MOTT MACDONALD

Delivering events, creating memories

Event overlay planning and design services

Temporary infrastructure, lasting value

Innovative overlay solutions to excite communities, inspire athletes, and amaze spectators

Sustainable and right for the job

Around the world, there is a growing need to make the process of bidding for and hosting events more flexible, easier to operate, and less expensive. There is also a recognition that legacy planning needs to be better aligned with the host city's long-term urban development goals.

Previous high-profile events have sometimes failed to look beyond the immediate needs of the games, leaving legacies of permanent buildings and infrastructure that are oversized or unfit for other uses. This has resulted in host cities and other stakeholders taking a closer look at areas where reducing or streamlining infrastructure is possible without compromising the event or stakeholder experience.

By using temporary infrastructure to host the event, a vibrant legacy of regeneration can be delivered. Overlay — the design, planning, installation, and removal of the temporary infrastructure and services needed to deliver major one-time events — is increasingly playing a key role in this process.

10 sustainability rules for event overlay

1.

Reduce. Pursue compact designs and better performance from energy and materials.

2.

Prolong the useful life of materials and structures.

3.

Reuse existing materials and use recycled or renewable resources.

4.

Don’t use materials that are harmful to health.

5.

Touch the ground lightly. Reduce or remove traditional foundations through performance engineering.

6.

Reduce carbon emissions, minimize energy use, and conserve water.

7.

Use natural systems to save energy, achieve thermal, acoustic, and lighting comfort, and create healthy, pollution-free indoor environments.

8.

Maximize use of renewable energy.

9.

Minimize earthmoving activity.

10.

Maximize the residual value of the venues and iindividual components to encourage reuse and resale opportunities after the games.

BIM keeps Olympics on schedule

Opportunity

Famed for its stunning location and its carnival and beach culture, as well as its impoverished favelas, Rio was on its way up in the world as a center of commerce: the engine of Brazil's powerhouse economy.

But when Brazil won the right to host the 2016 Olympic Games, it was a first for any country in South America, and some doubted the country's ability to do it. In May 2014, Reuters reported that only 10% of Rio's 55 Olympic construction projects were finished.

Solution

Our consortium had just six months to design $500 million worth of temporary power, water, wastewater, and drainage infrastructure for 55 sites. We introduced Building Information Modeling (BIM) to provide the clarity, speed, flexibility, and accuracy the project demanded.

Site layouts were in a state of flux during the early stages of the program, and designs had to be reconfigured up to five times. Our BIM working methods allowed changes to the overlay design to be accommodated quickly and easily.

A customized, in-house database of commonly used overlay assets allowed us to rapidly develop overlay drawings for venues while providing accurate quantity and capacity requirements for overlay equipment, such as generators, uninterruptible power supply systems, distribution boards, cabling, water storage, sanitation, fire extinguishers and containment sizing.

Our team also developed the broadcast lighting, temporary lighting, and other rigging solutions, as well as providing logistics and scheduling support. We used an automated overlay system that allowed our drawings and schedules to be updated when new objects were placed on the layout plans. This facilitated rapid and easy changes to a venue's overlay plan while using standardized components.

Project
Rio 2016 Olympic and Paralympic Games

Location
Rio de Janeiro, Brazil

Client
Organising Committee for Rio 2016

Expertise
BIM modeling, overlay drawings, value engineering

Outcome

With designs flowing from our design team six times faster than the industry standard, our team provided fast-track procurement of infrastructure, while also finding cost savings of up to 20% on capital-intensive overlay, such as power generation and water supply.

Database is a game changer

"We appreciate the contribution Mott MacDonald has made in what has been a great Pan Am Games. Thank you for the support and partnership throughout the project."

John Baker
Vice President,
Overlay and Broadcast Integration
TORONTO 2015

Opportunity

The TORONTO 2015 Pan Am/Parapan Am Games were the largest multisport event ever hosted in Canada, with 6,132 athletes representing 41 National Olympic Committees. The games had never before been held in Ontario.

Solution

We were the temporary power, sports lighting, internal build-out, and overlay delivery consultants for the games. We oversaw the installation of temporary overlay power, providing game-time support, and designing temporary lighting solutions to meet broadcast and sports federation requirements at 15 key venues. This included the shooting range that we designed and engineered.

Outcome

Recognizing the commonalities in various types of overlay assets — and the potential for standardization and reuse of components, with the associated cost benefits — we developed a BIM database of portable assets that could be dismantled and then reassembled at new locations.

This database has since formed the basis of our overlay solutions for Rio 2016 and other major international multisport events.

Project
TORONTO 2015 Pan Am/ Parapan Am Games

Location
Toronto, Ontario

Client
TORONTO 2015 Pan Am/Parapan Am Games Organizing Committee

Expertise
Delivery consulting, BIM modeling, database development

15
Venues

Temporary venue leaves permanent legacy

Project
Eton Manor

Location
London, UK

Client
LOCOG

Expertise
Structural and civil engineering review, contractor supervision

Opportunity

Eton Manor was the only dedicated Paralympics venue within the London 2012 Olympic Park. With temporary seating for 10,500 spectators, it hosted the wheelchair tennis events at the games.

It also provided a temporary pools enclosure housing three Olympic-sized swimming pools, a diving pool, a water polo pool, and aquatic training and changing facilities.

Solution

We were appointed to carry out structural and civil engineering reviews and provide a site-based contractor/supervisor role for the temporary overlay facilities at Eton Manor.

During London 2012 the tennis hall was fitted out for use by the International Olympic Committee as an administration center including office accommodation, meeting rooms, and reception areas.

Outcome

Following the Paralympics, Eton Manor was transformed into the Lee Valley Hockey and Tennis Centre.

Today it combines community and professional use, catering for players competing at international level and for clubs, schools, enthusiasts, and beginners.

London to Jakarta in half the time

Opportunity

Fresh thinking was needed when Jakarta, host city of the 18th Asian Games, began considering the viability of delivering a new permanent velodrome facility to host track cycling events.

The available budget was relatively low, and the authorities had only half the time typically required to tender, design, procure, and build a velodrome.

Solution

Working in partnership with the contractors ES Global and Wika and the architects Cox Architecture and BKM, we demonstrated that a permanent velodrome building could be delivered within the time and budget by using a temporary venue design and delivery approach.

Prefabricated structural components, previously used on the water polo and shooting venues for London 2012, were reengineered so they could be deployed on a permanent-use building in a seismic zone.

50%

Time saved on construction

Outcome

A world-class cycling track, housed in an air-conditioned environment to provide track longevity and comfort for 3,000 spectators, is on track to be delivered in 50% less time than typically achieved.

What's more, the facility will cost less than many naturally ventilated venues.

Project
Asian Games 2018

Location
Jakarta, Indonesia

Client
ES Global/Asian Games 2018 Organising Committee

Expertise
Design and reengineering services

Opening opportunities with connected thinking.

For more information, write to
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