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BIM Transforms University Curricula in AEC Disciplines

The Rise of an Educational Imperative

Educating a New Generation of BIM/IPD-Savvy Professionals

The advent of building information modeling (BIM) and the integrated project delivery (IPD) process alters professional responsibilities and forever changes the role of architects, owners, engineers and contractors in the design and construction process. As BIM adoption accelerates in the building industry, so does the need for BIM integration in the educational curricula of architecture, engineering and construction (AEC) disciplines.

The transition to BIM in the academic environment is a reality. According to the Association of Collegiate Schools of Architecture (ACSA), more than 35 universities offer a specialized degree in BIM and 50 universities offer a specialization in sustainable design. Many engineering and construction management programs now offer dedicated classes that teach BIM concepts, as well as interdisciplinary collaboration design studios with sustainable design as an underlying core concept.

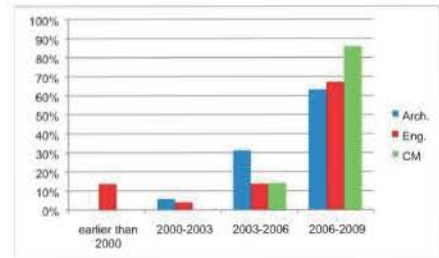
Foremost academic institutions are working to prepare the next generation for the challenges of professional practices, while ensuring these innovative thinkers and problem solvers have the right tools to compete in the emerging BIM era and are cognizant of the shift to IPD. Today, BIM is part of the pedagogy and curricula in many ways—as a core class, elective, capstone class, as well as interdisciplinary collaboration studios.

While the BIM transformation has begun to accelerate, these leading colleges and universities, along with many more, have built the framework for the next generation BIM/IPD-savvy AEC professional.

A recent study conducted at the University of Southern California (USC) and Virginia Tech found that most university-level AEC programs began offering BIM courses between 2006 and 2009, with architecture programs leading the way.

Dr. Burcin Becerik-Gerber, assistant professor in the Sonny Astani Department of Civil and Environmental Engineering at USC and study facilitator, says, “That is not surprising considering the visual nature of the architectural education and the rapid increase in 3D modeling technology usage since the late 1990s.”

The survey indicates BIM is comparatively new in university engineering programs and construction management programs. Dr. Becerik-Gerber says, “About 86% of the construction management programs polled began offering BIM courses during the 2006-2009 timeframe.” The survey asked how many courses AEC programs would integrate into the curricula per the future plan. The majority said they would have at least one course on BIM in the next two years.



Essential to the value of the research and impetus of the survey is the imperative for understanding the current state of integration in the education of AEC professionals.

Dr. David Gerber, assistant professor of Architecture at USC and also a study facilitator, says, “While the importance of continued BIM education across the disciplines is unquestionable, future studies should focus on emerging competencies that foster highly multidisciplinary professionals and researchers that can effectively bridge the gaps between practice and academia and lead a rapidly transforming industry.”

Orchestrating Collaboration

It is unreasonable to expect university students to achieve a deep understanding of all design and construction knowledge domains during their tenure in an academic program. Instead, it is critical that students develop a focused set of skills, and then learn how to collaborate with others to participate in interdisciplinary design teams effectively. BIM provides the opportunity to facilitate and accelerate collaboration and information sharing.

We recently implemented two courses at Penn State that provide a significant focus on orchestrating collaboration between students across disciplines. The first course is a model of a vertical “Collaborative BIM Studio” where teams of students across six different disciplines—architecture, landscape architecture, construction, structural, mechanical and lighting/electrical engineering—design a project using BIM for data collection, analysis, design development, data coordination and project presentations.

The second is a capstone design course in Architectural Engineering (AE), which focuses on integrating mechanical, structural, lighting and construction engineering students within AE with BIM as a foundation technology. These integrated design studios make learning more engaging through an experiential approach, provide the opportunity to learn from fellow team members, and provide students with the opportunity to learn about leadership, team dynamics and group management.



Debra Pothier
Senior Education Marketing Manager
Autodesk



Dr. John Messner
Associate Professor of
Architectural Engineering
The Pennsylvania State University

International Collaboration with BIM at its Core

The first American-China undergraduate construction education thesis class brought together students from the McWhorter School of Building Science at Auburn University and the College of Civil Engineering at Tongji University (TJU), Shanghai, China to understand the global advantage of BIM.

Teaching Virtual Design

Auburn University's Master of Design Build program prepares architects and construction managers to work effectively in an integrated design and construction milieu. We take collaboration as a point of departure and ask how best to manage the process in order to arrive at the best solutions.

Virtual design and construction is key to this process. BIM is not just a "tool," but the shop and the medium simultaneously, a virtual project environment that is integral with the actual process of designing, managing and building a project among people in the physical world. The ethical, environmental and economic imperative of building better buildings requires collaboration, and collaboration is enabled by technologies such as BIM.



Josh Emig
Assistant Professor
Auburn University

Stanford's BIM/IPD Microcosm

Stanford University houses all the key players in the integrated project delivery (IPD) process in its Civil and Environmental Engineering Department. Therefore, architectural design, structural engineering, building science (mechanical, electrical and plumbing disciplines), atmosphere and energy, and construction management students all live together under one roof and share the same studios and classes. In effect, we have created a little microcosm and testing ground for the IPD process. The fundamental tool at the core of our IPD process that we all use to share and communicate is now BIM.

Students routinely use the Autodesk® BIM Portfolio in our teaching clusters and studios

Through the international collaboration, 16 Auburn students and 15 TJU students studied, researched and worked on multiple construction-related topics with an emphasis on learning and using building information modeling (BIM) as well as the concepts of sustainable construction, integrated design, building MEP systems, and construction scheduling.

Developed by Assistant Professor Junshan Liu and Professor Scott Kramer of Auburn, along with faculty at Tongji, the students modeled one of the European pavilions, constructed for the 2010 Shanghai World Expo, using the Autodesk® BIM Portfolio to:

- Create architectural, structural and MEP models
- Create building material quantity take-off and pricing estimates
- Perform building design clash detection and 4D construction schedule simulation

After working in virtual teams during the spring semester with their Chinese colleagues, Auburn's students and faculty traveled to Shanghai in May 2010 and studied in residence at Tongji University for three weeks. During that time, the students also compared and analyzed the application of BIM in the American construction industry versus the use of BIM in the Chinese construction industry.

Auburn's Liu says, "Our students received an enriched international experience studying abroad, enhanced their BIM skills, developed their skill sets to work on an international construction management team and experienced first-hand the building challenges in China versus the United States."

for their design and planning projects so that the technology becomes a second language that students will use to communicate and test their ideas in future courses.

We also have a phenomenal integrated AEC studio where students collaborate with multi-disciplinary teams from all over the world to experience the work process from conceptual design thru detailed analysis and construction planning, while using BIM tools at every stage.

Because of BIM and IPD, our students do not think of themselves in terms of one particular discipline. Rather, they focus on the common thread—their shared love of the building process—and learn to appreciate the various roles and ultimately choose the role that fits them best. We are molding students and graduates



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who can fluidly design, communicate, test and plan using BIM models in an integrated project delivery framework, which is really the key to realizing the full promise of this revolutionary process change.



Glenn Katz
Department of Civil and
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Stanford University

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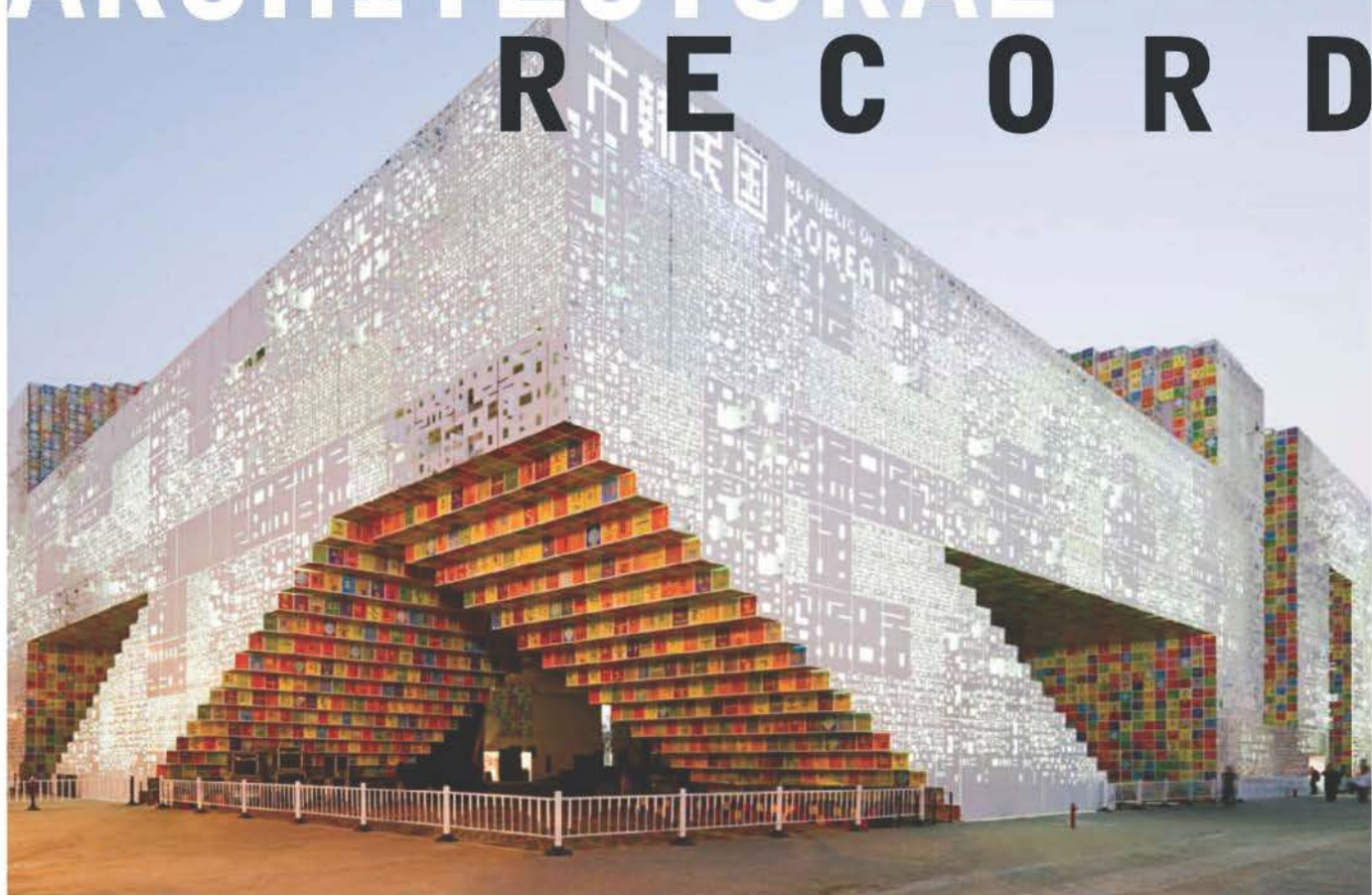
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ABOVE: Republic of Korea Pavilion, Shanghai, China, by Mass Studies-Minsuk Cho. Photograph © Iwan Baan.
ON THE COVER: Burj Khalifa, Dubai, by Skidmore, Owings & Merrill. Photograph © Iwan Baan.

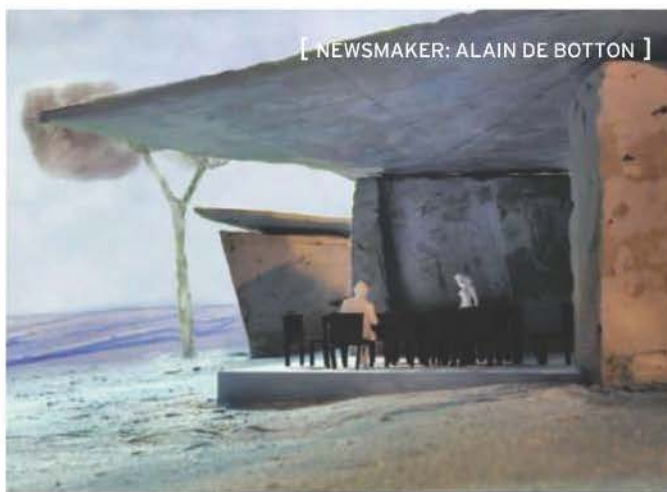
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NEW THIS MONTH

We visit **Expo 2010 Shanghai China** and report back with blog posts, photography, and more. We also speak with pop philosopher **Alain de Botton** about bringing well-designed vacation homes to the British masses. And our **House of the Month** features a Los Angeles home by 27-year-old Jayna Cooper.



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VIDEO: MIAMI MARINE STADIUM

A Modernist ruin in the middle of Biscayne Bay, Florida, this graffiti-covered concrete structure could see new life.

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Our Web site allows readers to share images of their design work – as well as their photography, their drawings, and their opinions. Below are some of the best contributions to the site from the previous month.



Illinois Institute of Technology's Crown Hall at 3 a.m. | Ludwig Mies van der Rohe | Chicago, Illinois | Submitted by splenert.

[COMMENTS]

“It’s great to see that architects recognize the mass appeal of the gabled house (the same shape inked by a child when instructed to *draw a picture of a house*), but will *modernize* it for their adventurous clients.”

—Anonymous on “Housing Stack”



Yale University Art Gallery | Louis I. Kahn | New Haven, Connecticut | Submitted by WRBingham.



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Scraping the Limits

China confounds our Western guilt with its ambitious Expo 2010.

BY ROBERT IVY, FAIA

HOW COULD ANY BUILDING BE higher? How could any development be larger? Have we gone as far as we can go? We seem to have reached a limit this year with the completion of the Burj Khalifa, in Dubai, U.A.E. – featured in this issue – which scrapes the heavens at 828 meters (2,717 feet). While beautifully realized, it calls into question the basic programmatic decisions of the forces that conceived it. The Burj culminates an era of financial expansion worldwide, yet opened, ironically, in the aftermath of an economic free fall.

CityCenter, meanwhile, rises in another desert, a world away. This urban agglomeration of more than 18 million square feet, the largest privately funded development in the United States, combines a cosmic gathering of talent in a multibillion-dollar mashup that warrants our critical attention: Was it worth the effort? Ironically, MGM Resorts International reached out to the investment company Dubai World to help fund these ambitious hanging towers. But to what avail?

Heroic in scale and scope, both projects were born in prosperity but have appeared in a new, scorched age: Like starlight, they shed heat and light separated from us by time and space. Today's fragile world, with its dwindling resources and expanding populations, is calling for other agendas in the West. Attribute it to changing fortunes or the bitter aftertaste of spilled oil, our architectural sights have now shifted to a more socially, environmentally conscious agenda. We're imagining a smaller scale, hands-on, ecofriendly urban world. We have corrected course from too much bigness. Right?

But whoa! Just at the moment that we Westerners have admitted our collective guilt, here comes the rest of the world, China in particular, loudly singing, "We've Only Just Begun." Along with the Beijing Olympics of 2008, Expo 2010, in a staggering debut, announces in capital letters that China has arrived on the world stage. Perhaps more than the Olympics, this world's fair, set in Shanghai, consumes a massive investment – \$45 billion – more than Beijing spent on the games.

The exposition spans both sides of the Huangpu River with a positive theme of "Better City, Better Life." While world's fairs have been ignored in the West, devolving into nonevents (who can recall a single structure from Hanover's in 2000?), they still retain the potential for signifying a nation or a city on the rise: Think London in 1851 or Chicago in 1893. China understands the branding opportunities.

The Shanghai Expo defies expectations, stretching for 2.04 square miles. Both entertainment and urban development, the fair reclaims a formerly gritty industrial area, changing wasteland into parkland and factories into exhibition halls and gathering places. One quadrant of the Expo, entitled "Urban Best Practices," showcases good ideas for a sustainable future with pavilions from international cities, such as a geothermally cooled house from Hamburg, Germany, that brings cooling to the sultriest day like an ice cream

cone. Feel-good and do-good meets good times.

Some improvements will stick. Five major pavilions constructed by the Chinese, including the signature red China Pavilion and space-age arena, will remain after the fair as the centerpiece of a large urban park that will serve as a site for future meetings and trade shows. At the same time, the nation invested in the city. Permanent improvements include the construction of a new freeway and five(!) new subway lines since 2006 (fully functioning, clean, easy to navigate). Such accomplishments humble us.

Country pavilions, which draw the crowds, include representatives from the nearly 190 nations that wanted to be on the guest list at China's biggest party. Despite a disappointing showing from the United States, two of the best, Great Britain and Spain, represent architecture by two of those respective nations' most talented designers: Thomas Heatherwick and EMBT. Korea's and Denmark's pavilions also beckon.

The imaginative designs – Britain's houses a genetic treasure house of seeds, a so-called "seed cathedral," from Kew Gardens, and the expressionistic Spanish pavilion is covered in wickerwork – demonstrate that creativity and inventiveness are flourishing, while the U.S. contribution seems like a sad version of corporate fulfillment.

The crowds are coming. Chinese television posts each day's turnstile figures, which sometimes top 500,000 in a single day. Lines are prodigious, often requiring several hours' waiting in the steamy heat for a single pavilion; Saudi Arabia's alone, the most expensive on the site, takes upwards of nine hours to enter and navigate. Estimates place ultimate attendance north of 70 million people by the time the Expo closes on October 31. Meanwhile, the city of Shanghai, more vibrant than any world's fair, with more tall buildings than its closest rival, continues to swell and grow upwards, with skyscrapers sprouting from the World Financial Center to the forthcoming Shanghai Tower, emerging from the Pudong muck.

Attitude adjustment is in order: From Dubai, U.A.E., to Dubai World in Nevada, we might congratulate ourselves, knowing that we have neatly figured out how the world should operate and build. If we think we've reached some kind of outer limit in Dubai and Nevada, that today's architectural ambitions and goals have shrunk down to manageable size, to the comfortable anti-icon, we may need to think again. Yes, we've scraped the heavens. The Expo demonstrates that other nations have their own ideas and are matching their urban visions to reflect their arrival on the world's stage. Today, it's China's turn.

FROM THE WEB:

The following unsigned comments, originally posted on archrecord.com, refer to stories that appeared in print and online.

What's in a name

I have long admired the work of Polshek Partnership, and have always been particularly intrigued by the deliberate "design" of their work process. My assumption is that in selecting a new name for their firm [Record News, June 24, 2010], they spent considerable time in research, presentation, debate, and resolution, just as they do with any project in their studio. I've always believed they would evolve more in the selfless style of the now-defunct The Architects Collaborative (TAC), so the final name choice, Ennead, is puzzling at best.

I hear that after much deliberation for a year, Virgil is renaming the *Aeneid*

the Polshek Partnership, but he isn't changing any of the characters, and Troy still gets sacked.

Let the light shine in

Tom Phifer's North Carolina Museum of Art is a stunning masterpiece of subtle beauty, linear lines, light, and water [July 2010, page 62]. The ingenious interior lighting (filtered exterior light) and reflecting pools dramatically set off the art inside; the museum allows the visitor to have a much more intimate and less intimidating experience with its contents. This is something that one would expect to see in any major world capital. As a citizen of Raleigh and the wonderfully progressive southern state of North Carolina, I am very proud to have this in my backyard. Watch out, Renzo Piano!!

The right site?

RECORD'S selection committee should be fired for highlighting Lautner

Associates' July House of the Month as one designed to respect nature. A cliff's edge scoured of all flora? Loving the ocean is more than just the sand and water – consider all the layers from water to deep inland. Good design starts with site selection.

Return of the gable

July's Encounter column ["Housing Stack," page 36] features clever and witty designs. I think of the places we have admired for thousands of years and wonder if our unsurpassed technology and finances are capable of helping us create spaces that will truly contribute to the public good for generations to come.

Josephine Minutillo asks the right questions in her Encounter column. My hypothesis: Is this the prologue to another era of quick figuration, sadly marching toward a second wave of postmortemism? I hope not.

**Corrections**

Credits for July's cover and contents page photos were inadvertently switched. Dennis Guichard shot the cover image of Cape Town Stadium while Roland Halbe shot the contents page's Centre Pompidou-Metz.

Send letters to rivy@mcgraw-hill.com.

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LEFT: A recent court decision allows Columbia University to move forward on its planned 17-acre expansion in New York City.

[URBAN PLANNING]

I'll Take Manhattanville

Many states have clamped down on eminent domain. Recent court cases signal that New York won't be following their lead.

Seizing another person's land is a pretty strong-armed way of doing business. Property owners have often challenged eminent domain in courts, and lawmakers in many states have tried to limit its use. Recent decisions in New York show that the state won't hesitate to apply the broadest interpretation of the law to make mega-developments happen.

On June 24, the New York Court of Appeals – the state's highest court – ruled that the state could use eminent domain to acquire property for a Columbia University expansion in West Harlem. The decision overturned a rare December 3 rejection by a lower court. The landowners fighting to keep their property intend to appeal to the U.S. Supreme Court.

The decision comes seven months after another controversial eminent-domain ruling: On November 24, the same Court of Appeals upheld the use of eminent

domain for the \$4.9 billion Atlantic Yards development in Brooklyn. The massive, mixed-use project is now under construction.

These recent decisions have reignited a long-running debate over the uses of eminent domain. Should urban dwellers fear Beijing-style condemnations of property to promote redevelopment?

"It's very challenging to assemble large parcels of land to promote projects in the public interest," says Vishaan Chakrabarti, a former New York City planning official and director of Columbia's real estate development program. "There needs to be a very high standard for what constitutes a public purpose, but it is a necessary part of urban redevelopment."

Eminent domain is allowed under the Fifth Amendment, which enables the government to seize private land if it provides just compensation and the project serves a public use. Since

the 1970s, courts have interpreted "public use" broadly. In 2005, in the landmark case *Kelo vs. the City of New London*, the U.S. Supreme Court affirmed that the government can acquire private property via eminent domain and turn it over to another private owner for redevelopment. Since that controversial ruling, 43 states have passed laws limiting the use of eminent domain. New York is not one of them.

"New York is the subbasement of the law – it's an open sewer," says Gideon Kanner, a lawyer and blogger specializing in eminent domain. "It has never in modern history considered the question of public use on the merits of the case."

The Columbia University saga goes back years. The school, in 2002, began acquiring property in an area called Manhattanville for the \$6.3 billion expansion, and in 2003 hired a team including Renzo Piano, SOM, and James Corner to master plan a 17-acre site. In 2007, it contracted Davis Brody Bond Aedas as architect of record.

The 25-year plan maintains the existing street grid but calls for the demolition of all but four struc-

tures and construction of 16 new mixed-use buildings for classrooms, research labs, and housing. A complex of building services and parking would be located below ground. Most property owners in the neighborhood struck a deal with Columbia, but there were a few holdouts.

In December 2008, the Empire State Development Corporation (ESDC), the state's development arm, voted unanimously to use eminent domain to acquire the property, arguing that the area is blighted and the Columbia plan would be a significant land-use improvement. In response, several Manhattanville property owners, one of them represented by attorney Norman Siegel, filed a petition against the ESDC. They also hired Mafruza Khan, a former planner at Pratt Center for Community Development, to help them perform their own land-use study.

The case, *Kaur v. New York State Urban Development Corporation*, went before a lower appellate court in December. The judge found that Empire State's "blight study" was flawed and ruled in favor of the property owners. At the time, Siegel credited their strategy. "People challenging eminent domain need to create their own record. We did 13 Freedom of Information Act requests to put thousands of pieces of paper into the record. We also created our own no-blight study to challenge the

government's blight study. We went building by building, took photographs showing the conditions, and analyzed what they claimed was blight," he said soon after his early court victory.

Siegel, speaking to RECORD in June, said he is disappointed by the recent decision and plans to appeal to the nation's highest court. "We believe it sets a terrible precedent

for the abuse of eminent domain," he said. "The history in New York is to show deference to the administrative agency, and that's a huge thing that you have to overcome. Fortunately, the judicial system allows us one more opportunity."

Maxine Griffith, Columbia's head of government and community affairs (and former head of Philadelphia's city-planning com-

mission), defends the project's civic purpose. "Even more telling than the finding of 'blight' was the 20-year history between elected officials and the community," she says. Griffith notes that residents aspired to clean up the area long before Columbia was involved. "[The university] is intervening in a positive way in a neighborhood that has been recognized to be underdeveloped."

Meanwhile, demolition and pre-construction work has begun on a site already owned by Columbia for the first building on the new campus, the Jerome L. Greene Science Center, a neuroscience research facility designed by Piano. Unless the Supreme Court intervenes, the first phase of the new campus is slated to be finished in 2015.

Stephen Zacks

[EDUCATION]

A Changing of the Guard at American Design Schools

As campuses prep for the fall semester, some top architecture and design schools are experiencing turnover among their high-level staff. Deans and other administrators have stepped down, or announced plans to, at the Art Institute of Chicago, the University of Maryland, The Cooper Union, Massachusetts Institute of Technology (MIT), the University of Michigan, and the University of California, Berkeley.

Every year brings a changing of the guard at one school or another, so these recent departures don't indicate the sky is falling. But they do highlight a trend: Tenures, in general, are shortening, which may be the result of burnout, according to some faculty members.

Indeed, unlike a few decades ago, when deans could focus solely on being administrators, today's leaders often juggle various tasks, such as fund-raising and teaching. That multitasking can be stressful, says Thomas Fisher, president of the Association of Collegiate Schools of Architecture, a 127-member trade group that Fisher headed until July 1, when his voluntary one-year term expired. (Succeeding him is Daniel Friedman, dean of the College of Built Environments at the University of Washington.)

Fisher, who has served as dean of the University of Minnesota's College of Design for 14 years, says leading a school "can be a grueling, relentless job because we're pulled in so many directions." But, he notes, the faster turnover also stems from "the hyperspeed of our culture. Everybody expects everything to happen at a faster rate."

ART INSTITUTE OF CHICAGO

One of the shortest tenures in recent history may be that of **Wellington "Duke" Reiter**, who was president of the School of the Art Institute of Chicago for just two years. In contrast, Reiter's predecessor, Toby Jones, was

president for 18 years.

In his brief but active time at the 3,000-student school, Reiter made decisions that did ruffle feathers, such as creating a provost position for greater oversight, and reaching out to corporations for financial support, he says. "Some people like change,



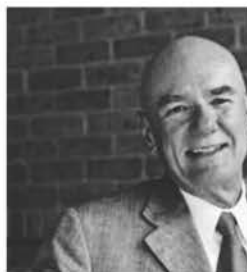
REITER

and some people think change is threatening," says Reiter, adding that he and administrators "came to a mutual agreement" about his departure.

Next up, Reiter hopes to launch his own school, after having taught at or led existing schools for more than two decades, including serving as dean of the College of Design at Arizona State University.

Aimed at teaching business skills to those with architecture degrees – a modified M.B.A. program for designers – Reiter's new school would also be somewhat virtual. Students would attend classes for a few weeks in the fall and spring on local campuses but also throughout the year in the boardrooms of large architecture firms, to whom Reiter is now promoting his idea. "Let's just say there is interest," he says.

In the meantime, a four-member transition team will lead the school at the



CRONRATH

Art Institute until a full-time replacement is found, a spokeswoman said.

UNIVERSITY OF MARYLAND

Change has also come to the University of Maryland's School of Architecture, Planning and Preservation, where Garth Rockcastle has stepped down from the deanship by choice after six years in order to "invigorate" the institution, said a spokeswoman, who added that the adaptive-reuse specialist will take a fall sabbatical before returning to teaching at Maryland in 2011.

Replacing him is **David Cronrath**, who started on July 1 after a six-year stint at Louisiana State University's College of Art and Design. While in Louisiana, Cronrath advocated for the shutdown of the Mississippi River-Gulf Outlet, or MRGO, which was blamed for intensifying damage from Hurricane



CAMPBELL

Katrina; it closed last year. Similarly, in Maryland, Cronrath plans to fight coastal erosion along the Chesapeake Bay, whose banks are depleted of vital silt, he explains.

"The 20th century gave us great abundance, but it also produced new problems," such as climate change, which needs to be addressed, Cronrath said.

THE COOPER UNION

A primary mission of The Cooper Union in Manhattan, on the other hand, has been to boost the endowment of the school, which pays the tuition of its 1,000 students.

And president **George Campbell, Jr.**, who will step down in May 2011 after a decade on the job, met the challenge head-on, increasing endowment from \$100 million in 2001 to \$600 million today. To do so, Campbell leased two



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TEHRANI

Cooper-owned parcels to developers: 435 Lafayette Street is now a green-glass condo by Gwathmey Siegel, and 51 Astor Place is set to add a Fumihiko Maki-designed office building.

Perhaps the most notable aspect of Campbell's legacy, however, is the school's new home, 41 Cooper Square [RECORD, November 2009, page 96], an 11-level multipurpose building by Thom Mayne/Morphosis that's been praised for its architecture, which features a perforated metal skin. "We wanted to stimulate the imaginations of our creative young people, and I think



MCMORROUGH

the building does that," said Campbell, a trained physicist. His successor has yet to be found.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

The architecture department at MIT has a new head, too: **Nader Tehrani**, a current teacher at the university, replaces Yung Ho Chang, who wrapped up a five-year term this spring.

Tehrani, who will occupy the number-two slot behind dean Adèle Naudé Santos, will serve for four years, dur-



BURESH

ing which time he expects to help transform the curricula and organize exhibitions. Tehrani will also raise funds, which may cut into his teaching – though, he joked, "I've taught for 20 straight years and never had a sabbatical."

Chang, meanwhile, will take a yearlong sabbatical, as per university policy, and resume teaching design studios with a focus on urbanism in China when he returns.

UNIVERSITY OF MICHIGAN

At the Taubman College of Architecture and Urban

Planning at the University of Michigan, meanwhile, **John McMorrough** is poised to become chair for a four-year term. A search committee selected him this spring, and the school's regents were scheduled to confirm him on July 15.

McMorrough replaces Tom Buresh, who served two back-to-back four-year terms and is now headed to the University of California, Berkeley.

McMorrough comes to Michigan from Ohio State's Austin E. Knowlton School of Architecture, where he had been "section head," or the second-in-command, for five years. He hopes to get students talking about ways they might use design to tackle global problems, he says. "I want to create a more worldly engagement for architecture in general," says McMorrough, who will continue to be a principal of studioAPT in Columbus, Ohio.

UNIVERSITY OF CALIFORNIA, BERKELEY

On July 1, **Tom Buresh**, the former Michigan head, became the chair of Berkeley's Department of Architecture, which has a total of 1,000 undergrad and graduate students.

Buresh replaced Gail Brager, who had served as interim chair since Mary Comerio stepped down in 2009 after a three-year stint. For Buresh, personnel changes are a positive sign. "I think it's a good thing for schools to turn over every five to 10 years," he says.

In its hiring, the university broke some new ground: Buresh is the first person to lead Berkeley's architecture program who wasn't formerly a professor there. He attributes that casting of a wider net to the school's desire for a more diverse faculty. *C.J. Hughes*

[CURRICULUM]

Parsons to Offer MFA in Transdisciplinary Design

Recognizing the ever-expanding role that designers play in today's world, a program that will launch this fall at Parsons, in New York City, aims to train students to be well-rounded problem solvers capable of applying design thinking to a wide range of issues.

The Urban and Transdisciplinary Design program, as it's called, will be housed in the Manhattan-based university's School of Design Strategies. It will offer a Master of Fine Arts in Transdisciplinary Design – the first degree of its kind in the country.

"The word *transdisciplinary* is often off-putting, because it sounds a little pretentious," acknowledges Jamer Hunt, the program chair. "But it's really a simple idea. We want to create an experimental space where we can address complex problems that transcend disciplinary boundaries." For instance, when designing responses to natural disasters, "you really need to bring in multiple kinds of capacity and skill,"

Hunt explains. A transdisciplinary designer would be equipped not only to develop a wide variety of products and systems, but also to consider and respond to the social, financial, and environmental aspects at play.



The program will include studio-based projects.

Students applying for the two-year graduate program must have a traditional undergraduate design degree or experience in the design world. "We're looking to bring in people who have design experience but are starting to see that there are limitations to what their disciplinary practice allows them to do," he says. The school plans to accept 15 students for its first year.

The core of the program will be studio-based projects that bring students and various experts together to develop new solutions to real-world problems. In addition, says Hunt, "we have seminar courses that make the link between the world around us, which is changing for political, social, technological, and environmental reasons, and how and why we design." He expects graduates will end up in a wide variety of jobs, including positions with large design consultancies, nonprofit organizations, and public agencies. *Tim McKeough*

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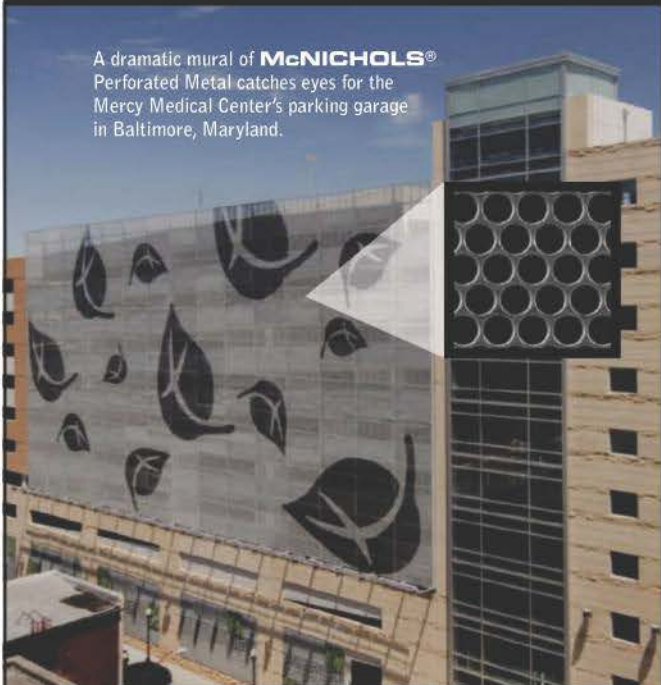
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ON THE BOARDS



Green-Wyatt Federal Building Retrofit

LOCATION **Portland, Oregon**
ARCHITECT **SERA Architects**

This fall, a \$135 million renovation of the SOM-designed Edith Green-Wendell Wyatt Federal Building (1975) is slated to begin. SERA Architects, a local firm, is working with the General Services Administration on the green retrofit. The project calls for a new radiant heating-and-cooling system, a rainwater-harvesting system, energy-efficient interior lighting, and exterior shading devices. The architects have also proposed a 200-foot-high living wall for the building's west facade.



