InfraBuild

Melbourne Grand Prix Facilities

June 2001

This case study was written at the time when InfraBuild (formerly Liberty OneSteel) was part of BHP. In that context, in some instances within this case study reference may be made to BHP.

Melbourne 'steels' t

When Melbourne won the right to stage the Grand Prix, the Australian Grand Prix Corporation and their Project Manager, Kinhill, had the task of building the track and associated facilities within a very tight time frame.

Initially a choice had to be made between building new control and pit buildings or reusing the modular buildings from the Adelaide Grand Prix. The Architects, Bates Smart, were faced with the challenge of designing new buildings cheaper than the costs associated with reusing the buildings from Adelaide. As the Adelaide buildings were modular, they would have required about four months to assemble and then remove after the event. The permanent buildings option had the advantage of the buildings only be required for one month during the Grand Prix and they could be designed to fit in with the theme of Grand Prix excitement. Alternate uses for the buildings over the rest of year were also sourced to ensure viability of this option.

A low environmental impact on Albert Park was also critical to the project. Extensive use of computer generated pictures was made to help assess impact on the park.

Steel emerged as the natural material choice for the buildings as it produces light buildings with fine details and given the tight deadline - the benefit of steel's inherent speed of construction.

Control Building

The first building is the three storey control building. It forms the permanent office of the Grand Prix and doubles as community meeting rooms throughout the rest of the year. Races are controlled from the top level which is over the part of the structure adjacent to the track. The building's front is raked forward at approximately 7 degrees which adds to its dynamism. As the building is sprinkled, a modification was given so that passive fire protection was not required.

Structurally it consists of steel columns, composite steel beams and slabs. The first floor grid is nominally 7m x 5m. Secondary beams are composite 310UB40 at 3.5 metre centres and primary beams are composite 460UB74's. Columns are typically 200UC46 and extend to the roof steelwork. Where the columns form part of the moment resisting frame they are 530UB92. Roof rafters are typically 360UB45 and are spaced at approximately 15 metres.

Sports Building

The other four buildings provide ground floor workshops and garages for the Formula 1 vehicles and provide corporate entertainment areas on the first floor. By raking the facade forward, a permanent viewing area is provided on the first floor with an additional viewing area on the roof for guests. This formula proved highly successful for the first Grand Prix. After the Grand Prix the first floor is removed and stored at the back of the building, the remaining space is then converted into netball courts. This arrangement allows netball courts to be available 11 months of the year.

Structurally the building is is a steel portal frame. In preparation for the Grand Prix, a temporary floor is added of steel beams at 4 metre centres and plywood deck panels spanning between the steel beams. The beams are 360UB's. To support the beams, removable 100 square hollow sections are provided at approximately third points.

The clocktower, control building and the linked pit/sports buildings.

he Grand Prix

Given the high fire load during the Grand Prix sprinklers were fitted to both levels. Lower level sprinklers are removed at the same time as the temporary floor.

Link Towers

In between the buildings a tower was constructed out of rectangular hollow sections, providing access between the buildings and to the upper level in the Grand Prix configuration. An architectural requirement was that the steelwork be constructed so that the bolts were not visible. As the towers were too large to be transported in one piece, they were fabricated in three pieces, transported to site, assembled on the ground and then lifted into their final position.

External walls

External cladding of all buildings needed to give the appearance of a smooth monolithic type surface. Pre-painted made to measure steel faced sandwich panels were selected as the most economical and efficient cladding material that could achieve this look. The panels enabled tight construction deadlines to be maintained and because they are made off-site helped minimise site congestion. The panels are James Hardie Equibond, 100mm thick sandwich panels, 900mm wide and mounted horizontally with spans of up to 4m. A special COLORBOND XSE pre-painted steel colour, Saville Row, was selected to complement the environment.

Another important selection criteria was, that after the Grand Prix, the structure's ability to be converted to an indoor sports facility.

Sandwich panels, using an expanded polystyrene core with superior insulation properties, were an ideal choice.

For the final touch, trees in tubs are placed in front of the buildings during the year and can be removed for the Grand Prix to make room for the pit lanes.

In summary

The Grand Prix project demonstrates that with steel structures it is possible to build economical, functional buildings that are aesthetically pleasing, complementing their environmental surroundings.

Project participants

Client:	Australian Grand Prix Corporation
Architect:	Bates Smart Pty Ltd
Engineer:	Kinhill Engineers Pty Ltd
Fabricator and Erector:	Alfasi Pty Ltd
Panel Manufacturer & Installer:	James Hardie Building Systems.

The Grand Prix buildings showcase finely detailed steelwork.