

Lessons learned from one of New Zealand's most challenging civil engineering projects: rebuilding the earthquake damaged pipes, roads, bridges and retaining walls in the city of Christchurch 2011 - 2016.

Beca Heritage Week Armagh Street and Colombo Street bridges - posters

Story: Heritage Bridges

Theme: Construction

Posters created for Beca Heritage Week 2014, outlining SCIRT's repair work on the Armagh Street and Colombo Street bridges in the Central City. They were hung on the bridges for members of the public to read during SCIRT's walk and talk tours.

This document has been provided as an example of a tool that might be useful for other organisations undertaking complex disaster recovery or infrastructure rebuild programmes.

For more information about this document, visit www.scirtlearninglegacy.org.nz



This work is licensed under a [Creative Commons Attribution 3.0 New Zealand License](https://creativecommons.org/licenses/by/3.0/nz/).

The authors, and Stronger Christchurch Infrastructure Rebuild Team (SCIRT) have taken all reasonable care to ensure the accuracy of the information supplied in this legacy document. However, neither the authors nor SCIRT, warrant that the information contained in this legacy document will be complete or free of errors or inaccuracies. By using this legacy document you accept all liability arising from your use of it. Neither the authors nor SCIRT, will be liable for any loss or damage suffered by any person arising from the use of this legacy document, however caused.



ARMAGH STREET BRIDGE REPAIR

Central City

HISTORICAL SIGNIFICANCE



The Armagh Street Bridge has historical and structural significance to the city of Christchurch.

The first version of the Armagh Bridge was constructed from wood in 1873. Today's bridge was constructed using permanent materials and opened to the public on 11 December 1883.

The structural significance of the Armagh Bridge is evident in the form of the bridge arch and the neo-gothic ornamentation of the balustrading.

The bridge was a symbol of permanency and progress for the Victorian citizens of Christchurch.

SCIRT's Downer team repaired the earthquake damage to the structure of the bridge, while maintaining its historical significance.

Information sourced from: John A. Ince, A History of Bridges over the Avon and Heathcote Rivers in Christchurch, Christchurch, 1998, pp 55-58

EARTHQUAKE DAMAGE

The Armagh Street bridge suffered significant damage in the February 2011 earthquake. Downer, as part of the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) repaired damaged sections of the bridge.

REPAIRS

Downer undertook repairs to the structure of the bridge and the brickwork:

helifix ties are steel rods that are used to stitch together the cracks in the brickwork.

- Diagonal and horizontal helifix ties* were installed across the cracking in the bridge.
- A block of detached brickwork was removed and re-constructed using matching brickwork and mortar.
- The road surface and footpaths were repaired.
- A temporary hydro-barrier dam was installed to create a dry working area beneath the bridge.
- The existing guardrail will be removed, repaired and reinstalled.
- Throughout the repairs the bridge will be closed to vehicle traffic.
- The bridge is expected to be open to traffic by mid-November 2014.



Images show cracking to the brickwork beneath the Armagh Street bridge.

HISTORICAL SIGNIFICANCE



The Colombo Street bridge has historical significance to many Christchurch residents. The first bridge was built in 1858.

At the time the bridge was 9 feet wide, and was built with timber beams. In 1875 this bridge was replaced with a larger timber bridge, which was then also replaced in 1902, this time with a 44 foot 9 inch wide steel and concrete structure.

The bridge was used to service trams. As a result in 1930 the bridge was widened to 19.14 meters and Victorian decorative elements were added to the bridge. These decorative elements include the cast iron balustrade and arched girders. In 1963 the timber deck was replaced with concrete, and an extra beam from the old Fitzgerald Ave Bridge was installed to improve the bridges load capacity.

COLOMBO STREET BRIDGE REPAIR

Central City

EARTHQUAKE DAMAGE

The Colombo Street Footbridge sustained significant damage in the February 2011 earthquake. Downer, as part of the Stronger Christchurch Infrastructure Rebuild Team, repaired damaged sections of the bridge.

REPAIRS

Downer undertook significant repairs to the structure of the bridge and its abutments:

- The ground was injected with cement to harden it and provide strength against future earthquakes.
- The damaged bridge foundations were demolished and then reconstructed.
- The services that run beneath the bridge were repaired. Services included water and gas mains.
- The existing handrail were removed, repaired and reinstated.
- The cracks in the bridge foundation were repaired.



- 1 The bridge without Victorian decorative elements.
- 2 The bridge under construction.
- 3 The bridge under construction.
- 4 The bridge before the February 2011 earthquake.
- 5 The bridge showing the warped balustrade following the February 2011 earthquake.