currently available in a warm white version that uses only 1/5 of the energy of a 35-watt incandescent or halogen bulb while significantly reducing maintenance costs and concerns. **CIRCLE 212**

3 | PRODUCT **Powercast projectors and floodlights**
MANUFACTURER **Erco**
erco.com

The Powercast line of projectors and floodlights uses LEDs and Spherolite reflectors to illuminate a range of applications, from signage to entire facades. The extremely weatherproof power-coated cast-aluminum housing contains all of the lighting components and control gear and comes in two sizes. It can be mounted on the wall, floor, or ceiling with a robust mounting bracket. **CIRCLE 213**

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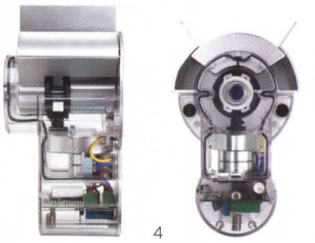

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4 | PRODUCT **Motorlight**
MANUFACTURER **Jake Dyson Limited**
conranusa.com

Jake Dyson's Motorlight fixture can be set to a precise angle or be activated to cycle through continually adjusting angles. Motorlight Floor is manually operated with a motor pause option, while Motorlight Wall is fully programmable via a remote control to create different lighting effects. Both versions are available exclusively at The Conran Shop in New York City. **CIRCLE 214**

5 | PRODUCT **Halo Eco-Twist downlights**
MANUFACTURER **Cooper Lighting**
cooperlighting.com

The Halo Eco-Twist 5" and 6" aperture multiwattage CFL downlight housing utilizes a new spiral twist CFL lamp and multiwattage ballast system from Osram Sylvania allowing interchangeability of 16-watt, 21-watt, or 28-watt lamps in a single housing. The line incorporates this new CFL technology in insulated ceiling housings rated for direct contact with ceiling insulation. **CIRCLE 215**

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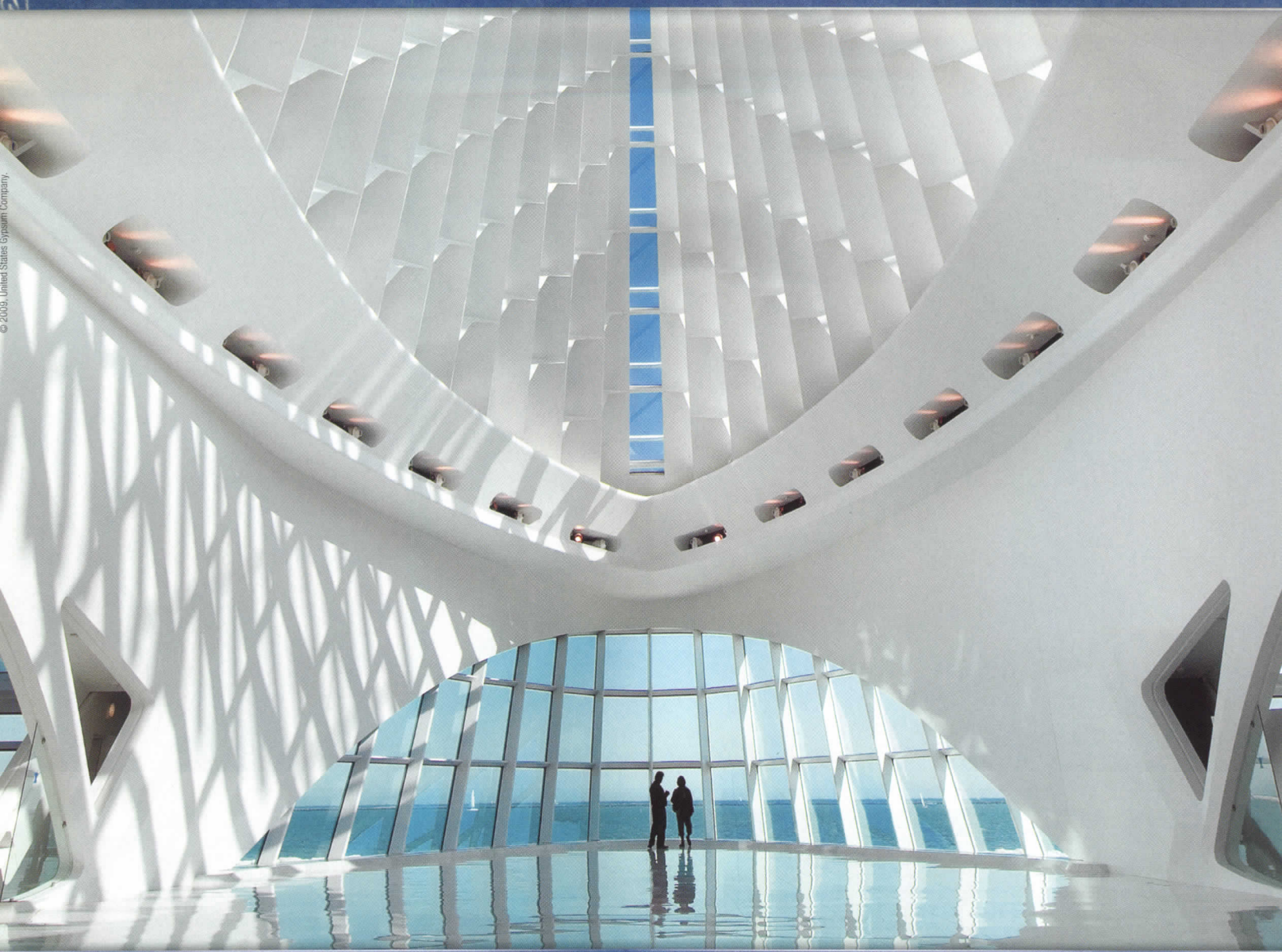

