

## Grafton Bridge FRP FRP Strengthening

**Location**

**Grafton Gulley, Auckland**

**Contract No**

**A5957**

**Client:** Brian Perry Civil Ltd

**Consultant:** Beca Carter Hollings & Ferner Ltd

**Contractor:** Construction Techniques Ltd

**Date:** 2009



Grafton Bridge is one of the first reinforced concrete bridges constructed in New Zealand and at the time of construction in 1910 the main span arch was the longest in the world. The structure is recognised by the American Concrete Institute as one of the 100 most significant concrete structures in the world. As part of Auckland's Central Corridor Project the bridge is to become a dedicated bus, cycle and pedestrian road and required strengthening to take the increased load of the anticipated 1500 bus movements each day. Contech had in 2007 been employed by the consultant Beca to conduct load tests on the bridge. As a result of this testing a scheme to strengthen the bridge using Sika CarboDur and CarboShear L plates was developed.

In 2008 a contract was let to main contractor Brian Perry Civil Ltd to perform a number of strengthening and preservation works on the bridge. BBR Contech was employed as a specialist to supply and apply nearly 600 m of CarboDur strip and the 830 CarboShear L plates. The CarboDur and CarboShear systems are pre-manufactured ultra high strength carbon fibre laminate plates approx 1.5 mm thick and 100 mm wide which are adhered to the prepared concrete surface with a specifically developed epoxy adhesive. The CarboDur strips were applied to the underside of the beams to provide additional mid span moment resistance. The CarboShear L Plates were installed, in pairs, around the beams and up into the deck slab, to improve shear performance.



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