Seattle Army Corps Headquarters

LOCATION **Seattle, Washington**
ARCHITECT **ZGF Architects**

In July, the ZGF Architects/Sellen Construction design-build team celebrated the ground breaking of the new \$72 million Seattle Army Corps Headquarters. Funded by federal stimulus dollars and part of the GSA's Design Excellence Program, the new 175,000-square-foot office building is expected to earn LEED Gold certification. Green features include ample natural light, conversion of hardscape into green space, recycled wood, and an energy-efficient HVAC system. Completion is scheduled for the fall of 2012.

A Temple to Tai-Pop

If all goes as planned, Taiwanese pop will get an expansive home where musical culture meets high design. Construction is expected to begin in 2012 on Taipei Pop Music Center, a \$110 million entertainment complex envisioned by Reiser + Umemoto RUR Architecture, with engineers from Arup Associates.

The team's proposal for a difficult 823,000-square-foot site in Taipei places three main structures on two separate pieces of land, which will be connected by a broad new walkway over an existing road. A 17-story tower will contain a performance venue and offices for music-industry professionals. A separate cube, likely with LED media facades, will house a Hall of Fame. On the public grounds, a movable and expandable stage will host outdoor events.

The team's competition-winning design beat out schemes by Toyo Ito & Associates and Morphosis, among other top firms. *Tim McKeough*



[MATERIALS]

Professor Uses Bacteria to Make Ecofriendly Bricks



An American architecture professor at a university in the Middle East is developing an energy-saving way to make bricks using bacteria known for its ability to solidify sand.

Ginger Krieg Dosier (pictured above), assistant professor of architecture at the American University of Sharjah in the United Arab Emirates, has developed a method that involves filling a form with alternating layers of sand and a solution containing urea, calcium chloride, and the nonpathogenic *Sporosarcina pasteurii* (or *Bacillus pasteurii*). Within a few days, a chain of chemical reactions yields a mineral growth that seeps between the grains of sand and “biocements” them together into a brick.

The process eliminates the need to burn coal or other fuel to heat a kiln to 2,000° F, as is commonly required in clay-brick production. Not burning fuel cuts down immensely on the amount of carbon released into the atmosphere during brick production. Dosier estimates that if her method were to replace the current way of making the 1.2 trillion bricks produced worldwide each year, it would reduce carbon emissions by 800 million tons annually.

Dosier, who taught herself chemistry with the help of mentors, is now working on controlling her bricks’ specific properties, such as hardness, brittleness, water-resistance, and freeze-thaw reactions. “The goal,” she says, “is to provide structural and performance proper-

ties similar to a standard clay brick.”

There are some drawbacks to her method. Although no burning of fuel is required, the process does give off ammonia, a small amount of carbon dioxide, and some effluent. These emissions are captured in a closed-loop system, which Dosier plans to employ when she eventually attempts larger-scale manufacturing. She adds that she has received requests for the waste from people who want to use it for fertilizer or in industrial processes.

While her method is still in the experimental stage, Dosier hopes to eventually mass-produce the biologically made bricks. A primary objective, she says, “is to make the cost as low as possible. Right now, each [experimental] brick costs \$2.70. My goal is to get down to less than 50¢ per brick, the same as a standard clay brick.” Plus, she aims to accelerate the production time. Creating one of her bricks takes about five days, compared to two days plus cooling time for a kiln-baked clay brick.

Dosier initially plans to target less-developed countries, where people don’t have access to typical construction materials. But she is equally interested in developed countries. “I have plans this year to work in the U.A.E. with local Bedouin, and I have also been in contact with several heritage centers here that have shown interest in renovation projects,” she says. “I am currently looking for future collaborations in the U.S., too.” *Mike Larson*

The process eliminates the need to burn coal or fuel to heat a kiln to 2,000 degrees Fahrenheit, as is commonly required in clay-brick production.



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Architects Recognized by Honor Society

The American Academy of Arts and Letters, established in 1898 in New York, recently honored the 2010 winners of its annual awards. Selected from a group of 50 nominees, the Awards in Architecture were presented to Stephen Cassell and Adam Yarinsky, of Architecture Research Office; Michael Meredith and Hilary Sample, of MOS; and the critic/architect Michael Sorkin. The Arnold W. Brunner Memorial Prize in Architecture was bestowed on landscape architect Michael Van Valkenburgh. Moreover, Thom Mayne, FAIA, was one of nine new members inducted into the honor society; Fumihiko Maki and Alvaro Siza were named foreign honorary members. *Jenna M. McKnight*

Fentress Receives Jefferson Award



Curtis Fentress, FAIA, has received this year's AIA Thomas Jefferson Award, which recognizes architects who have made significant contributions to the public realm. Fentress, founding principal of the 30-year-old Fentress Architects, has designed more than a dozen airport projects, including the Denver International Airport in Colorado and the Incheon International Airport in Seoul, South Korea. Most recently, he developed a modernization scheme for the Los Angeles

International Airport – a \$1.5 billion project that broke ground in February. In addition to his airport work, Fentress has designed museums, convention centers, and courthouses, among other building types. He also authored the recently released book, *Touchstones of Design: (re)defining public architecture*. *J.M.M.*

A Surprising Name Change for Polshek Partnership

Polshek Partnership, which has been named for its founder, Jim Polshek, in one form or another for almost five decades, is now Ennead Architects. The new moniker, a Greek word for a group of nine Egyptian deities that has come to mean any group of nine, is a reference to the firm's nine partners. "We are changing our name to something that suits us better, and we want to broadcast that message to the world," says partner Richard Olcott, FAIA. "It's not revolutionary, but evolutionary."

The 47-year-old firm, which has been planning the rebranding for a year and a half, will maintain its sole office, in New York, and not shed any of its 145 employees. And Polshek himself, now 80, will continue to function as a design consultant removed from day-to-day operations, as has been the case since 2005.



The only major difference is Ennead Lab, a new in-house research and advocacy arm that will provide pro bono services. "For years we have preached about a nonprofit practice, and now we can actually have one," says Polshek.

The firm's clients have almost exclusively been universities, museums, hospitals, and other not-for-profit institutions. Recent projects include the Frank Sinatra School of the Arts (above), in New York City. *C.J. Hughes*

PHOTOGRAPHY: COURTESY FENTRESS ARCHITECTS (LEFT); ENNEAD ARCHITECTS (RIGHT); ELS (OPPOSITE, TOP); KANNER ARCHITECTS (OPPOSITE, BOTTOM)

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OBITUARIES



Barry Elbasani

Barry Elbasani, FAIA, died of brain cancer on June 29 at his home in Berkeley, California. He was 69. As one of the founding principals of ELS Architecture and Urban Design, Elbasani was responsible for major buildings and plans in Milwaukee; Portland, Oregon; Phoenix; Summerlin, Nevada; Los Angeles; Austin, Texas; and Coral Gables, Florida. Born in Brooklyn, New York, he received a B.Arch. degree from The Cooper Union in 1964 and an M.Arch. in urban design from Harvard University in 1965. Subsequently, Elbasani joined Victor Gruen's Los Angeles office, then moved to Berkeley, where he worked for the Oakland Redevelopment Agency. In 1967, he, Donn Logan, and Michael Severin formed their own firm. *Kenneth Caldwell and Ron Nyren*



Stephen H. Kanner

Stephen Kanner, a third-generation Los Angeles architect, died of pancreatic cancer on July 2 at the age of 54. Kanner was principal of Kanner Architects, founded in 1946 by his grandfather, I. Herman Kanner; his son, Charles, took over in 1974. Stephen Kanner, who earned an M.Arch. from UC Berkeley, joined the firm in 1982 after working at SOM and Cambridge Seven Associates. Kanner considered his work a cheerful reinterpretation of Southern California Modernism. His projects – houses, commercial and public buildings, and apartments – were often playful and exuberant. His passion for architecture extended beyond the office: In 2001, he cofounded the Architecture and Design Museum of Los Angeles, which occupied a series of temporary spaces before moving into a permanent home in April. *David Hill*

Architectural Billings

The billings index rose to 46.0 in June, up slightly from 45.8 the month before. Still, any score below 50 indicates a decrease in billings. "Conditions at architectural firms continue to remain very soft," stated Kermit Baker, the AIA's chief economist, "but we're optimistic that they will improve before the end of the year." The inquiries score was 57.7.



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CIRCLE 19



ARCHITECTURAL RECORD Announces the Winner and Runners-up of Its Cocktail Napkin Sketch Contest

After being deluged with 1,322 cocktail napkins bearing sketches from 352 architects and architecture students, ARCHITECTURAL RECORD's jury of editors has determined the winner of its first annual Cocktail Napkin Sketch Contest. The jury picked as "the best in show" a drawing of a gate from a Japanese garden by Truc Dang Manh Nguyen, an architect from Piedmont, California. The winner has practiced for 27 years and recently opened his own office. He prefers sketching to photographing buildings. *"It forces the eye to focus and the mind to work,"* he says, *"and it's*

easier to commit a work of architecture to memory through drawing." Nguyen found the small size of the 5-inch-square cocktail napkin to be challenging, and confesses that this is the first time he actually tried to sketch on a cocktail napkin.

In sponsoring a contest on such a seemingly anachronistic art form in this digital age, RECORD affirmed its belief that many architects still draw to think—and many do so casually on scraps of paper. Architects have long been known to grab a cocktail napkin and start sketching when explaining or working out

a design concept. Stories abound on famous works of architecture resulting from such a seemingly effortless gesture, and it would seem the number of entries supports our belief that this activity still flourishes. RECORD would like to thank all the architects and architectural students who entered and urges readers to view additional selections at architecturalrecord.com. It would also like to extend its appreciation to its cosponsor, Centria, manufacturer of architectural metal wall and roof systems, for helping to make this competition possible.

WINNER

Truc Dang Manh Nguyen
*TDMN and Associates,
Piedmont, California*



Runners-up

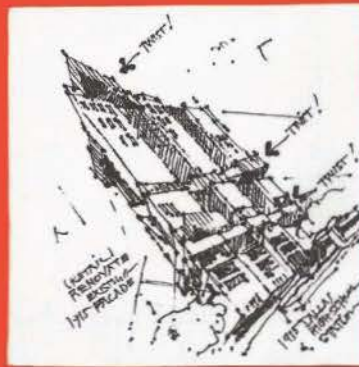
The jury awarded cocktail napkin sketches that reflect the spontaneous act of creativity underlying this ephemeral art form. While a number of entrants treated the cocktail napkin sketch as an exercise in more time-consuming rendering, the jurors admired the artistry of these exercises and included several runners-up that belong to this category.

Among the six runners-up is an entry that conscientiously employs the use of color and painstaking craft to create an elaborate cocktail napkin design. Some submissions were humorous and are shown on the Web, supplementing a small selection the jury found intriguing.

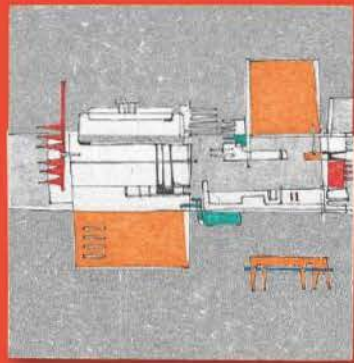
1. Keegan Carmichael, *Kallmann McKinnell & Wood Architects, Boston, Mass.*
2. David Fox, *University of Tennessee School of Architecture, Knoxville, Tenn.*
3. Choy Leow, *Allina Hospitals and Clinics, Minneapolis, Minn.*
4. Ernesto Liebrecht, *Ernesto Liebrecht, AIA, Dallas, Tex.*
5. Stanley Stark, *HDR, New York City*
6. John Henley, *ESa, Nashville, Tenn.*



1



4



2



5



3



6

To see more Cocktail Napkin Sketch Contest entries, go to architecturalrecord.com.



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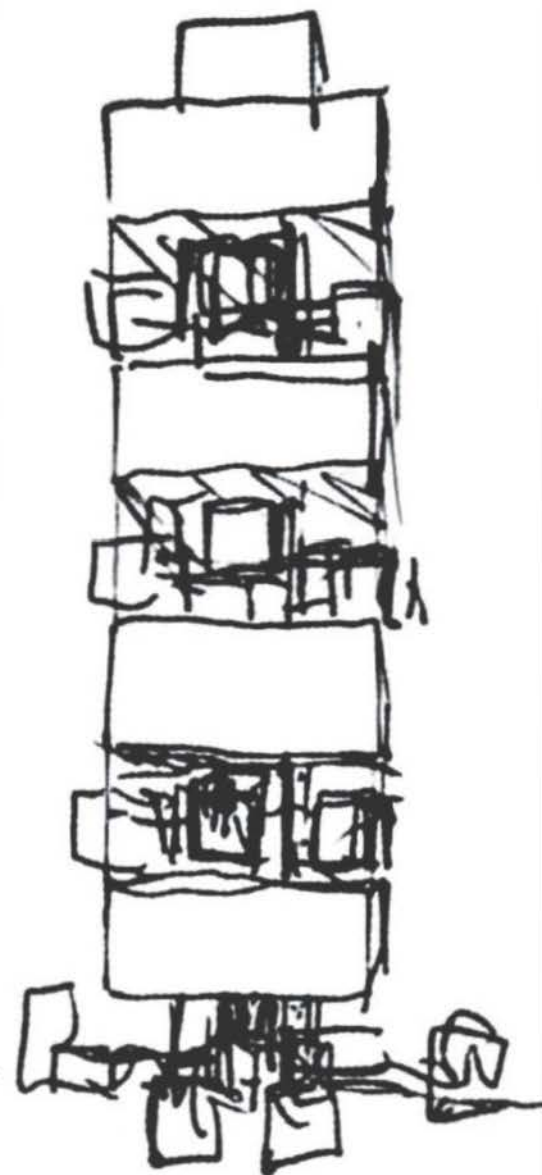
CIRCLE 20

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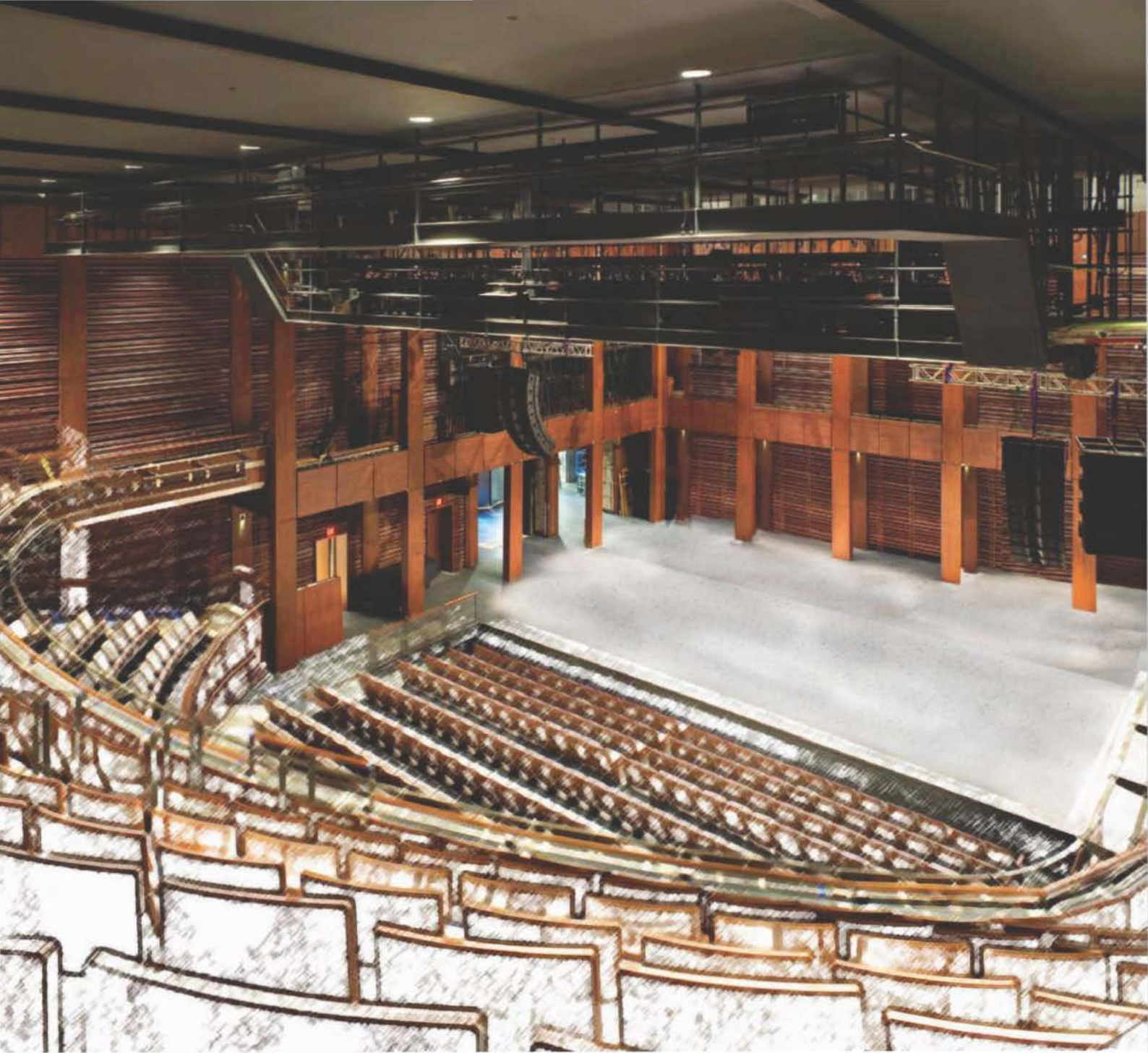


HANS HOLLEIN TRIED SOMETHING new by doing something old. For nearly half a century, the prolific architect has been building around the world, though he is probably best known for the groundbreaking, and sometimes controversial, projects he completed in his native Vienna decades ago. For a recent competition entry for an office building in Shenzhen, China, the Pritzker Prize winner searched his archive of drawings, focusing on a series of sketches he did in his twenties while traveling through the United States on a Harkness Fellowship. A year spent in Chicago from 1958 to '59 inspired him to draw skyscrapers, having had little opportunity to see them in Europe at the time. The concept sketch of a square-plan tower alternating office blocks with "sky gardens," which Hollein did in Chicago and decided to develop for the competition, landed the 76-year-old the grand prize. The building, which will house headquarters for two state banks, will be Hollein's first in China. It is located on a site whose master plan was originally developed by Steven Holl, and sits adjacent to Rem Koolhaas's Stock Exchange building, currently under construction. Schematic design drawings for Hollein's project were just approved, and construction is anticipated to begin at the end of this year. By dusting off an old sketchbook, Hollein once again finds himself at the forefront of current architecture. *Josephine Minutillo*



RIGHT: Chicago's skyscrapers inspired Austrian architect Hans Hollein to do a series of sketches of hypothetical high-rise buildings during his yearlong stay in the Midwest metropolis in 1958–59.

ABOVE: Fifty years later, Hollein developed one of those sketches into a competition-winning design for the 41-story SBF tower in Shenzhen, China.



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Office for Design & Architecture



PRINCIPALS: P. Christian Bailey, AIA; Ryoko Okada; Eran Chen

LOCATION: New York City

FOUNDED: 2007

DESIGN STAFF: 10

EDUCATION: Bailey: Virginia Tech, Blacksburg, Va., B.Arch., 1994; Okada: Pratt Institute, New York City, M.S.

Interior Design, 1995; Chiba University, Chiba, Japan, B.S. Engineering/Industrial Design, 1988; Chen: Bezalel School of Art and Design, Jerusalem, Israel, B.Arch., 1998

KEY COMPLETED PROJECTS:

15 Union Square West, New York City, 2009; The James New York, New York City, 2010; C.C. Residence,

New York City, 2010

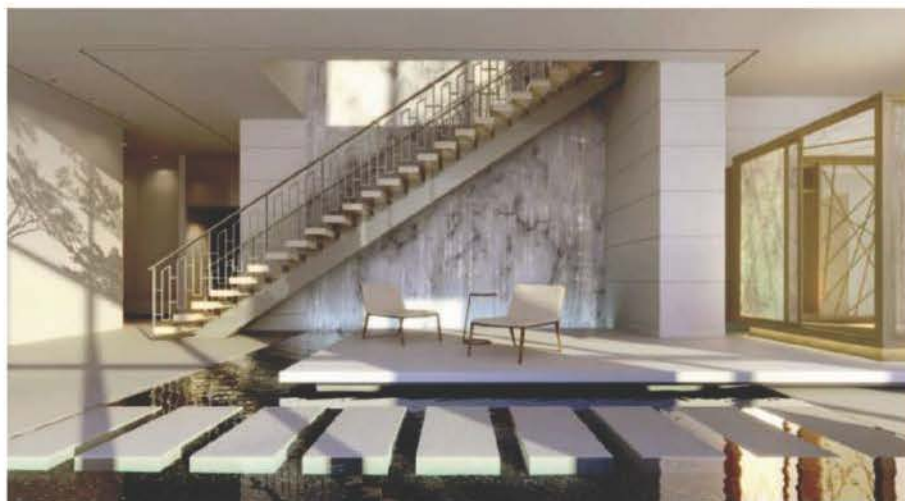
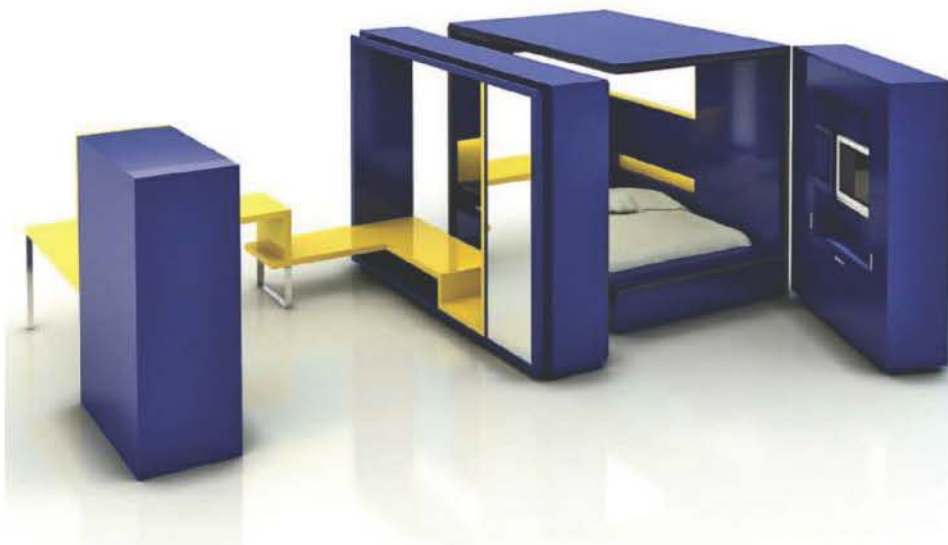
KEY CURRENT PROJECTS:

E.V. Haughwout Restoration, New York City, 2011; 55 Mercer, New York City, 2011; Stockbridge Residence, Stockbridge, Mass., 2011; L.E.S. Hotel, New York City, 2012

WEB SITE: ODA-Architecture.com

FOR ERAN CHEN, FOUNDER of the three-year-old Office for Design & Architecture (ODA), managing a 30-person studio at Perkins Eastman in New York City, where he worked for eight years, was almost like running his own company. Only it wasn't. "They are a big company," says Chen, "and although I had a lot of autonomy, I still knew I would someday have my own firm. I wanted to push the envelope and do more experimental work."

In 2007, with an exciting project – renovating New York City's famed Toy Building on Madison Square Park – in hand, Chen began ODA with two colleagues from Perkins Eastman, P. Christian Bailey, AIA, and Ryoko Okada. Unfortunately, Lehman Brothers was financing the project, and we all know what happened to them. To this day, the building is empty and in bankruptcy. "We finished full construction documents," says Chen, "and we're still hoping the project will come back to life." The blow was a hard one for the fledgling



design firm. "We had some rough times," says Chen. "We were on a track of doing seven very big projects shortly after we began, and four of them stopped."

Thankfully, the three New York City projects that remained were more than prominent enough to keep the partners working and building a rather stellar portfolio. A renovation of 15 Union Square West, an 1870s building that originally housed the Tiffany & Co. headquarters, was finished last year. Also recently completed is the C.C. Residence, a commission won from a competition launched by the unnamed, forward-thinking owner of the top

ABOVE: ODA Room is a modular system with three elements that can be retrofitted into existing spaces.

LEFT: The design for the top two floors of Trump World Tower includes multiple layers and experiences.



LEFT: 15 Union Square, the original home of Tiffany & Co., was updated and its cast-iron structure revealed to create a harmonious partnership between historic and Modern.



two floors of the 90-story Trump World Tower in New York City. That project boasts 20,000 square feet of living space, including a sculpture garden and a professional-grade recording studio. Then there's The James New York hotel in SoHo, a 76,000-square-foot hotel with 110 rooms/suites surrounded by 10,000 square feet of stepped gardens. Finally, the Long Island City Bagel Shop, an adaptive reuse project in Queens converting a gas-station garage into a bakery, will be completed later this year.

The three partners run their firm collaboratively, although Chen says he directs much of the design, while Bailey handles a lot of the project management, and Okada's specialty is interior design. Currently a 10-person team, Chen says that is down from the 18 people that made up ODA before the recession hit. Actively seeking more

public cultural projects, the firm is constantly competing in international competitions. They have also designed furniture, including a bassinet and easel with children's furniture company Argington; ODA Room, a modular bedroom system; the Mosaic Folding Chair, a lounge chair that, when folded, converts to an elegant room divider; and the Sunk Sofa, which is part of Italian furniture company Moroso's product line. Chen says the process of designing both buildings and smaller-scale projects is "very fluid. I can concentrate on designing a private house in the morning and a chair in the afternoon." But about the firm's product design, he says, "The furniture is not for the income, it's for the soul."

Also adding to the soul of ODA is the variety of sensibilities that each member brings to the table. Chen grew up in Israel, Okada in Japan, and most of the team members have international backgrounds. Also important to the firm's collective design philosophy is Chen's belief that every site has its own DNA to consider. "There's a history that exists way before the architect comes along," he says. "There's a chain of information the we must first identify, then make it multiply. It's holistic." *Ingrid Spencer*

[RECESSION FOLLOW-UP]

A year later: Retaking the job-market temperature

IN MARCH OF 2009, we profiled six emerging architects who were laid off as the economy tanked. Encouraged by news from formerly unemployed colleagues who recently landed new jobs and by the infectious optimism in the media, we caught up with our previous subjects and polled a few others on their job situation.

But did we jump the gun? A study by the AIA (www.aia.org/press/releases/AIAB082023) reveals that "despite signs that the overall U.S. economy is beginning to improve, nonresidential construction spending is expected to decrease by 13.4 percent in 2010."

Most of the subjects from the 2009 article are now employed full-time. Nick Loeper quickly resumed work at his previous firm near Philadelphia, and Dave Rizzolo of Rhode Island also returned to his previous position. Jesse Duclos relocated from California to contract with a former employer in Massachusetts, and Brian Jones — who spent a year in Guatemala

researching ancient Mayan artifacts as well as building homes for low-income families, designing a bar with an artist friend, and even tending bar — also found work in Massachusetts in the design department of a millwork company. Several others found work with high-end residential firms.

Karl-Eric Larson continues to



ABOVE: Brian Jones moved to Guatemala for a year, where he did various jobs, including designing a bar called Kafka with artist Morgan Mense.



consult for a firm in New York City. Though he will soon participate in his first group art show, he feels he "hasn't really accomplished the goals he set out to do" a year ago. The job market in Denver has proved difficult for Scott Gustafson; he landed a job last spring but found himself out of work again in January. He's still pursuing his own

practice, but his firm's Web site attracts many more job-seekers than paying clients.

Family needs, location, and debt all compound the struggle. When Kristina Iverson was 7 1/2 months pregnant, she was (legally) laid off from a large international firm in Washington, D.C. Though she is grateful for the extra time with her son, "It's difficult to have a newborn and try to job search," she says. She and her husband, also an architect, hope to remain in D.C., but high living expenses prove challenging. Lisa Shonnard, who was laid off from her position at a "starchitect" firm at the end of 2008, faces the same cost-of-living issues in Los Angeles, coupled with crippling student loans. In her article for *The Huffington Post* (www.huffingtonpost.com/2010/02/24/180000-in-debt_n_473722.html), she laments that the loans prevent her from moving "somewhere with a better chance at employment." *Murrye Bernard*

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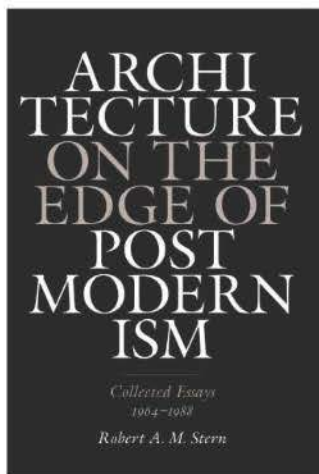
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Architects Write About Architecture



Architecture on the Edge of Postmodernism: Collected Essays, 1964–1988, by Robert A.M. Stern. Yale University Press, 2009. 203 pages, \$40.

This is writing pulled from a time warp. Robert Stern and his editor, Cynthia Davidson, have collected 21 essays Stern wrote between 1964 and 1988. That's the period the author roughly defines as the heyday of Postmodernism, a movement he sees as bookended by the early writings of Robert Venturi, Charles Moore, and Vincent Scully at the start, and by the Museum of Modern Art show *Deconstruction* at the end. During this era Stern was, of course, one of Postmodernism's leading theorists and practitioners.

Stern doesn't believe Postmodernism is finished. Since inclusiveness is one of its founding principles, he argues, it will simply weave itself in as one more strand in the diverse, pluralistic movement that is true modernism, which Stern thinks began when Gothic gave way

to the Renaissance.

Sometimes, as you'd suspect, the essays are dated. They're certainly madly repetitive, as Stern makes the same case over and over, often in the same words. But whatever you think of his built work, his argument here is worth making, and I came away with respect for the wisdom of the book.

Stern is at his best when he's skewering the faults and pretensions of International Style Modernism. (He's careful to note that there are other kinds of modernism). Beyond that, he cites what I take to be truths too often forgotten: that architecture is a language people understand; that it communicates through symbol and metaphor (not, say, through structural integrity); that it is typically a mix of high art and vernacular; that it always includes ornament, whether you want it to or not (he cites the nautical pipe rails of early Corbu); that it must take its place in an ongoing narrative by connecting with the past (but not by mere imitation); that any one building should be designed as an incomplete part of a larger context.

As a writer, Stern is literate and always clear. But he can be a tough read. He writes in a prolix, old-gentlemanly manner that never develops much energy except when he's bloodying the Bauhaus. He never evinces a typical architect's passion for the physical, for the sensory world of colors and materials, joints and connections, mass and void, light and space. In these essays, one feels that for Stern a work of architecture is an illustration of ideas about architecture. *Robert Campbell, FAIA*

Having Words, by Denise Scott Brown. Architectural Association, 2009, 159 pages, \$24.

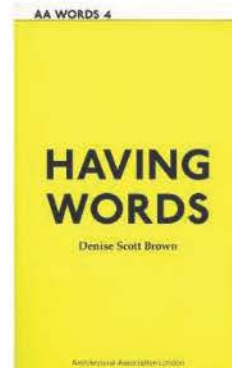
This small collection of essays, written by Denise Scott Brown between 1967 and 2009, provides a brief but absorbing intellectual history of the ferment in the architectural and planning professions in the U.S. and U.K. during the past four decades. Scott Brown, an architect and planner in the firm of Venturi Scott Brown and Associates, reveals significant academic and personal experiences that went into the construction of her remarkable persona.

Born Denise Lakofski in Johannesburg, the daughter of a Jewish family from Eastern Europe, she studied architecture at the University of Witwatersrand before heading to London's avant-garde Architectural Association in 1952. Postwar London needed serious rebuilding, and Lakofski's mentors, such as architects as Peter and Alison Smithson and Arthur Korn, were generating much-needed housing and planning ideas. In 1955, Lakofski married Robert Scott Brown and the two decided to pursue architectural studies at the University of Pennsylvania in Philadelphia, matriculating in the city-planning department in 1958. There, social thinker Herbert Gans convinced them of the value of investigating the much-disdained Levittown development.

Scott Brown realized that social planners viewed "physical planners" — architects and urban designers — with suspicion. She favored the latter, since they didn't suppress their artistic impulses. After the death of her husband, she would bring her social and artistic sensibility to her

new life with Robert Venturi, whom she married in 1967. As she writes in mellifluous prose, skills of analysis and synthesis were useful as she and Venturi forged their common interests in architectural history, planning, and popular culture. At a Yale studio on Las Vegas, they investigated the relationship between America's commodity culture, the "auto city," and Renaissance Rome's urban planning. The result: their groundbreaking tome, *Learning from Las Vegas*, written with Steven Izenour in 1972.

Nothing is easy. In "Sexism and the Star System," published in 1989, (abridged from an unpublished essay of 1975), the indomitable Scott Brown portrays the indignities of being the female partner of an architect who had brilliantly established his career with his milestone book *Complexity and Contradiction in Architecture* in 1966. With this collection, Scott Brown brings to the reader additional insights about architecture, the value of economic linkage in planning, the need for federal involvement in large-scale rehabilitation (such as New Orleans after Katrina), the significance of drawing, and — the importance of words. *Suzanne Stephens*



More Profitable Than Ever

Two architects talk candidly about how they turned their business around even before the recession.

BY CHARLES LINN, FAIA

IN 2007, MARVIN MELTZER, AIA (far right), a partner in an extremely successful New York City multifamily housing practice, began going through the sort of business transition that no one should ever face. David Mandl, his business partner and principal of their firm, Meltzer/Mandl Architects, for over a decade, was diagnosed with terminal cancer. When an engineering firm interested in buying the business began going over the books, Meltzer and David Carpenter, AIA (near right), who had been helping to run the business in Mandl's absence, learned that they knew much less about their firm's finances than they thought. "They kept asking us for reports, such as what was the value of work in progress, and we didn't have them," says Meltzer.