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The innovative and award-winning Norwegian firm Snøhetta, will be featured in this multifaceted exhibition. *SNØHETTA architecture – landscape – interior* offers insight into the design and construction of the firm's most important works, including the celebrated Bibliotheca Alexandrina in Alexandria, Egypt; the recently completed Norwegian National Opera and Ballet in Oslo; and the planned National September 11 Memorial Museum Pavilion in New York City. Visit www.scandinaviahouse.org.

Ongoing Exhibitions

Later Layer
Los Angeles
Through February 28, 2010
This exhibition features models and drawings of design work that Johnston Marklee architects are doing for DEVELOP RE and the DEPART Foundation in Italy, along with photographs and sculpture by Beshty from the DEPART Foundation Collection. Johnston Marklee's combined work is conceived as an alphabet of elemental building blocks for art exhibitions, artist-in-residence studios, exhibition pavilions, creative offices, and residences. For more information, visit www.johnstonmarklee.com.

China Prophecy: Shanghai
New York City
Through March 1, 2010
This exhibition explores the 21st-century skyscraper city of Shanghai, a vast metropolis of 18 million residents – the largest city in the world's most populous nation. At the Skyscraper Museum in Battery Park City. Call 212/945-6325 or visit www.skyscraper.org.

Zaha Hadid
Retrospective Exhibition
Padua, Italy
Through March 1, 2010
A major retrospective of the works of Zaha Hadid Architects, this exhibition will examine the practice's continued experimentation and research into *digital design* and construction methods at the cutting edge of the industry. Addressing the demand for an increased level of articulated complexity, the practice has evolved its experimentation by means of retooling its research methods on the basis of parametric design systems. For more information, visit www.camron.co.uk.

Design USA:
Contemporary Innovation
New York City
Through April 4, 2010
This exhibition celebrates the winners honored during the first 10 years of the National Design Awards, including works of fashion, technology, graphics, architecture, landscape, and product design. Following the exhibition, students will have two workshop options: "Chair Design" or "Graphic Identity." For more information, visit www.cooperhewitt.org.

On May 11, 2010, the National Building Museum will recognize a group of civic innovators, whose commitment to improving people's lives through design, education, community and cultural development, and sustainable practice, is helping to reinvent and renew our built environment. The ceremony will be held in Washington, D.C. in the Museum's historic Great Hall.

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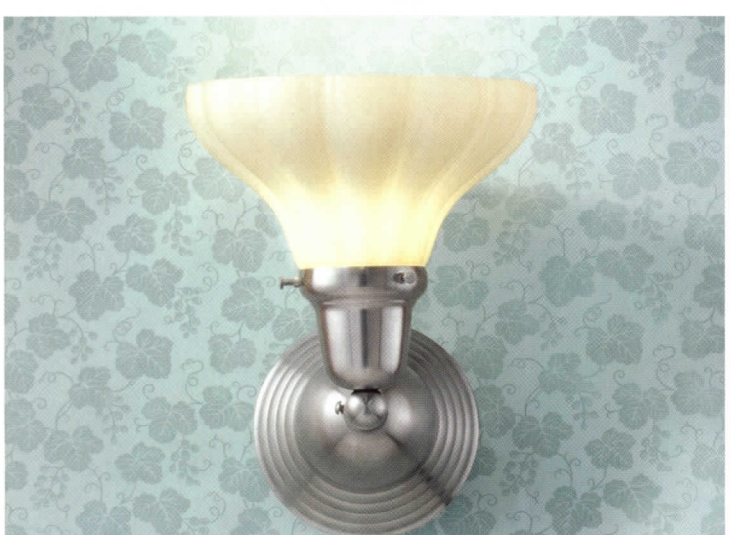

