

Supermarket Raised 180mm & Re-levelled

INDUSTRY

Commercial

STRUCTURE

Supermarket

PROBLEM

Earthquake remediation

LOCATION

Christchurch, New Zealand

DURATION / YEAR

30 days / 2013

TECHNOLOGY

Uretek Slab Lifting &
JOG Computer
Controlled Grouting

BUSINESS UNIT

Mainmark New Zealand



Summary

Seismic activity caused this Christchurch supermarket to suffer major differential settlement.

Mainmark successfully lifted the building utilising a combination of JOG integrated computer grouting and Uretek Engineered Resin Injection, thus returning the building to acceptable design levels as specified by our client.

The sand foundation ground of the building had liquefied, causing differential subsidence, as a consequence of the earthquakes of 2010 – 2011.

Objectives

To raise the building back to acceptable design levels; and the tension stresses, caused by the differing degrees of settlement, were to be released.

The structural integrity of the building was to be maintained throughout this level correction and uninterrupted store operations were to be maintained at all times.

Solution

JOG integrated computer grouting was employed beneath the load bearing elements from outside the building in daytime.

Uretek engineered expanding structural resins were injected beneath the internal floor slabs and footings, outside of the normal trading hours.

JOG

The building's construction, distribution and degree of lift required, and mitigation against any new stresses being imposed on the structure throughout lifting, were all considerations in the design of the injection array.

Injection locations were installed via 40mm Ø penetrations through the footings.

During each sequence of hydraulic lift, only a relatively small amount of material was injected at each pass, at each of the locations, for gentle, even lifting of the whole structure. The greatest lift in a single area was 180mm.

Uretek Resin Injection

Expanding engineered resins were injected beneath the internal floor slabs first to fill voids and then to raise them. This was done outside of the store trading hours through 16mm Ø holes to minimise impact on the client's business.

The supermarket maintained normal trading throughout the lifting works. The project was entirely successful in restoring levels and eliminating structural stresses.