The situation went from bad to worse when they attempted to get an extension on their firm's credit line to get a temporary loan. They found out that many of the firm's receivables were so many months past due that the bank considered them uncollectable, and therefore they could not be used for collateral. That severely limited the amount they could borrow. "We also didn't know that once some receivables for a client get over 90 days old, the newer receivables from that client don't count either," says Carpenter, who is now vice president of the firm and a partner. "It was a shock."

The situation as it existed at Meltzer/Mandl a few years ago isn't all that unusual. When work is plentiful and firms expand to take



"At one point, we were paying \$100,000 servicing the debt on loans we had to take out because our clients weren't paying us."

David Carpenter, AIA

advantage of it, it is easy for financial discipline to erode. Meltzer says, referring to his late partner, "David was a very good businessman. His idea was to expand the business,

and I kind of left it up to him. We got up to 45 people, and I began to see the downside of it. I realized that I was getting out of touch with a lot of stuff that was going on. When the engineers started looking at our business, we began to realize that the way it was being run was unsustainable."

A midcourse correction

Over the course of the next two years, Carpenter and Meltzer reexamined all of the firm's major expenses – staffing, information technology (IT), benefits and insurance, the cost of legal and financial consultants, office

"I was out of touch. We began to realize that the way the firm was being run was unsustainable."

Marvin Meltzer, AIA

space, and of course, how much the firm was owed by its various clients.

"We started by looking at our insurance and benefits," says Carpenter. "As a small firm, we simply didn't have enough people to get good health-insurance rates. We joined a professional employer organization (PEO) – in this case, a company called ADP Total Services. It takes care of payroll, benefits, and insurance." One of the advantages for both the firm and employees (who are technically coemployed by the Meltzer/Mandl and ADP) is that they can receive health insurance at far less cost than they could as a small group. Costs for both the employees and the firm, which pays half of the employees' health-insurance costs, have gone down by half. "Our employees are able to get much better insurance than we could offer them." The PEO also carries the firm's workers' compensation insurance, which in the past had been a major expense.

"We also started taking a serious look at our staffing," said Carpenter. "It was clear even before the slowdown that we were bloated. Some of our employees were only billing 50 or 60 percent of their time.

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Meltzer and Carpenter agree that though the firm is smaller by two thirds, and doing smaller projects, it is even more profitable than it was before the recession.

We had a full-time renderer. Now we are getting renderings from China. We had a full-time person working with the city planning department. We had a full-time IT person. We are hiring consultants to do this work now, and getting better service," says Meltzer. The firm does have some workers who are supplied by a temp agency. After paying the Internal Revenue Service a penalty, Carpenter is very strict about making sure that these workers comply with the IRS's regulations about independent contractors.

The firm also decided to change its legal representation, after its lawyers failed to respond to a lawsuit, costing it a judgment. It also replaced its accountant. "We didn't understand what we were paying for," says Carpenter. "An architecture business just isn't that complicated. The new one is getting half of what the old one was making." In both cases, however, they had to phase out these services over time. "It was kind of tricky," he continues. "You have to let them wrap up the work they're in the middle of before you replace them."

In both areas, the firm is getting the service they need at lower cost. The firm also subdivided its space and leases half of it to another company. Each company pays half the rent. They share some equipment and have a common reception area.

Money up front

Perhaps the most difficult and challenging change in the way the firm does business is in the way it deals

with receivables. "At one point a few years ago, we were paying more than \$100,000 per year servicing the debt on money we had to borrow because our clients weren't paying us," says Carpenter.

Part of the strategy involves more closely tracking late receivables and staying on the clients. But the firm also plays hardball now, not releasing drawings until the work is paid for. "We have said to clients, 'We're not your partners. If you want a loan, go to a bank,' says Meltzer. "I told one guy, 'You have owed us \$400,000 for the past six months and we are not going to release the next phase of this project unless we are paid.' And we were paid. We even have one client who was so bad we now make them pay us in advance. They do." But, he cautions, "you have to be willing to lose clients, and we have lost some."

Realigning business goals

The firm went from 45 to about 15 over the past few years. Many of these reductions came through attrition, he adds. "Some of our employees didn't believe that the business would survive after David Mandl died, and they left. So, we haven't had the layoffs," Meltzer says, referring to the drastic downsizing other firms have experienced.

"If you don't acknowledge that architecture is a cyclical business, you are bound to get hurt," says Meltzer. "What I have come away with is that you have to determine what kind of business you want to have. I have always felt that a certain size company can better weather the storm. I was never that comfortable about being so big." The principals also agree that they are lucky they became aware of the problems with the company's finances and began strategizing ways that they could begin to cut costs before the recession began. "We are smaller and doing smaller projects," Meltzer says, "but we are even more profitable now than we were then." ■



台灣塔

設計概念國際競圖 TAIWAN TOWER

CONCEPTUAL DESIGN INTERNATIONAL COMPETITION

The Invitation

To commemorate the centennial anniversary of the founding of Taiwan, R.O.C. and celebrate the merger between Taichung County and Taichung City, the government of Taiwan, R.O.C. will erect "Taiwan Tower" as an important landmark in the new special municipality. Here, visitors will be treated to a panorama view of the park, the city and the natural surroundings. The new landmark will also help visitors and residents orient themselves as Taichung makes the leap to become a world-class metropolis.

Taiwan Tower is to be located at the southern tip of Central Park, which is part of the former Taichung (Shuman) Airport site, Taichung city. It will become a vista at the southern end of a major boulevard. Measuring approximately one hectare, the site is situated across from the Economic and Trade Park to the north. The project will comprise of Taiwan Tower and the Museum of Taichung City Development.

Though not aiming to compete in height with other towers of the world, in principle the observatory of Taiwan Tower should provide visitors with a view of the Taiwan Strait. The height is planned to be at least 300 meters. In addition, the site context and local architectural character should be integrated with 21st-Century building technology to symbolize the new Taiwan spirit. Taiwan Tower should also answer its call for environment responsibility and adopt the use of alternative energy. In implementing the government's policies in energy conservation and carbon reduction, Taiwan Tower will act as a model of green building for the 21st century.

Thus, an international competition will be held to seek a forward-looking and innovative design and enliven the project with a fresh look and multifunctional use. Outstanding design teams from home and abroad are cordially invited to contribute pioneering planning and design ideas. Spread your creative wings and let the dream of a new-age landmark for Taichung take off!

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 3. Any design-related department of university of R.O.C. (Taiwan) or foreign country, alone or in teams.
- For more information, please visit our website.

Timetable

Registration Deadline	2010/10/21
Material Submission Deadline	2010/11/02
Jury Session	2010/11/04 - 2010/11/05
Announcement of the Winners	2010/11/05

For more information, please visit

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This month's product roundup takes a closer look at two iconic (and large-scale) projects featured in the issue: the Burj Khalifa in Dubai and CityCenter in Las Vegas. **BY JEN RENZI**



1 | PRODUCT SunGuard Solar Silver 20 and ClimaGuard NLT Low-E Glass

MANUFACTURER **Guardian Industries**
guardian.com

The Burj Khalifa's 2,650'-tall, 160-story facade is veiled in 26,000 glass panels – tallying more than 1.8 million square feet of glazing – supplied by Guardian Industries. The company's SunGuard Solar Silver 20 and ClimaGuard NLT Low-E glass series both offer strong solar and thermal performance, antiglare properties, and enhanced light reflectance to withstand the desert climate's extreme temperature swings, strong winds, and blazing sunshine. **CIRCLE 200**



4 |

4 | PRODUCT TS 93 Door Closer

MANUFACTURER **DORMA**
dorma-usa.com

More than 16,000 pieces of DORMA hardware – including the TS 93 door closer – equip the Burj Khalifa's 12,000-plus portals. The track-arm, surface-applied TS 93 has a cam-and-roller design that reduces the effort required to open doors and eliminates protruding double-lever arms to create a barrier-free, ADA-compliant environment. **CIRCLE 203**



2 |

2 | PRODUCT Mega Blinds

MANUFACTURER **Hunter Douglas Contract**
hunterdouglascontract.com

In addition to supplying motorized curtain tracks and Roman shades for the Armani Hotel's 160 guest rooms, Hunter Douglas also customized more than 30,000 square feet of motorized Venetian blinds for the Burj Khalifa entry pavilions. The sun-shading louvers, engineered by company subsidiary Limelight, are powered by rooftop solar panels. **CIRCLE 201**



3 |

3 | PRODUCT Varia EcoResin, Pure Gold Interlayer

MANUFACTURER **3form**
3-form.com; 3form.eu

Varia EcoResin wall panels form a shimmering backdrop in the entrance lobby of the Burj Khalifa's Armani Hotel. The translucent resin panels, which incorporate 40% preconsumer recycled content, can be specified with custom interlayers or with items from 3form's vast portfolio of wood veneers, organic materials, and textiles – such as Pure Gold metallic fabric (above). **CIRCLE 202**



5

5 | PRODUCT **Forum Armchair**
 MANUFACTURER **Bernhardt Design**
 bernhardtdesign.com

Bernhardt products featured throughout the CityCenter complex include Moreau seating in the Mandarin Oriental presidential suite, Caron and Zoe bar stools in the Aria bar/lounge, and Suzanne Trocmé's Forum armchairs in the MGM Mirage. The Greenguard-certified Forum chair supports an upholstered seat and back on a maple frame that's available in 13 finishes plus white or red lacquer. **CIRCLE 204**



6

6 | PRODUCT **PuraVida Single-Hole Faucet**
 MANUFACTURER **Hansgrohe and Duravit**
 hansgrohe-usa.com

Kay Lang + Associates specified fittings by Axor, the designer brand of Hansgrohe, for the Residences at the Mandarin Oriental Hotel. The manufacturer's latest debut is PuraVida, a full bathing suite – developed in conjunction with Duravit – that features dual-finish white-and-chrome fixtures, such as the Single-Hole faucet with ADA-compliant joystick handle, adjustable aerator sprays, and ceramic-cartridge technology. **CIRCLE 205**



7

7 | PRODUCT **WhisperShade IQ**
 MANUFACTURER **MechoShade Systems**
 mechoshade.com

MechoShade's ecofriendly window shades and motorized drapery tracks helped the Veer Towers, the Mandarin Oriental, the Vdara Hotel & Spa, and the ARIA Resort & Casino achieve LEED Gold status. Comprising shade cloth and components, the WhisperShade IQ system features a powerful yet quiet motor, a built-in communications port, direct-connecting low-voltage switches, and can integrate with other manufacturers' control systems. **CIRCLE 206**



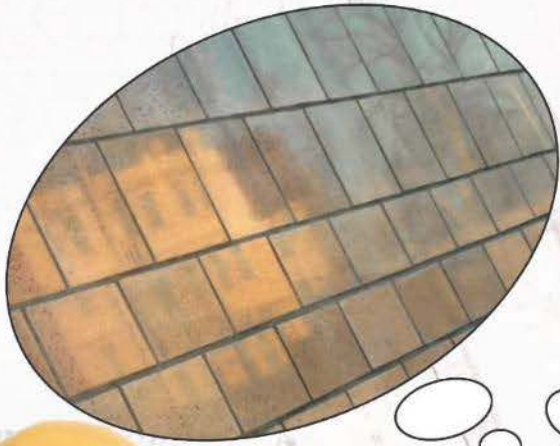
8

8 | PRODUCT **Pellican**
 MANUFACTURER **Cambridge Architectural**
 cambridgearchitectural.com

The Aria Resort & Casino Convention Center's Frank Sinatra Boulevard entry features a billowing stainless-steel-mesh podium facade by Cambridge Architectural, which collaborated with Pelli Clarke Pelli to design a new weave pattern, Pellican, specifically for the project. **CIRCLE 207**

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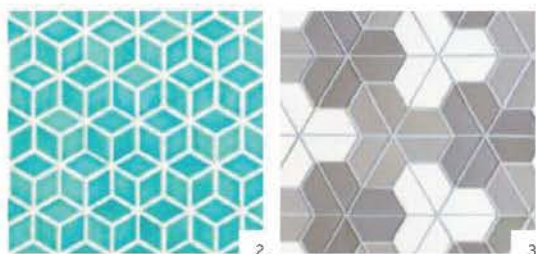
CIRCLE 26

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PRODUCTS IN BRIEF

1 | PRODUCT **HAWA-Concepta**
 MANUFACTURER **Häfele America**
hafele.com/us

The latest introduction to Häfele's portfolio of architectural hardware is Concepta, by Swiss manufacturer Hawa. A unique sliding mechanism encompassing hinges and rails allows doors to pivot and then pocket away, rendering the system ideal for ADA and universal-design applications. Suitable for both glass and wood pocket doors as well as frameless glass panels, the easy-to-install hardware is designed to support large dimensions and heavy weights. **CIRCLE 208**



2,3 | PRODUCT **Dwell Patterns**
 MANUFACTURER **Heath Ceramics**
heathceramics.com

The Sausalito, California-based ceramics house unveils a mod collection of hand-glazed tiles in eye-catching geometrics. The three diamond- and hexagon-shaped modules combine in myriad ways to create Op Art installations. Choose among five standard, stocked mosaic patterns – available either back- or face-mounted – or mix and match unmounted tiles of different shapes and colors to create custom designs. Tiles are also sold individually, in any of Heath's 80-plus glazes. **CIRCLE 209**

4 | PRODUCT **Knight Wall System**
 MANUFACTURER **Knight Wall Systems**
knightwallsystems.com

Combining steel framing, cladding, and framing members into a single unit, this all-in-one rain screen thwarts moisture while contributing up to eight LEED credits. Cladding options include brick, metal, tile, and composites – which can even be installed on out-of-plumb facades courtesy of a patented self-leveling feature. Specify framing with 2", 4", or 6" brackets to accommodate different R-factors of insulation, which installs outside the building's vapor barrier – while providing a drainage cavity. **CIRCLE 210**



5 | PRODUCT **Prestressed Granite Bridges**
 MANUFACTURER **Kusser Graniteworks USA**
kusserusa.com

Ideal for bicycle or pedestrian bridges, prestressed granite has a superslim profile, with a span-to-depth ratio of up to 75. A 49'-long bridge, for instance, measures less than 1' thick. The factory-made units, which install in a few hours, are compressed by stressing corrosion-resistant steel tendons within the granite under a defined load. Featuring a high compressive strength, dense granite also withstands salt, abrasion, and the elements. **CIRCLE 211**



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National Political Correspondent and Columnist, New York Magazine



The Economic Outlook

David Wyss

Chief Economist, Standard & Poor's



Industry Perspectives from a Building Product Manufacturer

Sandy Diehl

Vice President, Integrated Building Solutions, United Technologies Corporation



Green Outlook & Global Trends: Opportunities in the Construction Marketplace

Harvey M. Bernstein, F.ASCE, LEED AP

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The Outlook for Homebuilding & Residential Remodeling

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PORTAL TO THE FUTURE

Expo 2010 **Shanghai** China

BY THOMAS J. CAMPANELLA

World's fairs and expositions have long served as test beds of architectural and urban innovation, but rarely have they been promoted as such from the outset. At the expansive Expo 2010

Shanghai China, organized around the fetching theme of "Better City, Better Life," urban futurism stands at center stage.

The Expo enters the record books as the largest and costliest world's fair ever held, though only time will reveal its ultimate impact on how we make and manage cities.

Not surprisingly, expectations are China high.

Thomas Heatherwick designed a surreal, folded landscape to surround his U.K. Pavilion, known as the Seed Cathedral.





1



2

By now we have come to expect only superlatives from this nation of surging ambition, where a mighty building boom has rattled the earth for a quarter-century. China has come a long way from its Maoist days of red and gray, rice rationing, and isolation from the world. There is hardly a product in our homes today not manufactured in China; hardly a category of building or infrastructure that has not been superseded, in scale and length and loft, somewhere in the People's Republic. Two years ago, Beijing staged the most extravagant Olympic Games in history, with an opening ceremony that awed a world still used to thinking of China as the "sick man of Asia." In part, the World Expo is Shanghai's chance to outshine its northern sibling rival. But like the Olympics, the Expo will also telegraph to the world another must-read message about Chinese ascendancy. Even as the economic tide runs out from much of the globe, China is gleefully surfing the zeitgeist of our still-wet century. This summer, Shanghai will show what a made-in-China urban world might look like.

The United States did much the same thing more than a century ago, at a similar moment of acceleration to superpower status. In May 1893, the proud fathers of Chicago opened the World's Columbian Exposition. Nominally a celebration of the 400th anniversary of Columbus's arrival in the New World, the fair was really a celebration of Chicago – and America. It capped one of history's great sagas of urban recovery – Chicago's phoenix-like rebirth from the Great Fire of 1871 – while signaling to the world America's arrival on the global stage. Youthful and ambitious, the U.S. was the workshop of things to come, the foundry of the future. More than 20 million people attended the Columbian Exposition – a third of the U.S. population at the time – and they caught a glimpse there of what an orderly, automated urban tomorrow might look like: "Better City, Better Life" could well have been its catchphrase.

The most dazzling aspect of that tomorrow was electricity, then still unknown to most Americans. Electricity powered the fair's 90,000 lights, animated its fountains, pumped sewage, and propelled mechanical sidewalks and the world's first elevated rail line. President Grover Cleveland opened the exposition by throwing an electrical switch, and each night the fair consumed three

times the electricity of the rest of Chicago. But though not an exhibit per se, urban design was the fair's most lasting takeaway. Frederick Law Olmsted's master plan brought spatial discipline to the Jackson Park site, while the aesthetic unity of the buildings themselves – nearly all Beaux-Arts confections – was meant to inspire a lofty sense of civic harmony and order. For better or worse, the Columbian Exposition ushered in the City Beautiful era, setting standards for American urbanism that would endure until the arrival of European Modernism in the 1930s.

Just as the Columbian Exposition heralded the American Century, the Shanghai World Expo portends a coming century of Chinese supremacy. How fitting that Shanghai be its host! The city has long been China's portal to the future, its most aggressively modern metropolis: the first to electrify; to provide municipal water and sewer service; to communicate by telegraph and telephone. Albeit, much of this was due to Shanghai's status as a treaty port – a well-oiled machine that helped spirit China's wealth off to London, Paris, and Tokyo. But it was also in Shanghai that some of the most progressive Chinese experiments in urbanism were carried out. The most ambitious was by none other (continued on page 58)



1. View of the Expo Axis and China Pavilion.
2. Spain Pavilion by EMBT Miralles Tagliabue.
3. Finland Pavilion by JKMM Architects.
4. Denmark Pavilion by BIG-Bjarke Ingels.

TOURING THE PAVILIONS

1. Spain Pavilion | EMBT Miralles Tagliabue

From the first glimpse of the building's snakelike, basket-covered form to the climactic view of a 21-foot-tall sculpture of a baby, Benedetta Tagliabue of EMBT orchestrated a theatrical event for visitors. Tagliabue opened the show with a facade made of more than 8,000 wicker panels woven by craftsmen in Shandong Province. Workers stripped and treated willow stems to produce a range of panel colors, and arranged the colors to form Chinese characters, which bring a tiger-skin pattern to an already fierce facade. The effect of the whole is only slightly marred by the many distracting, if necessary, "No Smoking" signs. A circular plaza marks the entrance to the building and splits it into a wing of exhibition space and a wing with offices and a tapas restaurant. Visitors arrive at a long, cave-like tunnel, whose rounded, rough walls are used as giant projection screens. Then they move into a high-ceilinged room sliced by five long, thin video screens, and finally into a bright, open space dominated by the giant baby (created by Spanish director Isabel Coixet) and more wicker panels. *Clare Jacobson*

2. United Kingdom Pavilion | Thomas Heatherwick

Most pavilions present their country's cultural history and progressive ideas in an effort to convey a clear sense of national values and identity. Conversely, the U.K. Pavilion seems to say, "You know who we are, so let's just show you something wonderful."

More sculpture than building, the pavilion, designed by Thomas Heatherwick, comprises 60,000 transparent acrylic rods, each 25 feet long, piercing a wooden frame. By day, the rods bring light to the interior, but at night they glow from LEDs. The ends of the rods contain seeds from the Germplasm Bank of Wild Species at the Kunming Institute of Botany, which gives the pavilion its nickname, the Seed Cathedral. Heatherwick envisioned his building as a piece of jewelry and its site the crinkled wrapping paper from which it came. His glowing gem of a design stands as a worthy successor to Joseph Paxton's Crystal Palace at the Great Exposition of 1851 in London. The pavilion organizers plan to distribute the seed rods to schools in China and the U.K. after the Expo. But it would be better if this new Crystal Palace lived on as a complete building instead of scattered seeds. *C.J.*

3. Republic of Korea Pavilion | Mass Studies – Minsuk Cho

As an exercise in form-making and spectacle, the colorful, multidimensional South Korea Pavilion succeeds at grabbing attention. Architect Minsuk Cho and his firm, Mass Studies, made a playful composition of the three-story structure, using block-like configurations, stepped corners, and multiple cutouts, then wrapping the building with alternating facades of Hangul letters cut into aluminum panels and colorful tiles designed by the artist Ik-Joong Kang. And they covered the central plaza with an abstract map of a typical Korean city, complete with stepped-seating "mountains" around a performance stage.

As a building, however, the pavilion proves less successful. The three-dimensional excitement of the exterior does not continue on the interior. Visitors enter the exhibition space on the second floor via an elevator and then walk



VIEW SLIDESHOW

Tour these and other pavilions from the Shanghai Expo.



down a simple single-story hallway to the exit elevator. More important, the big idea of the project – to create a lively public area framed by the building – fails in its execution. Long lines at the pavilion take over the plaza, offering only fleeting glimpses of the map and performers acting as integral parts of the country's exhibition. In his defense, Cho states that he intended his design "to improve the typical inverted condition in which most visitors spend more time waiting than experiencing the exhibition itself." *C.J.*

4. Finland Pavilion | JKMM Architects

Inspired by the large cavities cut into bedrock by receding glaciers during the last Ice Age, Teemu Kurkela and his colleagues at JKMM Architects carved a tall open space at the center of their Finland Pavilion and gave the building an almost geological character. Called Kirnu (Giant's Kettle), which is the term used for those cavities in the earth, the pavilion alludes to natural forms without ever being literal. The architects surrounded the pavilion with a pool of water to give it the sense of an island and used shingles on the outside that recall fish scales. But they kept everything abstract enough so the various elements seem poetic, not corny or sentimental. A steel-frame structure that has been bolted together so it can be dismantled and reused somewhere else, it incorporates a number of sustainable-design strategies. For example, its central cavity helps draw air through the spaces to cool visitors, and its exterior shingles are made of recycled paper and plastic. *Clifford A. Pearson.*

5. Denmark Pavilion | BIG-Bjarke Ingels Group

Using cultural clichés in architecture rarely results in good design. But Bjarke Ingels found a way of incorporating Hans Christian Andersen's *Little Mermaid*, water from Copenhagen's harbor, and Denmark's ubiquitous bicycles into his nation's pavilion while making it smart and fun, not dumb and silly. Designed as a double spiral with ramps for pedestrians and bicyclists that cross at two places, the pavilion offers both a slow and a fast route through its exhibitions. Visitors can start their experience by going to a roof garden for a picnic, then take one of 300 bikes for a quick ride downhill. At the base of the pavilion, sitting in a pool of water shipped over from Copenhagen harbor, the *Little Mermaid* sculpture normally found in Copenhagen now attracts the attention of Expo visitors. In a witty trade, a multimedia artwork by Ai Weiwei resides in Copenhagen while the mermaid vacations in Shanghai. *C.A.P.*

6. The Netherlands Pavilion | John Körmeling

This pavilion offers a unique interpretation of the Expo's motto "Better City, Better Life." For architect/artist John Körmeling, this means a place to take a stroll, see the sights, or just hang out. His design, called *Happy Street*, consists of a 1,300-foot ramp lined with 26 houses filled with conceptual art (a big floating rock), technological innovations (a water-treatment installation), and cultural artifacts (a re-creation of the Schröder House with a Rietveld chair). Körmeling gives Expo-goers what they need: an umbrella of buildings that shield them from sun and rain, a communal space for which they don't have to stand in line or pay money, and plenty of fiberglass sheep to sit on. *C.J.*

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LEFT: The South Korea Pavilion by Mass Studies; Minsuk Cho creates a covered plaza.

than Sun Yat-sen, founder of the Chinese Republic. His 1919 "Great Port of Pudong" plan proposed a canal across the Pudong peninsula to divert shipping and commerce away from the Bund, leaving the foreigners high and dry.

Will the Expo extend Shanghai's legacy of urban progress and innovation? Will it change how we imagine and build cities the way the Columbian Exposition did four generations ago? Its planners certainly mean it to. A visit to the Urban Best Practices Area (UBPA) offers a glimpse of how. There, in what is arguably the Expo's most original attraction, the organizers exhibit state-of-the-art planning and architectural practices on a 50-acre site. This is by no means the first time a world's fair has dabbled in speculative urbanism. The popular Futurama exhibit at the 1939 New York World's Fair – with its mechanized "Democracy" diorama of the American landscape circa 1960 – celebrated a coming order of skyscrapers and sprawl. But the scale and ambition of the UBPA is without precedent, and its relentless message – about sustainability, energy alternatives, and reducing our collective carbon footprint – is the most urgent of our age. How far we have come from the Columbian Exposition's gluttonous celebration of electric power!

The UBPA delivers its message inside several renovated Mao-era industrial buildings and a series of stand-alone "case city" pavilions. In its pavilion, London looks at its Beddington Zero Energy Development (BedZED), the first carbon-neutral community in the world, while Madrid offers a version of an innovative social housing project at Carabanchel by London-based Foreign Office Architects, with bamboo shutters, a ventilated glass curtain wall, and a rooftop rainwater pool. The Danish town of Odense focused its open-air pavilion on urban bicycle infrastructure, while Mecca offers visitors a replica of the membrane-roofed structures erected annually to accommodate hajj pilgrims. The Pavilion of the Future, a reclaimed power plant whose smokestack is now a colossal thermometer, anchors the east end of the site and offers a wealth of interactive displays exploring the theme of urban utopia through the ages.

When the Columbian Exposition opened, Olmsted was alarmed to see bored expressions on the faces of visitors to the Court of Honor – the fair's gloriously didactic centerpiece. The White City, as the fair's ceremonial core was dubbed, (continued on page 134)



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DESERT MIRAGE

FROM LAS VEGAS TO DUBAI



Too many agonizing years usually pass between a building's conception and its completion. In that slice of time, the world can change drastically – as it did with the planning, design, and construction of the CityCenter in Las Vegas and Burj Khalifa in Dubai. These two mega-projects – one, at 2,717 feet, the tallest building in the world; the other, a 67-acre mixed-use complex, the largest privately financed project in U.S. history – were both planned for desert climates when money was abundant. While energy concerns have always loomed like a dust storm on the horizon, earlier in this decade they still seemed solvable through better technology. In presenting



analyses of these projects, RECORD is asking what can be learned architecturally and urbanistically from design caught in a time warp. It is easy to say that architects and planners should stay away from the desert and from big building. But we are seeking a more considered debate and therefore have devoted a majority of the August issue to the publication of these two projects. In addition to coverage in the following Projects pages, RECORD focuses on the structure of the Burj Khalifa for a Continuing Education story (page 89), and has turned over its Lighting (page 100) and Products in Brief (page 50) sections to both CityCenter and Burj Khalifa. Please comment on the Web at architecturalrecord.com.





CITYCENTER, LAS VEGAS

A mega-development wagers that urbanism and architecture can trump flamboyance and kitsch. **BY JOANN GONCHAR, AIA**



Even before the economy tanked, few would have called the scope of CityCenter anything less than incredibly ambitious. The 18-million-square-foot development, which officially opened on the Las Vegas Strip in December, includes almost 6,000 hotel rooms, 2,400 condominiums, 38 restaurants and bars, a convention center, a shopping mall, a Cirque du Soleil theater, and a 150,000-square-foot casino. All of this was designed and built in just over five years for \$8.5 billion, making CityCenter reportedly the largest and most expensive commercial project in U.S. history.

CityCenter was conceived to be more than just big. MGM Resorts International (until recently MGM Mirage), which owns the complex with Dubai-based Infinity World, had a set of lofty goals that included LEED certification and the creation of an urban core for the notoriously sprawling city. Instead of the pattern of isolated buildings spread out on big, open lots found elsewhere on the Strip, CityCenter needed to be "vertical, dense, and sustainable," says J.F. Finn, AIA, project executive for Gensler. The firm acted as an extension of MGM's design department, overseeing approximately 250 consultants and a cast of marquee architects that included Daniel Libeskind, Helmut Jahn, and Norman Foster, as well firms such as Tihany Design and the Rockwell Group for the interiors.

The project's ultimate objective was, as one would expect, to generate revenue. (For a report on its financial performance so far, see page 76.) The high-rolling architects were part of MGM's business strategy, intended to differentiate the complex from the kitsch and flamboyance that have been associated with the Strip at least since Philadelphia architects Robert Venturi, Denise Scott Brown, and Steven Izenour published *Learning from Las Vegas* in 1972. (For Scott Brown's assessment of CityCenter, see page 74.)

The concentration of buildings on the site was as much a result of the realities of the now-defunct real estate boom as it was the outcome of a new Las Vegas development paradigm. "Property values on the Strip had skyrocketed," says Sven van Assche, vice president of MGM's design group. "We had to consider the return on investment for the amount of land," he explains, referring to the 67 acres formerly occupied by the Boardwalk Hotel and Casino.

For site master planners Ehrenkrantz Ekstut & Kuhn, the challenge was to develop a scheme in which "the buildings would create space, not just be attractive objects," explains firm principal Peter Cavaluzzi, FAIA. His goal was to create a plan characterized by a mix

of uses, pedestrian-oriented spaces, and buildings brought right up to the property line to form a street wall directly on the Strip.

As realized, the Strip wall is anchored at its southern end by Kohn Pedersen Fox's 47-story Mandarin Oriental Hotel. The glass-and-anodized-aluminum-clad tower has a boomerang-shaped plan and knifelike corners. At the northern end is a somewhat less effective marker – Foster's literally stunted Harmon Hotel. MGM decided to cap the rounded building, clad in several hues of blue reflective glass, at 28 stories, instead of the originally planned 49, after inspectors discovered a construction defect.

In between the Mandarin and the truncated Harmon is the complex's only building that can be readily associated with its designer: Libeskind's Crystals retail complex, with his signature shards dominating CityCenter's Strip edge. But even if Libeskind's hand is the most legible, Murphy/Jahn's Veer condominiums, made up of two 500-foot-tall towers leaning at opposing angles, provide the more memorable forms. The tilt results not from mere architectural caprice, insists Francisco Gonzalez-Pulido, a Murphy/Jahn partner, but instead is intended to assure unobstructed views from more apartments.

Two buildings – Pelli Clarke Pelli's 4,004-room Aria Resort & Casino and the 1,500-room Vdara Hotel, designed by Rafael Viñoly Architects – take their formal cues from the site's two traffic circles. Designers of the larger hotel have disguised its true size by creating several volumes organized in plan as a pair of intersecting arcs. Jogs in the glazed facade that give each guest a "corner" room, along with projecting light shelves, add texture

- 1 ARIA RESORT & CASINO
- 2 HARMON HOTEL
- 3 CRYSTALS
- 4 VEER TOWERS
- 5 MANDARIN ORIENTAL HOTEL
- 6 PARKING
- 7 CONVENTION CENTER
- 8 POOL DECK
- 9 VDARA HOTEL
- 10 PEOPLE MOVER
- 11 THEATER



SITE PLAN



and scale. The smaller Vdara is sleekly articulated as a series of layered and curved vertical glass slabs.

CityCenter's buildings have earned a total of six LEED Gold certifications. The collection of plaques notwithstanding, it seems a bit of a stretch to call so much air-conditioned space enclosed largely by glass (even high-performing glass) in the middle of the desert "sustainable." However, the complex does deploy some notable resource-conserving strategies, including an 8.5-megawatt natural-gas-fired cogeneration plant. It generates enough power to satisfy about 13 percent of CityCenter's electricity demand. But the real benefit comes from capturing the thermal energy produced as part of the generation process and using it to heat the buildings' domestic water supply and provide space heating in the winter, says Mark Powasnik, senior vice president at WSP Flack + Kurtz, designer of the plant. According to Powasnik, it is the first cogeneration system of its type in Clark County, Nevada.

Unfortunately, CityCenter's parts don't quite gel into a cohesive ensemble. The buildings come across as a collection of individual expressions jammed together on a tightly packed site. The structures do define a few spatially interesting outdoor rooms, including a small park sandwiched between Crystals and the Aria. But most of the other outdoor spaces aren't particularly pedestrian friendly. One example is the long boulevard that leads from the Strip to the Aria's main entry. The roadway, framed by the Mandarin, Veer, and Crystals, is impressive, especially when viewed from the passenger seat of a limo. But on foot it is a different experience, encumbered by level changes and footbridges.

Though imperfect, CityCenter, with its density and urbanist aspirations, could well represent the next wave of Vegas development. But those who love the Strip's flashy neon, outsize stucco temples, and theme-parklike atmosphere need not worry that this landscape will disappear anytime soon — at least not until the economy recovers. ■

PREVIOUS SPREAD: In a departure from the usual pattern of Las Vegas development, CityCenter's buildings come right to the property line. The development's shopping mall, the Daniel Libeskind-designed Crystals, dominates the Las Vegas Boulevard edge of the complex, forming a street wall directly on the Strip.

ABOVE: Pelli Clarke Pelli, the architects of the Aria Resort & Casino, have organized the 4,004-room hotel as a series of smaller volumes. In plan, these elements form two intersecting arcs. The building's sawtooth-shaped facade provides each guest with a "corner" room.

1. Pelli Clarke Pelli incorporated daylight wherever possible into the Aria Resort & Casino's vast podium. The entry lobby's roof, for example, is entirely glazed. Behind the adjacent check-in area is a canted glass wall that provides guests with a view of a small park.

2. To avoid a cafeterialike atmosphere in Aria's buffet, Lewis Tsurumaki Lewis carved out smaller dining areas within the 23,000-square-foot space. A folded suspended ceiling and bamboo banquettes help differentiate seating areas from circulation.