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CIRCLE 32

WOMEN OF ARCHITECTURE

2010 Lecture featuring

TOSHIKO MORI

Role Models and Paradigm Shift: Frank, Paul, Marcel, and Me

Toshiko Mori, FAIA, founder and principal of Toshiko Mori Architect, discusses her work, including the Darwin D. Martin House Visitors Center.

In collaboration with the Beverly Willis Architectural Foundation, the National Building Museum established the *Women of Architecture* series in 2007 to recognize and celebrate the professional and personal accomplishments of women in the field of architecture.

For more information or to register for the program, visit *www.nbm.org.*

NATIONAL BUILDING MUSEUM

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Iannis Xenakis: Composer, Architect, Visionary
New York City
Through April 8, 2010
Exploring the fundamental role of drawing in the work of Greek avant-garde composer Iannis Xenakis, this exhibition comprises more than 60 documents created between 1953 and 1984, including rarely seen hand-rendered musical scores, architectural drawings, conceptual renderings, precompositional sketches, and samples of his pioneering graphic notation. A leading figure in 20th-century music, Xenakis was trained as a civil engineer, then became an architect and developed revolutionary designs while working with Le Corbusier. For more information, visit http://drawingcenter.org.

John Portman: Art & Architecture
Atlanta
Through April 18, 2010
Featuring fifteen completed and current architectural projects by Atlanta-based architect John Portman, this exhibition explores five decades of national and international developments, including the Hyatt Regency Atlanta (1967), which is globally renowned as the first Modern atrium hotel. For additional information, visit www.high.org.

Rewind Remix Replay: Design, Music & Everyday Experience
Scottsdale, Ariz.
Through May 23, 2010
Hosted by the Scottsdale Museum of Contemporary Art, this exhibition highlights how design can influence the production and consumption of music and how, in turn, making and consuming music influences design in fashioning our experience of music in everyday life. *Rewind Remix Replay* reflects strong community ties as well as national scholarship focusing on music and design. Visit www.smoca.org.

From Village to Grounds: Architecture after Jefferson at the University of Virginia
Charlottesville, Va.
Through May 31, 2010
This exhibition explores the wide range of solutions to the architectural and planning problems posed by adding to the Academical Village, from 19th-century picturesque ideals to the Classicism of McKim, Mead & White and the Modern architecture of the 20th and 21st centuries. For more information, visit www.virginia.edu/artmuseum.

House of Cars: Innovation and the Parking Garage
Washington, D.C.
Through July 11, 2010
For more than 100 years, the parking garage has provided design and engineering solutions to the parking problem; this is the first major exhibition to explore the history of this familiar structure and to open conversations about innovative designs and parking solutions for the future. Call 202/272-2448 or visit www.nbm.org.

Lectures, Conferences, and Symposia

Cecil Balmond
Pittsburgh
February 6, 2010
Accompanying the exhibition, *Forum 64: Cecil Balmond*, Carnegie Museum of Art presents a lecture by the internationally renowned engineer, designer, and artist. Balmond will discuss his unorthodox and visionary ideas, which merge architecture and engineering. Visit www.cmoa.org.

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THE AMERICAN INSTITUTE OF ARCHITECTS

Risk Contamination
Los Angeles
February 10, 2010
In this lecture, Michel Rojkind Halpert speaks to the challenges of building during this time of economic crisis, stressing the strategy necessary to get things accomplished in different environments. In 2005, Rojkind Arquitectos was recognized by ARCHITECTURAL RECORD as one of the magazine's Design Vanguard firms. For more information, visit www.sciarc.edu.

Michael Sorkin: Pro Eutopia
Los Angeles
February 17, 2010
Michael Sorkin Studio is devoted to both practical and theoretical projects of all scales with a special interest in the city and in green architecture. Sorkin directs the urban design program at the City College of New York and is a contributing editor at ARCHITECTURAL RECORD. For more information, visit www.sciarc.edu.

