Simple build approach satisfies complex functions

Indoor Sports Complex, Tamworth

With the brief calling for minimal site disturbance and economical construction on the one hand and smart layouts to streamline staffing on the other, a structural steel approach proved the best of both worlds in building regional NSW's biggest ever and most multi-functional indoor sporting centre.

Officially opened by Prime Minister, **Julia Gillard** on 17 May, the $10.4 million sports complex comprises three buildings. Building One contains four timber floored courts, Building Two incorporates the administration zone and Building Three two synthetic full-size netball and basketball courts.

All up, the total building area is 6828sqm which equates to over eight normal house blocks undercover.

Tamworth Regional Council gained a $5million grant from the Federal Government via the Regional and Local Community Infrastructure Program (RLCIP) to underwrite the project and injected $4.5million of council funds with local basketball and netball clubs contributing $1million over 20 years.

Director of project architects Facility Design Group (FDG), **Stephen Johansson** said the development concept was born from a need for a very large building for a relatively small budget.

"The project had to minimise earthworks onsite and ultimately cost, although the initial site investigation and assessment was necessarily short due to a very tight timeframe associated with RLCIP funded projects," he said.

"The sports complex has a multitude of functions that all need to be controlled from the one zone which determined the general placement of the various elements to ensure one point of control and the least staffing possible for operational cost savings.

"The design of such functionally complex buildings requires an easy to navigate layout – simple, uncomplicated and easy to manage."

He said that FDG and Eclipse Consulting Engineers from the outset recognised the efficiency of steel and its application to sports and aquatic centres.

"To get the roof on a project early enough to enable undercover work is a mandatory design methodology we employ," Mr Johansson said.

"The use of precast concrete panels with the structural steel mainframe allowed for a very quick erection of a very large building. The curved portal frame of the roof was efficiently designed with an open web, lightweight truss system reducing weight and ultimately cost."

He explained that the key to developing large buildings and delivering such cost efficiency is in using the same frame dimensions.

"Whilst duplication of structural elements reduces detailing and fabrication costs, the efficiencies gained in the main sports halls allowed for a more architectural solution for front of house and public entry areas with a sophisticated entry and roof structure, one that was very buildable and appropriate to such a facility," he said.

He said that FDG and Hines Constructions worked in intense detail with the shop detailers for the structural steel fabricator.

"We see this as a critical stage of 'getting it right' and time devoted to providing input and checking and problem solving certainly pays dividends when the construction goes together like a Meccano set," Mr Johansson said.

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"Working with the Hines team added the empiric knowledge, further embellishing the accuracy and build-ability of the structural systems while ensuring maximum efficiency and budget control."

Alan Vermeer of Hines Constructions said that early engagement of the main contractors on the project team helped win the full Design and Construct job and paid dividends in undertaking it.

"We had the fabricator Amarcon involved in the tender and design process with our team of consultants," he said.

"This allowed input from all parties to come up with the most practical and economical design for the structure.

"We looked at our costs on a similar fully documented project and changed from a rolled 460 UB to the curved trusses which gave us a good cost saving over the project."

Steel fabricator on the project, Amarcon organised the workshop drawings, manufacture and erection of the structural steel and precast concrete panels.

"Having one contractor handling both elements reduced the coordination required between trades," Mr Vermeer said.

"We were able to design a practical and economical structure that satisfied all the requirements of the brief by including our prime contractor in the design process."

Project Team

Client: Tamworth Regional Council

Architecture: Facility Design Group

Structural Engineering: Eclipse Consulting Engineers

Builder: Hines Constructions

Steel Fabrication: Amarcon Group

Steel Detailing: Prime Steel Detailers

ASI Steel Manufacturers: BlueScope Steel, OneSteel

ASI Steel Distributors: Southern Steel