Award

AELTC Indoor Tennis Centre, London

PROJECT TEAM

Architect:
Hopkins Architects

Structural Engineer:
Cundall

Steelwork Contractor:
Billington Structures Limited

Main Contractor:
Willmott Dixon

Client:
The All England Lawn Tennis Club

The Indoor Tennis Centre (ITC) at The All England Lawn Tennis Club (AELTC) in Wimbledon is a steel-framed sports facility that exemplifies the fusion of architectural elegance and engineering precision. Located across the road from the main estate, the ITC forms part of a long-term masterplan to enhance connectivity, security, and amenities for Members and guests.

Replacing an outdated indoor facility, which had reached its end of life and no longer fit for purpose, the new centre provides six new indoor courts, six new external clay courts, a members' bar, changing areas, and a basement car park with electric vehicle charging and accessible parking.

The standout feature of the ITC is its double-curved, undulating roof, inspired by the form of vintage wooden tennis rackets popular in the 70s and 80s. This sculptural roof creates a grand internal playing experience while adhering to strict external planning height limits and internal spatial requirements. The roof's profile rises over the centre of the nets on each court to accommodate lobs, and dips around the perimeter to reduce the overall volume of the facility and energy demand for heating the space.

Nothing is hung from the court soffit, which creates a seamless flowing ceiling. The dividing nets are suspended from cables beneath the main steel ties and

lighting has been integrated into the soffit alongside the exposed paired steel arches. There are no other services sitting above the courts. Aligning the exposed primary steelwork with the carefully defined and profiled light boxes, along with the timber soffit panels, required coordination between the project team to achieve exacting construction tolerances and the roof's movements during construction and in its completion.

The roof has a plan area of approximately 50m x 110m, with each court requiring a 38 metre clear span. A further challenge was the need to limit the structural zone to comply with internal playing requirements and external height planning limitations. To achieve this, the primary spanning members were designed as pairs of tied arches, with stainless steel tie cables acting in tension, to balance the outward thrust from them. The arches were formed from fabricated box sections, typically 500 x 300mm with a regular series of internal stiffeners. UB 457 x 191 x 98 secondary beams then spanned between these, with varying degrees of curvature.

Two plan movement joints were incorporated to manage thermal effects, while plan cross-bracing, which was hidden between the ceiling and the roof, combined with local portalisation and lateral connections to the concrete cores, provided a discrete stability system. A bespoke designed sliding bearing detail at one end allowed for movement of the arch and tie, while balancing the compression and tension forces. This was then welded in the permanent condition, ensuring minimal visual impact and maintaining the architectural vision.

Precision fabrication was imperative to ensure that each curved beam was identical. To mitigate the need for welding at height, whilst maintaining the appearance of a continuous member, a hidden splice detail was developed that allowed the arches to be bolted together in thirds providing a seamless appearance. As a consequence, a considered erection sequence had to be developed, with temporary props holding each section in place to allow bolting of the splices and to prevent splaying of the arches until the tension ties were in place.

Careful tightening using a tensioning device ensured the stress in the ties was sufficient to balance the thrust before depropping the arch. Monitoring of geometry and movement was critical to achieving equilibrium and maintaining the roof's visual and structural integrity.

Delivery of the project faced numerous challenges, including COVID-19 restrictions, Brexit-related supply issues, and the rigid timeline of The Championships. The standing seam roof required a bespoke jigsaw of welded panels to accommodate the double curvature, and the timber ceiling, comprising 1,100 birch ply panels, was refined through off-site mock-ups to ensure compliance and visual quality. Collaborative working across trades enabled adjustments to the support grid and fixing brackets, ensuring alignment and flexibility.

The ITC was designed to meet both year-round and Championship needs, with sustainability at its core. Passive design measures reduce energy demand, while renewable technologies such as air source heat pumps and photovoltaic panels contribute to low operational carbon. Rooflights provide diffused daylight to reduce artificial lighting, and natural cross-ventilation cools the courts overnight.

The landscape strategy reflects AELTC's ethos of "tennis in an English garden," enhancing biodiversity through native planting, tree preservation, and the installation of bird and bat boxes. The project achieved a BREEAM 'Very Good' rating, demonstrating its commitment to environmental performance.

Collaboration was key to the project's success. Full-scale mock-ups of steelwork and 3D-printed connection prototypes helped visualise and refine the design. The result is a facility that embodies AELTC's pursuit of excellence and readiness for future generations, which could only have been achieved with structural steel.

Judges' comment

The Indoor Tennis Centre at Wimbledon, distinguished by its graceful double-curvature roof, is beautifully finished and an outstanding addition to the estate. Exposed structural steelwork enhances the interior, creating a striking and welcoming volume. Exemplary coordination between disciplines ensured refined detailing, resulting in a building of clarity and elegance.