For the Greener Good: A Green Building is a Healthier One
Washington, D.C.
February 25, 2010
This lecture addresses several questions regarding green building, including, Can working in a green building make you healthier? And if you can prove this, would it reduce a company's health-care insurance? Find out if these questions are game changers when considering how and when to build sustainably. For more information, visit www.nbm.org.

Frank Lloyd Wright Preservation Trust Architecture Fantasy Camp
Chicago
March 5–8, 2010
In this chance-of-a-lifetime workshop experience, participants from around the world work with accomplished architects to plan and design a structure of their own. No architecture experience is necessary, as the skilled designers will help participants create a new addition to their home, remodel their kitchen, and design a picturesque dream home. For more information, visit www.gowright.org.

SmartGeometry 2010 Conference
Barcelona
March 23–24, 2010
This event is focused on innovative design tools, technologies, and methodologies that allow and encourage new forms of architectural and structural expression. With the theme "Working Prototypes," the conference includes an interactive "shop talk" day, a hands-on workshop, and a symposium with presentations by preeminent authorities. Visit www.smartgeometryconference.com/2010.

Global Construction Technologies and Building Materials
Doha, Qatar
March 28–29, 2010
This second annual conference aims to add to the key operational aspects of building materials and construction technologies, putting forward new and emerging trends in this dynamic field that will help professionals gain a competitive edge, build a sustainable built environment, and achieve business goals. It will feature international case studies on iconic buildings and structures, such as Tornado/QIPCO Tower, Dubai Towers, Ocean Financial Centre, and Masdar City Centre. For more information, visit www.marcusevans.com.

China Eco Expo
Beijing
June 3–5, 2010
Featuring green building products, technologies, and services from

around the world, this high-level conference addresses China's need for more sustainable, ecofriendly growth. For more information, visit www.ecoexpo.com.

Glenn Murcutt International Architecture Master Class
Sydney
July 11–25, 2010
This intensive, two-week design-studio program involves a group-design project and culminates with a design presentation by participants and a critique by Australia's best-known architect, Glenn Murcutt. The annual Master Class has created an active, international alumni network that includes practicing architects, academics, postgraduates, and senior students. To find out more, visit www.ozetecture.org.

Chicago: You Are Here
Chicago
Ongoing
This engaging permanent exhibition at the Chicago Architecture Foundation provides images, models, artifacts, and video presentations, encouraging visitors to explore the architecture, infrastructure, and environment of Chicago. Visit www.architecture.org.

Competitions

AIA San Francisco Design Award
Submission deadline: February 12, 2010
This awards program celebrates the best in architecture and urban design in the Bay Area. Recognizing achievement in a broad range of architectural work by members and nonmembers, the program serves to inform the public of the breadth and value of architectural practice. Visit http://designawards.eventbrite.com.

Ceramic Tiles of Italy Design Competition
Submission deadline: February 19, 2010
This competition, now in its 17th year, recognizes the exceptional work of North American architects and designers who feature Italian ceramic tiles in their institutional, residential, or commercial/hospitality spaces. Visit www.tilecompetition.com or call 718/857-4806.

ULI Amanda Burden Urban Open Space Award
Submission deadline: February 19, 2010
This awards program was created to recognize excellence in the design and development of urban public open spaces. It is based on a belief in the power of well-designed public spaces to serve both as gathering places accessible to all citizens as well as catalysts for economic development. For more information, visit www.uli.org.

IESNYC Challenge: Liminal Luminosity
Registration deadline: February 24, 2010
This competition challenges New York City students to interpret and express how light facilitates, defines, or bridges a point of transition. The students are to interpret and express this theme in the form of a three-dimensional abstract lighting composition, constructed of their choice of materials. Visit iesny.org or call 212/993-6460.

Ecohousing Art
Registration deadline: February 28, 2010
Conceived as an ecoconstructive idea factory, this competition promotes the restoration of the ecosystem to an equal balance among humans, housing, and habit. Competitors will have the opportunity to catch the attention of traders, investors, dealers, collectors, and potential purchasers of ecohousing artwork and projects. For more information, visit www.ecohousing-art.it.

The Architectural League Prize for Young Architects + Designers: ReSource
Submission deadline: February 28, 2010
This annual competition asks young designers and architects what ways architecture is proving itself resourceful in the face of recent global shifts – from the financial crisis to the environmental crisis – that demand that architects and designers rethink their resources and produce new approaches, techniques, and even terminology. For more information, visit http://archleague.org.

