IOC IAKS AWARD 2017

GOLD

Photo: Renato Sette Camara

DEODORO WHITEWATER STADIUM

CANOE SLALOM COURSE IN RIO DE JANEIRO, BRAZIL

Designed by architects Viglíecca & Associados together with Whitewater Parks International, the innovative canoe slalom venue is cost-effective to operate. It is the first self-contained whitewater facility in Central / South America, providing for meaningful sport development in a previously under-supported region.

The site is part of Deodoro Olympic Park, a beautiful landscape that hosted 15 Olympic and Paralympic sports. The Deodoro venues are situated on military property previously used for Pan American and World Military Games. The Whitewater Stadium site enjoys a stunning orientation with dramatic terrain, a natural amphitheatre and a backdrop filled with breathtaking views of urban and mountain landscapes. Architecturally, the elegant, sympathetic shapes of the design blend almost seamlessly and artistically complement the surrounding space.

In conceptualising the installation, the planners looked at best utilising site topography by matching the required gradients with natural slopes. Most of the facility was set on the least-sloped areas to balance earthworks. 8,000 temporary Olympic seats were also matched to existing terrain. In legacy, grass-covered slopes function as spectator seating.

State-of-the-art hydraulic system

The facility draws water from a purpose-built reservoir (lake) and delivers it to the starting basins for two separate whitewater channels. Water descends the channels by gravity, guided by adjustable obstacles that create whitewater features (e.g. waves and eddies). The two channels include a 250 m competition channel and a 210 m training channel. Water depth ranges from 1.80 m to 2.40 m. Channel walls are precast concrete panels allowing better control of finish surfacing. Polyethylene obstacles are attached to metal tracks imbedded in channel floors. The 25,000 m³ reservoir lake, pump station and starting pools are in-situ reinforced concrete. Water is delivered to the starting basins by 4,000 l/s variable-speed pumps. The starting basins are serviced by mechanical conveyors, which transport boats up from the lake. A technical building houses an electrical plant and water treatment facility. A multi-level support building services facility logistics.

PROJECT DATA

Architects
Viglíecca & Associados
www.vigliecca.com.br
Whitewater Parks International
www.whitewaterparks.com

Operator
Prefeitura do Rio de Janeiro
www.rio.rj.gov.br

Opening December 2015
Size of site 490,000 m²
Number of users 2016 400,000
Spectators 2016 40,000
Construction costs 30 million euros

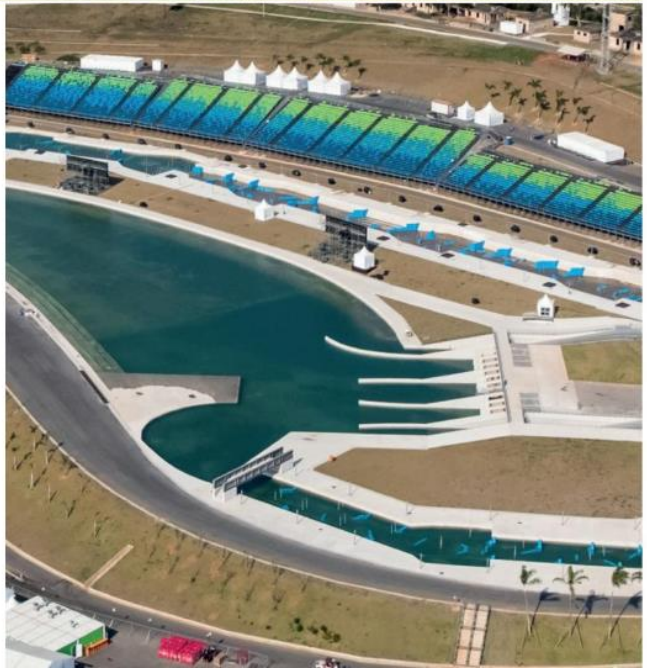
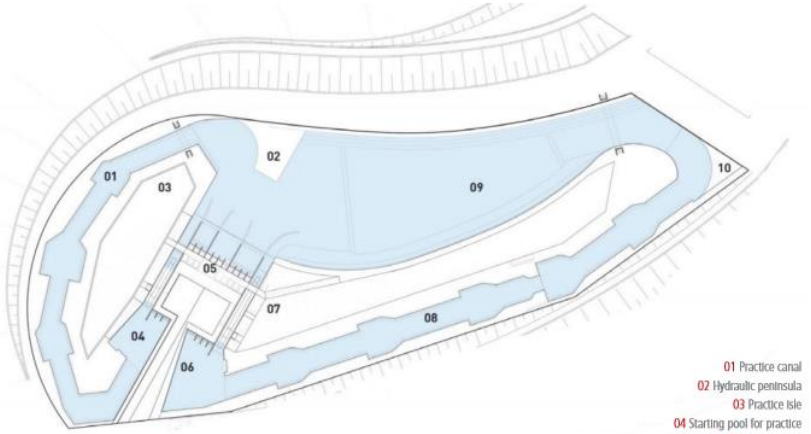