3. The Spin gaming lounge is one of three Peter Marino-designed VIP gambling spaces at the Aria. It is enclosed on three sides by graphically patterned and internally illuminated glass.

4. Tree and foliage motifs are featured prominently in Tihany Design's Union Restaurant, which overlooks the Aria casino floor. In one corner of the restaurant, a canopy of walnut "branches" defines a communal dining area.



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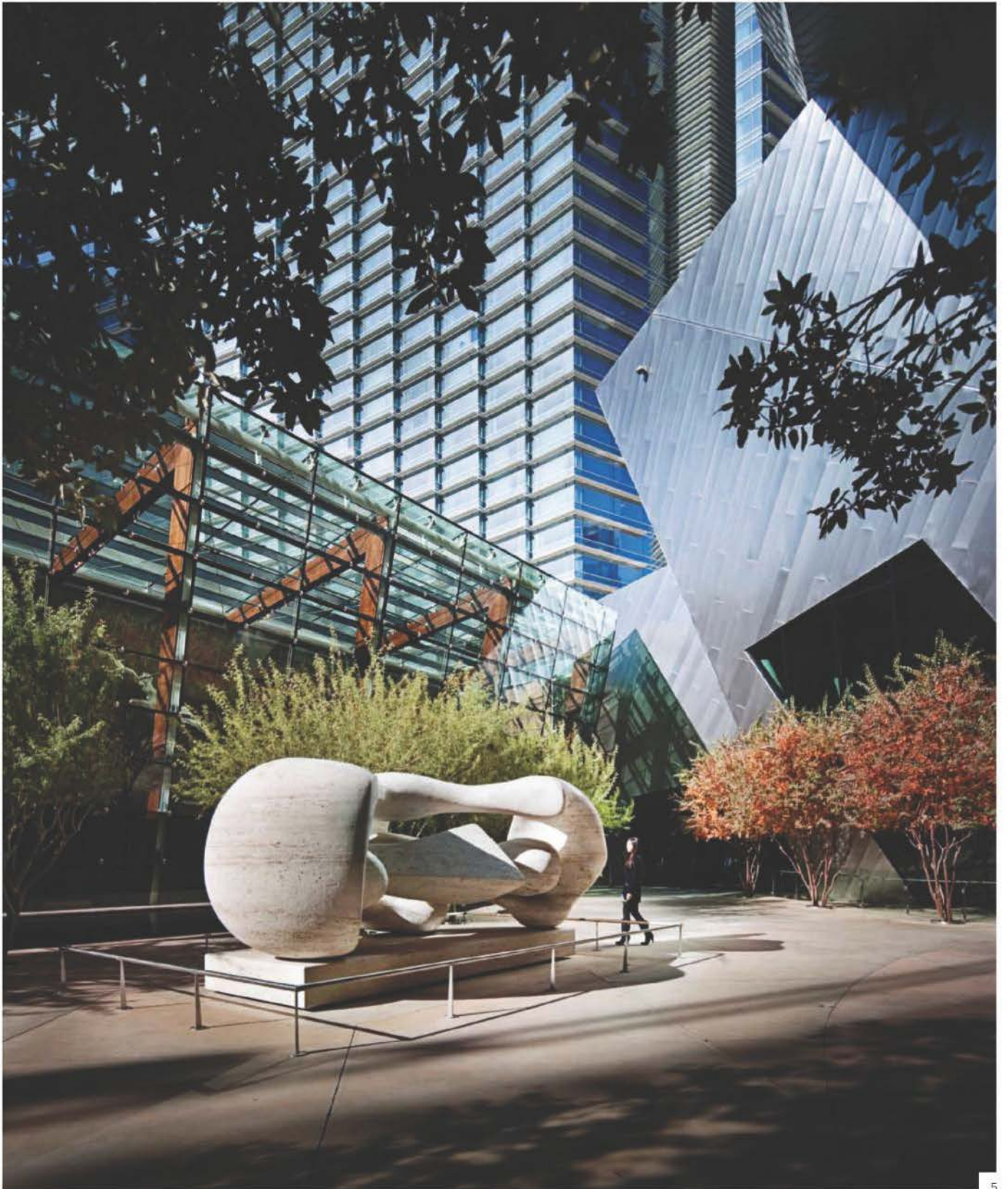
5. The Aria and the neighboring Daniel Libeskind-designed Crystals retail complex enclose an outdoor room. The sliverlike space, defined by the canted glazed wall behind the hotel reception desk and the shopping mall's angular glass and stainless-steel-clad planes, contains a Henry Moore sculpture.



2



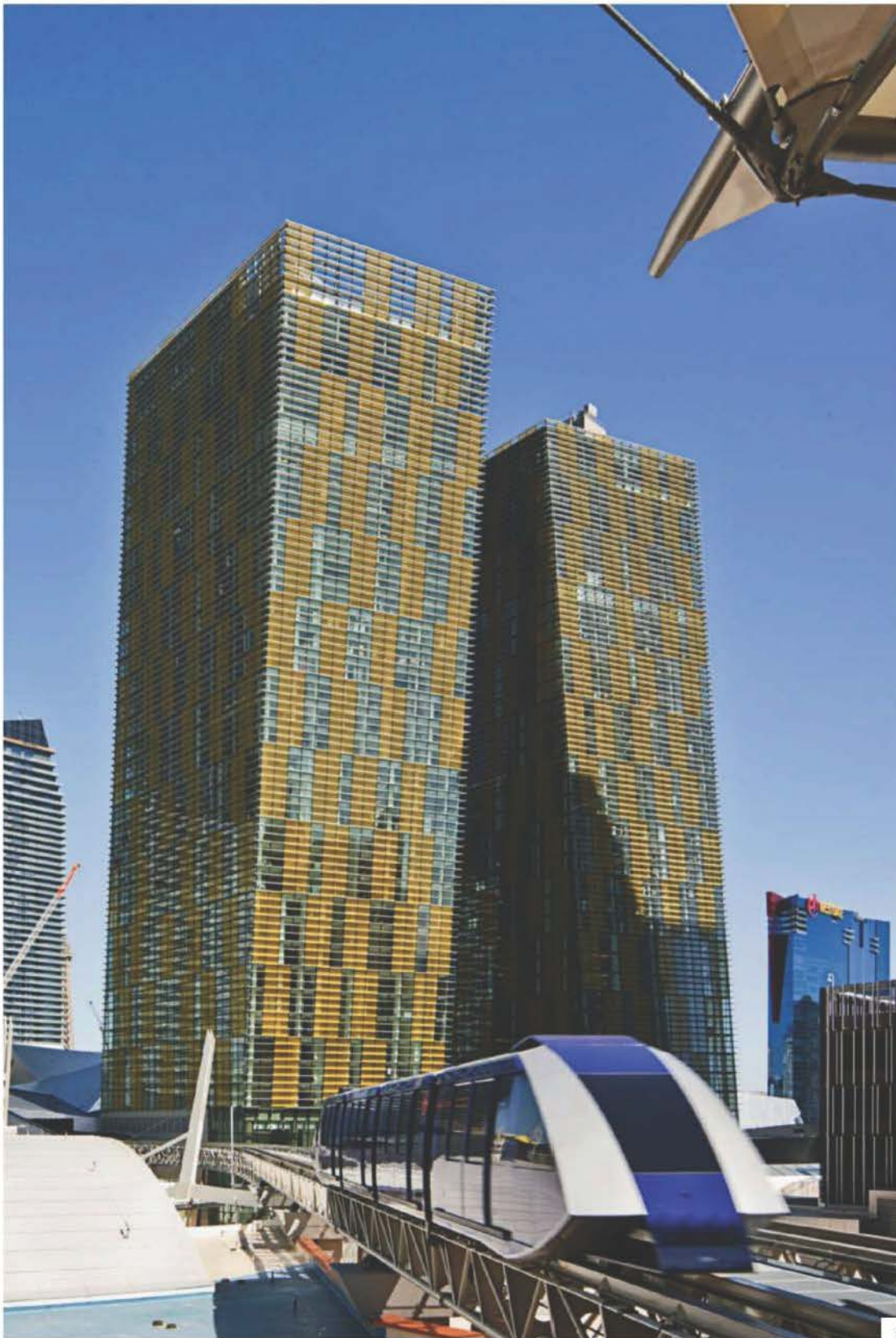
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1,2. The faceted surfaces of Daniel Libeskind's Crystals retail complex enclose stores and restaurants on three levels. The building's interior architecture, designed by Rockwell Group around the theme of an urban park, includes a "tree house" dining room for Mastro's Ocean Club. The mahogany-and-sapele cage, supported by steel, has a proboscislike extension that juts out over the mall's main floor.





3. CityCenter features a half-mile-long, three-station tram system that connects the complex with neighboring MGM properties, the Monte Carlo and Bellagio. Along the way, it stops at Crystals and travels by Murphy/Jahn's 500-foot-tall Veer condominiums. The paired towers tilt 5 degrees at opposing angles in order to assure unobstructed views from more apartments, especially those on the uppermost floors. To help mitigate heat gain from the desert sun, the insulated buildings' glass skin includes sand-dune-colored ceramic frit and perforated aluminum louvers.

Latter-Day Las Vegas

BY DENISE SCOTT BROWN

On first seeing Las Vegas in 1965, I felt a shiver. Was it hate or love? The sprawling city, its polychrome signs etched against desert and so-blue sky, engendered both emotions. And the Strip, apotheosis of neon, archetype of suburban commerce, cried out to be studied. So in 1968, we launched our Learning from Las Vegas studio at Yale University [published in 1972 as *Learning from Las Vegas*, by Robert Venturi, Denise Scott Brown, and Steven Izenour].

In 1997, when we revisited the city, Steven Wynn, the Las Vegas casino and resort developer, was removing neon, replacing signs with scenography, altering the balance between cars and transit, and converting parking forecourts into pedestrian parterres. Change was probably needed to help Las Vegas grow beyond a single industry, but ousting its signage gutted the city's communication system, obliterated much of its history, and sapped its vitality. The new Las Vegas had little to teach us. We left feeling depressed.

Returning in 2009, we found a densely developing Las Vegas Boulevard. Although no substitute for the vertiginous Strip, it had its own exuberance. Las Vegas today is a "city of 1,000 designers," as planner David Crane has said, where strong protagonists combine élan and shock in projects of *terribilità*—of an unsettled unity and intensity. The city's growth patterns are larger and more orderly than Tokyo's of the skyrocketing 1950s. And whereas Shanghai's Pudong and Las Vegas Boulevard both suggest fairyland from afar, Pudong streets are a pedestrian nightmare while Las Vegas casino forecourts woo their customers with grand-slam visions of Paris, Venice, and New York. Here *terribilità* is achieved by Photoshop. Venice's most vivid experiences are collaged to produce more laciness than is found in any one place in the real city. And in Paris Las Vegas, the Eiffel Tower sits atop the Opera. Parking is out front once more, jammed among the beckoning icons but visible from the road. And a monorail glides between unknown destinations.

Neon lighting is back. On our 1997 visit, we heard forecasts of its demise and predictions that LED would forsake rectangular formats and follow neon's flow. But this has not happened, and Las Vegas LED, whatever its size, looks constricted and pale. In any case, by 2009, the stylistic battle line had shifted architecturally from neon to NeoMo. The sleek slabs of the Wynn and Encore Hotels, their names inscribed in cursive high on their facades, suggest a pair of well-bred visiting cards. Their copper-colored

cladding glistens at sunset and, when low rays reflect between their mirror surfaces, the sun seems to shine from west and east. They're rather nice, but their forested street frontages, happily too thin to alter the desert ecology, are also too narrow to assure the desired privacy. And can abstract exclusivity and urban surrealism be enough?

In 2009, CityCenter was not yet complete, but it seemed that, as in

Pudong, the glass would purvey a fairy-tale effect, day and night, and impressive surrealism at sunset and dawn. Yet, will a project lacking decoration, hyped only by architects' signatures, and situated off the 100 percent location (in real estate terms) find a ready market? It's called CityCenter despite the fact that it *isn't* at the center. Can luxury, exclusivity, and level of service replace pizzazz? Or will people grow as bored with abstraction as their grandparents did in the 1960s?

Today's quickly densifying city is different indeed from the 1960s non-city, whose signs in the desert mocked the prim dreams of architects but drew the world to the Strip. The New Las Vegas looks strangely Victorian. Seen from a middle distance, its PoMo piles, Photoshop collage, and crystalline NeoMo resemble Thomas Cole's 1840 painting *The Architect's Dream*. What a dream! But today, when developers, seeking exclusivity,

turn projects away from the street, how can they offer the interest-filled pedestrian environments they hope for? While Crystals may sit on Las Vegas Boulevard, others are located on an inner street that is not highly visible to the boulevard—so different from the parterres of the New York, Paris, and Venice casinos. This is because the developers have stressed exclusivity as a marketing tool. Furthermore, Crystals's pointed forms and discontinuity with other shop entrances seems to break the retail linkage. Laws of economics require that stores be located where most people pass, and that overall patterns of retail be conceived to provide maximum connectivity.

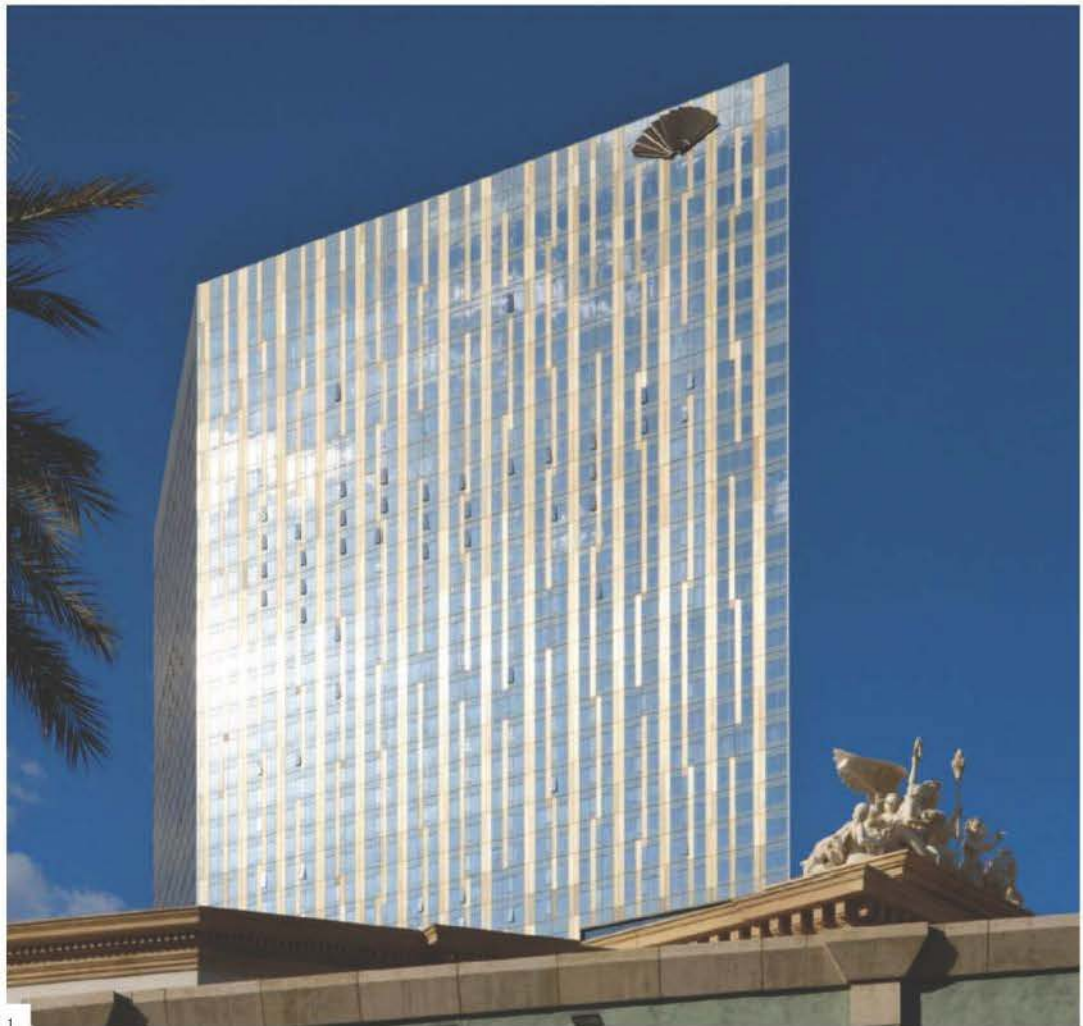
More mixed emotions await us at the city edge. In the Boneyard the great odes to neon of the Old Las Vegas lie cut up, testament to those who built them and those who destroyed them. Tragedy is in the air; on the ground, high monumentality. Opera could be performed here. But can a NeoMo opera be written for the Newest Las Vegas? Can urban composers use this abstract language to portray and preserve the city's grand wackiness, its sense of naughty danger (backed, people know, by actual safety)? Can Las Vegas remain a place where visitors are afraid something wonderful might happen? ■

Denise Scott Brown, a principal of Venturi Scott Brown, is the author of *Having Words* (2009), reviewed on page 41.



The structures on the Aria Hotel pool deck, designed by Graft, were inspired by regional topographical elements. The Breeze Café and Pool Bar, for example, is sheltered by a sculptural, stucco-clad canopy meant to simulate rippling sand dunes.

- 1. High-performance-glass and anodized-aluminum panels clad CityCenter's Kohn Pedersen Fox-designed Mandarin Oriental Hotel. The skin, in combination with a boomerang-shaped plan, make the building's corners seem almost knifelike from certain vantage points.
- 2. The Mandarin's Amore Patisserie, created by Tihany Design, relies on a palette of strong reds and inky blacks. Its textured panels, crafted from painted glass-fiber-reinforced gypsum, feature the signs of the zodiac.
- 3. Tihany also designed the interior of the Mandarin's MOzen Restaurant. Here, the firm was striving to offer a neutral and calm environment. Beige tones and soft whites dominate, with sycamore wall paneling and Calacatta marble floors.



1



2



3

Stalled Economy Weighs Down CityCenter

BY TONY ILLIA

Vegas's newest high-stakes bet, the \$8.5 billion CityCenter, has had a bumpy ride, with the deaths of six construction workers, a lawsuit between development partners over rising costs that was later dropped, and funding woes brought on by the global credit crisis. The Las Vegas Strip development began construction during the real estate boom but finished in a deep recession. As the economy went south, co-owners MGM Resorts International (formerly MGM Mirage) and Dubai's Infinity World responded with cost cuts.

In early 2009, CityCenter reduced the 400-room Harmon Hotel tower, designed by Foster + Partners, to about half of its planned height. The move eliminated 200 condominiums, of which fewer than half had sold, trimming \$600 million from the project price tag. Completion of the oval-shaped, glass-clad structure has since been delayed indefinitely, saving another \$200 million in fit-out expenses. The building is part of a \$490 million construction defect lawsuit with general contractor Perini Building Company that centers on improperly installed reinforcing steel.

MGM, meanwhile, discounted CityCenter condominium prices by 30 percent late last year and unveiled a home-buyer financing program. This has helped, somewhat. Through June, 234 CityCenter residences had closed, say officials. Yet that still accounts for less than 10 percent of the development's 2,400 condo and condo-hotel units. "We will clearly have remaining inventory for some time," says MGM spokesman Alan Feldman. "CityCenter, like all Las Vegas properties, has been affected by the larger picture in the U.S. economy."

The company lost \$96.7 million in the first quarter of 2010, partly due to an \$86 million write-down of CityCenter residences, according to Securities and Exchange Commission filings. That compares with \$105.2 million in net income for the same period last year. MGM is \$13 billion in debt as of March 31, much of it from financing CityCenter.

The development's 4,004-room centerpiece—Pelli Clarke Pelli's Aria Resort & Casino—had occupancy rates of 63 percent, with an average daily room rate of \$194, during the first quarter, according to SEC filings. By comparison, average citywide occupancy rates were 82.4 percent for the first three months of 2010, reports the Las Vegas Convention and Visitors Authority (LVCA). But average daily room rates citywide were only \$93.23, says LVCA, or less than half the rate commanded at Aria.

The property's retail offerings have also had a slow start. Crystals—Daniel Libeskind's angular 500,000-square-foot shopping complex—opened in December with only a handful of tenants. However, the building is fully leased, with new stores moving in each month, says Feldman. At press time, it was approximately 70 percent occupied.

CityCenter, which reported a \$255 million operating loss through March 31 to the SEC, has clearly suffered from poor timing. "In a normal economic environment," says Grant Goversen, principal of Las Vegas-based Union Gaming Group, a market research firm, "it probably would have been a home run and a massive driver for visitation to the city."

Tony Illia is a Las Vegas-based journalist and a regular news contributor to ARCHITECTURAL RECORD and its sister publication Engineering News-Record.



MGM decided to cap CityCenter's Harmon Hotel at 28 stories instead of the originally planned 49 after inspectors discovered a construction defect. Interior fit-out of the building has been delayed indefinitely.



PHOTOGRAPHY: © BRAD FEINKNOPE (1, 4)

- 1. The 1,500-room Vdara Hotel, designed by Rafael Viñoly Architects, has a crescent-shaped floor plan. In three dimensions, the building appears to be three overlapping planes. The effect is accentuated by the different colors of the building's acid-etched, back-painted spandrel glass. White was chosen for the two outer planes, while black is used on the inner one.
- 2.,3. Inside the Vdara's lobby, designed by BBG-BBGM, the crescent shape of the floor plan is clearly legible. A double-story seating area near the elevators features bridges that lead to the hotel's swimming pool.
- 4. Adjacent to the Vdara's lobby is the brightly colored, Karim Rashid-designed Silk Road Restaurant. It features a sinuous, LED-illuminated wall.

FOR CREDIT AND SOURCE INFORMATION, PLEASE SEE PAGE 124.




BURJ KHALIFA, DUBAI

The completion of the world's tallest skyscraper raises intriguing questions about the significance of this gleaming, spiraling form. **BY BLAIR KAMIN**

خفف السرعة
REDUCE SPEED

Iconic skyscrapers, especially those that strive for the fleeting title of "world's tallest building," are rarely the progeny of cold logic. Their backers invariably are motivated by ambition and ego. The architect does not control whether or where such behemoths are built. He or she can only ensure that they are proud and soaring things, not Frankenstein-esque, XXL-size monstrosities. Such is the considerable achievement of Adrian Smith, FAIA, and his former colleagues at the Chicago office of Skidmore, Owings & Merrill (SOM) in the gargantuan yet persuasive Burj Khalifa, which rises half a mile above the desert in the once-unstoppable, now-humbled Persian Gulf playground of Dubai.



THIS PAGE: **Stainless-steel spandrel panels and vertical fins articulate the gleaming glass-and-aluminum curtain wall of the tower.**

OPPOSITE: **The Burj Khalifa is surrounded by a 27-acre park designed by landscape architects SWA. The complex overlooks the Dubai Lake and Fountain and the Old Town Island, a new, low-rise mixed-use complex (foreground).**

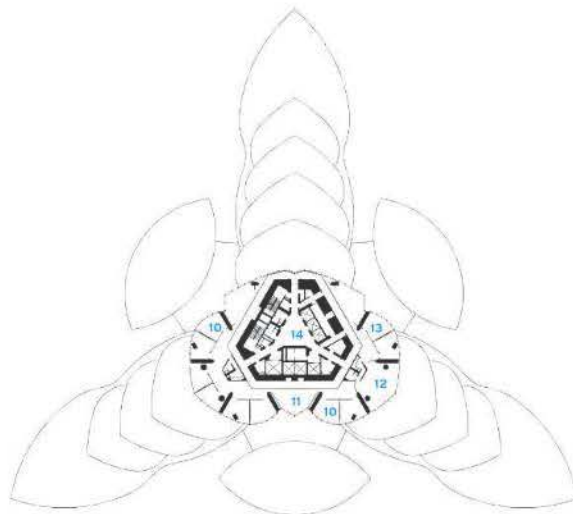


At the staggering height of 2,717 feet (easily more than two Empire State Buildings), this shimmering, spiraling mixed-use tower inevitably raises the question: When is big too big? To some, this giant of giants – its spire alone is more than 700 feet tall – clearly overshoots the mark. Shortly after its spectacular January 4 opening ceremonies, critics pegged it the Hummer of skyscrapers. “Purely a vanity project,” said the German urban planner Albert Speer, Jr., in *Spiegel*. “Completely unsustainable,” jibed Britain’s *Guardian*. Pundits also ridiculed the tower’s abrupt name change – from Burj Dubai (Arabic for “Dubai Tower”) to Burj Khalifa in honor of Sheik Khalifa-bin-Zayed al-Nahyan of Abu Dhabi, who bailed Dubai out of its 2009 debt crisis. In the Great Recession, when sustainability supposedly has supplanted spectacle as architecture’s guiding principle, the bling of the Burj Khalifa offers a convenient target for those eager to consign the pre-Crash Age of Excess to the ash heap of history.

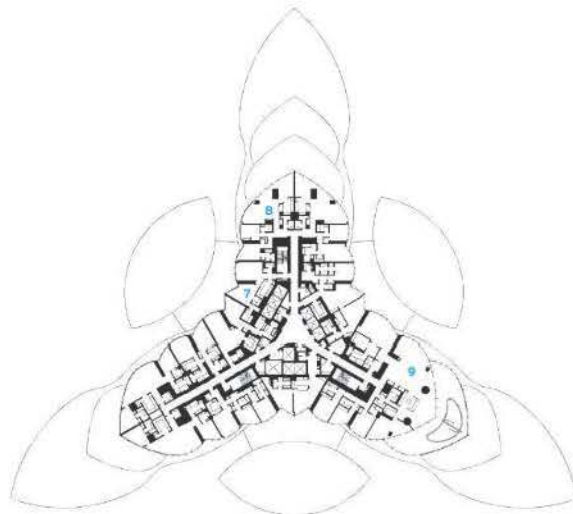
But it would be shortsighted to conflate the messy circumstances surrounding the Burj Khalifa’s completion with the tower’s exhilarating and surprisingly refined architecture. And such a dismissal would ignore previous supertall sagas. When the now-beloved Empire State Building opened in 1931, so few of its floors were rented out that it was labeled “the Empty State Building.” Building booms and busts come and go, as do the temporary wearers of the world’s-tallest-building crown. What matters, in the long haul, is the artistry that separates skyscrapers that are merely yardstick-tall from those that make of their tallness a smashing aesthetic virtue. And the Burj Khalifa easily meets – and exceeds – and exceeds – that standard, soaring in both height and design quality above Dubai’s often-ludicrous collection of architectural cartoons.

The \$1.5 billion skyscraper marks the first time since Egypt’s Great Pyramid of Giza that the world’s tallest building has been found in the Middle East. It also represents a great leap forward in height, rising higher than the previous record-holder, Taipei 101 in Taiwan, by more than 1,000 feet. Yet the tower is more than a mere feat of engineering, the product of mad scientists striving to achieve a listing at guinnessworldrecords.com. The secret to its success is its integration of architecture and engineering, long a staple of the SOM Chicago office, responsible for five of the world’s current 10 tallest buildings.

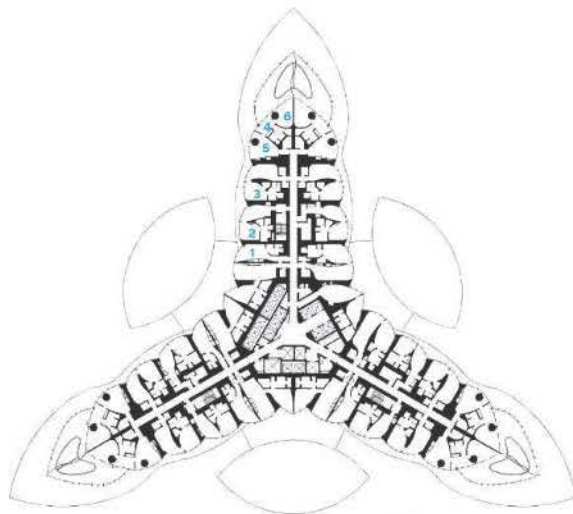
To be sure, the tower is no paragon of sustainability. But a little perspective is in order. When the tower’s developer, the state-backed Emaar Properties, rounded up the usual supertall suspects – including SOM, Kohn Pedersen Fox, and Pelli Clarke Pelli – for an invited competition in 2002, green was not on its agenda; “Big” was. At that time, architects and the culture at large had yet to embrace sustainability as they have today. It is perhaps unfair to judge a building



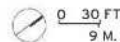
TYPICAL OFFICE FLOOR



TYPICAL RESIDENTIAL FLOOR



TYPICAL HOTEL FLOOR



SITE PLAN (OPPOSITE)

- 1 BURJ KHALIFA ARRIVAL COURT
- 2 ARMANI HOTEL ENTRY
- 3 RESIDENTIAL ENTRY
- 4 VIEWING DECK
- 5 LAKEFRONT PROMENADE
- 6 TOWER GARDEN
- 7 WATER FEATURE
- 8 CHILDREN'S PLAY AREA
- 9 RECREATION AREA
- 10 SERVICE YARD
- 11 OFFICE ENTRY

FLOOR PLANS

- 1 STUDIO
- 2 CLASSIC GUEST ROOM
- 3 SUITE
- 4 LIVING ROOM
- 5 DINING ROOM
- 6 BEDROOM
- 7 ONE-BEDROOM UNIT
- 8 TWO-BEDROOM UNIT
- 9 FOUR-BEDROOM UNIT
- 10 OFFICE
- 11 STAFF CAFÉ
- 12 EXECUTIVE SUITE
- 13 MEETING ROOM
- 14 RECEPTION



SITE PLAN



The swirling park designed by SWA Group at the base of the Burj Khalifa echoes the tower's curves and supplies water features and planting for the hot, humid climate. The mix of plants (irrigated by graywater) includes date palms, olive trees, and the *Hymenocallis* (spider lily) that inspired the Burj's design.

birthed in one era by the standards of another, just as it is unrealistic to insist on passive solar cooling in a climate where summer temperatures hit 120 degrees Fahrenheit and even the bus shelters are air-conditioned. The Burj beats the heat with double-paned glass walls that combine a low-E outer layer with a reflective inner layer. Besides, by promoting urban density, the skyscraper has attributes of conceptual green rather than literal green.

Located a few miles inland from the azure waters of the Persian Gulf, the tower is the undisputed centerpiece of a 500-acre, master-planned city-within-a-city that has improbably risen on what was desert just six years ago. Its nearly occupied 160 floors house a chic Armani hotel, floor upon floor of sold-out but mostly unoccupied condominiums, an already-popular observatory, and still-under-construction boutique offices. Huddled around the tower, like Lilliputians to its Gulliver, are various residential and hotel towers, the sprawling Dubai Mall, and a new "old town" of traditional, Islamic-themed town houses and hotels. While the juxtaposition of heights may seem bizarre, Emaar shrewdly calculated that the presence of the world's tallest building would give the area cachet and allow the company to charge higher prices for units with prized "Burj views." Such a strategy paid off – at least until Dubai's real estate market collapsed in 2009.

Taking note of the Burj's superskinny, supertall silhouette, many critics have wrongly averred that the tower was inspired by Frank Lloyd Wright's unbuilt Mile-High Illinois scheme of 1956. In fact, as Smith and SOM have made clear, the actual forerunners were the suavely curved, three-pronged Lake Point Tower in Chicago of 1968, designed by Schipporeit & Heinrich, which has shallow floor plates to keep residents close to prized views; and another three-lobed, residential high-rise, SOM's Tower Palace III in Seoul, South Korea, completed in 2004. Such was the formal genesis of the Y-shaped Burj, whose organic forms subtly echo in plan the onion domes and pointed arches prevalent in Islamic architecture. In tandem, SOM's chief structural engineer, William Baker, designed a wind-resistant "buttressed core" of concrete that, at the 156th floor, gives way to an internal steel structure that carries the mostly unoccupied spire to the summit (see page 89).

This innovative structural solution allows the Burj to be remarkably tall and remarkably thin, with one-third less square footage than the steel-framed Willis (originally Sears) Tower even though it almost doubles Willis's height. As at Willis, floor plates simply drop off as the tower sets back, letting columns run continuously and avoiding costly structural transfers. Yet in lieu of Willis's boxy Miesian geometry, the setbacks whirl upward in a dynamic, counterclockwise spiral. By sheathing the faceted, sculptural mass in a luminous,



1. The residential entry pavilion contains a large sculpture by Jaume Plense, titled *World Voices*, comprising 196 cymbals and representing the number of countries in the world. The structure of bronze-and-brass alloy, plated with gold, rises from a pond that echoes the leaf-shaped form of the pavilion.
2. The upper level of the entrance pavilion for the corporate suites has a sculptural ceiling of English sycamore to give it an organic lift.
3. The escalator leads to a lower-level entrance for the offices that connects to parking for cars. Glass is held in a suspended cable-net structure.
4. In the upper floors for the corporate suites, walls are lined with dark Wenge wood.

light-catching skin, accentuated with fin-shaped stainless-steel mullions, Smith creates a dazzling skyline object that mounts rhythmically to a thrilling climax. This skyscraper looks like a skyscraper, its elegant, exultant verticality providing Dubai's random clumps of high-rises with an unmistakable center of the tent.

The tower's extraordinary height, Smith insists, was not his – or his client's – aim, but an outgrowth of his desire to prevent the tower from appearing stubby, as it did in earlier, shorter schemes. "I just wanted the proportions to be right," said Smith, who left SOM in 2006 to start his own firm, Adrian Smith + Gordon Gill Architecture. "That was the singular motivation for reaching to that height – not a number."

The tower is equally persuasive at ground level, achieving Smith's aim that it approximate the effect of a vertical stalagmite that grows naturally out of the earth. Footlike extensions of its Y-shaped floors step down nimbly to the surrounding plaza. Lacking an immediate context, Smith built one in the form of wedge-shaped low-rise annexes (an office building and a health club) that belly up to the Burj and shape relatively intimate spaces around it. Pedestrians approaching the tower encounter lozenge-shaped entrance pavilions outfitted with precisely detailed, cable-supported double walls. The pavilions have the added benefit of deflecting downdrafts that could knock visitors off their feet.

