



1 Sculptural facade and courtyard following retrofit works (Auercon / Tony Stewart) 2 Temporary support works to northern end of the sculptural glazed façade (Christchurch Art Gallery Te Puna o Waiwhetu / John Collie) 3 Seismic trench construction adjacent to the iconic western sculptural facade (Christchurch Art Gallery Te Puna o Waiwhetu / John Collie) 4 Neon artwork by Martin Creed displayed on the south facade, commissioned ahead of reopening (Auercon. / Tony Stewart)

## Christchurch Art Gallery Te Puna O Waiwhetu Base Isolation Retrofit

**Project Location:** Christchurch

**Ruamoko Solutions & Aurecon NZ for Christchurch City Council and Fulton Hogan**

**Disciplines:** Structural Engineering



The base-isolation retrofit of the iconic Christchurch Art Gallery building was an inspiring and technically challenging project. The retrofit of base isolators returned the seismic strength of the Art Gallery to current building code levels without the need for strengthening of the superstructure, whilst also providing increased protection for the buildings precious art collection.

Located in Christchurch's rapidly redeveloping CBD, the re-opening of the Art Gallery was considered a very important step forward in the redevelopment of central Christchurch following the devastating Earthquake Sequences.

To preserve the special contents of the gallery and reinstate its national and international reputation, Christchurch City Council decided to retrofit base-isolation devices under the Christchurch Art Gallery. This was after taking advice from their structural enigeers, Aurecon and to mitigate the 'New Seismic Normal' conditions in Christchurch. Aurecon carried out the concept and developed design and continued to complete the detailed non-linear analysis of the isolated structure and provide a performance specification for the triple friction pendulum base isolation devices.

Fulton Hogan engaged Ruamoko Solutions for their design-build tender for the retrofit base isolation project. Ruamoko Solutions carried out detailed design to completion which required the analysis of the ground floor and basement structure to identify the areas where structural strengthening and intervention work was required to meet the demands of the 140 base isolators. The implementation of base isolation devices required bespoke innovative solutions to strengthen existing columns and retrofit supporting structure for floors, beams, walls, ramps, lifts and stairwells in the basement.

The base isolation retrofit of the Christchurch Art Gallery was a technically complex project with a highly successful outcome. The project was on time and to budget to deliver one of the safest and most quake resilient galleries in the world to a delighted client.

### Judging & Copyright Statement

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