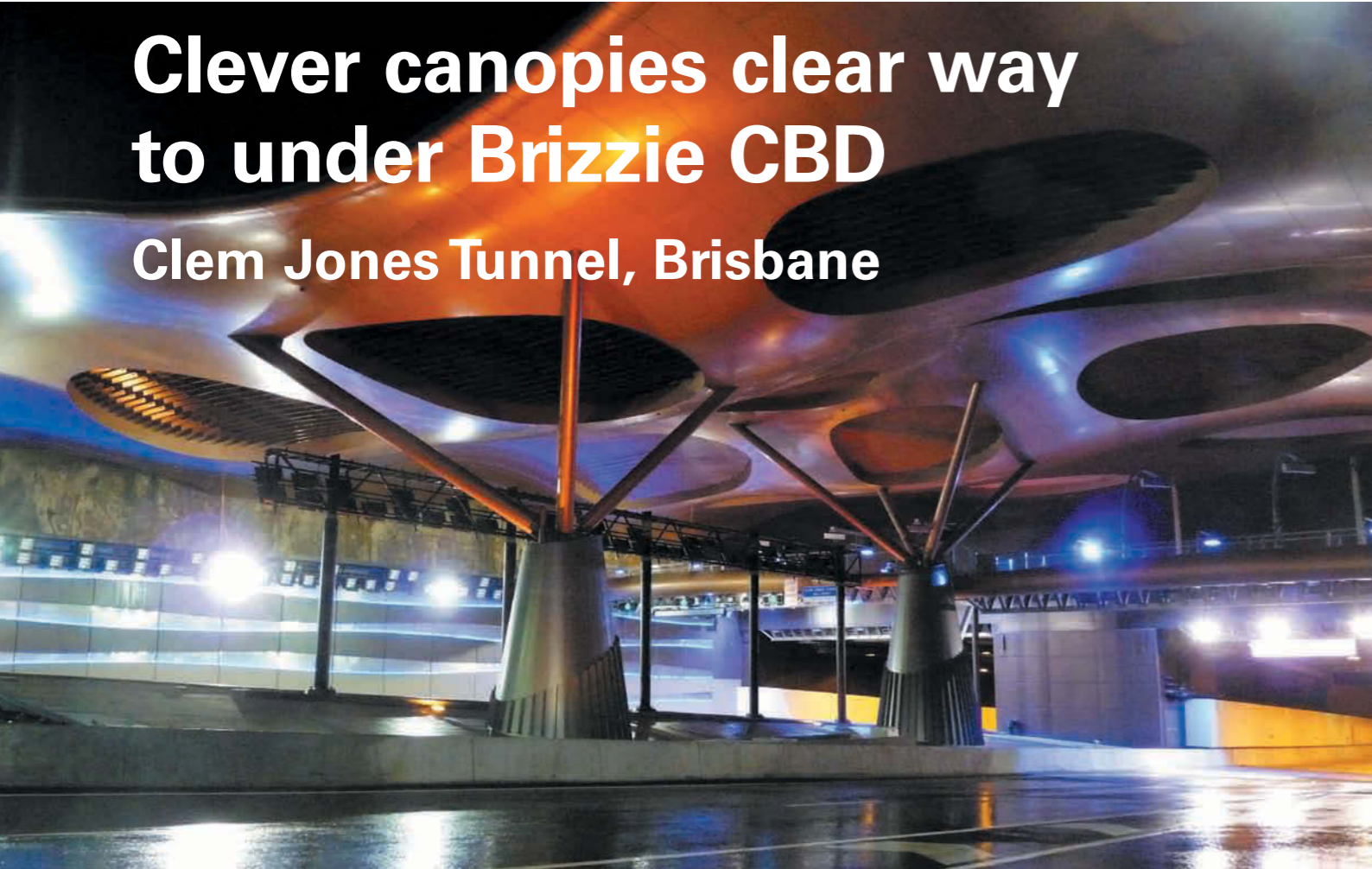


Clever canopies clear way to under Brizzie CBD

Clem Jones Tunnel, Brisbane



A structural steel solution solved the challenge of forming ornate entrances to greet motorists using the new Clem Jones Tunnel (CLEM7) to bypass the Brisbane River, the CBD and 24 sets of traffic lights, whilst acting as a solid support structure.

