

Award ~ Innovation Award

The MCC Indoor Cricket School, Lord's Cricket Ground, London NW8

Owner: Marylebone Cricket Club

Architect: David Morley Architects

Structural Engineer: Price & Myers

Steelwork Contractor: Tubeworkers (Structures) Ltd

Main Contractor: Wates Construction Ltd

The brief for this project presented the opportunity to create a coaching facility of national standing, as well as the chance to contribute to the architectural heritage of Lord's Cricket Ground and the surrounding area of St John's Wood. The design evolved from examining the building's functional aspects and physical context, to produce a simple and elegant concept. The first task was to provide a design which would fit comfortably into the existing building hierarchy, and complement but not compete with the main ground's spectator stands.

The roof, which spans 48.6m with a further 5.4m cantilever canopy, is the scheme's key element. Five barrel-vaulted roof lights combine with fabric blinds to provide diffused natural light throughout the playing area. The design allows direct sunlight and fluctuations in daylight intensity to be controlled by a combination of the architectural form and fabric blinds hung under the structure - resulting in a calculated electricity saving of around £10,000 per year. The playing area's dimensions were determined by playing requirements and circulation areas around it, with its most important aspects being light quality and the playing surface. The sides are constructed from 7m high screens which can be opened.

Throughout the design process, the designers carefully expressed the roof's structural action by using appropriate members, sizes and connections. Similar care was taken with the detailing of secondary steelwork, the steel-framed glass liftshaft, steel staircases, the bridge across the main entrance area and the balustrades. The roof structure is exposed and time was devoted to

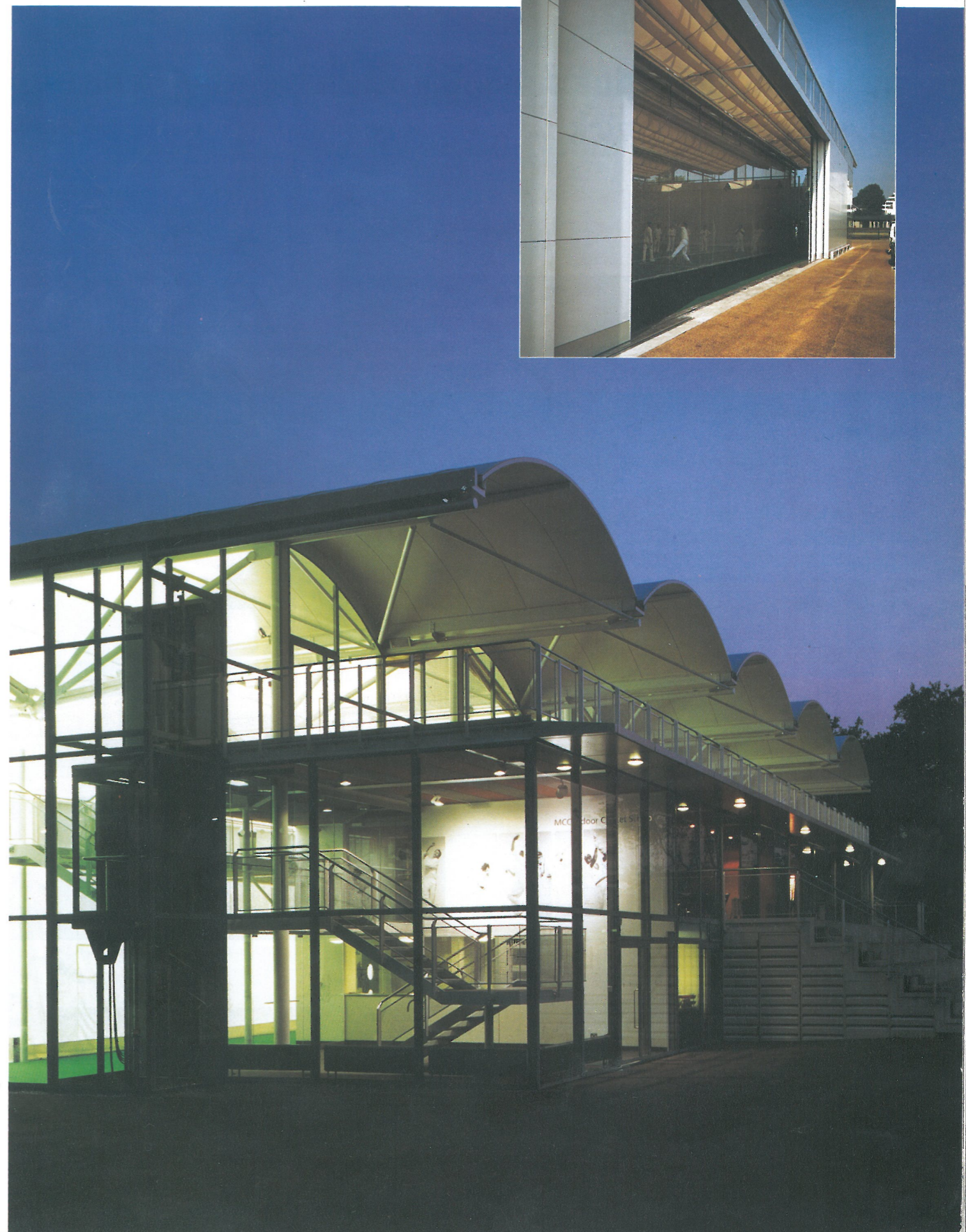
producing clear simple details which didn't detract from the overall concept.

The roof structure comprises five 2.4m deep Warren trusses with top and bottom chords of circular hollow sections, centred on each barrel vault. The secondary structure is divided into three main components - upper diagonal outriggers, lower orthogonal struts and continuous valley gutter support tubes. The individual 7.2m bays formed are stable under uniform loading. Any imbalanced loads are distributed between trusses by designing the lower orthogonal outriggers as continuous across the gutter line. The cantilever canopy is formed as a continuation of the main truss chord. The two valley gutters at either end of the pavilion act as pure cantilevers. The required stiffness was provided by using a welded section formed from a CHS and solid plates to keep the gutter profile constant.

A 100mm precamber was built into the main trusses and, as the first truss is only a half bay in from the edge of the building, the vertical wall cladding support members incorporate a sliding connection. This avoids distortion of the roof by profile at the building sides as the cladding was installed. Once cladding was complete, the connections were made rigid by tightening high strength friction grip bolts along the eaves. All further differential deflections under imposed loads were acceptable.

The structure is braced by triangulating Macalloy bars in three sides and by cantilevering the main CHS

columns at the pavilion end from level two. The wind loads are transferred back to these points by the roof members' triangular plan geometry. The main trusses were fabricated in three 20m long sections and site butt-welded under controlled conditions to avoid large bolted flange connections. The three secondary roof elements were designed to be simple to handle, transport and erect, and ended in pinned connections, except the intermediate valley gutter tubes where a flange connection was designed which resists moments and combines with the gutter supports.



A beautifully resolved building using elegantly detailed steel to form all primary and secondary structural elements. Services, envelope and structure are finely tuned to provide excellent environmental conditions creating joyous and innovative design solutions for indoor sports facilities.