Upstairs, the benefits of the tower's structural parti are readily apparent. By dispensing with closely spaced perimeter columns and deep floor plates, the buttressed core opens the interior to million-dollar





2



3

views of the Gulf, Dubai's skyline, and the surrounding desert. While the "At the Top" observatory on the 124th floor is not truly at the tower's top, as its name implies, it is still a splendid lookout point. From bottom to top, SOM's interiors team wisely employed soothing, understated finishes, creating oases of calm that sharply contrast with Dubai's visual cacophony.

For all the design skill, the question looms: Is the skyscraper nothing more than beautiful folly? Undeterred by the Burj's empty spaces, Emaar reports that the tower's Armani Hotel is recording "strong occupancy levels," that the observatory is on target to attract 1.2 million visitors in its first 12 months of operation, that owners are starting to occupy the condos, and that the transfer of offices to owners will begin this summer. Nonetheless, due to Dubai's sharp decline in real estate prices, some Burj condo owners are renting out apartments rather than flipping them.

For his part, Smith argues that the Burj is not the last blast of the age of spectacle, but a harbinger of the future, as developing countries follow its prototype of the mega-scale, master-planned community anchored by an iconic tower. With Saudi Arabia contemplating a kilometer-high skyscraper, and other developing countries getting set to join the supertall race, time may well prove him right – just as it did the backers of the Depression-era giant that eventually became synonymous with the exuberance of New York City and the resilience of America. ■



4

Armani Hotel Dubai: A World Within a World

BY SUZANNE STEPHENS

As one more sign of the decline of the West and its dominance in things ultra-chic, Milanese fashion designer Giorgio Armani chose the Burj Khalifa tower in Dubai for the setting of his touted debut in the hotel business. New York and Milan just have to wait—albeit they are on the list for forthcoming Armani hotels. Armani could not have chosen a more dramatic venue than this desert city on the Persian Gulf for displaying his “minimalist opulence,” as the Armani literature puts it. For one thing, there is the deep contrast between his and other luxe-level Dubaian caravansaries. These hotels seriously strive for over-the-top-dom marked by panoply and panache. You can get an ocular migraine visiting the self-proclaimed “seven star” Burj Al-Arab Hotel (designed by Tom Wright of WS Atkins in 1999), where 22-karat-gold leaf is the default interior finish.

In relation to the gimme-gilt syndrome, the cerebrally elegant Armani Hotel Dubai, a joint project with Emaar Properties, the Burj’s developer, appears amazingly discreet.

Stepping into the hotel through one of the three glass pavilions nestled between the lobes of the tower, the visitor enters a cool, shadowy lobby dominated by a tubular arch construction, rather like an abstracted version of a spider sculpture by Louise Bourgeois. The hotel’s materials contrast textures—such as Eramosa limestone floors with the sheen of fabric wall coverings. Its color scheme is Full Armani Jacket, veering confidently from beige to tan to gray to charcoal. The public spaces and 160 guest rooms and suites are located mostly on the first eight floors of the tower, plus floors 38 and 39, with 144 Armani-designed short-stay apartments on floors 9 through 16. Elsewhere in the Burj, residences designed by Skidmore, Owings & Merrill (SOM)—for Armani—fill out floors 19 to 39, with more SOM-designed condos on 43 to 72, and luxury ones on floors 76 to 108—not to mention the offices on floors 112 to 154. In addition, Adam Tihany is designing a restaurant appropriately named Atmosphere on the 122nd floor, slated to open at the end of the year.

The halls of the Armani Hotel’s guest-room floors, paneled in zebrawood and trimmed with LED cove lighting at the base and fluorescent lighting at the ceiling, impart the sleek look of a sci-fi catwalk

to a calmer world. They lead to somnolently lush guest rooms where Armani partitioned spaces with serpentine walls to echo the curves of the tower’s exterior. Since most of the furnishings and fabrics belong to the designer’s home furnishings line, Armani Casa, the *gesamtkunstwerk* idea never stops. The rooms’ plush look is calming and soothing. For a bit of oomph, many rooms overlook the Dubai Fountain’s Busby-Berkeley-goes-to-Arabia floor show designed by WET in the lake next to the Dubai Mall.

Restaurants, cafés, and lounges in the hotel religiously adhere to the Armani aesthetic, along with boutiques, a nightclub, and a spa. The Italian-oriented Ristorante most serenely imparts the soigné Armani imprimatur, where tan, curvilinear banquettes and floor lamps arcing over circular tables echo the tower’s formal thematic. The Japanese restaurant, Hashi, presents a coolly casual look (with disco music thumping in the background), but Peck, a gourmet deli with Milanese-Viennese early Modern overtones, might appeal more to architects: It looks as if Adolf Loos were hovering over the hand of the designer. An Indian restaurant, Amal, on the other hand, comes out looking anorexic, owing to the bleak lighting and attenuated scale of the fittings (more arches!). Oddly, this seems to be the only place where touches of color made it through the door, but that alone simply doesn’t provide the heat. Fortunately, these drawbacks can be fixed.

Although Giorgio Armani meticulously supervised the entire design of the hotel, down to the room controls and the soap, he was backed up by Wilson Associates, the interior design firm headquartered in Dallas. Because of its past experience in designing hotels and resorts, including

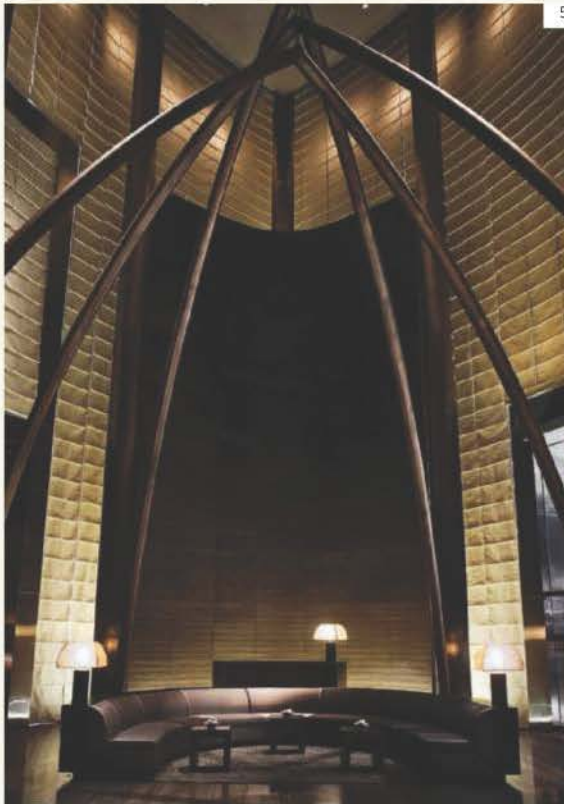
the Ritz-Carlton, Four Seasons, Kempinski, Disney, and Emaar Properties, it stands to reason that Wilson’s advice would be useful. But make no mistake about the person at the controls: as Bernard Himel, managing director of Wilson Associates says, “Giorgio Armani had the vision and intense attention to detail—he was personally involved in almost every decision.” Not surprisingly, you sense that when you go there. It will be interesting to watch how the company, Armani Hotels & Resorts, formed in 2005 with Emaar Properties, retains this aesthetic for the series of hotels it is planning in the years to come. ■



FOR CREDIT AND SOURCE INFORMATION, PLEASE SEE PAGE 124.



2 3
5 4



1. The entrance to the Armani Hotel Dubai is located between two lobe-like wings of the Burj Khalifa.
2. A Milanese ambience overlaid with Viennese overtones characterizes Peck, a gourmet deli in the Armani Hotel.
3. The hotel's Ristorante, offering Italian cuisine, effectively employs soft lighting, monochromatic colors, and circular forms that echo the formal motifs of the Burj Khalifa itself.
4. The lobby's height is dramatized by a tubular arch construction that echoes in elevation the sinuous lines of the Burj's three-lobed plan.
5. In the hotel's hallways, lighting strips (LED at the base, fluorescent at the top) and zebra wood paneling provide an eerily svelte path to the guest rooms.

The medium is light. The very, very big canvas is SunGuard.

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Beyond Limits

The Burj Khalifa's designers tackle extreme height and extreme climate to create a landmark for the 21st century.

By Josephine Minutillo



Continuing Education

Use the following learning objectives to focus your study while reading "Burj Khalifa, Dubai" (page 78) and this month's ARCHITECTURAL RECORD/AIA Continuing Education article "Beyond Limits." To earn one AIA learning unit, including one hour of health, safety, and welfare (HSW) credit, turn to page 94 and follow the instructions.

Learning Objectives

- 1 Identify the various challenges involved in designing a supertall structure.
- 2 Describe the structural system utilized in the design of the Burj Khalifa.
- 3 Discuss the various m/e/p and life-safety systems used in the Burj Khalifa.
- 4 Discuss how the Burj Khalifa differs from other supertall structures.

SKEPTICS QUESTION THE LOGIC behind building a supertall skyscraper in the middle of the desert. Others are less interested in why the Burj Khalifa exists than how it was built. The secrets to its construction might surprise you. While the Dubai landmark dwarfs its closest rival in the competition for world's tallest building by more than 1,000 feet, it doesn't flaunt its architectural muscle. Rather, its design is as straightforward and logical as it gets.

At the heart of that logic is the building's triaxial geometry. "The Y-shaped plan is ideal for a residential building because it gives plenty of surface area per unit, and structurally, it is much better than a cruciform or linear tower," explains Adrian Smith, FAIA, former design partner at Skidmore, Owings & Merrill (SOM) in charge of the project through the completion of construction documents. And though SOM's competition-winning design for the Burj far exceeded the approximately 550-meter (1,800 foot) height called for in the brief to make it the world's tallest, the scheme – originally at about 700 meters, or 2,300 feet – was selected based on its appearance and construction feasibility, according to Smith.

The center of the structural-concrete tower features a hexagonal core that surrounds the elevators. Since the core is not big enough to rise to such extreme heights on its own, it is buttressed by the three wings. While the core functions as an axle to keep the building from twisting, 2-foot-thick corridor walls on either side of each wing act like the web of an I-beam; cross walls like the flanges. Round columns are located at the pointed end of each wing between ordinary flat plate slabs. The result is a tower that is extremely stiff laterally and torsionally.

"These are very conventional systems, just arranged in a unique manner," says William Baker, structural engineer partner at SOM. The driving force behind the structural design was wind. "Tall building design is dominated by wind forces, even in most seismic areas where earthquakes are a major concern," Baker says. Since wind velocities increase with height, it was an even greater concern here. Consulting engineers Rowan Williams Davies and Irwin (RWDI) carried out extensive wind-tunnel testing over the course of two years in its renowned facilities in Ontario, Canada. First, balsa wood models of the slender tower were subjected to force balance tests. Later, more sophisticated aeroelastic tests were conducted. RWDI studied the building's six important wind directions – the pointed end, or nose, of each of the three wings, and the areas between two wings, called tails.

The Burj Khalifa's organic form has a triaxial geometry. The Y-shaped building's three wings are connected to a central core. As the tower rises, one wing at each tier sets back in a spiraling pattern.

The most significant change to come from RWDI's analysis did not significantly affect the building's design but rather its orientation. Since analysis indicated less excitation in wind patterns blowing at the nose, the tower was rotated 120 degrees from its original position so that the noses faced into the wind. RWDI also suggested that the Burj's different tiers be made more regular. "Initially, the building spiraled much more dramatically," says Smith. "But each time it steps back, it changes how the wind reacts. To keep the wind from organizing into vortices, we evened out the setbacks."

While changes to the design were being made, so too were changes to the building's use. Originally meant to be all residential, the client, Dubai-based Emaar Properties, added offices to the program. Corporate suites were located at the top of the tower, which, with floor areas as low as 5,000 square feet, is more ideally suited for apartments, the original intent for those floors.

But the program was not the only element to be in flux. The tower's final height remained a question mark until rather late in the game. It wasn't until after the foundation was in place and construction of the superstructure began that the magic number – 828 meters, or 2,717 feet – was finally determined. "I hated the proportions of the shorter tower and kept pushing for it to be taller," recalls Smith. The economy was on Smith's side at that point, and the client agreed it looked better taller.

The tower's strategic design allowed flexibility in terms of changes in program and height. The addition of offices required an extra set of elevators, which were accommodated in one of the wings. The other two wings would then house elevators for the apartments and hotel, respectively. Issues of proportion and scale were paramount in the Burj Khalifa's design. Unlike the Willis (formerly Sears) Tower, which scales by the cube, the Burj scales by the square. So whereas doubling the height of the Willis Tower would increase its area eightfold, doubling the height of the Burj only increases its area fourfold; its wings would get longer but not wider.

Nevertheless, most of the extra height was in the spire, which Baker calls "a nest of steel triangles that sits on the hexagonal walls." At the opposite end, at the very bottom of the building, a 12-foot-thick concrete mat, or raft, foundation rests on the surface of a calcisiltite rock mass. It was constructed in four separate pours – one for each of the three wings and the center core. Then, 194 5-foot-diameter piles were driven 140 feet below the mat. Most of the piles are located toward the edge of the mat, with very few at the center. "It's all about decreasing wind forces and managing gravity," says Baker. "By the time you get to the bottom, everything is in compression, so you don't need much reinforcing. The reinforcing there is similar to what you'd see in an average 20-story building. We're very proud of that."



None of this would have been possible without recent material advancements. "We discovered this new material called concrete," Baker jokes. "It is so different from the stuff we used to call concrete." While in the past, slump tests were used to measure how hard and consistent a sample of concrete was, the chemicals in the ultra-high-performance concrete used for the Burj make it so flowable that it forms a puddle. (Silica fume and fly ash are its main ingredients.) The quality control comes in measuring the diameter of the puddle.

Regardless of the concrete's 100 MPa (14,500 psi) strength, all concrete changes dimension over time. Fifteen separate three-dimensional finite-element analysis models predicted the effects of creep, shrinkage, and foundation settlement. "We made precise calculations with data that is very rough," says Baker. "It's all going to shrink. The problem comes when one part moves differently from another."

The key to minimizing that kind of differential movement was to use the same concrete in every vertical element, and to ensure that columns and walls had similar volume-to-surface ratios so that they dried at the same rate. There are virtually no transfers within the concrete structure. Designers adhered to a strict 9-meter (29.5 foot) module. Where a wing sets back and the columns at its nose drop off, the next set of columns appears directly over the walls beneath it.

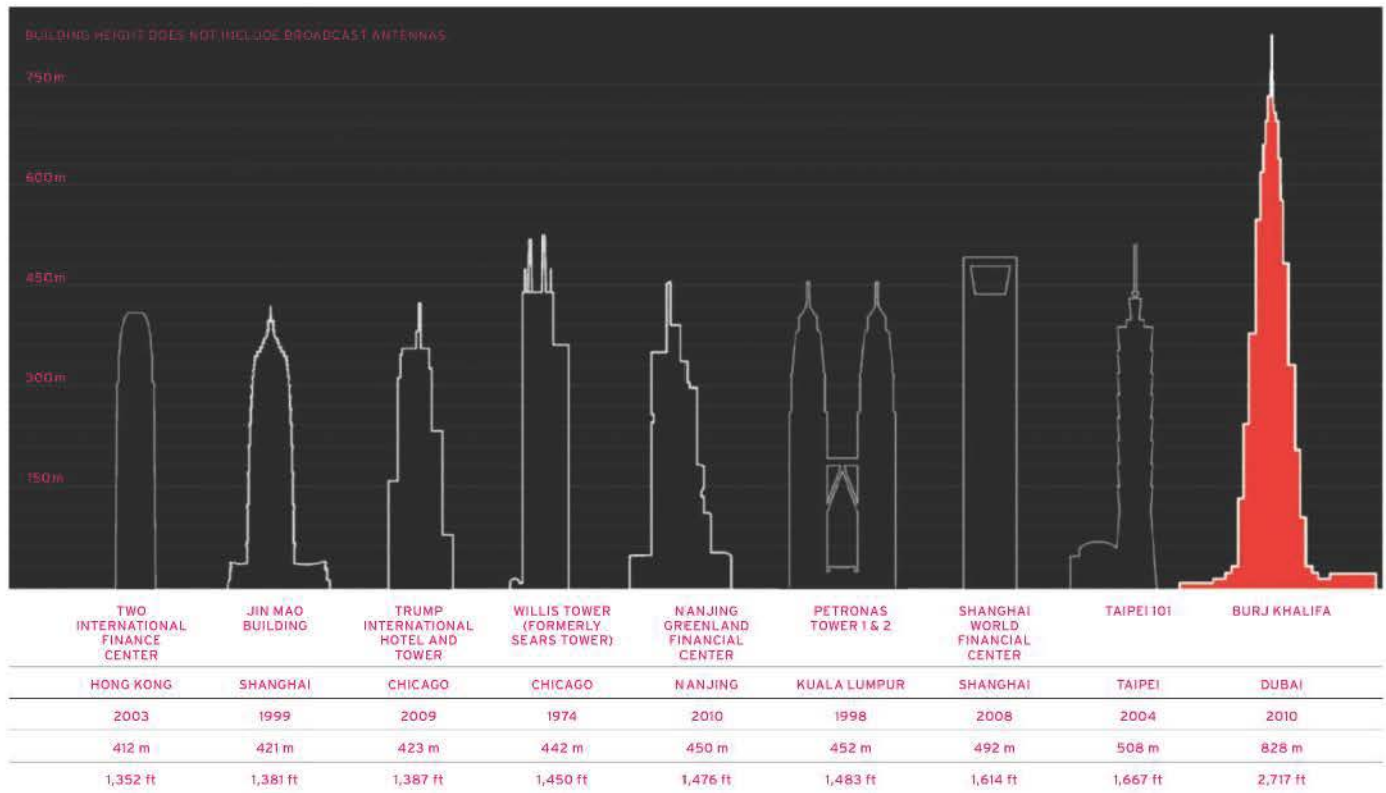
"You verify as much as possible through computer programs and calculations, but it's not an easy thing," Baker admits. "In the end, you walk the building and look for cracks." So far, the building has settled about 2 inches.

Samsung Corporation was responsible for making the design a reality. The Seoul-based contractor used an automated self-climbing formwork system to build the concrete structure. Specially developed pumps brought the concrete to heights of 600 meters (1,970 feet). The structural steel spire was constructed from inside the building and jacked to its full height of over 200 meters, or approximately 700 feet, using a hydraulic pump.

Seven two- to three-story-high mechanical floors are distributed throughout the building, about every 30 floors or so. "It's really a series of 30-story buildings stacked on top of one another," Baker says. "There would be too much pressure in the pipes, and ducts would get too big, if you try to move things too far."

The mechanical floors house various equipment, including water tanks and pumps, air-handling units, and electrical substations. Track-mounted building-maintenance units, used for window washing, are stored in garages within the structure. "We were very aware of the sand

Structural concrete gives way to steel at the tower's top section, where a structural-steel spire utilizes a diagonally braced lateral system.



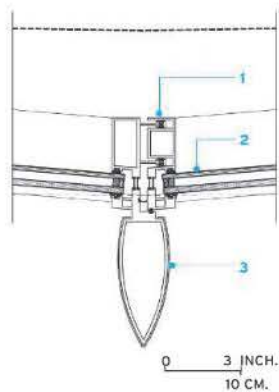
problem,” Smith says. “The consistency of the sand in Dubai is more like talcum powder. It sticks to everything.” The building was kept as flush as possible, and ledges were kept to a minimum to reduce the number of areas where sand could settle. Window washing is expected to take place every few months.

Over 26,000 low-E, anti-glare glass panels were used in the exterior cladding of Burj Khalifa, which features more than 1.8 million square feet of glass. Eight-inch-long wing-shaped, stainless-steel mullions occur at every glass joint. “We originally designed the exterior wall with steel tubes, but it looked too industrial,” recalls Smith. “The sheen of the vertical stainless steel, especially in the horizontal sun of morning and evening, makes the building sing.”

While the building’s structure and its exterior, including the cladding, were designed to resist a variety of forces, forces of a different kind needed to be addressed inside the tower. According to SOM’s Luke Leung, “There is a tremendous amount of pressure in a building of this height, both on the water side and on the air side.”

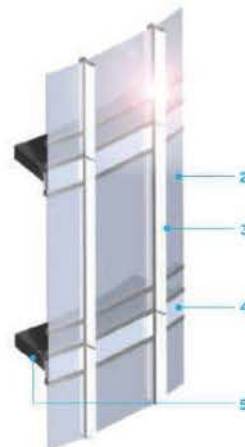
The typical system pressure for water is 300 psi. The Burj has one of the highest water pressures in the world at up to 460 psi. “Imagine a water pipe that is 800 meters tall,” says Leung. “You don’t want to be standing under that.”

Pressure breaks are typically added in high-rise



CURTAIN-WALL DETAIL

- 1 ALUMINUM VERTICAL MULLION
- 2 CLEAR REFLECTIVE INSULATING VISION GLASS
- 3 STAINLESS-STEEL VERTICAL FIN
- 4 HORIZONTAL SPANDREL PANEL
- 5 CONCRETE SLAB



CURTAIN-WALL DETAIL



The tower used over 430,000 cubic yards of concrete and 43,000 tons of steel rebar. To help determine the concrete-to-rebar ratio, three-dimensional finite-element analysis models were used to predict the effects of creep and shrinkage.

buildings to alleviate the forces. In the Burj, SOM created some of the highest pressure breaks ever in a building, consisting mainly of heat exchangers to isolate one riser from another. The tower's water system supplies an average of 250,000 gallons of water daily.

Cooling the water presented another challenge for SOM's engineers. "When we first started coming to Dubai, we noticed that the hot water in our hotels was very hot, and that the cold water was also very hot," says Leung. "Imagine getting hot water out of the cold faucet at the Armani Hotel!"

Since Dubai has limited fresh water and relies on the sea, the water had to travel through the very hot ground during the salt evaporation process. Instead of following that scenario, SOM took advantage of the area's high humidity and the large amount of condensation that results. "The moisture is so high that if you collect condensate in the air during a cooling period, you get a significant amount of water in the 55-65 degree Fahrenheit range," explains Leung. This water is collected and drained in a separate piping system to a holding tank. The system provides about 15 million gallons of supplemental water per year. A sitewide graywater collection system collects water for use in landscape irrigation.

The effects of air pressure are more noticeable to the average visitor to the Burj. There is an

enormous amount of air movement going through the building. Due to Dubai's high temperatures, reaching 115 degrees Fahrenheit and higher in the summers, the stack effect is reversed. Instead of hot air rising, it is sucked in from the top of the building and directed downward because the inside of the building is cooler than the outside.

Stack effect is a function of both the building's height and the temperature difference between the inside and the outside. Both are extreme in this case. When you enter the building in the heat of summer, the air will feel like it is trying to push you out. "In Chicago, for instance, it is 75 degrees inside and as high as 95 degrees outside on a summer day," Leung explains. "In Dubai, the temperature difference in summer can be more than 40 degrees Fahrenheit."

What is not so apparent from the building's height is the amount of power it consumes. As electricity travels through the building, which in essence is a stack of five 30-story buildings, it loses voltage similar to the way water loses pressure flowing through a small pipe. To supply these massive loads efficiently, the Burj's electrical mains are supplied with 11 kV, 23 times higher than the 480V typically used in the U.S. Transformers located at each of the mechanical levels reduce the voltage to intermediate levels for heavy equipment and to 220V, the normal voltage used

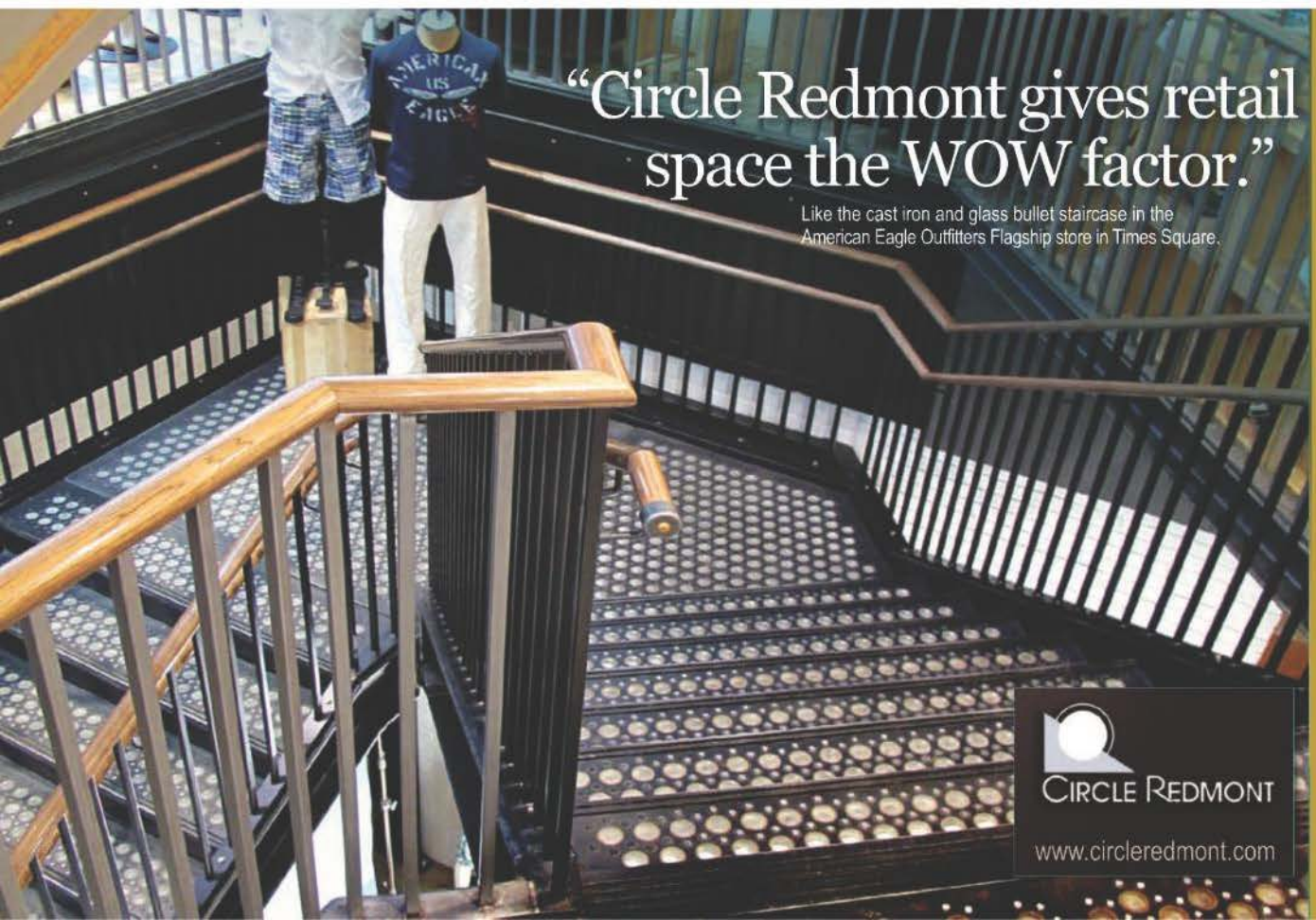
in the U.A.E., for office equipment and appliances.

Fire- and life-safety issues are a vital concern in high-rise buildings, particularly one of unprecedented height such as this. The Burj contains 57 elevators, some of the fastest in the world, serving different building zones, though no one elevator travels more than 500 meters (1,640 feet).

According to Baker, the longest elevator ride takes under two minutes – with the express elevator to the observation deck on level 124 taking much less time. Baker also admits to walking down the full height of the building (at a leisurely pace) about 45 minutes. A typical floor contains three sets of concrete-encased fire stairs, one in each wing.

In case of fire emergency, the building deploys a "defend in place" strategy. Fire-rated, air-conditioned refuge areas accommodate building occupants until further instruction. Some elevators are equipped with cameras so that elevator shafts can be inspected remotely.

Despite the challenges involved in designing the Burj Khalifa, and the criticisms leveled against it in the wake of Dubai's subsequent financial meltdown, Adrian Smith staunchly defends it. "The Burj was an important piece for Dubai at the time it was built," says Smith. "Dubai wanted to be recognized as an international player on par with other major world cities, and it needed an international landmark to do that." ■



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AIA/Architectural Record Continuing Education

To receive one AIA learning unit, read the articles "Burj Khalifa, Dubai" and "Beyond Limits" using the learning objectives provided. To apply for credit, complete the test below and follow instructions for submission at right.

- The Burj Khalifa rises higher than the previous record holder for the world's tallest building by how many feet?**
 - 550
 - 700
 - 828
 - over 1,000
- The design of tall buildings is dominated by which of the following forces?**
 - seismic
 - wind
 - gravity
 - all of the above
- Which of the following is true?**
 - the design of the Burj Khalifa was inspired by Frank Lloyd Wright's unbuilt Mile-High Illinois scheme
 - the Burj's cruciform plan reduces wind forces on the tower while offering residential units expansive views
 - the Burj contains one third less square footage than the Willis (originally Sears) Tower, even though it almost doubles the height of the Willis Tower
 - none of the above
- Which best describes the Burj's structural system?**
 - bundled tube
 - rigid frame
 - buttressed core
 - space truss
- Which is not true about the mechanical floors?**
 - they are distributed approximately every 30 floors
 - they house the window-washing system
 - they serve as refuge floors in case of emergency
 - they contain air-handling equipment
- Which of the following was done to counter wind forces?**
 - building setbacks were made more regular
 - structural steel was added to the building base
 - a third bank of elevators was installed
 - ledges were kept to a minimum
- Which of the following was done to accommodate the addition of offices to the building's program?**
 - building setbacks were made more regular
 - structural steel was added to the building base
 - a third bank of elevators was installed
 - ledges were kept to a minimum
- Which of the following is used as a source of domestic cool water?**
 - a sitewide graywater system
 - condensate
 - seawater
 - all of the above
- Electrical transformers used to return voltage to average levels are located where?**
 - in the spire
 - at each residential and office unit
 - at the mechanical levels
 - none of the above
- In the Burj's reverse stack effect, which of the following occurs?**
 - hot air rises
 - hot air descends
 - cold air descends
 - none of the above

Program title

"Burj Khalifa, Dubai/Beyond Limits" ARCHITECTURAL RECORD, 08/10, page 78 and page 89.

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LAS VEGAS CITY CENTER

PRODUCT PROFILE SECTION



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FLUSH DOORS KEY TO CITYCENTER'S DESIGN Modernus brings innovative door construction to the Mandarin and Veer Towers

MGM's design team turned to Modernus to provide flush door frames for a modern, understated aesthetic.



POHL

BACK-VENTILATED RAINSCREENS TAKE SHAPE Pohl delivers rainscreen principles to CityCenter's Mandarin

Offering a varied and lively façade, Pohl's Ecopanel® metal panel system brings beauty, economy and energy efficiency to the Mandarin Oriental's podium.

THE CITY WITHIN A CITY

CENTRIA helps CityCenter redefine the Vegas skyline

There are a lot of stars in Las Vegas but a brand new one recently stole the show on the Strip. CityCenter, the 18-million-square-foot mixed development project that stretches across more than 65 acres between the Bellagio and Monte Carlo Resorts on the Vegas Strip, is capturing all the attention lately. Approximately 795,000 square feet of this monumental project is covered with products from CENTRIA Architectural Systems.

Crown Corr Inc., one of the dealers in CENTRIA's nationwide network, was instrumental in integrating and installing CENTRIA metal wall systems on the Spa, The Podiums, Theater, The Crystals and the Convention Center. The CENTRIA product used most prominently was Formawall® Dimension Series®, the only wall system that provides both advanced thermal efficiency and moisture control in a single panelized component. Formawall panels offered the architects and designers a broad range of aesthetically appealing options in terms of form, color and texture.

Because CENTRIA systems are manufactured to work together, Formawall Dimension Series integrated seamlessly with the other materials used, including Profile Series Exposed Fastener Profiles, Concept Series® and IW-Series. All of these were chosen because of their virtually unlimited design options, ease of installation and flexibility on large scale projects and in high-rise conditions. CENTRIA's Versawall® panels were also used on various CityCenter buildings as an insulated composite back up panel system behind other CENTRIA products to provide an excellent moisture, air and thermal barrier.

All of the CENTRIA products used have received Cradle to Cradle® Certification, which contributed to the overall sustainability of the development. Today, CityCenter holds the title of the world's largest sustainable project with five buildings achieving LEED Gold certification.



Product Application:

- Formawall Dimension Series panels were applied horizontally on the Convention Center in multiple bright colors to create a distinctive exterior appearance.
- Versawall panels were used on various buildings as an insulated composite back-up panel system behind other CENTRIA products to provide an excellent moisture, air and thermal barrier.

Performance Data:

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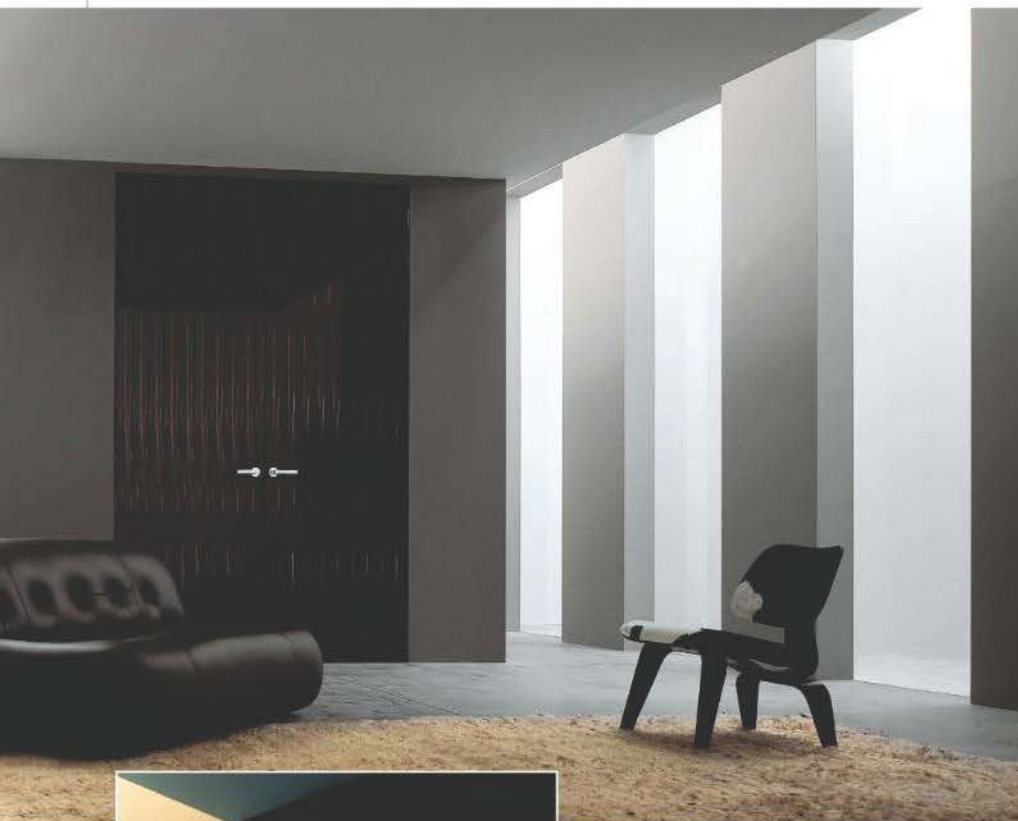
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FLUSH DOORS KEY TO CITYCENTER'S DESIGN

Modernus brings innovative door construction to the Mandarin and Veer Towers



Flush doors are highly sought after by contemporary designers for their sleek, understated minimalism. Traditionally, though, a true flush frame has been difficult for American manufacturers to produce.

