

Olympitecture

Beijing's new sporting hardware

WORDS BY DANIEL ALLEN



This year's Olympic Games have galvanized Beijing's development. From infrastructure improvements like Terminal 3 at Capital Airport and the new subway lines, to prestige projects like the CCTV Tower and the National Grand Theater, Beijing's construction makeover has been radical – and expensive. At its heart lies an array of

spectacular Olympic venues set to dazzle the world with innovative design and hi-tech facilities. Here are some of the city's most crowd-pleasing new projects.

OLYMPIC VILLAGE

High-tech home away from home

Nearing completion after three years of construction, the Olympic Village will house 16,000 Olympic athletes and 7,000 Paralympians. Designed by Australian architectural firm PTW, the 66-hectare complex is set between the Olympic Forest Park and main competition venues such as the Bird's Nest and Water Cube. In the residential areas are the athletes' apartments,



FEATURES

Opposite: The Wukesong Basketball Arena becomes a flowing curtain of color by night

Left: Many of the athletes' apartments in the Olympic Village have already been sold to future luxury dwellers

Below: Solar panels, wind power, and other sustainable technology abound throughout the Athletes Center

a clinic, dining halls, a multifunctional library, an entertainment center and a recreational zone. In the international areas, sports delegations will hold activities like welcoming ceremonies and receptions.

Sustainable technology is used throughout the Village, including solar panels for lighting and hot water and a rainwater collection and recycling system. One of the most eco-friendly buildings is the Olympic Athletes' Center, or "Micro-Energy Building," constructed with help from a team of US green building experts. It incorporates advanced technologies such

as efficient heating, ventilation, and air conditioning (HVAC) systems, daylighting to reduce the use of electric light, internal and external shades and energy efficient windows, and photovoltaic solar panels to generate power.

After the Games the Olympic Village will become a residential community, and many of the athletes' apartments have already been snapped up by private Chinese buyers. The Micro-Energy Building will become a kindergarten.

While US experts have surveyed the village using Leadership in Energy and Environmental Design (LEED) criteria, the developer has asked that the project's LEED rating not be published unless it achieves the highest level, something it is not likely to do. "Although the final design for the Village may not have been quite as sustainable as we'd intended, it still integrates an impressive amount of green technology, and the project as a whole represents a major step forward for China," says John Pauline, a leading designer on the Olympic Village project and the regional director for PTW.

Xu Yake, chief engineer for the Olympic Village, comments, "The Olympic Village and all the Olympic venues have provided the perfect showcase for green technology and sustainable construction techniques. We hope they will provide a model for other building projects on all scales, both within China and across the world."

WUKESONG OLYMPIC BASKETBALL ARENA

High-tech hoop dream

With three subterranean floors and four above ground, this 63,000sqm arena can seat 18,000 »

"The Olympic Village and all the Olympic venues have provided the perfect showcase for green technology and sustainable construction techniques," says the Village's chief engineer



images by Daniel Allen, Simon Lim, Helen Sotiriadis, images@helensotiriadis.com



Top: Shijingshan Shooting Range
Below: Olympic Green Convention Center

spectators. Originally designed by the Beijing Institute of Architectural Design, the blueprint was modified several times for economy, with significant input on the courtside layout from the NBA. The American basketball super-brand and event organizer AEG are stakeholders in the arena, which is likely to become the home of regular NBA China games in 2009, as well as a destination for international music acts.

Ribbons of yellow steel form the exterior of the structure, creating a bamboo screen effect. At night, the building's facade becomes a flowing curtain of illuminated color. The perforated design admits plenty of natural light to the interior, and solar energy and rainfall collection and recycling systems also cut the site's environmental footprint. Along with 47 luxury boxes for VIPs (some of them have already been sold for post-Games events), the venue wows visitors with 22 tons of cutting-edge audiovisual gear.

NATIONAL AQUATICS CENTER

Tripping the light aquatic

Conceived by Australian architectural firm PTW Architects in conjunction with CSEEC International Design and Arup, the futuristic National Aquatics Center (a.k.a. "the Water Cube") is one of the Beijing Olympics' iconic venues. Rivaling the National Stadium in its groundbreaking design, the Water Cube's bubbly, glowing form is the perfect foil for its neighbor's uncompromising rigidity.

The Water Cube is clad in 100,000 square

meters of plastic pillows which help reduce the energy used for interior heating and lighting. As these pillows illuminate at night, their blue glow makes the rectangular structure look more like a giant lathered bar of soap than a USD 200 million sporting venue. The building incorporates some impressive sustainable technology; the outer surface and roof can contribute 10,000 tons of rainwater annually for use inside, while recycling allows 80 percent of the building's water to be reused.