Yéle Music Studio Design Ideas Competition
Registration deadline: March 9, 2010
The purpose of this competition is to enable the realization of a new music studio in Cité Soleil, Haiti, for Wyclef Jean's charity Yéle Haiti. Yéle Haiti is a grass-roots movement that aims to raise global awareness for Haiti and transform the country through the regeneration of forgotten neighborhoods and programs in education, sports, the arts, and the environment. For more information, visit www.architecture.com/competitions.

The Chicago 2010 Initiative
Submission deadline: March 15, 2010
The main challenge of this competition is to spur urban renewal through the proposal of a design for a Chicago Union Stockyards Museum and Education Center incorporating the landmark gate and expanding the park. The second design challenge is to provide sustainable residential spaces that encourage assimilation and foster dignity, community, and opportunities for

immediate vocational participation to immigrant communities. For more information, visit www.chicagoarchitecturetoday.com.

Temporary Outdoor Gallery Space Ideas Competition
Registration deadline: March 26, 2010
TOGS was created in order to challenge the visual and conceptual boundaries of the outdoor gallery space and to transform the open-air art-fair experience into one that not only showcases fine art, but also introduces the element of architecture to the public. Following TOGS 1 and 2, TOGS 3 will continue to generate innovative proposals for a temporary outdoor structure that will function simultaneously as an exhibition space and as an architectural exhibition. For more information, visit www.artallianceaustin.org.

Deborah J. Norden Fund Travel/Study Grants
Application deadline: March 29, 2010
Established in 1995 in memory of architect and arts administrator Deborah Norden, this competition awards a total of up to $5,000 in travel/study grants to students and recent graduates in the fields of architecture, architectural history, and urban studies. Visit http://archleague.org.

Personal Infrastructures – 2010 SMIBE Short Film Competition
Submission deadline: March 31, 2010
Entrants to this competition are asked to answer the question: "What are issues that we should be addressing in our built world?" Submissions must take the form of a video under three minutes in length. Visit www.smibe.org.

Atlantic City Boardwalk Holocaust Memorial Design Competition
Submission deadline: April 1, 2010
This is a two-stage international design competition to choose a winning proposal to build a fitting and compelling memorial to the Holocaust. Entry is anonymous and open to professionals and students in architecture, design, and the visual arts. Visit www.acbhm.org.

Art in Architecture Juried Competition
Registration deadline: April 1, 2010
The goal of this competition is to find images about architecture as a repository for art, revealing how art is expressed in architecture, and how art and architecture affect and are affected by each other. In focusing on the capacity of art and architecture to be transcendent, the resulting exhibition will add special voice to the current debate between the "container" and the "contents" that has been taking place across the globe. Visit www.somersetart.org.

Tiananmen Square Landscape Architecture Competition
Deadline: June 1, 2010
This competition aims to generate debate and ideas for redesigning part of the most important urban space in the history of Chinese civilization. The intention is to set a new course for eastern landscape architecture, helping in the development of an ecologically and culturally distinctive design tradition. Visit http://www.gardenvisit.com/.

Western Red Cedar Architectural Design Awards
Deadline July 30, 2010
The Western Red Cedar Architectural Design awards recognize innovative design using one of the world's most unique building materials, Western Red Cedar. Winners will be chosen by a panel of notable architects, and the results announced at the Greenbuild Expo in Chicago. Visit http://construction.com/community/WRCLA/default.asp

E-mail information two months in advance to recordevents@mcgraw-hill.com. For more listings, visit architecturalrecord.com/news/events.

AIA/Architectural Record Continuing Education

To receive one AIA learning unit, read the project stories that start on page 49 and their accompanying tech sidebars on "Performing Arts Centers and Acoustics," on pages 57, 66, and 74, using the learning objectives provided. To apply for credit, complete the test below and follow instructions for submission at right.