Photo: Gabriel Heusi

JURY VERDICT

This facility is one of the best examples of an engineered whitewater venue, which is usually a very specific facility with a restricted range of use. Here, the artificial lake at the bottom of the run serves now as a recreational swimming destination for one of the largest youth populations in Rio, even if it continues to host whitewater competitions. Unlike previous whitewater venues, the Deodoro design also reduces the vertical distance between the discharge level and the artificial lake at the bottom, thereby reducing the pumping height and energy required to operate it. The jury sees in the Deodoro design a socially responsible approach to catering for a meaningful legacy, and the ultimate benefit of a specialized facility to the general well-being of the neighbouring community.

Photos: Renato Sette Câmara



01 Practice canal
02 Hydraulic peninsula
03 Practice isle
04 Starting pool for practice
05 Pump house
06 Starting pool for competition
07 Competition island
08 Competition canal
09 Artificial lake
10 Hydraulic curve

To meet Olympic needs while ensuring sustainable legacy, the planners ran extensive analyses aimed at pumping water to the shortest possible height. This analysis included model testing at Czech Technical University, whose research experience helped to predict hydraulic behaviour relative to the rapid-creating obstacles. Research included 3D digital models and a physical model that provided detailing for channel shapes, gradients and obstacle placements.

Innovations in the Deodoro design produced a state-of-the-art hydraulic system, which allows for a 20% reduction in pumping height, competition channel length and water volume as compared to the London 2012 Olympic Canoe Slalom course.

Legacy mode

In legacy, the stadium has already hosted the Pan American Canoe Slalom Championships, which saw athletes from seven nations compete in October 2016. Meanwhile, the International Canoe Federation awarded the 2018 Senior World Championships and 2019 Junior/U23 World Championships to Deodoro, further acknowledging the facility's technical function and accommodation.

The facility also provides activity options for a variety of recreational paddlesports. Instructional and school-oriented programmes have been planned for the training channel and lake, while the competition channel is level-appropriate for more experienced paddlers. Guided rafting excursions can cater even to inexperienced patrons. In an area that comprises Rio's largest youth population, the venue will provide positive activity-oriented opportunities for young people.

Pre-legacy initiative

The facility's lake doubles as a public recreation area. Portable structures are assembled to manage public uses adjacent to technical areas. The water treatment system has the greatest functionality of any whitewater facility constructed to date. It was specifically designed for high water quality standards to accommodate public swimming recreation post-Games.

Being one of the first Olympic venues to be completed, the stadium enjoyed an early legacy prior to the Games where, between the months of December 2015 and March 2016, the lake offered free admission for swimming recreation, available to approximately 1.5 million people.

Multi-user activity model for the future

After successful implementation of its inaugural year, the Deodoro Whitewater Stadium has already demonstrated a strong, multi-user activity model for the future. The support building used during the Olympics is now being converted to house environmental education activities, community events and administrative offices, while a family clinic established prior to the Olympics has been actively serving nearby communities.

It is also worth mentioning that the project for the whole X-Park, in which the Canoe Slalom Whitewater Stadium is inserted, was developed to be totally inclusive for all visitors. Even though the site has a challenging topography, with natural inclinations edging 35%, the paths were developed so that virtually all sectors of the park are accessible to all.