In 2008, despite these challenges, MGM's design team decided that flush door frames would add a modern aesthetic to the Mandarin and Veer towers, exuding timeless, understated simplicity. This attention to detail and quality design would set them apart from other properties on the Strip. MGM's procurement team was charged with finding a viable manufacturing solution for flush frames. After an international search, they discovered San Francisco-based Modernus.

Utilizing European technologies, Modernus developed a metal frame specifically designed for American standard 5/8" drywall. This jamb eliminates cracking and leaves no visible seam. Modernus met with MGM's building and design team and proposed its flush aluminum door system, whose design is based on a special aluminum jamb recessed behind the drywall. It also includes 3-way adjustable hinges, magnetic latchset that eliminates the need for strikeplates, gasketing and a proprietary no-warp panel construction.

Modernus quickly delivered a full-scale sample. MGM was drawn to the quality but requested changes to the aluminum jamb, taking into account feedback from workers on the project. Modernus developed a jamb that can be easily installed in high volume environments and saves about \$300 per opening in labor costs compared to alternatives.

Today, there are thousands of Modernus flush doors installed in Las Vegas, from closet doors to large master suites. Custom made and competitively priced, Modernus flush doors are the highest quality interior doors in the United States.



Product Application:

- CityCenter Mandarin Oriental Residences, Las Vegas, NV
- CityCenter Veer Tower Penthouses, Las Vegas, NV
- High-end residential projects

Performance Data:

- 100% Recycled Aluminum Frames resistant to cracking
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BACK-VENTILATED RAINSCREENS TAKE SHAPE

Pohl delivers rainscreen principles to CityCenter's Mandarin

Combining beauty, economy and energy efficiency, Ecopanel® ventilated rainscreen system, from Pohl Inc. of America, is the metal panel system used for the podium at the Mandarin Oriental, Las Vegas—the luxury 47-story hotel prominently located at CityCenter's entrance. The podium houses a multitude of street-level retail spaces, as well as an elegant ballroom on the second level. Pohl's Ecopanel system offers a varied and lively façade to this and other installations, due to a combination of different materials, as well as perforated and smooth wall cladding panels, carried out as a complete package service.

Pohl's Ecopanel system, which is based on the rainscreen principle, is quickly and easily installed based on a few elements, and nevertheless offers the possibility of noise-free thermal movements due to the isolators, integrated with the eco-clips. For the Mandarin

podium project, designers selected stainless steel with an embossed finished pattern. The finish, which has a protective skin, provides a better life expectancy than any ground finish. The horizontally modulated panel system—which may be manufactured from different kinds of thin metal sheets—can be processed to form individual façades with many possibilities of different patterns and/or colors.

As a sustainable design product, the Ecopanel system offers energy efficiency, high durability and low maintenance, contains pre-consumer recycled content and is recyclable after use. Pohl Inc. of America offers a number of sustainable rainscreen cladding systems, which utilize their well-known rainscreen technologies, as well as their uniquely tight bending and forming capabilities.

Product Application:

- Mandarin Oriental podium, CityCenter, Las Vegas, NV
- Primary application for commercial buildings, hospitals, museums
- Horizontal orientation
- Custom-formed panels and columns

Performance Data:

- 20-year limited warranty
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LIGHTING

CITYCENTER, LAS VEGAS
BURJ KHALIFA, DUBAI
LIGHTING PRODUCTS

Grabbing Attention Without Shouting

Lighting designers favor form over flash for CityCenter's diverse set of buildings.

By Joann Gonchar, AIA

THERE ARE FEW URBAN environments where the lighting is as brash and in-your-face as the Las Vegas Strip, as Philadelphia architect Denise Scott Brown has famously observed (see page 74). Getting a building noticed amid the area's flashing neon lights and digital screens without shouting just as loud would seem almost impossible. But that is what the lighting designers set out to do at CityCenter, the Strip's new \$8.5 billion mixed-use complex.

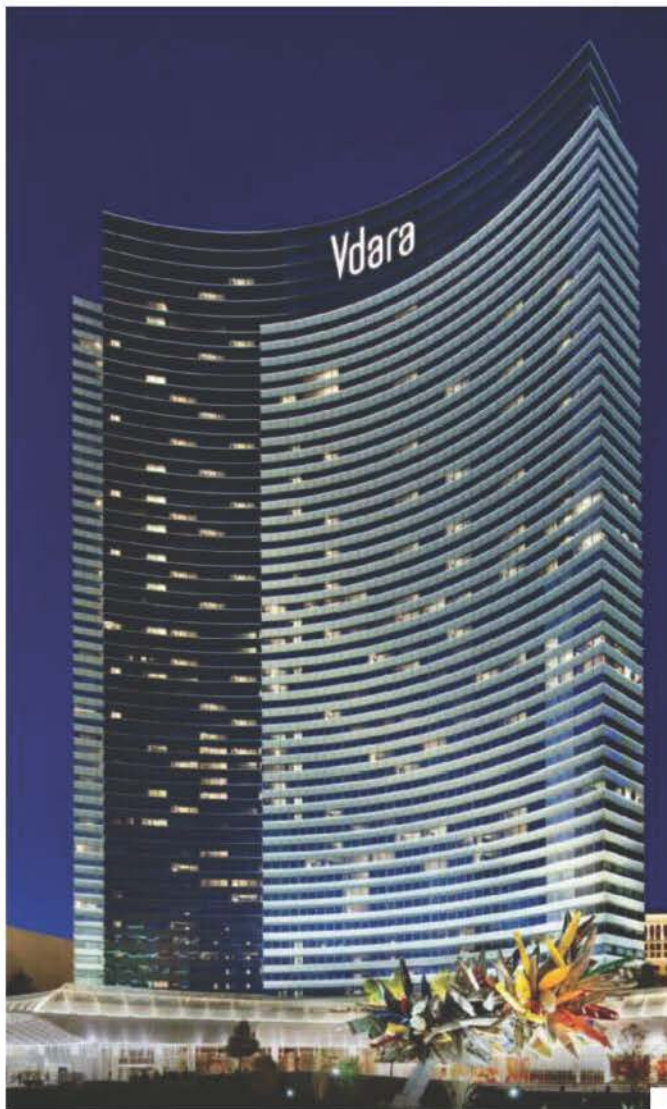
To create the mega-development, which is dense and vertical in a city where spread out and horizontal rule, MGM Resorts International (formerly MGM Mirage), owner of CityCenter with Dubai-based development partner Infinity World, hired a group of high-profile architects including Daniel Libeskind, Pelli Clarke Pelli, and Kohn Pedersen Fox, in the hopes that urbanism and high design would woo visitors from flashier hotels and casinos elsewhere on the Strip. Lighting these architects' buildings did not involve throwing as many watts at the facades as possible, as would be typical in Las Vegas. Instead, the illumination strategy depended on emphasizing the unique qualities of each structure, says Kelly Stechschulte, project director for Illuminating Concepts. The company was the project's executive lighting designer, responsible for coordinating 16 other firms working on the exterior and interior lighting.

The centerpiece of the complex, the Pelli Clarke Pelli-designed Aria Resort & Casino, arguably makes the boldest lighting statement of any of the CityCenter projects. At more than 6 million square feet, it is the development's largest structure and the only one with a definitive crown. Each of the hotel's primary wings, a pair of curved glass-clad towers that form intersecting arcs in plan, has an approximately 40-foot-tall series of horizontal, 14-foot-long, finlike aluminum louvers that conceal elevator overruns and other equipment. As part of the lighting scheme by Brandston Partnership, this Modernist cornice is illuminated with asymmetrical fluorescent uplights mounted at the end of each fin. The location of the fixture makes one end of the fin brighter than the other, reinforcing the rhythm of the architecture.

Below the crown, on the roof of the Aria's vast podium, the lighting designers placed narrow beam floodlights to illuminate the rest of the facade. The fixtures are positioned so that the undersides of perforated shades projecting from the top of each floor catch the light, making the shades glow.

The approach to illuminating the 1,500-room Vdara Hotel, designed by Rafael Viñoly Architects, was similar to that of the Aria, but tailored to its unique form. The building doesn't have a crown, but is instead a 57-story volume extruded from three overlapping curved bands. In elevation, the Vdara's architects articulated the three elements with two colors of spandrel glass: white for the outer two and black for the one in between. They also differentiated the spandrel and vision panels by making the vision glazing jut out a few inches from the facade. The lighting designers from Cline Bettridge Bernstein took advantage of this configuration, mounting floodlights on a pool deck and rear podium, so that the protruding edges would reflect light on areas with white glazing. "We illuminated the volumes that would take light the best," explains Francesca Bettridge, Cline Bettridge Bernstein principal.

For Veer, twin 500-foot-tall condominium towers designed by Murphy/



1. With 3000K metal-halide spotlights placed on a pool deck and podium, designers lit the facades of the Vdara Hotel to accentuate recessed spandrel panels. A variety of warmer sources were used to illuminate the entry canopy.
2. The tilt of the Veer condominium towers (center of photo) is emphasized by LED fixtures mounted on the corner of the buildings' shading devices. To ensure the longevity of LEDs in the hot desert climate, the fixtures' control system dims and changes the color of the lights when the ambient temperature is too high.
3. CityCenter's retail center, the facade of the Daniel Libeskind-designed Crystals, is illuminated with a combination of low-wattage footlights located directly at the building's base and higher-wattage spotlights hidden in planters several feet away. The higher-intensity spotlights are also mounted on the roof to accentuate some planes of the so-called fifth facade.



2



3



Jahn, the illumination makes the most of the buildings' defining characteristic: They lean 5 degrees at opposing angles. The lighting, executed by Illuminating Concepts from a scheme by Paris-based Yann Kersalé, includes LEDs mounted on the corners of exterior shading devices to emphasize the tilt.

The lighting design teams weren't only focused on the view of CityCenter from afar, but also on the experience of those arriving by car or approaching on foot. To light two sweeping laminated-glass entry canopies at the Aria, designers chose warmer lamp sources than those used for the facade. They selected through-canopy downlights with 3000K metal-halide lamps but chose cooler 4000K floodlights to accentuate the towers' projecting shades. The Vdara has a more solid canopy, but the lamp selection strategy was the same: Sources for illuminating elements near the ground were chosen on the basis of what would be comfortable for people, says Bettridge.

What it is like to stand right next to a structure at night was also a key concern for Focus Lighting, the firm that devised the illumination scheme for Crystals, Daniel Libeskind's shopping mall. The 500,000-square-foot stainless-steel-clad building, which sits directly on the Strip, features canted and angular planes, leaning toward and away from the sidewalk. Focus sought to soften the pedestrian experience with 39-watt metal-halide uplights placed at the building's base. Like stage footlights, they provide a soft glow from below. Focus also hid higher-wattage spotlights in planters several feet away to play up particular edges and surfaces of the facade.

One surprising aspect of Crystals is the way its skin reflects the vibrant light and color from signage across the Strip, helping it, at least at night, fit in with CityCenter's more flamboyantly illuminated neighbors. "The building," says Focus principal Paul Gregory, "reflects what's going on in Vegas without actually becoming it." ■

The edges of sunshades on the sawtooth-shaped facade of the Aria Resort & Casino catch light from floodlights placed on the hotel's vast podium. These lights, together with fluorescent fixtures illuminating the building's crown, reinforce the rhythm of the facade. Wide-beam downlights mounted on top of a sweeping glass canopy light the entry.

CREDITS

PROJECT: CityCenter, Las Vegas

DESIGN ARCHITECTS: Pelli Clarke Pelli (Aria Resort & Casino); Rafael Viñoly Architects (Vdara Hotel); Studio Daniel Libeskind (Crystals); Kohn Pedersen Fox (Mandarin Oriental)

EXTERIOR LIGHTING DESIGN: Illuminating Concepts (executive lighting design) – Kelly Stechschulte, project manager; Brandston Partnership (Aria Resort & Casino) – Scott Matthews, John Newman, Sanchai Kornwattananon, Napee Deephanphongs, project team; Cline Bettridge Bernstein (Vdara Hotel) – Francesca Bettridge, Michael Hennes, Sang Lee, Chi Iamsakul, project team; Focus Lighting (Crystals and hardscape design) – Paul Gregory, Juan Pablo Lira, Michael Cummings, Stephanie Daigle, Hilary Manners, project team; Yann Kersalé (Veer, conceptual); Isometrix (Mandarin Oriental Hotel, conceptual)

SOURCES

EXTERIOR FIXTURES: We-ef; Bega; BK Lighting; Edison Price; Color Kinetics; Hydrel; Elliptipar; Erco; Hunza

LAMPS: Osram Sylvania; Philips; GE LED

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Shedding Light on the World's Tallest Building

Three firms illuminate the Burj Khalifa with alternating restraint and spectacle.

By Linda C. Lentz

FROM A DISTANCE, the half-mile-high Burj Khalifa in Dubai tapers to a near imperceptible spire like a mirage along the windswept desert coast of the Persian Gulf. Up close, within its urban context, visitors and residents are treated to a densely landscaped setting of terraced drives, esplanades, restaurants, retail outlets, pools, and fountains.

In terms of illumination, it was an interesting challenge, says Paul Marantz, design principal at Fisher Marantz Stone (FMS), the firm responsible for lighting the bulk of the tower, as well as the circular Tower Park around it. "You're either looking up or straight ahead," he says. "So the question we had was, What do you do with a building that is so tall it dwarfs everything else?"

At first Marantz and his associates considered floodlighting the facade. They soon realized that if they did, the tall, lithe skyscraper would almost always be shrouded in a light-polluting nimbus. Unlike the typically crystal clear atmosphere that imparts definition to the cityscape of Las Vegas, the humid air of Dubai is often filtered with blowing sand – a condition that continually alters the building's appearance. So the lighting designers reverted to a "close-in" scheme similar to that of the Jin Mao Tower in Shanghai, an earlier FMS collaboration with Adrian Smith and SOM.

Here they took advantage of the Burj's spiraling lobes to layer the structure with a series of small fixtures that wash its surface in a soft, luminous glow.



1



2



PHOTOGRAPHY: © HEDRICH BLESSING/NICK MERRICK (1,3); COURTESY WET (2)

1. Fisher Marantz Stone transformed each lozenge-shaped entrance pavilion into a super-size luminaire, illuminating the lobby and adjacent outdoor area with a row of uplights installed in the base of the double-glazed walls and a canopy fitted with metal-halide MR16 downlights and a horizontal, louvered fluorescent light box at the back.
2. The water-feature specialists at WET eclipsed their famed Fountains of the Bellagio in Las Vegas with the even larger Dubai Fountain, which is lit by several thousand 3100K incandescent lamps enhanced by 25 video projectors set to stream color or abstract painterly effects into the water jetting from this giant feature's five rings.
3. Washed by the glow of metal-halide uplights installed on the building's curtain wall and setback terraces, the Burj Khalifa soars above the gently lit paths and landscape of Tower Park and the festive Dubai Fountain set within the man-made lake of the 30-acre Burj Park.

The custom fixtures include tightly sealed metal-halide uplights bracketed to the curtain wall at the ceiling line of the first two levels and installed around the top of the 10-foot-high glass windscreens at the edge of the setback terraces above; halogen downlights affixed to residential balcony sunscreens; and 400-watt metal-halide floodlights on the parapets beneath the needlelike pinnacle. All fixtures are carefully angled and shielded to enhance the building's texture and form without imposing on the occupants or impeding their views.

Carrying this illuminating *parti* to terra firma, the FMS design team installed evenly spaced arrays of uplights along the floors between the double glazing of the three entrance pavilions, filling the interiors of the jewel-like lobbies with a bright ambient light that filters through to the outer drop-off areas. A fluorescent glass light box extends this light-wall effect around the lower parking level of the office atrium (where most occupants enter), doubling as a radiant path to and from the plaza. To avoid interfering with the view of the Burj outside, Marantz kept everything in the landscape as close to the ground as possible, using low-level bollards, circular necklaces of in-ground lamps along the roundabouts, and unobtrusive streetlights. Low light levels and warm color temperatures are never harsh or overwhelming.

Of course, festivals and the need to entertain tourists warrant sensation. For this, Emaar Properties tapped two special-effects icons. California-based WET illuminated its dazzling Dubai Fountain with a system that follows the movement of the aquatic displays, while 25 video projectors (in rooms beneath five rings of water jets) are programmed to stream color or painterly abstractions into the bursts. For the Celebration Lighting system, U.K.-based lighting designers Speirs and Major Associates (SaMA) devised a show that morphs the tower into a flashing beacon, with 868 high-power stroboscopes and six searchlights integrated into the facade and palms. A radical juxtaposition to the understated FMS plan, the flamboyant SaMA spectacle, which debuted opening day, is perhaps a fitting tribute to a building and city that demand our attention, yet want to be taken seriously. ■



1



2

1. The Burj Khalifa is a largely residential building with hotel suites and several offices, so Fisher Marantz Stone devised a solution that avoids light intrusion into the interior and preserves night views for its occupants.

2. An easy-to-service, walk-in fluorescent light box greets visitors as they enter and exit the office-tower pavilion from the lower-level parking garage. The light box doubles as an underlit walkway at the main doorway out to Tower Park.

CREDITS

PROJECT: Burj Khalifa, Dubai
ARCHITECT: Skidmore, Owings & Merrill – Adrian Smith, former design principal.
LIGHTING DESIGN: Fisher Marantz Stone (facade, interior, landscape) – Paul Marantz, design principal; Hank Forrest, Marcel Dion, Rob Schoenbohm, design team; Speirs and Major Associates (Celebration Lighting) – Jonathan Speirs, Keith Bradshaw, Gill Pyatt, Iain Ruxton, Sarah Wisner, design team; WET (The Dubai Fountain) – Jim Doyle, director of technology

SOURCES

EXTERIOR FIXTURES: B-K Lighting; ERCO, Cooper Lighting; Simes; WE-EF Lighting
LAMPS: Philips; Osram; GE LED
CONTROLS: Philips
CELEBRATION LIGHTING: High End (strobos); Finline (searchlights); ETC, Oasis (control system)

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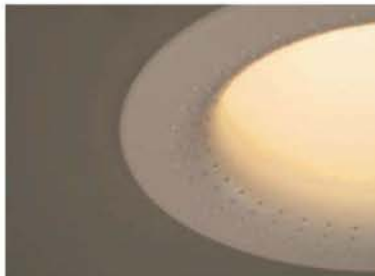
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PRODUCT Tetra PowerGrid LED Lighting System

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Used by Fisher Marantz Stone to illuminate the onyx path into Privé, the club at the Armani Hotel Dubai in the Burj Khalifa, Tetra PowerGrid is a modular LED system designed to simplify the backlighting process in dry or damp locations. Available in a range of color temperatures, the 9.3" x 5.3" x 0.58" modules provide a brilliant uniform light and work with GE LED drivers to link in numerous configurations and sizes. **CIRCLE 212**



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MANUFACTURER ecue lighting control
www.ecue.com

Capable of integrating media content, this high-performance LCE server, installed with the manufacturer's Lighting Application Suite 5.2, can control large, complex projects (up to 65,536 DMX channels) by orchestrating all devices and fixtures within a project. Additionally, it has been equipped with a built-in touch screen for customized graphical user interfaces and real-time installation monitoring. **CIRCLE 213**



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PRODUCT Hi-lume A-Series LED DriverMANUFACTURER **Lutron Electronics**www.lutron.com/HiLumeLED

Developed to suit varying design standards, the Hi-lume A-Series LED Driver is capable of continuous dimming, down to a 1% light level for most LED fixtures, and supports constant-current or constant-voltage outputs over a wide range of voltage levels for LED loads up to 40 watts. Available in either compact and stick form, this driver works with electronic low-voltage (ELV), 3-wire fluorescent, and EcoSystem digital controls. **CIRCLE 215**

**PRODUCT CosmoPolis Outdoor Lighting System**MANUFACTURER **Philips**www.philips.com

The lighting design team at Fisher Marantz Stone chose the CosmoPolis Outdoor Lighting System for the streetlights surrounding the Burj Khalifa due to the warm quality and high efficacy of its compact CosmoWhite lamps and mini eHID (high-intensity discharge) electronic ballast. Improved optics require fewer light points to achieve the desired effect. **CIRCLE 216**

**PRODUCT DuroSite LED High-Bay Fixture**MANUFACTURER **Dialight**www.dialight.com

Measuring 16" x 3", the

150-watt, 12,000-lumen DuroSite LED high-bay fixture is the ideal energy-saving replacement for similar 400-watt metal-halide versions typically installed in such industrial applications as factories, warehouses, and gymnasiums. Sealed for outdoor use and Dark Sky Compliant, this heavy-duty luminaire is available in several iterations, including models with occupancy sensors or dimmers, or configured for cold storage or hazardous-location applications. **CIRCLE 217**

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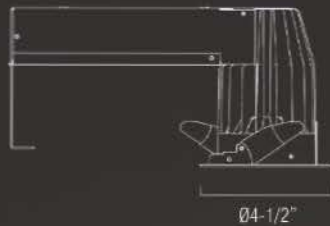
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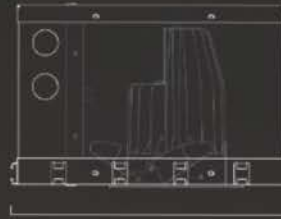


13W L141
Lumen Output = 50W MR16
Lumen Output



Ø4-1/2"

*Non-insulated ceiling
configuration*



9-1/2" (w) x 7-5/8" (l) x 6-1/8" (h)

*Insulated ceiling
configuration*

L141 LED downlight features a **field replaceable** lamp and light output **equivalent to a 50W MR16** source.



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ISAY WEINFELD
- 116 3641 Holdrege Avenue
LYNCH/EISINGER/DESIGN
- 120 Wards Cove Marina Warehouse Office
ATELIERJONES

LIVRARIA DA VILA

Livraria da Vila

SÃO PAULO, BRAZIL

For a store on a tight, midblock site in a chic neighborhood, Isay Weinfeld lets the books do the talking.

By Bill Hinchberger





IF YOU DON'T THINK BOOKS can make a spectacular entrance, visit the Livraria da Vila in São Paulo's haute Jardim Paulista neighborhood. While visitors to South America's largest city are often disoriented by its sprawl, they can find architectural gems tucked away in urban nooks and crannies.

When the Livraria da Vila, a bookstore intent on becoming a chain, approached São Paulo architect Isay Weinfeld about designing a store on a street called Alameda Lorena, he devised a scheme that would place books themselves at the forefront by using pivoting bookcases at the main entrance and making

the merchandise itself the principal element of the interior design.

Program

Born in the city's hippie-tinged Vila Madalena district, Livraria da Vila asked Weinfeld to adapt its bohemian attitude to the sometimes snooty Jardim Paulista area where the streets are lined with exclusive fashion and lingerie boutiques. Weinfeld appreciated the challenge of translating one neighborhood's culture for the denizens of another, but he didn't lose sight of the financial bottom line. "For me to take on a commercial project," he says, "I have to see how the architecture is

going to help the business reach its sales targets."

Solution

"The books are the most important thing," says Weinfeld of his design. Few people can walk past the store without stopping or making a mental note to come back later. When it is closed, the store presents no visible entrance – just rows of glass-encased bookshelves smartly lit. When it is open, customers walk between one-story-high walls of books that have swung open to reveal the store's interior. Such an entrance recalls Brazil's informal corner bars, called *botequins*, which spill out onto the

street. Weinfeld is known for designing dramatic entries to his buildings, a tendency that many critics chalk up to his love of cinema. Above the pivoting bookshelves sits a stark rectangular cement facade, adorned only at the top with the store name. While film-loving architects are hardly rare, few have made their own films as Weinfeld has, codirecting the cult film *Fogo e Paixão* (*Fire and Passion*) with fellow architect Marcio Kogan.

Weinfeld admits to an addiction to shops for used books, especially places that evoke a sense of organized chaos and intellectual serendipity. At Livraria da Vila he conjures that effect with a combi-

OPENING PAGE: Steel-and-glass doors pivot open to bring customers inside the store.

OPPOSITE: A book-lined, oval cutout brings views and light to the basement level while maintaining the store's attractively cluttered look.

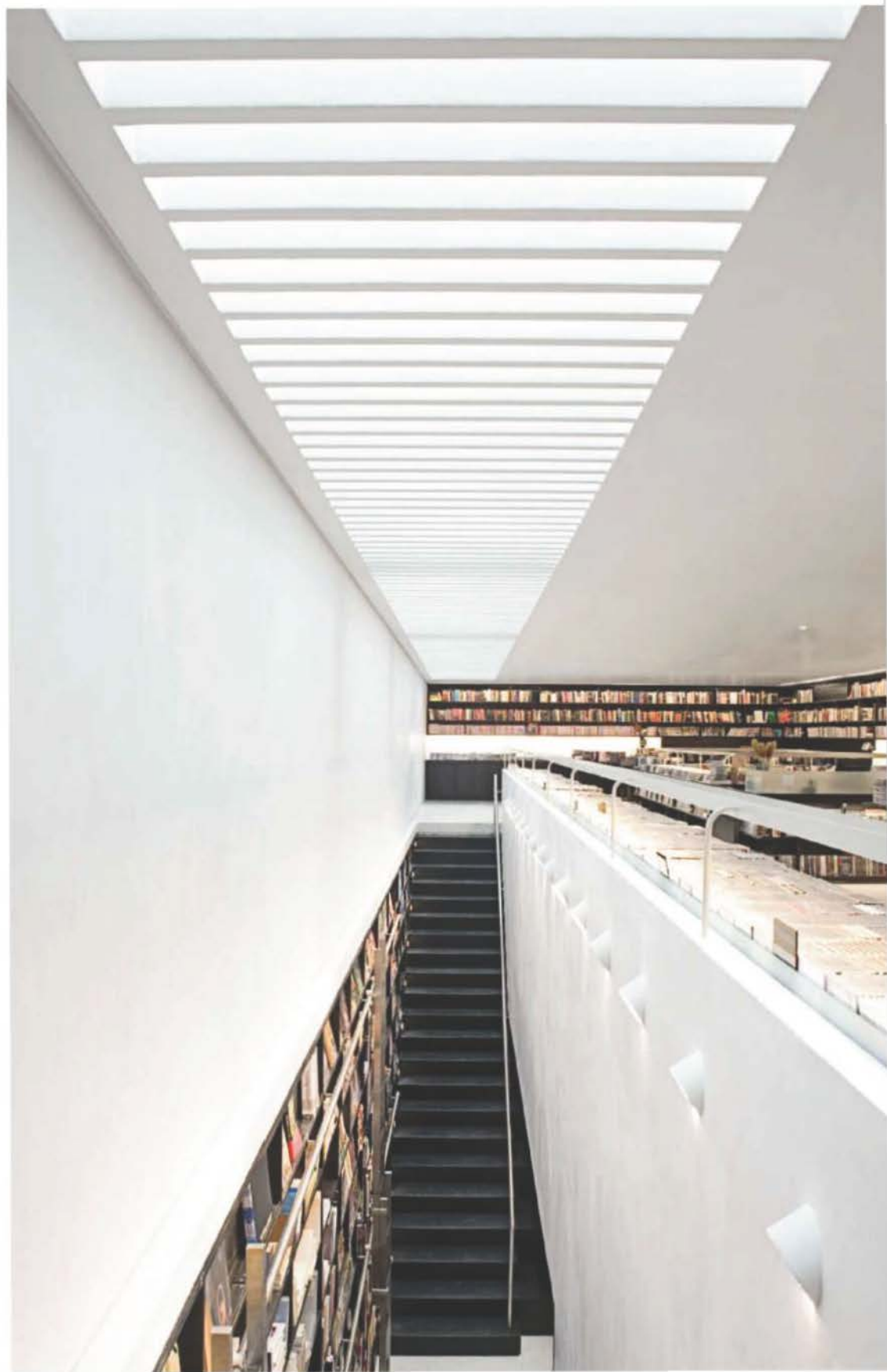
RIGHT: A long skylight brightens the store's top floor and emphasizes the longitudinal flow of space throughout the 8,500-square-foot building.

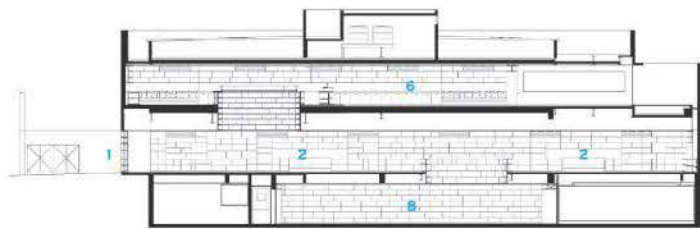
nation of elements: low ceilings, indirect lighting, a hodgepodge of furnishings, wood shelves that cover the walls top to bottom with books, and comfortable chairs for customers who want to flop and browse.

The general literature section occupies the ground floor with a small kitchen tucked into a back corner. Cash registers sit in an alcove to the left as customers exit, creating an effect more reminiscent of a library checkout than a commercial establishment. Upstairs, the store offers a movies and music section and a café. The architect placed the children's section and a small auditorium in the basement. "To sell more, we had to create a pleasant place, a comfortable place," notes the architect. "People need to feel free to spend some time and maybe buy a book."

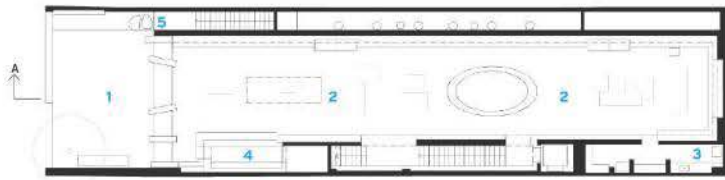
To visually connect the basement to the street level, Weinfeld cut an oval opening in the ceiling of the lower level and – of course – lined it with books. So in a single gesture, he both brings light into the lower level and creates a wonderful sense of books overflowing. The cutout also allows parents on the main floor to peer into the children's area, where bright lights and colorful, play-friendly furnishings cater to a younger age group. A straight stair topped with an aluminum-framed skylight runs along one side of the store, connecting all three floors.

Weinfeld designed the 8,500-square-foot store as a concrete-frame structure reinforced with steel beams. Because it is a low-rise building set on a midblock lot, the architect had to be creative in bringing daylight in. So he used the pivoting front doors and brought light in from above the stair.





SECTION A-A



GROUND FLOOR PLAN

0 16 FT.
5 M.

- | | |
|----------------------|--------------------|
| 1 ENTRANCE PATIO | 6 MOVIES AND MUSIC |
| 2 GENERAL LITERATURE | 7 CAFÉ |
| 3 KITCHEN | 8 CHILDREN'S BOOKS |
| 4 CHECK OUT | 9 AUDITORIUM |
| 5 SERVICE ENTRANCE | 10 OFFICE |



SECOND FLOOR



LOWER LEVEL



LEFT: A brighter, more playful design animates the children's section.

OPPOSITE: When closed, the pivoting doors reveal no entry to the store.