210EDIT

1 All of the following are true regarding the Winspear's displacement ventilation system, except which?
- A cool air is introduced into the performance hall from below the seats
- B cool air is introduced into the performance hall at high velocities
- C it operates more quietly than a forced-air system
- D it should save energy since the people are cooled, but all the spaces above them are not

2 The pattern on the Winspear balcony fronts
- A helps makes the room "dryer" for performances that rely on amplified or recorded music
- B helps distribute high-frequency sounds
- C helps distribute low-frequency sounds
- D is purely for decorative effect

3 An STC rating indicates which?
- A how well a building component dissipates acoustical energy
- B how well a building component attenuates airborne sound
- C how reverberant a space is
- D how intelligible speech is in a space

4 At the Wyly, which of the following does not contribute to the mitigation of low-frequency sounds from outside?
- A a sound-and-light lock
- B the IGU's asymmetrical buildup of glass
- C the IGU's rigid interlayer
- D pneumatic gaskets for operable portions of the facade

5 Which of the following is true regarding reverberation time?
- A it is the persistence or lingering of sound within a space after the sound source has stopped
- B long reverberation times are considered undesirable in spaces where intelligibility of speech is a priority
- C long reverberation times are preferred for music
- D all of the above

6 Reverberation time is
- A directly proportional to both volume and the amount of sound absorption
- B inversely proportional to both volume and the amount of sound absorption
- C directly proportional to volume and inversely proportional to the amount of sound absorption
- D inversely proportional to volume and directly proportional to the amount of sound absorption

7 Which project provided a precedent for the shape of the main auditorium at the Copenhagen Concert Hall?
- A Boston Symphony Hall
- B Amsterdam's Concertgebouw
- C Munich's National Theatre
- D the Berlin Philharmonie

8 The Copenhagen Concert Hall's acoustician relied on computer simulations to analyze which of the following phenomena?
- A diffraction
- B scattering
- C early reflections
- D none of the above

9 The sound source inside the Copenhagen Concert Hall's 1:10 physical model produced frequencies that were
- A the same as those that would be produced by an orchestra
- B ten times higher than those that would be produced by an orchestra
- C ten times lower than those that would be produced by an orchestra
- D none of the above

10 Which of the following regarding the Copenhagen Concert Hall's 1:10 physical model is true?
- A during acoustical tests, the model was filled with 80 percent nitrogen
- B it was used as an early design phase tool
- C it was used to take measurements of actual sound
- D none of the above

Program title
"Performing Arts Centers and Acoustics," ARCHITECTURAL RECORD 02/10, starting on page 49.

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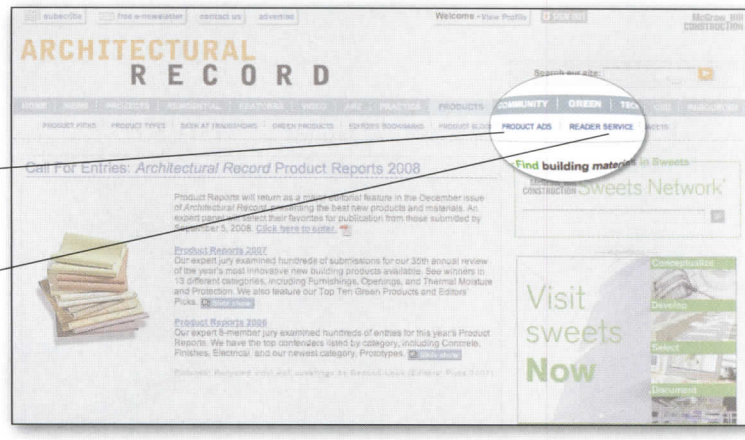

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ARCHITECTURAL RECORD

Record Interiors 2010

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The editors of ARCHITECTURAL RECORD are currently accepting submissions for the 2010 Record Interiors review process. All architects registered in the United States or abroad are welcome to submit interiors-only projects, completed within the past 18 months. These may be new construction, renovation or adaptive reuse, commercial or residential, domestic or international projects. In a nod to the new decade, special consideration will be paid to works that incorporate innovations in design, program, building technology, sustainability, and/or materials.

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All submissions should be electronic* in one of the following configurations and accompanied by an official entry form that is available by visiting **architecturalrecord.com/call4entries**

- A CD or DVD containing the writable PDF "Call for Entries" form completely filled out; and a good-quality, low-resolution project PDF that provides at least 10 full-page images, plans, drawings, elevations, and explanatory text.
- A CD or DVD containing the writable PDF entry form; at least 10 good-quality 8-by-10-inch (screen-resolution) 72 dpi images, plans, drawings, and elevations as JPEG files; and explanatory text as a Microsoft® Word document.

* Please include one printout of the "Call for Entries" form with the disc. Be sure also to include the project's date of completion. Do not send binders or hard copies of the project presentations. No materials will be returned.

