

Olympic Park Station



photo courtesy of Peter Hyatt

The Steel Solutions

Steel was able to provide the designers with large spans of roofing, while delivering the strength-to-weight requirements necessary to give the station its distinctive shape.

The success of the roof owes much to the sophistication of modern steel fabrication and rollforming techniques. Each roof truss is comprised of three sections, and each section had to be cold rollformed to the desired radius from straight circular hollow sections.

The truss sections were fabricated by Alfasi in Melbourne, then brought back to Sydney to be assembled on a specially-

designed jig on site. Two truss sections were first bolted together on the ground, lifted into place, anchored at one end and supported at the other, then the third section was craned into place and bolted on.

The intricate design, engineering and fabrication work was all brought together to achieve the necessary structure.

The use of steel in building the large roof meant there was no disruption to the construction of the railway line beneath. This was a major factor in keeping to building deadlines, which BHP met during the entire construction process.

Awards

Olympic Park station awards include the Sir John Sulman Award in the 1998 Royal Australian Institute of Architect's (RAIA) NSW Chapter Awards for outstanding architecture, an award made only three times in the past decade. It also gained

the RAIA national architecture award, the Sir Zelman Cowan award, and the BHP COLORBOND® steel Award for innovative use of steel, as well as a number of national and state engineering awards.



photo courtesy of Peter Hyatt

The dramatic steel arches of the Olympic Park Railway Station were the gateway to the Sydney Olympics site and were designed to handle up to 50,000 passengers - or 30 trains per hour - attending major events.





Facts and Features

Transport was a major challenge for the Sydney 2000 Olympic Games. The previous Games in Atlanta drew international comment for related transportation problems, which in turn placed the spotlight on the Sydney Games' transport systems. In fact, one of the major success stories of the Games was the efficiency of Sydney Olympic Park Station.

Architects Hassell Pty Ltd were engaged by the Olympic Coordination Authority to design Olympic Park Station. The station was built to emulate the world's great railway stations, moving up to 50,000 people per hour - the contents of 30 full-sized trains. The station's major architectural feature is its 200-metre-long, 36-metre-wide roof. Supported by 18 steel arches, the roof rises 20 metres above the four platforms, which are situated 6.5 metres below ground level.

The curved roof is made from BHP ZINCALUME® zinc/aluminium alloy-coated steel. The steel-vaulted structure provides the necessary strength, as well as the all-important large open-space, required for the busy operations of the station.

Only steel could provide the lightweight covering to the station at reasonable cost. The strength of steel made it the obvious and ideal material to achieve the vision of a light and delicate structure through a series of vaulted arches.

The appropriate and effective use of structural steel became an integral part in giving the station its unique architectural expression. Although quite minimalist in appearance, the roof employs curves in its structure which give it softness and a distinctive feeling.

The environmentally-friendly agenda for the station was achieved by providing a delicate steel canopy which allows natural ventilation for the whole of the station.

The use of steel fitted well with the Sydney Organisers' "green" requirements - it made a significant weight saving, and through design was able to provide natural ventilation. The Olympic Park station was a made to measure project, with minimal wastage of steel materials occurring during construction.

Figures

Sydney Olympic Park Station and the connecting 5.3 kilometres of railway loop and tunnels were finished on-time at a budget of \$95 million dollars. The station was one of the major success stories of the Games and comfortably met passenger demand. The station continues to operate during large scale events, including football matches, concerts and the Royal Easter Show. Out of major event times, a rail shuttle service operates between Lidcombe and Olympic Park Station.

Project Details

Client Olympic Co-Ordination Authority

Architect Hassell p (02) 9273 2300

Structural Engineer (Station) Tierney and Partners p (02) 9904 6555

Principal Construction Contractors Leighton Contractors
p (02) 9925 6666

Principal Steel Fabricators

roof Alfasi Constructions p (03) 9794 9207

cold-rolling of pipe Rollco p (02) 9772 4188

Cost \$95 million including 5.3km loop and tunnels

Featured Steel Products

Roof trusses Circular hollow sections fabricated from ULTRAPIPE®.

Exterior roof cladding BHP ZINCALUME® zinc/aluminium alloy coated-steel rollformed into Stramit Speed Deck 500 concealed fixed roof decking.

Ceiling Painting of the roofing's internal ceiling was done at Port Kembla in Dover White - 80 percent gloss. The gloss paint allowed the light to be reflected and diffused to create a cooler environment.