Commentary

As Weinfeld had hoped, the Livraria da Vila has become a place where people can hang out and "maybe buy a book." Frequent readings, book signings, lectures, and storytelling sessions generate bustle. The popular children's section seems indispensable today, yet it came at the expense of a small garage that the owners had originally envisioned for the basement. Since parking is at a premium in the Jardim district of car-obsessed São Paulo, some people might debate the wisdom of this trade-off. And others might criticize the small auditorium, seemingly carved out as an afterthought, somewhat incongruously next to the kids' section. As for the store's striking street facade, it has become an informal trademark for the Livraria da Vila brand, and Weinfeld used it again at a subsequent store in the new Cidade Jardim shopping mall. ■

CREDITS

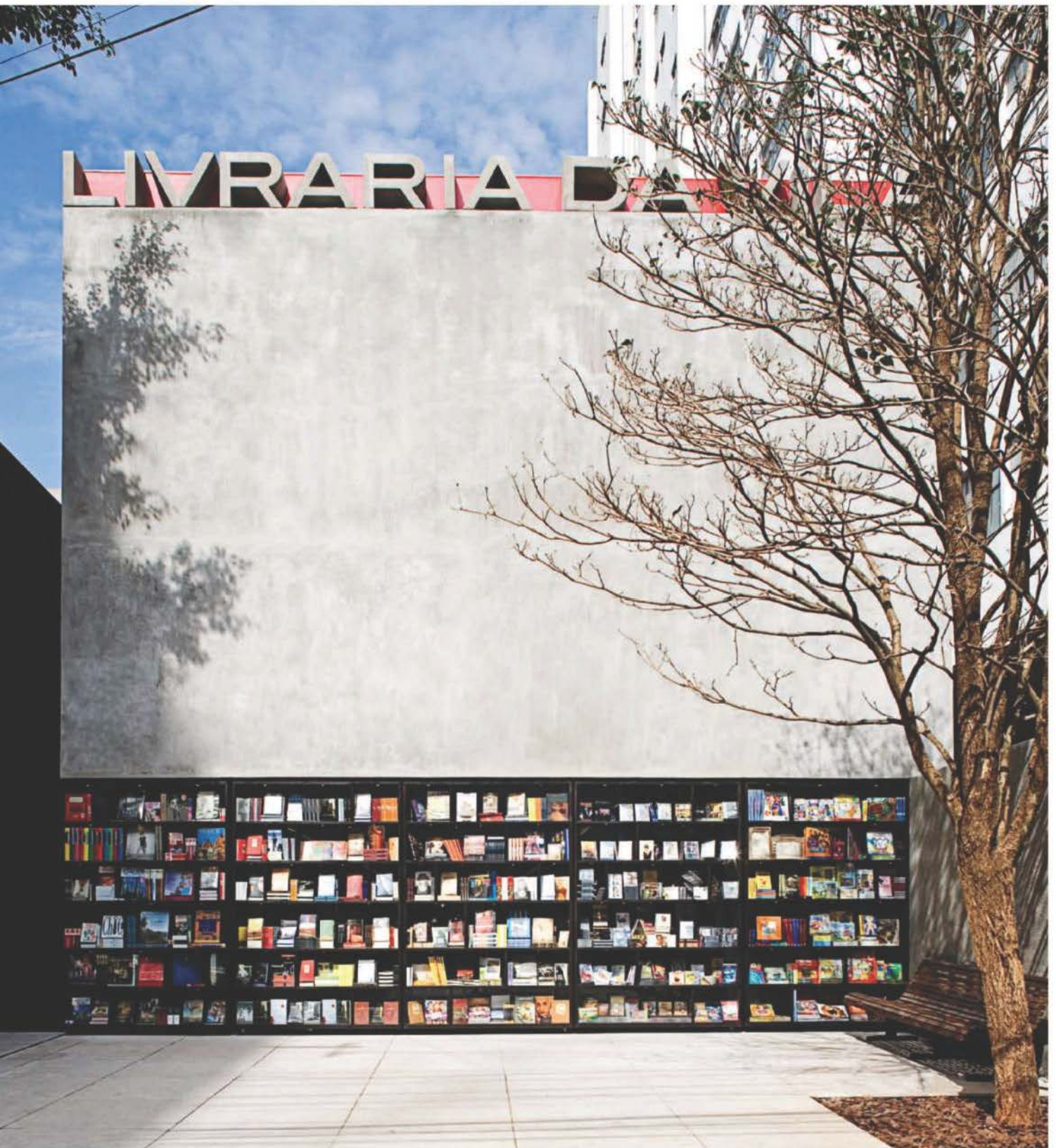
ARCHITECT: Isay Weinfeld – Isay Weinfeld, Domingos Pascali, Marcelo Alvarenga, Monica Santoni, Juliana Garcia, Leandro Garcia, project team
CLIENT: Samuel Seibel
ENGINEERS: Stec do Brasil Engenharia (structural); MVF Instalações (m/e/p)
CONSULTANT: Roberto Cipolla (visual communication)

SIZE: 8,500 square feet
COST: Not disclosed
COMPLETION DATE: April 2007

SOURCES

SKYLIGHTS: Agrotan
PIVOTING ENTRY DOORS: Swatt (metal structure); Legno Marcenaria (wood paneling)
GLASS: Casa dos Vidros
DOWNLIGHTS: Cia da Iluminação

Bill Hinchberger is the founding editor of the online guide BrazilMax.com.



3641 Holdrege Avenue

LOS ANGELES

Lynch/Eisinger/Design uses a series of new outdoor spaces to recast an industrial relic into a cool (and green) place to work.

By Clifford A. Pearson

CREDITS

ARCHITECT: Lynch/Eisinger/Design – Simon Eisinger, Christian B. Lynch, AIA, partners; Erik Brotherton, Brandon Pass, project architects; Kristen Alexander, Christopher Connock, Michael Gibson,Carolynn Karp, Brent Klokis, Mitsuhiro Komatsu, Christopher Mascari, Nina Reckeweg, Aviva Ruben, design team

ARCHITECT OF RECORD: HPA (Phase I); tvsdesign (Phase II)

CLIENT: Urban Offerings

ENGINEERS: Structural Focus (structural); Rosini Engineering (m/e/p)

CONSULTANTS: Emerald Design, Van Atta Associates (landscape); Lighting Workshop (lighting); Zinner Consultants (LEED); Engineering Economics (LEED commissioning); Brummit Energy Associates (energy modeling)

SIZE: 31,500 gross square feet, including courtyards

COST: \$3 million

COMPLETION DATE: December 2009

SOURCES

ELASTOMERIC ROOFING: Sika Sarnafil

ALUMINUM WINDOWS: United States Aluminum; Arcadia

GLASS: PPG; Oldcastle BuildingEnvelope

EXTERIOR LIGHTING: Poulsen

USING A PROCESS of renovation through subtraction, the New York-based firm Lynch/Eisinger/Design (L/E/D) created a multitenant commercial building in part by taking away pieces of an old industrial complex. But its scheme respected the integrity of the remaining buildings and, indeed, leveraged their muscular structure to give character to the new facility.

Program

Set in the Culver City area near many of Eric Owen Moss's projects, 3641 Holdrege Avenue joins a number of buildings in this part of town converting from industrial to commercial use. The project's developer, Urban Offerings, saw an opportunity to serve an emerging market of creative businesses such as technology startups and design-related companies. The developer hired L/E/D because it had experience creating showrooms and retail space for design and fashion companies. The firm also shared the developer's commitment to sustainable design.

Solution

Given a trio of industrial buildings that had served as a diaper factory, and then a clothing warehouse, the architects – Christian Lynch, AIA, and Simon Eisinger – realized early in the process that less would be more. So they tore down a generic shed dating from the 1980s on the south end of the site to provide surface parking. And they sliced off pieces of a second building to create a pair of courtyards – one in front and one in back – that bring daylight into the structure.

But they restored the remain-

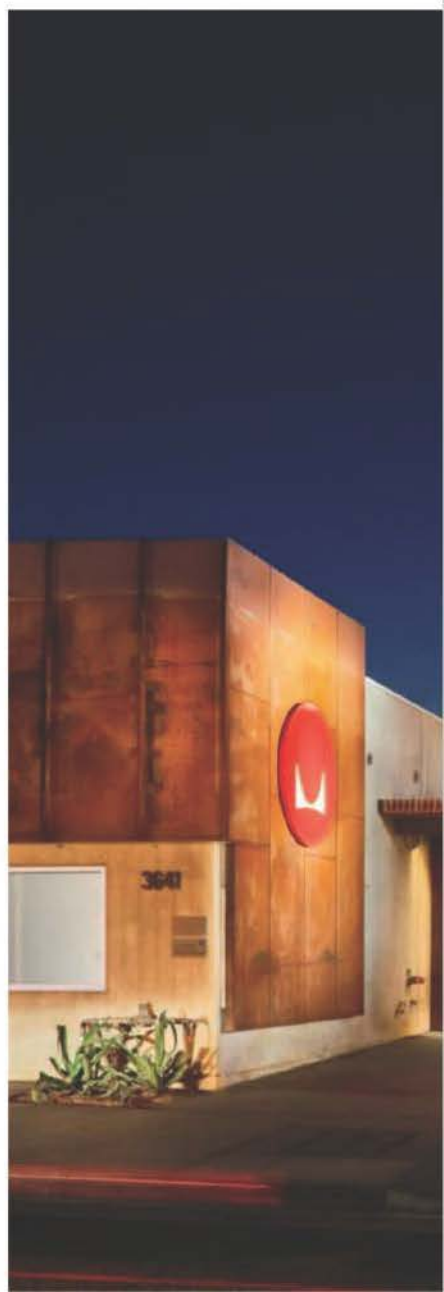


ing buildings, dating from 1956, which stole their hearts with hard-working bowstring-truss roofs and tilt-up-concrete envelopes. "We all fell in love with the wood roof structures," recalls Dean Nucich, managing principal of Urban Offerings. "The bowstring trusses and curved plank-roof decking are classic mid-century L.A.," states Eisinger. So they sandblasted the trusses and the concrete to reveal the warmth of the wood and the rugged quality of the walls and floors.

They also tore out five decades of accretions, such as interior partitions, ceilings, and finishes. "We wanted to show that the original materials are beautiful," explains Lynch. They also restored two long skylights and existing windows, but installed high-performance glazing to reduce energy consumption, and added light scoops to bring daylight into the 28,500-square-foot building.

To upgrade the existing structures' seismic performance, the architects added steel clips and panels securing the connections between the tilt-up concrete walls and the wood trusses.

For the project's lead tenant,

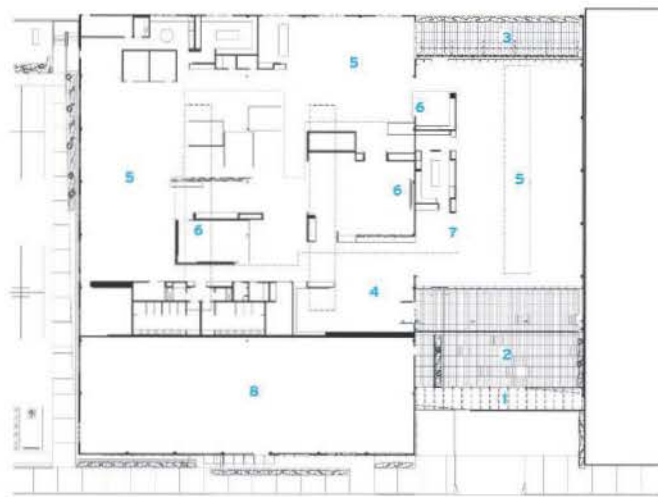




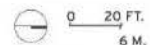
- 1 ENTRY PAVILION
- 2 ENTRY GARDEN
- 3 REAR GARDEN
- 4 RECEPTION
- 5 SHOWROOM
- 6 MEETING
- 7 CAFÉ
- 8 TENANT SPACE

1. The architects cleaned up the existing complex's concrete envelope and added Cor-Ten panels to give it a new look.

2. The front courtyard offers views to the street. BELOW: The entry pavilion both screens and reveals the bowstring-truss building beyond.



SITE/GROUND FLOOR PLAN





2

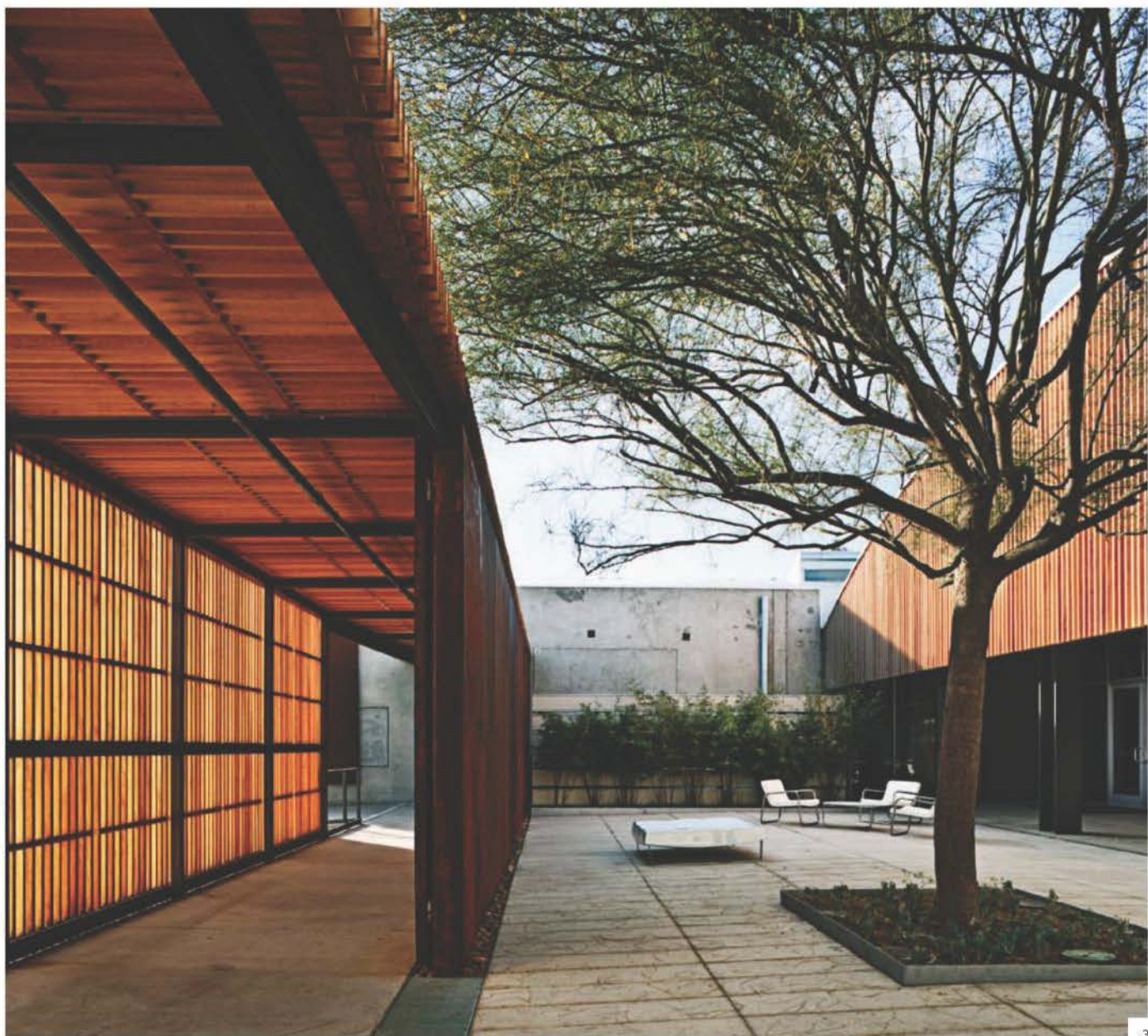
a showroom and national sales center for Herman Miller, Lynch and Eisinger gave the northern portion of the complex its own dramatic entry sequence. Facing the street but recessed from it, a slatted-Douglas-fir and Cor-Ten-steel pavilion grabs attention while offering only glimpses of what lies beyond. Visitors walk through the pavilion, which has no doors, to get to one of the courtyards carved from the

old building. At night, a Cor-Ten gate that had been tucked flush with the back wall of the pavilion, swings out to close off access to the courtyard. The roundabout route helps visitors shift their minds from hectic city thoughts to quieter garden musings, says Lynch.

Where they had sliced the old building, the architects inserted new steel moment frames – in front and back – and glass curtain walls

to help light the spacious interior. To shade the glass wall on the east, facing the larger courtyard, they suspended a slatted-wood screen from above. On the west, they protected the glass with steel grating that projects out from the building like a pergola.

Although they didn't design the interiors, Lynch and Eisinger created an architectural setting that establishes a strong relationship be-



3

tween indoors and out and leaves a strong imprint on the spaces inside. They landscaped both gardens with native species that do not require irrigation and used a Minimalist's aesthetic that ties the outdoor spaces to a long line of Modern design. In the front courtyard, they planted a palo verde tree, which "populates the space at all times," says Eisinger.

On the southern portion of

the complex where two tenants recently moved in, the architects wrapped the upper portion of the building with Cor-Ten panels and extended them above the structure to reduce glare from the roof's white surface. Lynch and Eisinger used the white roofing to reduce solar loads inside, which along with other shading strategies and material selections earned the project a LEED Gold rating.

Commentary

Working with a tight \$3 million budget and a limited palette of materials, L/E/D gave a forlorn set of buildings a new identity as a hip place to work or shop for good design. The project's intriguing entry sequence, which teases visitors inside, shows that sometimes the best way is not the most direct way. It also demonstrates the power of spaces that flow gracefully from outdoors to inside. ■

1. The architects shaded the 20-foot-high curtain wall with slats suspended from above and created a transitional space between the garden and the interior.
2. A metal pergola protects the rear curtain wall from the sun.
3. Visitors walk through the entry pavilion to the main garden.

Wards Cove Marina Warehouse Office

SEATTLE

Susan Jones retains the nautical spirit of an old fishing-industry building while updating it for offices and marina facilities.

By B.J. Novitski

CREDITS

ARCHITECT: atelierjones – Susan Jones, FAIA, design principal; Greg Bishop, project architect; PJ Bauser, Brian Gerich, Drew Giblin, Kristin Saunders, project team

CLIENT: Wards Cove Packing Company

ENGINEERS: CPL (structural); Layton & Sell (civil); Gerber & Vail (electrical)

CONSULTANTS: Swift and Company, Brumbaugh & Associates (landscape); Sparling (acoustics); Buster Simpson (art)

SIZE: 19,850 gross square feet

COST: \$3.8 million

COMPLETION DATE: February 2009

SOURCES

CURTAIN WALL: AEP Span

EXTERIOR WOOD: Prodema

ALUMINUM WINDOWS: Kawneer

METAL DOORS: Wayne Dalton

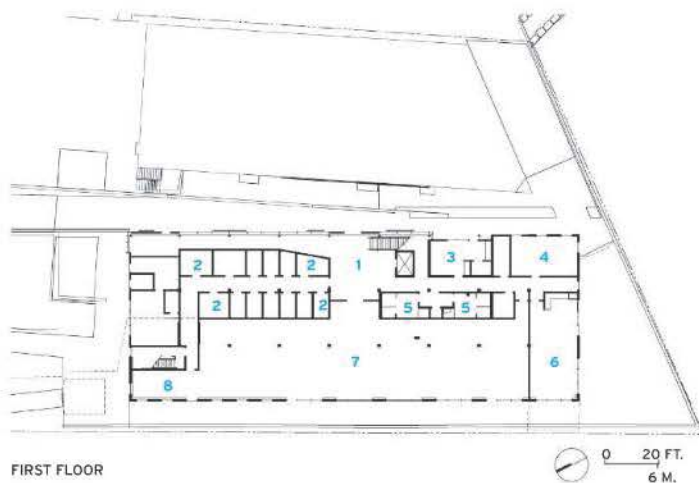
RECYCLED-GLASS TILE: Bedrock Industries

BUILT ON AN ISTHMUS between Puget Sound and Lake Washington, Seattle boasts a history of fishing and nautical trade. Even today, Seattleites love their lakes and waterways, and many go to work each day by ferry. On Lake Union, just north of downtown, in the residential Eastlake district, Susan Jones, FAIA, of atelierjones, converted an old fishing-industry warehouse, resting on ancient piers and steeped in the city's history, into an upscale 20,000-square-foot office building to which occupants can commute by kayak.

For 100 years, the property had housed the family-owned Wards Cove Packing Company with its fish-packing and boat-repair facilities supporting a fleet working out of Ketchikan, Alaska. But to enhance the value of its waterfront property, the family decided to clean up the site's industrial conditions and repurpose one of the two warehouses. Jones, whose Seattle-based firm specializes in sustainable urban housing, saw the project as a plum job. "It was a big, old, ugly warehouse," she recalls, "but we're always looking for under-used sites to tackle."

Program

The client, the Brindle family, wanted its existing 80-year-old office building to remain, with only a few cosmetic changes. A master plan developed by NBBJ called for demolishing one of two warehouses on the site to provide parking and converting the other to a two-story, class-A office building. The program also included a kayak access path, the development of an 11-slip



FIRST FLOOR

marina for large yachts, and 12 slips and design guidelines for houseboats. Behind many of the family's decisions was its desire to preserve a relationship between the property, the lake, and the family's history. Meanwhile, the permitting review process triggered a state Department of Ecology mandate to clean up the lakeshore.

Solution

Renovating the long, narrow warehouse fronting the lake, atelierjones converted industrial spaces downstairs into offices, restrooms with showers, a fitness room, visitors' quarters for overnight stays, and storage rooms sized to accommodate kayaks. The firm turned the second floor into an airy, open office space, with exposed HVAC and structure. Taking advantage of the site's most attractive amenity – the lake itself – Jones increased the size and number of windows to maximize views to the

- 1 LOBBY
- 2 STORAGE
- 3 CARETAKER UNIT
- 4 FITNESS
- 5 SHOWER ROOM
- 6 LOUNGE
- 7 YACHT SALES
- 8 MARINA OFFICE

water. She also extended the ground floor outdoors by building a deck of cumuru – a hard wood that lays flat – for tenant use in pleasant weather.

Jones played with history at every turn. Removing most of the nonstructural elements, she chose finish materials – natural-wood-composite paneling, galvanized steel, corrugated metal – whose patina and textures recall the former warehouse and the fishing fleet. She reclaimed heavy timbers from the demolished warehouse for benches and other





1



2

PREVIOUS PAGE: Jones designed a narrow courtyard between her building and an existing office building.

1. Recycled wood and galvanized steel help

give the stair a nautical attitude.

2. In addition to the office building, Jones designed a walkway to boat slips and a small marina structure.

3. Large windows in the office space and a deck establish a strong relationship between interiors and the water.



3

site furniture. She worked with artist Buster Simpson to craft fences that recall the construction drawings of a favorite Brindle family vessel. And she created a "memory lane" hallway on the ground floor dedicated to fishing-industry-related artwork and old photos of family and boats. The central "grand" stair, with its recycled wood and galvanized steel, evokes nautical vessels and attracts far more traffic than the mandated elevator.

Although the owners chose not to pursue LEED certification, Jones emphasized sustainability in her design. She reused the existing building's floor and structure and

some material from the adjacent demolition. She specified occupancy sensors for lighting controls, materials with recycled content, low-flow plumbing fixtures, low- and no-VOC paints, and high-efficiency lighting.

Conveniently, the existing warehouse was 60 feet wide, ideal for enabling daylight to penetrate to the core of the open office space. Jones specified operable windows to facilitate natural ventilation, though she was obliged to also provide mechanical cooling. Between the two office buildings, she designed a courtyard featuring a bioswale of native plants and crushed

lava to manage runoff. In front of the refurbished building, workers pulled industrial debris from the lake as part of the remediation effort.

The small office building now houses five tenants, all of whom finished their own spaces. The entire second floor is home to an environmental consulting firm. Downstairs are two architects, a marine engineer, and a development company.

Commentary

Although Wards Cove is a few miles from downtown, it competes successfully with more centrally located office buildings. Astonishingly, in the

economic climate of 2010, the leases were snatched up in less than a year, despite higher rents (\$23.50 per square foot) than downtown, where occupancy has dropped to 80 percent and top-floor penthouses can be found for \$18 per square foot. One tenant, commenting on the unique location, calls the lake view "calming and inspiring." In Wards Cove, Jones has successfully combined a modern sensibility informed by history with Seattleites' love of the water. ■

Contributing editor B.J. Novitski writes about architecture from her base in Eugene, Oregon.

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Hajj Terminal, King Abdul Aziz International Airport, Jeddah, Saudi Arabia; 2010 AIA National Twenty-Five Year Award recipient; architect: Skidmore, Owings & Merrill LLP; photo: © Jay Langlois/Owens Corning Fiberglas

CITYCENTER, LAS VEGAS, NEVADA

CLIENT: MGM Resorts International/Infinity World
SIZE: 18 million square feet

EXECUTIVE ARCHITECT: Gensler - J.F. Finn, AIA, principal in charge; Bob Stekfo, principal; Hunter Clayton, principal; Andy Cohen, executive director; Walter Hunt, vice chairman; Jeff Bricker, senior associate; Janie Boras, senior associate; Steve Batte, senior associate

ARCHITECT OF RECORD: HKS Architects; AAI Architects; Leo A Daly
ASSOCIATE ARCHITECT: Hamilton Anderson Associates

CONSULTANTS: Ehrenkrantz Eckstut & Kuhn (conceptual master plan); WET Design (water features); Gensler (wayfinding); CTG Energetics (executive LEED consultant); Illuminating Concepts (executive lighting designer); Office of James Burnett (irrigation/executive landscape architect); Doppelmayer (people-mover system); Lea & Elliot (people-mover consultant); Kimley-Horn (traffic); RWDI (wind testing); RJA (fire/life safety/code); GeoDesign (geotechnical); Lochsa (civil engineering); PBS&J (dewatering); Cal-NeV (OSHA); KaKu (parking); SH-Nevada (peer review - m/e/p); Saiful/Bouquet (peer review - structural); Hyde Consulting (permitting); Capri (quality assurance); KMI Architects (sustainability)

GENERAL CONTRACTOR: Perini Building Company

PROJECT: ARIA RESORT & CASINO

SIZE: 6.1 million gross square feet

DESIGN ARCHITECT: Peilli Clarke Peilli Architects - Cesar Peilli, FAIA, senior principal; Fred Clarke, FAIA, senior principal; Gregg Jones, AIA, principal; Rob Narracci, Peter Follett, AIA, Andrew Nyhart, Leonard Rehkop, project managers

ARCHITECT OF RECORD: HKS Architects

ENGINEERS: Thornton Tomasetti (structural); Flack + Kurtz (m/e/p); Lochsa Engineering (civil)

INTERIOR ARCHITECTS: BBG-BBGM (tower)

INTERIOR DESIGNERS: Bentel & Bentel (Café Vetro); Lewis, Tsurumaki, Lewis Architects (Aria Buffet); Remedios Studio (Aria Casino/convention center); Cleo Design (theater); Brayton Hughes (executive offices); GRAFT (pool deck)

SOURCES

BASE BUILDING

EXTERIOR CLADDING: Baker Metal Products/Enclos (tower metal/glass curtain wall); Crown Corr/Centria Architectural Systems (podium metal-panel enclosure system); Novum Structures (Harmon Circle point support glazing system; casino circle hotel entry and valet out point support glazing system); Crown Corr/Oldcastle BuildingEnvelope (podium glass curtain wall at valet out, pool facades, and spa); Carrara Marble Company of America/Las Vegas Rock (exterior stone cladding); Crown Corr/C/S Group (architectural louvers); Coreslab Structures (Harmon facade); Cambridge Architectural Mesh (exterior architectural mesh at Sinatra facade); Baker Metal Products/Enclos Corp (convention center glass facade); Crown Corr/Centria Architectural Systems (convention center metal-panel enclosure system); Crown Corr/Centria Architectural Systems (theater/showroom metal-panel enclosure system)

ROOFING: Overly Manufacturing Company/KOVACH (metal-batten roofing)

GLAZING: Novum Structures (Casino Circle and Harmon Circle canopies and glazing); Crown Corr/Oldcastle BuildingEnvelope (Serpentine roof clerestory glazing); Giroux Glass/Super Sky Products (Serpentine roof skylights in metal-batten roofing system; valet out and retail skylight); Giroux Glass (Spa and Harmon Circle exterior glass handrails)

DOORS: Novum Structures (Casino Circle entrance doors and vestibules); Harmon Circle entrance doors and vestibules)

LIGHTING: Derek Porter Studios; Lumen Architecture; Illuminating Concepts; H.E. Banks

SPECIAL EQUIPMENT: MechoShade (motorized shades)

CAFÉ VETRO

DOORS: Bentel & Bentel/Allegheny Millwork (wood doors)

INTERIOR FINISHES: Tectum (acoustical ceilings); Bentel & Bentel/Allegheny Millwork (cabinetwork and custom millwork)

SPECIAL SURFACING: Bentel & Bentel/M. Cohen & Sons (metalwork); Stone-Nordic Brown/Medium Wood Enhanced by Mirage Tile (floor and wall tile); Cork-Duo Design (resilient flooring)

FURNISHINGS: Bentel & Bentel/Jay's Booth (fixed seating); Poltrana Frau (chairs)

ARIA BUFFET

INTERIOR FINISHES: WhisperWall (customized ceiling panels); Xorel (fabric); Plyboo (custom bamboo millwork); Benjamin Moore (paints and stains)

SPECIAL SURFACING: Stone Tile (floor and wall tile); Asia Eco-Gres (restrooms)

FURNISHINGS: Plyboo (custom tables); Xorel (custom upholstery)

LIGHTING: Yesco (custom chandeliers); Shaper (custom pendants)

ARIA CASINO

HARDWARE: FSB-USA c/o JRW Associates (locksets)

INTERIOR FINISHES: Wylie Systems (suspension grid - lobby metal-grill ceiling); Wylie Systems (demountable partitions - lobby/registration metal-grill screen); Plaster Finish for Column Finish - TexSton, ICI Paint (paints and stains); Race & Sportsbook Wall Paper Maya - Romanoff, Dooge Veneers (wall coverings); For Slot Arcade - Arbolite (plastic laminate); 3form (wall facade); Modular Arts (ceiling special finishes); Moss & Lam (feature wall); J Prichard Design (registration desk facade); Brintons (gaming floor carpet); Arizona Tile (granite for casino floor and public circulation); Laufen Tile (ceramic tile for race and sports lounge)

FURNISHINGS: Montis (racebook chairs); Diva (casino guest chairs); Intershul (casino desk chairs); Brayton International (VIP lounge coffee table); Gasser Arc/Com, Majilite, Maharam (upholstery); GPI Gaming Partners International (gaming tables)

LIGHTING: Artemide (table lamp); Alqer (casino branch chandelier)

CONVEYANCE: Exotic Hardwoods and Veneers (escalator wood finish); Novel Architectural Products (lift cab wall and floor accent)

PLUMBING: Hirsch Pipe & Supply (restroom faucets); Toto (race and sportsbook restrooms)

THEATER

DOORS: Forms and Surfaces Bonded Metal (metal doors)

HARDWARE: Hinges (locksets); ELA Lighting (cabinet hardware); Schlage and Richelieu (custom door pulls)

INTERIOR FINISHES: Armstrong Metalworks (retail area/food-and-beverage area suspension grid); CertainTeed (reception area suspension grid); 3form, Seven Continents, Sunburst Construction (cabinet and custom woodwork); Tri Kes (retail area); Wall Resources (lobby); GL Veneer (lobby/showroom); Giroux Glass (specialty mirror); Laminart/Pionite (plastic laminate); Chemetal (restrooms and food and beverage area surfacing); Advanced Technologies (restroom surfaces); ARCON (floor and wall tile); Milliken (nylon carpet)

FURNISHINGS: Sierra School Equipment (fixed seating); Justin David Textiles (upholstery)

LIGHTING: 3form (interior ambient lighting)

EXECUTIVE OFFICES

INTERIOR FINISHES: Northwestern Millwork (cabinetwork and custom woodwork); Benjamin Moore (paints and stains); Maya Romanof (wall coverings); Northwestern Millwork (paneling); Brinton's Axminster (carpet)

FURNISHINGS: Northwestern Millwork (reception furniture/fixed seating); Bernhart (chairs/tables)

POOL DECK

WALL FINISHES: TexSton (plaster walls); Naturally Durable (wood cladding); Ombrae Studios (perforated wall panels); Ann Sacks, Monociebec (wall tiles); P-D Interglass Tech (fabric walls/ceilings)

FURNITURE: Janus et Cie; Tucci; Tropitone

UPHOLSTERY/RUGS: Paola Lent; Perennials

BAR COUNTERTOP: CaesarStone

PLASTER WALLS: TexSton

WOOD CLADDING (MASSARANDUBA): Naturally Durable

PERFORATED WALL PANELS: Ombrae Studios

WALL TILES: Ann Sacks; Monociebec

FABRIC WALLS/CEILINGS: P-D Interglass Tech

PROJECT: CRYSTALS AT CITYCENTER

SIZE: 500,000 square feet

DESIGN ARCHITECT: Studio Daniel Libeskind - Daniel Libeskind, owner; Carla Swickerath, principal; Gerhard Brun, associate; David Stockwell, associate; Johan van Lierop, associate; Noah Wadden, Steven Haardt, Sean Ellis, William Hunter, Taek Kim, Kiwoo Park

ARCHITECT OF RECORD: AAI Architects

ENGINEERS: Halcrow Yolles (structural); WSP Flack + Kurtz (m/e/p/t); Rolf Jensen & Associates (fire and life safety)

CONSULTANTS: D.I.R.T. Studio (landscape design); Office of James Burnett (executive landscape); Focus Lighting (lighting); Illumination Concepts (executive lighting); Shen Milson Wilke (acoustical); Romano Gatland (kitchen and laundry); Cini Little (waste management); Access-by-Design (ADA/accessibility); The Schachinger Group (materials handling); Hamilton Anderson Associates (back-of-house interiors); Rowan Williams Davies & Irwin (wind); FM Global (risk management); WET Design (water features); Israel Berger Associates (curtain wall); Lerch, Bates and Associates (vertical transportation); The Fore Group (LEED consultant); Büro Happold (sustainable design); Entek Engineering (building maintenance); FallTech/Checkmate, Rauch International (fall arrest); The Taubman Company (retail consultant)

GENERAL CONTRACTOR: Perini Building Company

INTERIOR ARCHITECTS: Rockwell Group - David Rockwell, founder; David Mexico, principal; Daniel Sleski, senior associate; Daniel Holguin, associate; Tomas Pedrasa, senior designer; Harold Gainer, associate; Gail Ginzburg, interior designer

SOURCES

BASE BUILDING

EXTERIOR CLADDING: Oldcastle BuildingEnvelope (metal/glass curtain wall); Centria Formawall (EIFS, ACM, or other)

ROOFING: Saranafil (elastomeric); Corus/Kalzip/Crown Corr (metal)

GLAZING: Viracon (glass); Oldcastle BuildingEnvelope (skylights)

DOORS: McKeon (fire-control doors, security grilles)

INTERIOR FINISHES: George M. Raymond Company (acoustical ceilings, suspension grid, demountable partitions); Commercial Cabinet Company (grand stair); West Works (tree house); Benjamin Moore, Frazee Paint (paints and stains); Timber Products Company (paneling); Formica (plastic laminate)

SPECIAL SURFACING: Mitchell Aronson (grand-stair cabanas, hanging garden); Mulligan Flooring (grand-stair flooring); Nucor (steel); Ditan Color (plaster); Commercial Cabinet Company (wood veneer); Margaritelli (wood flooring); Arkema (Plexiglas); Pulp Studio (art glass - elevators); Skyline Design (art mirror - restrooms)

FLOOR AND WALL TILE: Corradini Corp. (terrazzo and stone flooring); Designers Stone Resource (grand-stair metal-mosaic tile); Latcrete (grout)

LIGHTING: Phillips, we-el (exterior)

CONVEYANCE: Otis (elevators); Schindler (escalators); Automated People Mover (accessibility provision)

PLUMBING: Toto, Delta (fixtures and trim); Bobrick, Georgia-Pacific (washroom accessories)

HVAC: Uponor (radiant flooring)

PROJECT: VDARA HOTEL & SPA

SIZE: 1.6 million square feet

DESIGN ARCHITECT: RV Architecture - Rafael Vifoly, FAIA, Jay D. Bargmann, AIA, Harold Park, AIA, Chan-Li Lin, AIA, Jiwoo Park, AIA