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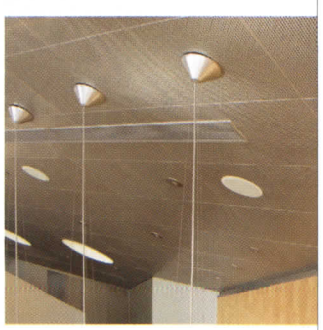

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www.vermontstructuralslate.com
800.343.1900 | **Contact:** Craig Markcrow

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Performance Data:

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www.gagecorp.net
800.786.4243, 608.269.7447
Contact: gage@centurytel.net

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Performance Data:

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www.bostonvalley.com
888.214.3655 | **Contact:** Sheri L. Carter, AIA

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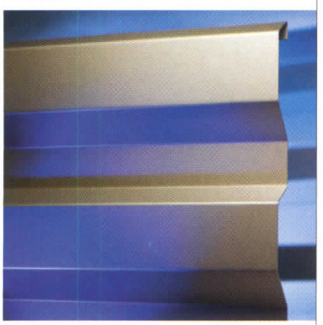

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www.fabral.com
800.884.4484 | **Contact:** Donna Berryhill

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www.smartvent.com
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www.cpidaylighting.com
847.816.1060 | **Contact:** Talia Vinograd **Circle 167**

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305.796.2226 | **Contact:** Rolando Serra **Circle 168**

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www.feeneyarchitectural.com
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www.lumenrail.com
888.243.6914 | **Contact:** Heidi Bischmann ***AIA Booth #2838*** **Circle 171**

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www.faacusa.com
866.925.3222 | **Contact:** *Robert Kempton* **Circle 172**

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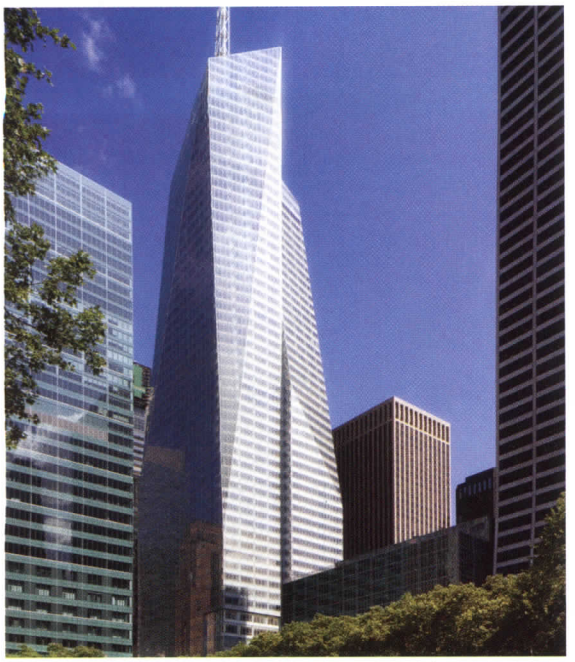

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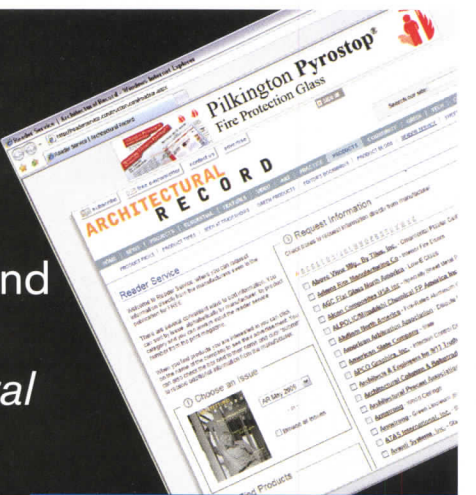

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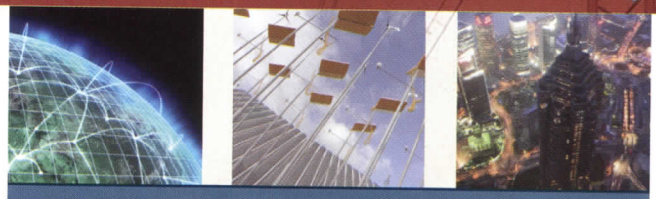

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PROJECT ***Water Sky Garden***

