

Alice River Rail Bridge



CLIENT: QUEENSLAND RAIL
VALUE: \$1.2 M (OF THE \$17.2M FOR THE 22 BRIDGE CONTRACT)
COMPLETED: SEPTEMBER 2015

THE ALICE RIVER RAIL BRIDGE WAS REPLACED WITHIN JUST 6 DAYS. UTILISING PRECAST HEADSTOCKS AND THE INNOVATIVE DIRECT FIX FOR THE RAIL-LINES, VEC AND THE CREW OF JUST 8 WERE ABLE TO COMPLETE THE PROJECT WITHIN THE LIMITED CLOSURE. THIS PROJECT IS PART OF THE 22 TIMBER BRIDGE REPLACEMENT, DESIGNED AND CONSTRUCTED BY VEC FOR QUEENSLAND RAIL.

THE PROJECT

The Design & Construction of the Alice River Rail Bridge was part of the 22 Rail Bridge Replacements contract for Queensland Rail. The Alice River Rail Bridge is between Emerald and Longreach in outback Central West Queensland.

The replacement of this - and the other 21 rail bridges within this contract - has ensured the continuous service of trains to these remote country towns, securing the financial futures of many outback citizens.

The Alice River Rail Bridge has 17 spans and stretches across 137m. With limited rail shutdown periods, the VEC program stipulated that the existing timber structure would be demolished and replaced with this fully precast construction within just 6 days. With a crew of just 8 people and 2 excavators, the team were able to complete the works in day shifts, mitigating any fatigue management issues.

The piles were driven during the limited closures and outside occupation period. All precast items were supplied by HUMES.

One of the challenges that was faced was the varying geotechnical conditions. The pile lengths varied from 10 to 26 metres along the length of the structure.

DIRECT FIX

VEC took the Direct Fix system with Pandrol plates, and adjusted the design for the Pandrol plates to be fixed directly to the precast, prestressed voided plank, with a direct fix rail onto these beams. This decision was paired with two major constraints that concrete rail bridges of current designs have

1. Structural depth; and
2. Cost.

These constraints were due to traditional concrete rail bridges requiring a ballasted deck.

The structural depth was reduced by ~400mm, allowing the rail to remain at its' current level, without reducing the waterways below the beams. Between the direct fix rail, VEC used precast concrete guard rails, giving the structures very clean and flowing lines which looked slim and attractive.

The Direct Fix was also integrated in the guardrail of the Alice River Rail Bridge. The VEC crew completed rail approach works.

The entire project was completed on time, within budget and with zero safety incidents.