Thanks to its self-cleaning, translucent shell, the ultramodern interior of the Water Cube is beautifully lit and remarkably airy during the daytime – it won an award for "atmosphere" at the Ninth International Architecture Exhibition at the 2005 Venice Biennial. Seating 17,000 spectators, the building will host the swimming, diving, and synchronized swimming events during the Olympics. After the Games the venue will be converted into a retail and leisure center with shops, tennis courts, nightclubs, and restaurants.

OLYMPIC GREEN CONVENTION CENTER

Unconventional style meets sustainable swordplay

Conceived by UK-based firm RMJM and completed in 2007, the curvaceous Convention Center will host Olympic fencing competitions and the fencing and shooting components of the modern pentathlon. It will also be the venue for Paralympic wheelchair fencing, and house the International Broadcasting Center

and the Main Press Center during the Games. RMJM beat out such distinguished competitors as OMA, Philip Cox Architects, and KMD with a design that includes elevated piazzas and arched pedestrian walkways, linking several Olympic Green sites.

Covering over 270,000 square meters, the Convention Center is situated halfway along the Olympic boulevard. This thoroughfare, conceived by US-based Sasaki Associates and Tianjin Huahui Architecture and Design Company, is designed to represent a timeline of Chinese history from 3000 BC to the modern day, with buildings along its length incorporating various historic themes. As the Center is "located" in the Qin Dynasty, its design reflects national unification, with a curved roof bringing together various architectural elements below. The roof also collects rainwater for recycling, and the interior boasts an array of energy-saving measures. After the Olympics the fencing hall will be converted into a 6,000-seat convention hall.

DIGITAL BEIJING

Binary beauty

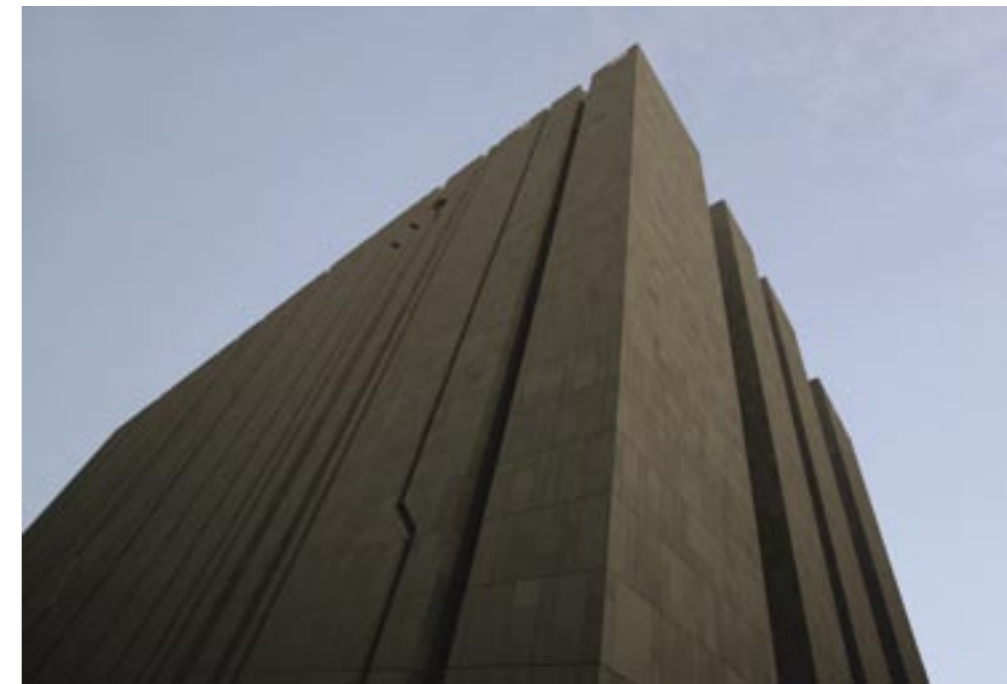
Digital Beijing, which will function as the Olympic headquarters and data center, is the brainchild of three Chinese Miami University graduates – Xiadu Liu, Yan Meng, and Hui Wang – who work for Beijing-based architect Pei Zhu's firm Studio Pei-Zhu. Completed in late 2007 and situated in the Olympic Green close to the Bird's Nest and Water Cube, Digital Beijing covers 16,000 square meters, with a high-tech design said to resemble an upright circuit board or digital bar code.

Digital Beijing incorporates some innovative elements within its subtle structure; the floors and inter-building walkways are constructed from a special fiber that can project ever-changing digital images. The building's glass curtain wall reduces thermal conduction, and its LED lighting system will cut power use by up to 60 percent. The building also has a rainwater collection mechanism.

