

## Lateral thinking for fast track result

Replacing an ageing rail underbridge to challenging specs in a super short 60-hour timeframe called for lateral thinking and some highly coordinated teamwork.

The old, low clearance bridge in question was a 1940s timber ballast top spanning the Yass Road in Queanbeyan, NSW. The new bridge was to have both an increased 20 metre span to accommodate future road widening, and a higher clearance – increasing from its previous 4.1 metres to a desired 5.3 metres – but with no possibility of either lowering the road or raising the tracks above to achieve it. Solving this problem required intelligent design and use of materials, and a variety of precast components filled the bill.

### The design solution

The designers opted for use of an external 'T' beam design – but that was the only standard part of the solution.

To maintain the existing rail level, a modified precast cross deck section was conceived, with use of 8 no. 1200mm diameter bored piles located outside the existing bridge structure, along with cast in situ columns to form the sub-structure. The headstocks and abutment beams were cast as high as possible under the existing bridge, while concrete packing beams gave the new bridge greater clearance.

#### Precast Manufacturer

Waeger Precast

#### Project Owner

Australian Rail Track Corporation

#### Architect

Opus International Consultants, Sydney  
Briding Australia and Tack Australia

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### **The need for speed**

The need for speedy execution led to the use of a multi-contract approach. This reduced lead time – but also required a high level of co-ordination and teamwork between contractors.

Works were broadly divided into the sub-structure, site works and the precast superstructure, which was in turn divided in two.

One contract, for the conventional requirements such as standard rail girders, was awarded to Structural Concrete Industries for casting at its Teralba factory.

The contract for the specially designed components – the 20 metre girders and the cross decking – went to Waeger Precast.

### **Minimal rail closure**

“Building complex 20 metre beams is a big ask in any project and was a very satisfying milestone for us,” says Karl Waeger, who oversaw the design and manufacture of the beams and decking.

“For the decking, although the rails had to be set low, the girders had to be set high. We used conventional precast principles and adapted them to create the cross decking with a small drop-down step in which to set the rails.”

“It all came together exceptionally well, with all the components and contractors working to plan. We opened the road and the railway again within 60 hours and with a brand new bridge to show for it. It was a real achievement.”