LOCATION **Vancouver, British Columbia**

ARTIST **Janet Echelman**

ARCHITECTURE **Hotson Bakker Boniface Haden**

LANDSCAPE **Phillips Farevaag Smallenberg**

ENGINEERING **Buro Happold; Peter Heppel Associates; Fast + Epp**

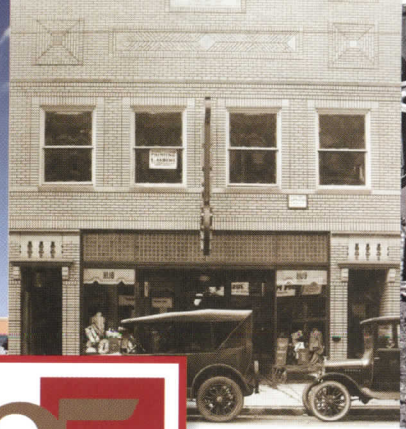
CONSULTANTS **Speranza Architecture**

LIGHTING DESIGN ***Joseph Scott***

UPON SEEING *Water Sky Garden*, a sculpture by Janet Echelman commissioned for the Vancouver 2010 Olympics, opening this month in Richmond, British Columbia, you might think of the Chinese fishing nets of Kerala, India. Echelman welcomes the connection between those massive, age-old, pulley-operated nets and her new, nautically derived art installation outside the Richmond Oval, a key skating venue for the Olympic Games. As the Massachusetts-based sculptor puts it, "I keep the work open to the point where each person becomes an active participant by taking his or her own meaning from a direct visual and kinesthetic experience."

While the sculpture's Eastern references pay tribute to the large Asian population of Vancouver (and, more specifically, Richmond, which is predominantly Chinese), it also draws inspiration from the indigenous Musqueam Band, who still fish the waters of the nearby Fraser River. "I do extensive research of the history, physical anthropology, and geography of a place before I design a work," Echelman explains.

Two 52- and 75-foot red lanterns are constructed of flexible, knotted high-tech fiber draped around a rigid steel armature. The fluid forms hang above a pond that receives rainwater from the roof of the adjacent rink, which is treated and reused for irrigation. Echelman named the installation after the sky lanterns that move according to a "wind choreography," in her words, and are reflected in the pond. Paths around the sculpture are linked by red bridges extending over the water to foster "the experience of someone walking between water and sky." *Jane F. Kolleeny*



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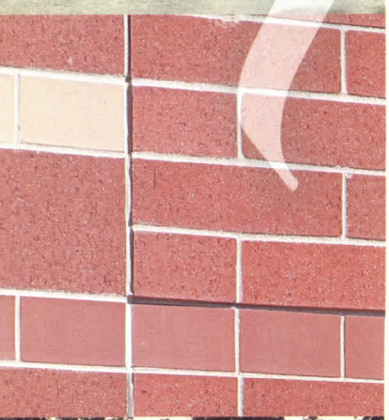

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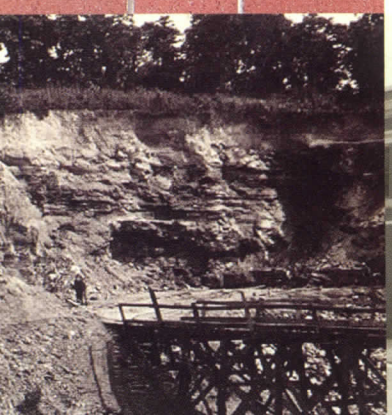

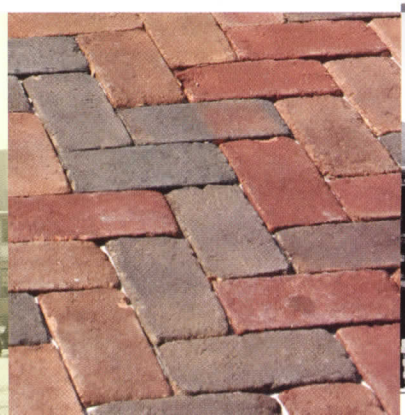

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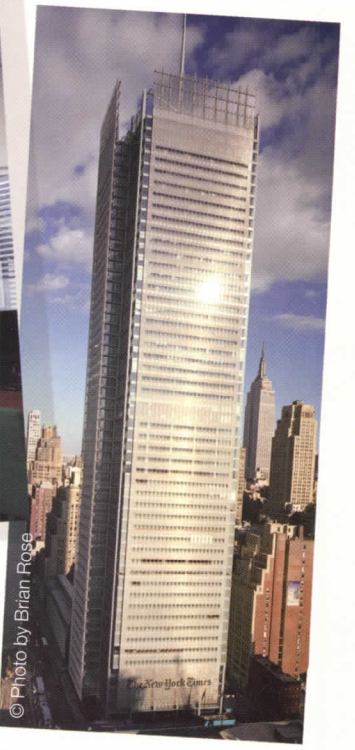

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