LAOSHAN VELODROME

Close encounters of the cyclical kind

Designed by German firm Schuermann Architects, the creative force behind a clutch of other world-class cycling venues, the extraterrestrial aesthetics of the Laoshan Velodrome should make this shiny new Olympic structure a big hit with crowds in August. The purpose-built, 33,000sqm building resembles a giant flying disc, with a circular roof designed to evoke the shape of a bicycle wheel. The arena seats 6,000 spectators for track cycling events, and hosted a World Cup competition late last year.



The Velodrome's huge dome spans more than 130 meters. It shelters a 250m oval track made from Siberian pine which is illuminated during the day by natural light flowing through the saucer-like roof. At night, hundreds of spotlights give the interior a cathedral-like air. After the Games the Velodrome will be used for training and as a venue for world-class cycling competitions.

SHIJINGSHAN SHOOTING RANGE

On target for first Olympic gold

The Olympic Shooting Range Hall, one of the first Games venues to be completed, is located in Shijingshan, west of Beijing. It will host the qualifying rounds and finals of ten shooting events. Due to Olympic timetabling, the Hall should also be the first venue where an Olympic gold medal is awarded. Designed by Zhuang Weimin, dean of Tsinghua University's Architecture Design Institute, the 45,000sqm venue (capacity: 8,600) was given a trial run in April as part of the International Shooting Sport Federation (ISSF) World Cup.

The shape of the Shooting Range Hall is said to evoke a drawn bow, referencing (perhaps tenuously) the connection between hunting and shooting. The building incorporates a range of sustainable technologies – a double-layer glass-curtain wall features air intakes at both ends, allowing for natural cooling or heating and cutting energy use. After the Games the Hall will be used to host international shooting events, and as a training base for Chinese shooters. »



Top: Digital Beijing
Below: Laoshan Velodrome



Top, clockwise: China Agricultural University Gymnasium; Fencing Hall exterior; interior

CHINA AGRICULTURAL UNIVERSITY GYMNASIUM

Gripping, green design

Completed in mid-2007, the distinctive China Agricultural University Gymnasium will host all the Olympic wrestling. The gymnasium's 24,000 square meters are comprised of a main event hall with three competition mats as well as several training halls, and will seat 8,200 during the Games. For the Paralympics, the gymnasium will be the venue for the seated volleyball competition.

The building's staggered rooftop incorporates over 400 skylights which give the interior an airy feel. Thanks to these and to terrestrial heat wells, the gymnasium will use 30 percent less electricity than similar structures. After the Games, venue capacity will be cut to 6,000 and the gymnasium will become a multi-functional indoor sports complex for students and neighborhood residents.

SHUNYI OLYMPIC ROWING-CANOEING PARK

Oarsome waterborne architecture in leafy environs

Beijing's Olympic organizers claim that this venue, located in a rural expanse of Beijing's northwestern Shunyi District, is the only world-class rowing-canoeing venue that has both flat-water and slalom courses. Completed in mid-2007, the massive aquatic park will host the rowing, canoe/kayak and marathon swimming events, with a total of 32 gold medals up for grabs. Some 37,000 specta-



tors will get a great view of the competition from an elegant, white C-shaped stand that sits on an island in the middle of the park's six-square-mile lake. The sinuous contours of the main stand are complemented by the architecture of the nearby floating boathouse, which features a rippled roof inspired by its aquatic setting. Five thousand trees have now been planted in the park, which will become a swimming and recreation resort after the Games.

NATIONAL INDOOR STADIUM

Simply fan-tastic

Designed by German architectural firm Glöckner Architekten GmbH and completed at the end of 2007, the National Indoor Stadium will be the venue for artistic gymnastics, trampoline and handball events, as well as the Paralympic wheelchair basketball competition. The 68,700sqm venue, located in the Olympic Green just north of the Water Cube, can seat 18,000.

With its giant, undulating roof, the simple stadium is designed to evoke a Chinese folding fan. The structure incorporates a range of sustainable technologies, including the use of natural lighting, water recycling and solar power generation. Glass curtain walls incorporating solar panels can produce 100 kilowatts of energy a day – enough to meet the building's total energy needs. After the Games the stadium will be used for sports competitions and entertainment purposes, and as a multifunctional exercise center for Beijing residents. **U**



What will you miss?

One last snapshot of Beijing before the Olympics:

As Beijing prepares for its close-up, an era of creative destruction comes to a close. Whether it's old subway signage, a favorite restaurant or hutong, we want to see the people, places and things you might miss come September.

Email your photographs, of 1 MB or larger, to editor@urbanechina.com, for possible publication in our special Olympic issue.

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