ARCHITECT OF RECORD: Leo A Daly

ASSOCIATE ARCHITECT: Hamilton Anderson Associates

ENGINEERS: DeSimone Consulting Engineers (structural); Lochsa Engineering (civil); Cosentini Associates (mechanical/electrical); Terracon Consulting Engineers & Scientists (geotechnical)

CONSULTANTS: Meléndrez (landscape); Cline Bettridge Berstein Lighting Design (lighting); Pelton Marsh Kinsella (audiovisual)

GENERAL CONTRACTOR: Perini Building Company

INTERIOR DESIGNERS: BBG-BBGM

SOURCES

BASE BUILDING

EXTERIOR CLADDING: Benson Industries; Viracon Glass

WINDOWS: Benson Industries, Viracon Glass (metal/glass curtain wall); Melco/Weiss (skylight)

GLAZING: Viracon Glass (glass); Custom (skylights)

DOORS: Benson Glass Doors (entrances)

HARDWARE: Schlage & Safelock (locksets); Grandview (pulls); Safelock & Access Control (security devices)

INTERIOR FINISHES: Armstrong (acoustical ceilings); Armstrong (suspension grid)

CONVEYANCE: Otis (elevators)

PLUMBING: Toto (toilets); Deco-Lav (sinks)

WINDOW WASHING: Grmyl (equipment and rails); Winsafe (fall protection)

SPECIAL EQUIPMENT: MechoShade (motorized shades)

LOBBY

HARDWARE: Mockett, Elmes (pulls)

INTERIOR FINISHES: MDC (wall coverings); Nathan Allan Glass (special surfacing); APA Stone (floor and wall tile); Innovative Carpet (carpet)

FURNISHINGS: Fleetwood Fine Furniture (media cabinets); Go Top Furniture (headboards)

LIGHTING: Preclosa (interior ambient lighting); Orion Chandelier (downlights); Design Compendum (task lighting)

PLUMBING: Duravit (sinks); Kohler (faucet)

BAR VDARA

HARDWARE: Omnia Industries (locksets); Norton Door Controls (closers); Dough Mockett & Co (pulls and cabinet hardware)

ACOUSTICAL CEILINGS: Decoustics (panel system); Xorel (fabric)

CABINETWORK AND CUSTOM WOODWORK: Western Millwork

PAINTS AND STAINS: Liqua Pear; Ceramic; Opticoat; Benjamin Moore

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CIRCLE 65

WALL COVERINGS: Maya Romanoff; Tri-Kes
PLASTIC LAMINATE: Formica; Oberflex
SPECIAL SURFACING: CC Leathers; Khartoum Pattern (bar face); Moore & Giles; FSC African Rose Wood Veneer; Shakuff (sculptures); Karen Atta (lighting fixture); Form Glass (outdoor ceiling); Robin Regi (outdoor garden area flooring); Stone Source (interior pool)
FLOOR AND WALL TILE: Western Tile
CARPET: Zenith International
CHAIRS: Murray's; California's Finest; High Tower; Pie; Janus et Cie; Tupelo Manufacturing Company; J.A. Casillas
TABLES: Gist Décor; Senyuan Furniture Group
CUSTOM DRAPERY: Fabricteria Maki
UPHOLSTERY/FABRICS: Valley Forge; Bogesund; Fabricut; Innovations; Zoffany; Pollack; Metaphores; Prismatic; Romo; Moore & Giles; Osbourn & Little; Holly Hunt; Chella; Richloom
OTHER FURNITURE: Gist Décor
LIGHTING: Nulux, Belfer, Hunza (interior ambient lighting); Kurt Versen (downlights); USAI (task lighting); Lucifer Lighting (exterior); B-K Lighting (landscaping); Lutron (controls)
SPECIAL EQUIPMENT: MechoShade (motorized shades)

SILK ROAD RESTAURANT

CEILING: Plyboo
DINING CHAIRS: Capdell
BAR STOOLS: Bonaldo
PLASTIC LAMINATE: Formica
FLOOR AND WALL TILE: Sicis; Ann Sack
RESILIENT FLOORING: Mondo
CARPET: Karastan Contract; Monterey Carpets
CHAIRS: Capellini; Stephen Spencer; M2L; Stew Design; DDC Domus Design
TABLES: DDC Domus Design
UPHOLSTERY: Ultrafabric; Maharam; Moore & Giles
LIGHTING: Rotaliana, Viso, David Chipperfield, Artemide, C.L. Sterling (interior ambient lighting)
PLUMBING: Kohler; Hansgrohe; Toto

PROJECT: MANDARIN ORIENTAL

SIZE: 1.3 million gross square feet
DESIGN ARCHITECT: Kohn Pedersen Fox Associates – Paul Katz, FAIA, managing principal; William Pedersen, FAIA, design principal; Ko Makabe, senior designer; Christopher Stoddard, AIA, project manager
ARCHITECT OF RECORD: AAI Architects
ASSOCIATE ARCHITECT: Hamilton Anderson Associates
ENGINEERS: Halcrow Yolles; Flack & Kurtz Consulting Engineers
CONSULTANTS: Hargreaves Associates (landscape); Isometrix Lighting & Design (lighting); Shen Milson Wilke (acoustical and audiovisual); Entek Engineering (window washing); Romano Gatland (food services); Deckmann Wellness HK (spa); STO Design Group (pool/water features); Lerch, Bates, and Associates (vertical transportation); Rolf Jensen & Associates (fire and life safety); Atelier Ten (sustainable design); Fore Solutions (LEED); Access-by-Design (accessibility); Poulin + Morris (signage); Rowan Williams Davies & Irwin, Consulting Engineers and Scientists (wind migration)
GENERAL CONTRACTOR: Perini Building Company
INTERIOR DESIGNERS: Adam Tihany Associates (hotel interiors); Page + Steele Architects, Kay Lang + Associates (condominium interiors); Hamilton Anderson Associates (BOH interiors)

SOURCES**BASE BUILDING**

EXTERIOR CLADDING: Far East Aluminum Works (tower curtain wall); Titanium Aluminum, Giroux Glass, Sierra Metals (podium cladding); Giroux Glass, POHL Bending Technology (stainless steel); Giroux Glass, Dri-Design Wall Panel System (zinc); Novum Structures, Giroux Glass (canopy); Western Tile & Marble (stone)
ROOFING: Carlisle Syntec Fully Adhered TPO
GLAZING: Desert Glass Products, PULP Studios (interior glass)
DOORS: Tajima (entrances); Ingersoll Rand STEELCRAFT (metal doors); Sundart (wood doors); McKeon Door Company (fire-control doors, security grilles); Modernfold Acousti-seal 931 (special doors)
HARDWARE: Schlage (locks); Von Duprin (exit devices); SDC Security Door Controls (security devices)
INTERIOR FINISHES: Armstrong Cortega (acoustical ceilings); Armstrong Prelude (suspension grid); Fetzer Architectural Woodwork, Sundart, Glenn Rieder Architectural Millwork, Complete Millwork Services (cabinetwork and custom woodwork); Pittsburgh Paints (paints and stains); BCE Specialties, RPI Industries (paints and stains); Wilsonart (plastic laminate); KHS&S Contractors (special surfacing)
FLOOR AND WALL TILE: Dura-A-Flex; Daltile; Granada Tiles; Western Tile; Artistic Tile; Everstone P/L; Mega Tiles Limited; Bisazza;

Forbo Linoleum (resilient flooring); Bamboo Flooring Hawaii; Rode Bros (wood flooring)
LIGHTING: BRUCK (interior ambient lighting); Eureka (pendant); RSA Lighting, Sistemalux, Lightolier, BEGA, Zumbotel (downlights); B-K Lighting, Erco Lighting (exterior); Lutron (controls)
CONVEYANCE: Otis (elevators); Schindler (escalators)
ADDITIONAL BUILDING COMPONENTS OR SPECIAL EQUIPMENT: Valley Crest, Badford Products (spa pools and swimming pools); WaterFX (spa vitality pools and wet vessels)
HOTEL INTERIORS: Sundart Timber Products, Kowloon, Hong Kong, Decca, Fetzer Architectural Woodwork, Quality Cabinet & Fixture Company (millwork/casegoods); Bisazza Tiles, Daltile, Innovative Stone, St. John Stone, Western Tile (stone and tile); Delta, Dornbracht (bath fixtures); Ambienti, Asher Cole/Lily Jack, Brian Austin Collection, Colber S.R.L., J.A. Casillas, Mitchell Gold, Vaughan Benz, Table Topics, West Coast (furniture); Architectural Custom, Boil/Lasvit Lighting, Charles Loomis, Neidhardt, Orion, Spectrum Lighting (lighting); Burcco Enterprises (carpets); Innovative Carpets (rugs); WEL International; Julie Keyes Art Consultant, Bram Tihany (art)
OTHER: KHS&S Contractors (lobby and sky lobby ceilings); Gist Décor (wall panels at Twist)
CONDO INTERIORS: Anne Mennealy Art Consultant, Kevin Barry Fine Art Associates, William Turner Art Gallery (art in residential lobby, billiard room, elevator); The Natural Carpet Company, Innovative Carpets (area rugs); Terzani (lighting); Parquet By Dian (wood flooring); Ann Sacks (wall tile); Stone Source (stone accent wall); Saint John Stone (stone face of reception desk); Hansgrohe USA (bath fixtures); Fabrica International (residential carpeting)
BOH INTERIORS: Modernus (wood doors); Pulp Studio (sliding doors)
HARDWARE: Showera, Elmes Door Hardware (pulls); Valli + Valli (PH suite door handle); Doug Mochett + Company (cabinet hardware)
INTERIOR FINISHES: Dunn Edwards (paints and stains); Carrara Marble (special surfacing); Casa Dolce Casa, Vetro (bathroom wall tile); Parquet by Dian (wood floor)
LIGHTING: Leucos Dianee (interior ambient lighting)
PLUMBING: Toto (toilets); Hans Grohe (faucets, shower columns, accessories); Americh (bathtubs); DSKB (kitchen sink); Oliveri (bar sink)
ADDITIONAL BUILDING COMPONENTS: Thermador, Bosch (kitchen appliances); Gaggenau, Moore & Giles (leather); MechoShade

PROJECT: VEER TOWERS

SIZE: 834,000 square feet
DESIGN ARCHITECT: Murphy/Jahn
ARCHITECT OF RECORD: AAI Architects
ENGINEERS: Halcrow Yolles (structural); WSP Flack & Kurtz (telecommunications and security)
CONSULTANTS: The Fore Group (sustainability); L-Plan (lighting); Shen Milson Wilke (audiovisual); STO Design (pool); Door + Hardware Consultants (hardware); Hunt Design (signage)
GENERAL CONTRACTOR: Perini Building Company (base building); Tishman Consultants (interiors)
INTERIOR DESIGNERS: Hamilton Anderson Associates; Dianna Wong Architecture + Interior Design

SOURCES**BASE BUILDING**

EXTERIOR CLADDING: Far East Aluminum (glazed curtain wall); Sierra Metals (metal cladding)
GLAZING: Shanghai Yachua Pilkington Glass (curtain wall); Graham Wood Doors (wood doors); Besam (sliding doors); Total Door (special doors)
HARDWARE: Architectural Materials (trade); Schlage, Von Duprin, Stanley, Trimco (architectural hardware); Hafele (cabinet hardware); Pemko (miscellaneous)
INTERIOR FINISHES: USG, Georgian Pacific, Durock (gypsum board); Armstrong (acoustical ceilings); Raymond (cabinetwork and custom millwork); Midwest Pro Painting (painting contractor); Sherwin Williams, Scuffmaster (paints and stains); Flakeboard MDF (paneling); PPG Glass (glass); Carlisle, WilsonArt, Nevamar (plastic laminate); Amazon Masonry (floor and wall tile); Johnsonite (resilient flooring); Schluter (transition); J Picini Flooring (carpet); Arcon Flooring (epoxy terrazzo flooring); Kinetics (isolation system); Johns Manville; Owens Corning; 3M; Hilti; Mapei; Styrofoam
FURNISHINGS: Dero Bike Rack Company
ELECTRICAL: Mojave Electrical/Rosendin Electric
LIGHTING: A-Light
CONVEYANCE: Otis
MECHANICAL: S3H
FIRE PROTECTION: Westar Fire Protection; Nystrom
PLUMBING: S3H; Dornbracht; Hansgrohe; Toto; Kohler; Elay Drinking Fountains; Mr. Steam; Armstrong Pumps; Puriflex Pumps; Zurn; Nilco
SPECIAL EQUIPMENT: MechoShade

PROJECT: CITYCENTER TRAM

SIZE: 60,000 square feet
DESIGN ARCHITECT: Gensler
ARCHITECT OF RECORD: Gensler
CONSULTANTS: Saiful Bouquet Structural Engineers (structural); IBE Consulting Engineers (m/e/p); PBS&J (civil); First Circle (lighting); FabriTec Structures (tension fabric structures); Tensys (fabric canopy structural); Rolf Jensen & Associates (fire and life safety); Gensler (wayfinding); Doppelmayr Cable Car (system); Berger/Abam Engineers (structural); Lea & Elliott (people mover); Doze Green (art)
GENERAL CONTRACTOR: Clark-Thor Construction

SOURCES**BASE BUILDING**

EXTERIOR CLADDING: Trespa (panels)
ROOFING: Saint-Gobain (fabric canopy)
DOORS: Stanley (entrances)
LIGHTING: Bega (platform bollards)
CONVEYANCE: Otis (elevators); Schindler (escalators)

BURJ KHALIFA, DUBAI

CLIENT: Emaar Properties
SIZE: 4.89 million square feet (tower); 5.1 million square feet (total)
DESIGN ARCHITECT: SOM – George Elstathiou, FAIA, partner in charge; Bill Baker, structural engineer; Adrian Smith, FAIA, consulting design partner; Ray J. Clark, m/e/p engineering partner; Eric Tomich, AIA, associate director
ARCHITECT AND ENGINEER OF RECORD: Hyder Consulting
INTERIOR DESIGNERS (ARMANI HOTEL): Giorgio Armani, Wilson Associates (associated designers)
ENGINEERS: SOM; Hyder Consulting
CONSULTANTS: Jaume Plensa, Plensa Studio (residential lobby artwork); SWA Group (landscape); Ominum International (quantity surveyor); Fisher Marantz Stone (lighting); Pelton Marsh Kinsella Consulting (acoustical); Lerch Bates Consulting (vertical transportation); Lerch Bates Facade (facade access); The RJA Group (fire and life safety); Square Peg Design (signage and graphics); WET Design (exterior water features); Speirs and Major Associates (external feature lighting)
GENERAL CONTRACTOR: Samsung Coporation/BESIX Group/Arabtec Construction
EXTERIOR CLADDING: Far East Group, Al Abbar Aluminum & Glass (metal/glass curtain wall); Waagner Biro AG (cable wall pavilions); UNIMIX Concrete Supplies (concrete)
GLAZING: Guardian Industries (glass); Dow Corning (silicone)
DOORS: Al Abbar (entrances); Task Industrial, UAE (metal doors); Fino International FTZ, Depa Dubai, Hee Hon Design Group (wood doors); Marshfield Door; Eggers Doors (fire-control doors)
HARDWARE: Dorma (locks, hinges, closers, exit devices); Samuel Heath (closers); CHMI (pulls); Ogro, Oliveri, Manital (levers)
INTERIOR FINISHES: Hunter Douglas, Decoustics, Armstrong (acoustical ceilings); Dorma (demountable partitions); STO (suspension grid); Imperial Woodworking, Fino International, Depa Dubai, Hee Hon Design Group (cabinetwork and custom woodwork); Jotun Paint, Sherwin-Williams, Benjamin Moore, Dupont (paints and stains); Wolf Gordon, Knoll Textiles, Carnegie, Maharam, Valley Forge (wall coverings); Tabu Spa/Berti Pavimentati Legno (paneling); Abet Laminati (plastic laminate); Formica (solid surfacing); Italian Automotive Texture Paints (special surfacing)
FLOOR AND WALL TILE: Royal Mosa, Dal Tile, Sicis, Glacier, Fino International, London Grey, Kerman Grey; Eramosa (limestone); Mannington Commercial (resilient flooring); Hokanson, Tai Ping, Interface, Shaw Floors (carpet); Campolonghi Group, Tre Emme (natural stone); Lopark, Margaritelli (wood flooring); Fritz Kohl, Tabu (vener); Figla (glass floors); Excelsior, Eden Design (metal flooring)
FURNISHINGS: Halcon, Knoll, Haworth, Interna Contract, Moroso, Cassina, Poltrona Frau, Zographos, Interior Crafts, Arper, Corneo Chair, Holly Hunt, Armani Casa; Calvin Fabrics, J Robert Scott, Larsen, Gretchen, Bellinger (fabrics); Edelman Leather; Cortina; Poliaro Custom Furniture; Richard Schultz; MechoShade
LIGHTING: Zonca; Accent Lighting; Erco; DAL; Oldham Lighting; B-K Lighting; Dynalite; Tectronics; Phillips; Holly Hunt; Armani Casa
CONVEYANCE: Otis
PLUMBING: Dornbracht; Duravit; Hansgroh

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PRODUCT SPOTLIGHTS

Advertisement

DOORS, WINDOWS

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SG | NEW

Graham Wood Doors, an ASSA ABLOY Group brand

▲ Graham offers a palette of 28 standard prefinish colors.

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Performance Data:

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Circle 150

DOORS, WINDOWS

SINGLE-TRACK SLIDING SYSTEM

WR | G | NEW

NanaWall Systems, Inc.

▲ NanaWall announces the new VSW65 single-track sliding system with center swing doors.

Product Application:

- Residential, commercial, educational applications
- Indoor and outdoor systems

Performance Data:

- A four-panel single-track sliding wood system with center swing doors
- Pocket option available
- High performance levels for air, water, structure, and security

www.nanawall.com
800.873.5673



Circle 151

DOORS, WINDOWS

ENERGY-SAVING DAYLIGHTING SYSTEMS

WR | G

Major Industries, Inc.

▲ Guardian 275 skylights and translucent curtain wall illuminate spaces with glare-free natural light.

Product Application:

- Enhance work areas, schools, and other locations where uncontrolled sunlight can wreak havoc

Performance Data:

- Lightweight and economical
- Sandwich panel design for enhanced thermal performance
- Hurricane and blast protection

www.majorskylights.com
888.759.2678



Circle 152

SERVICES

ARCHITECTURAL VERSION

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▲ Technical Glass Products offers a valuable course for AIA HSW Sustainable Design credit: "A Bright Future: Daylighting for Tomorrow's Buildings."

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Circle 153

ELECTRICAL, LIGHTING

ARCHITECTURAL CEILING FANS & LIGHTING

G

G Squared Art

▲ Flyte ceiling fan, GOOD DESIGN Award winner. Quiet, powerful, reliable, an energy saver.

Product Application:

- Suitable for sloped ceilings up to 30°, can be used on 8-ft. ceilings or on cathedral ceilings with optional downrods up to 6 ft. long

Performance Data:

- Other finishes available
- Cap for non-light use included; integrated 100W mini-can halogen bulb, bulb included
- Lifetime warranty

www.g2art.com
877.858.5333 | Contact: info@g2art.com



Circle 154

ELECTRICAL, LIGHTING

AREA OF REFUGE COMMUNICATIONS

Housing Devices, Inc.

▲ New 09 IBC and NFPA code changes now require all new multi-story buildings to have AOR two-way communications with no exceptions.

Performance Data:

- 3-in. diameter Push for Help button for ADA-accessible activation
- Engraved lettering rather than stencils which will rub off
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- Multiple masters available, systems expandable

www.housingdevices.com
800.392.5200 | Contact: Mathew Bardin



Circle 155

ELECTRICAL, LIGHTING

LED DOWNLIGHT

G | NEW

MP Lighting

▲ The L141 is a 13W LED downlight featuring a field replaceable lamp and light output equivalent to a 50W MR16.

Product Application:

- Commercial or residential
- Non-insulated ceilings
- Insulated ceilings

Performance Data:

- 50,000-hour product life
- Energy efficient and environmentally friendly

www.mplighting.com
877.708.1184 | Contact: Carlos Flores



Circle 156

INTERIOR FINISHES, FURNISHINGS

CAST METAL PANELS

\$\$\$ | G

The Gage Corporation, Int.

▲ Gagecast is a cast metal wall surfacing material suitable for a variety of interior applications.

Product Application:

- Palm Beach Motor Cars, West Palm Beach, FL
- Lowe's Corporate Headquarters, Mooresville, NC
- Microsoft Corporate, Redmond, WA

Performance Data:

- Durable, low-maintenance dimensional surfacing
- Cost-effective installation systems

www.gagecorp.net
608.269.7447, 800.786.4243



Circle 157

PRODUCT SPOTLIGHTS

Advertisement

INTERIOR FINISHES, FURNISHINGS

METAL COLUMN COVERS

WR | G

Nelson Architectural

▲ Metal column covers are durable, easy to install, and offered in a multitude of designs and finishes.

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- Commercial

Performance Data:

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www.nelsonindust.com

800.277.6897 | Contact: Lars Hermanson

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INTERIOR FINISHES, FURNISHINGS

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SS | G

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▲ ECOSurfaces features 83 colorful patterns, enabling limitless design possibilities.

Product Application:

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Circle 159

INTERIOR FINISHES, FURNISHINGS

ARCHITECTURAL METAL

\$\$\$ | G

The Gage Corporation, Int.

▲ GageMetal is an innovative collection suitable for walls, elevators, and column covers.

Product Application:

- The Joule Hotel, Dallas, TX
- Atrium, Celebrity Genesis, Atlantic Ocean
- Column covers, Le Meridien Hotel, Delhi, India

Performance Data:

- Class A ASTM E-84
- Durable stainless steel, cost-effective aluminum



www.gagecorp.net

608.269.7447, 800.786.4243

Circle 160

MATERIALS

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\$\$\$ | G

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▲ Quarrier and fabricator offering select slates, quartzites, sandstones, limestones, marbles, granites and basalts.

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- Emerson and Emerson Vein Limestone
- Evans Heintges Architects



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800.343.1900 | Contact: Craig Markcrow

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MATERIALS

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WR

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▲ Wire cloth products for architectural, railing, industrial, security, and decorative applications.

Product Application:

- Septa, Philadelphia, PA
- McCarran International Airport, Las Vegas, NV
- Bonefish Grille, FL

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▲ The MacroVoltaic solar fan system is a 100% solar HVLS fan. With two LEED credits per unit, it boasts virtually infinite efficiency being solely powered by the sun.

Product Application:

- Mercedes-Benz of Beverly Hills, Beverly Hills, CA
- OSO Libre Winery, Paso Robles, CA
- Hot Water Night Club, Milwaukee, WI

Performance Data:

- Affected area up to 10,000 sq. ft.
- Up to 100 lb. of thrust; 6-24 ft. in diameter



www.macro-air.com/arspotlight810

877.831.8292 code 109 | Contact: Bob Herkner

Circle 163

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WR | G

ATAS International, Inc.

▲ ATA-Solar is a thin-film solar laminate applied to standing seam roof to generate renewable solar power.

Product Application:

- Commercial buildings
- Residential homes
- Schools and universities

Performance Data:

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- Thin-film solar laminate is applied in a factory-controlled environment



www.atas.com

800.468.1441 | Contact: info@atas.com

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ROOFING, SIDING, THERMAL & MOISTURE PROTECTION

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G

Fabral, Inc.

▲ Fabral's product line is architecturally appealing and consistent with green building guidelines.

Product Application:

- Harvey B. Gantt Center, Charlotte, NC (pictured)
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- Coleman Park, Nashville, TN

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PRODUCT SPOTLIGHTS

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SS | G

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| Circle 167

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The Cable Connection

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SPECIALTY PRODUCTS

DRY GLAZE SYSTEM FOR GLASS RAILING

SS | G

The Wagner Companies

▲ PanelGrip™ provides a cost-effective alternative for the installation of tempered glass panels.

Product Application:

- The Wagner Companies, Milwaukee, WI
- Private residence, Milwaukee, WI

Performance Data:

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SPECIALTY PRODUCTS

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717.285.4088



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SPECIALTY PRODUCTS

METAL PANELS

WR | G

Gordon, Inc.

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Product Application:

- California State University, Los Angeles, CA
- CAPSTAR at Compass Plaza, Austin, TX
- Kaufman Stadium, Kansas City, MO

Performance Data:

- Aluminum or galvanized steel with expanded tubular slit pattern, 40% open area
- LEED credits available, recycled metals, mold prevention, acoustical, durable, no-VOC finishes

www.gordonceilings.com

800.747.8954 | Contact: Tom Ayres



Circle 171

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\$ | G | NEW

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- Farms and agricultural applications

Performance Data:

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| Circle 172

SPECIALTY PRODUCTS

TRANSLUCENT BUILDING SYSTEMS

PDF | G

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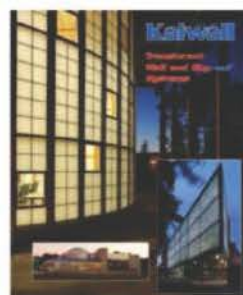
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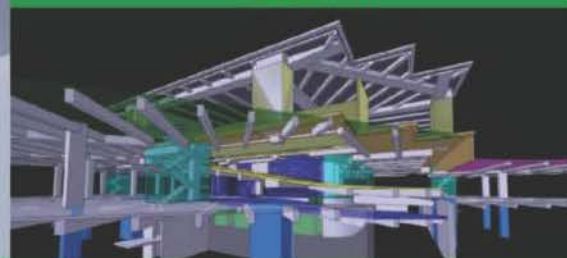
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DATES & EVENTS

Lectures, Conferences,
and Symposia**ASAE10: Architecture and Beauty -
A Troubled Relationship**

Malmö, Sweden

September 10-11, 2010

Held at Lund University, this two-day symposium aims to maintain an ongoing discussion about international education programs and architectural education strategies by raising poignant issues regarding the place of beauty, aesthetics, and self-expression within the psychology and the design process of architects. For more information, visit www.lu.se.

Annual Landscape Architecture Convention
Washington, D.C.

September 10-13, 2010

The largest annual gathering of landscape architecture professionals in the world, this event at the Washington, D.C., Convention Center will focus on the theme "Earth Air Water Fire DESIGN." Attendees may choose from more than 125 education sessions to earn up to 21 professional-development hours. More than 400 product manufacturers and service providers will be featured in the attendant EXPO trade show. For more information, visit www.asla.org.

East Coast Green

Atlantic City

September 16-17, 2010

This two-day conference will focus on the relevant industries in the green marketplace, including government and legislation, alternative energy, and health care. Some of the green legislative courses and lectures will include the "Mayors Panel on Greening Efforts of New Jersey Municipalities," and a presentation on "Sustainable Growth as Public Policy" presented by Mark Strauss, senior partner at FXFWOLE Architects. At Bally's Atlantic City. For more information, visit www.aia-nj.org.

**IMCL Conference on Planning Healthy &
Child-Friendly Communities**

Charleston, South Carolina

October 17-21, 2010

This conference will focus on how to design healthy communities and improve children's health and development by improving the built environment and making natural and community spaces accessible. The conference will bring together 350 to 400 delegates from around the world. At the Dock Street Theater. For more information, visit www.livablecities.org.

Competitions

SHIFTboston Moon Capital Competition

Deadline: September 3, 2010

SHIFTboston aims to collect visions that will provoke thought on the moon as a new destination. It welcomes radical ideas for lunar elements, such as rovers, growing pods, inflatable structures, and lunar habitats. Visit www.shiftboston.org.

Housing and Health in Haiti

Registration deadline: September 20, 2010

Seeking housing prototypes that work to reduce the transmission of tuberculosis for a community in St. Marc, Haiti, this competition encourages ideas that vary in size, scale, layout, grouping, building construction methods, structural responses, materials, and form. Five winning designs will be used to build five single-family units. Visit www.archiveinstitute.org/haiti.

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

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(continued from page 58) was an obligatory stop for visitors, to be sure; but most soon headed off to the infamous Midway, where they could ogle racist displays of tribal peoples or experience technologies of a more visceral sort – a ride on the world's first Ferris wheel, for example. The Shanghai Expo has no such pabulum, but its earnestly instructive UBPA exhibits don't seem to be particularly popular. This is the fault of geography and too much plannerly faith in the aerial view. Like Paris, Shanghai is split by a river; its left and right banks are very different places. Puxi – “west of the Huangpu” – is old Shanghai, the treaty-port city of the Bund. Pudong (“east”) is almost wholly a post-Mao creation, a caffeineated growth zone Deng Xiaoping famously called “the head of the dragon.” Shanghai planners have used every form of infrastructure to pull the city's halves into a coherent whole, which is why the Huangpu is

the most bridge-and-tunnel-crossed urban river in the world.

It is also why the Expo was laid out neatly on both sides of the water. Yet, as any landscape or urban design student knows, the plan view seductively minimizes ground-level realities. That the Expo's river-sliced plan would be experienced by visitors as a single entity is pure delusion. Worse, the goods have not been equally divided. The biggest attractions, including all of the national pavilions, are on the Pudong side, while Puxi seems to have gotten the leftovers. Of course, it's hardly surprising that the Expo's planners would put the good stuff in the east. Pudong represents China's bold urban future, and its skyline might well be recognized now by more people around the world than New York's. Symbolically at least, this is where the Chinese century begins, not among Puxi's coal-dark masonry and memories of subjugation. This

makes it doubly unfortunate that the UBPA, with all its bright-eyed optimism, was not placed on the side of China's urban tomorrow but in Puxi, where fewer Expo visitors venture. One American attendee described Puxi as the Expo “ghetto,” and the UBPA “the ghetto of the ghetto.”

Of course, all this begs the question: In this age of globalization and light-speed communication, is it really necessary to erect such a costly, energy-wasteful complex to teach sustainability in a world of dwindling resources? As with every previous world's fair, most of the Expo's structures will eventually be demolished. Despite all the lessons on greenness and sustainability, the pavilions are really not so different from single-use batteries or disposable razors (admittedly, much of the building material will be recycled). In 1893 and 1939 – even in 1964 – relatively few people traveled to other lands except to make war. World's

fairs shrank the globe and put ordinary people in contact with a wealth of new ideas and information; they were like brick-and-mortar Web browsers. Given our Googled world of melted borders and mingled peoples, isn't all this really just elaborate entertainment and a chance for a city and nation to strut its stuff? Perhaps; but then again, for millions of Chinese today global travel is still as remote a possibility as it was for the majority of Americans who streamed to Chicago in 1893. And for the rising generation of more affluent Chinese youth, who spend a frightening amount of time in cyberspace, anything that gets them out from behind a computer screen is a worthy venture indeed. ■

Thomas J. Campanella is the author of The Concrete Dragon: China's Urban Revolution and What It Means for the World.

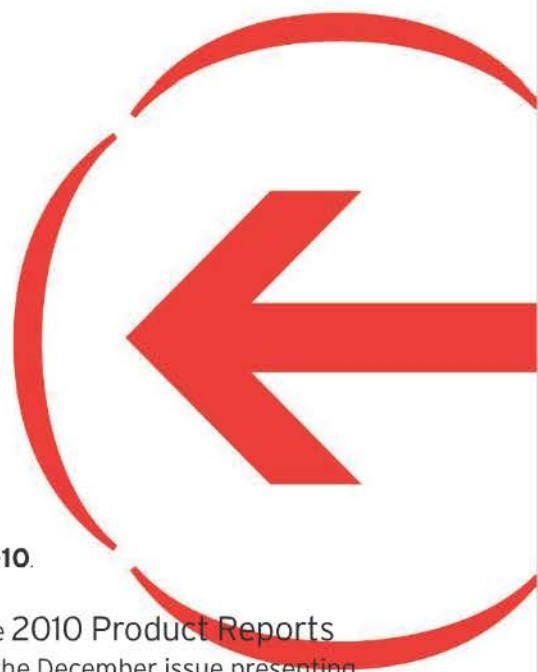
Product Reports

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See a time-lapse video of Sands Bethworks' light show that simulates the processes once under way at the blast furnaces there.



Dignity and beauty are not words typically associated with casinos. Yet a carefully conceptualized lighting scheme for a new gaming complex at the former home of Pennsylvania's Bethlehem Steel Corporation achieves both with deceptive effortlessness. Founded in 1904, Bethlehem Steel quickly became the crown jewel of American Gilded Age industrial prominence, providing steel for San Francisco's Golden Gate Bridge, World War II ships and munitions, and much of Manhattan's skyline. But when an increasingly competitive industrial sector shuttered the company in 2003, the facility's new owners, the Las Vegas Sands Corporation, looked to London-based Speirs and Major Associates (SaMA) to give new life to the disused headquarters and honor its rich history. Upholding Bethlehem Steel's historical narrative was paramount, notes SaMA director and cofounder Jonathan Speirs. "We didn't want to make it a rock-and-roll show," he says. Instead, a quintet of blast furnaces with LEDs programmed to glow from muted blue to smoldering red simulate the processes once under way there. After a 15-minute interval, the furnaces fade to black until the story slowly repeats. "We tried to do something that was respectful and had a dignity to it," says Speirs. SaMA's luminous monument to this pillar of America's industrial history seems a fitting tribute. *Asad Syrkett*



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CIRCLE 68

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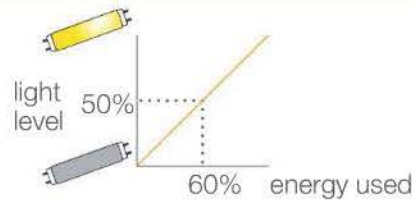
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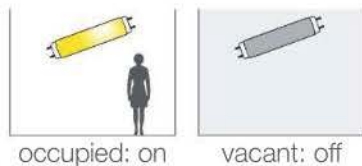
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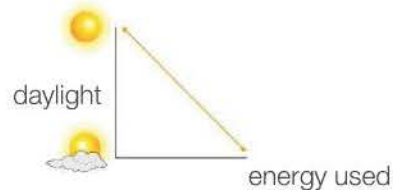
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- Can provide up to 20% lighting energy savings



For more information about Lutron EcoSystem solutions—or to schedule an on-site lighting energy assessment—call **1.888.LUTRON1** or visit **www.lutron.com**



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