

Staged erection speeds Yarra River span

Melbourne Convention Centre footbridge



By ALAN MARSHALL

The use of Australian steel enabled an iconic new footbridge across the Yarra River to the new Melbourne Convention Centre to be built on time and on budget.

An integral part of the Melbourne Convention Centre Development (MCCD), the bridge directly connects South Wharf with the Docklands and opens up a whole new way to get to Etihad Stadium, the waterfront restaurant precinct and Southern Cross Station.

Steel, concrete and hybrid options were looked at by Winward Structures during the bid feasibility stages with steel being the solution adopted going forward into concept design. Brown Consulting (Vic) confirmed that steel was the most efficient and economically viable design solution during the detailed design phase.

The majority of the superstructure steel is Australian including the suspension bar, arches and primary and secondary beams.

According to Design Manager, **Rian Calder** from Fitzgerald Constructions Australia, the use of steel allowed the erection to be staged to keep lifted masses within the weight limits of available plant and equipment.

Mr Calder explained that the adjacent wharf's weight capacity limited the size of crane that could be placed on it, so being able to assemble the structure in manageable sections was crucial.

"The ability to simply connect the steel members allowed erection to take place quickly, leaving the structure in a stable state for continuous river traffic to pass beneath and also maintain a slender structural system whilst maximising the bridge's span," he said.

"All main lifts were carried out using a 100-tonne crane carried on Fitzgerald Constructions' jack-up barge."

The river remained open to water craft during construction (pylon works, superstructure erection and finishes and claddings) and was only briefly shut down when erecting the main span of the bridge, limited to between 5am and 10am on a pre-programmed morning.

"But the simple and effective steel connections designed by Brown Consulting allowed Fitzgerald to complete the erection within these tight timelines," he said.

Grimshaw Architects and the project's head contractor, Brookfield Multiplex looked for a slender, elegant looking structural solution to span a maximum distance across the Yarra River.

Senior Design Manager at Brookfield Multiplex, **Ian Steedman** said that the Government brief requested a walkway to improve pedestrian connections into the Docklands precinct.

"The design brief also called for provision along the cycle path component of the bridge for vehicle access during major state occasions and convention events (such as a long line of limousines) and access for maintenance vehicles and associated plant," Mr Steedman said.

"Choosing a steel structure enabled us to keep the overall weight of the bridge down and minimise the size of all critical structural elements, and also benefited the contractor in handling lighter, more manageable structural elements to simplify construction over the river."

Partner at Grimshaw Architects, **Neil Stonell** describes the bridge as "two groups of parabolic compression arches springing from two piers, one at the south wharf with the other away from the north bank."

"These help to minimise the structural impact on the recently restructured wharf edge," he said.

"These fanning arches are larger at the southern pier than those to the north with the connecting steel ties forming an



enclosure of the space below. The changing scale of this structurally enclosed space creates a 'processional crescendo' as pedestrians move across the bridge towards the new Plenary Hall."

He said that the bridge deck sits as an elegant wing spanning from bank to bank. Glass handrails were designed to reduce the visual profile of the deck.

"The development of the architectural intent and the selection of material was an integrated process as we analysed the most efficient design solutions to span the river," Mr Stonell said.

"Steel was selected as the most appropriate material given the constraints of the construction program, budget and site.

"Along with our recently completed Newport Bridge in the UK, the new Yarra pedestrian bridge continues a tradition of elegant, performance-driven bridge designs."

The bridge was completed on schedule at the end of November 2008 and opened to the public just prior to New Year's Eve.

The bridge was funded by the City of Melbourne which has recently invited members of the public to suggest a name for the structure. The bridge will be officially opened and named by the Melbourne City Council later this year.

Project Team

Head Contractor: Brookfield Multiplex Constructions

D&C Subcontractor: Fitzgerald Constructions Australia

Architect: Grimshaw Architects

Structural Engineer: Brown Consulting (Vic)

Proof Engineer: Sinclair Knight Merz

Structural Engineer (Concept Design and Design Reviewer): Winward Structures

Primary Steel Fabricator (arches and beams): Focus Engineering, Corowa

Coating Supplier: International® Protective Coatings

Steel Supplier (Suspension Bar): Interlloy (Albury)

Suspension Bar Machining and Components: Albury Precision Engineering



* Images courtesy of Glenn Hester Photography and Brookfield Multiplex.

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