Formerly known as the North-South Bypass Tunnel, it is a 6.8 km bored portal connecting Woollongabba in the South to Bowen Hills in Brisbane's North with two parallel twin-lane tunnels, each 4.8 km long.

Three unique steel canopies were envisaged as striking architectural entrances to the tunnels to act as transitions between the dim light inside and brighter outside the tunnel, allowing the eyes of drivers to adjust safely and comfortably.

Each canopy is supported by complex rolling steel trusses covered in metallic copper-coloured architectural panels which have been individually cut and fitted to match the complex curves. They are a series of large three-dimensional elliptical pods with louvered blades incorporated which allow filtered light to shine through.

According to Managing Director of Geelong Fabrications, **Peter Kirby** steel plate was the only material considered sufficient for the task of not only providing the shape required but also acting as support members for the roof and ceiling purlins, and in the case of the largest North canopy at the entrance of the main tunnel, to support the structure for the tolling system.

There was over 400 tonnes of steel required for the three canopies, the largest of them at Bowen Hills spanning 45 metres and comprising 2000 unique pieces weighing 230 tonnes.

"About 4300 pieces of steel were fabricated and every single piece was unique with barely one straight piece among them," Mr Kirby said.

"Amongst the individual pieces were a number of voids and pods which were all fabricated out of steel plate. These voids and pods were three-dimensional shapes with curves and dips in three axes.

"Due to the size of the pods, a series of splices had to be incorporated into the

design to enable them to be transported on semi trailers to Brisbane from our Geelong workshop."

The North Canopy pods were split into six sections. Plate processing company Komo Industries profile cut and rolled the pod plates from DXF files provided from shop detailers, Steelone.

"Due to the very complex shape of these pods and the difficulty in welding into exact position all the cleat plates, stiffeners and splice points, Komo were asked to drill holes into and etch pick-up points onto the plate," he said.

"They had never attempted this before and programmed their machinery to provide these marks successfully."

He said that the nose section that incorporates the very front of the canopy was another geometrically challenging piece, consisting of pipe which again twisted into three different axes.

"Those nose sections had to be completely trial assembled in the workshop to ensure

"Steel plate was the only material considered sufficient for the task of not only providing the shape required but also acting as support members for the roof and ceiling purlins."

correct fit-up once delivered to site," Mr Kirby said.

"We were able to pre-fabricate and apply protective coatings to all the steelwork required that enabled the site installation to proceed at a rapid rate and allow the other trades who required access to the tunnel itself to continue working unhindered.

"It was an extremely tight schedule and the work had to be organised into staged shifts."

All the canopies were undertaken within six months with the last one completed by September 2009.

Urban design consultant on the CLEM7, AECOM wanted to make an architectural statement with the canopies for the entrances and based the design concept on South East Queensland's expansive shade trees and the dappled light they create.

The project is Brisbane's first privately financed inner city toll road. It was the city's largest road infrastructure project and one of Queensland's largest infrastructure projects.

CLEM7 was the longest road tunnel in Australia when officially opened to traffic on time in mid March.

Project Team

Project Management: Leighton Contractors and the Baulderstone Hornibrook Bilfinger Berger Joint Venture

Lead Designers: AECOM and Parsons Brinckerhoff

Onsite Rigging and Supervision: Geelong Fabrications and Mulherin Rigging

Steel Detailer: Steelone

Plate Processor: Komo Industries

Roll forming: Smithweld

Coatings Supplier: International Protective Coatings

