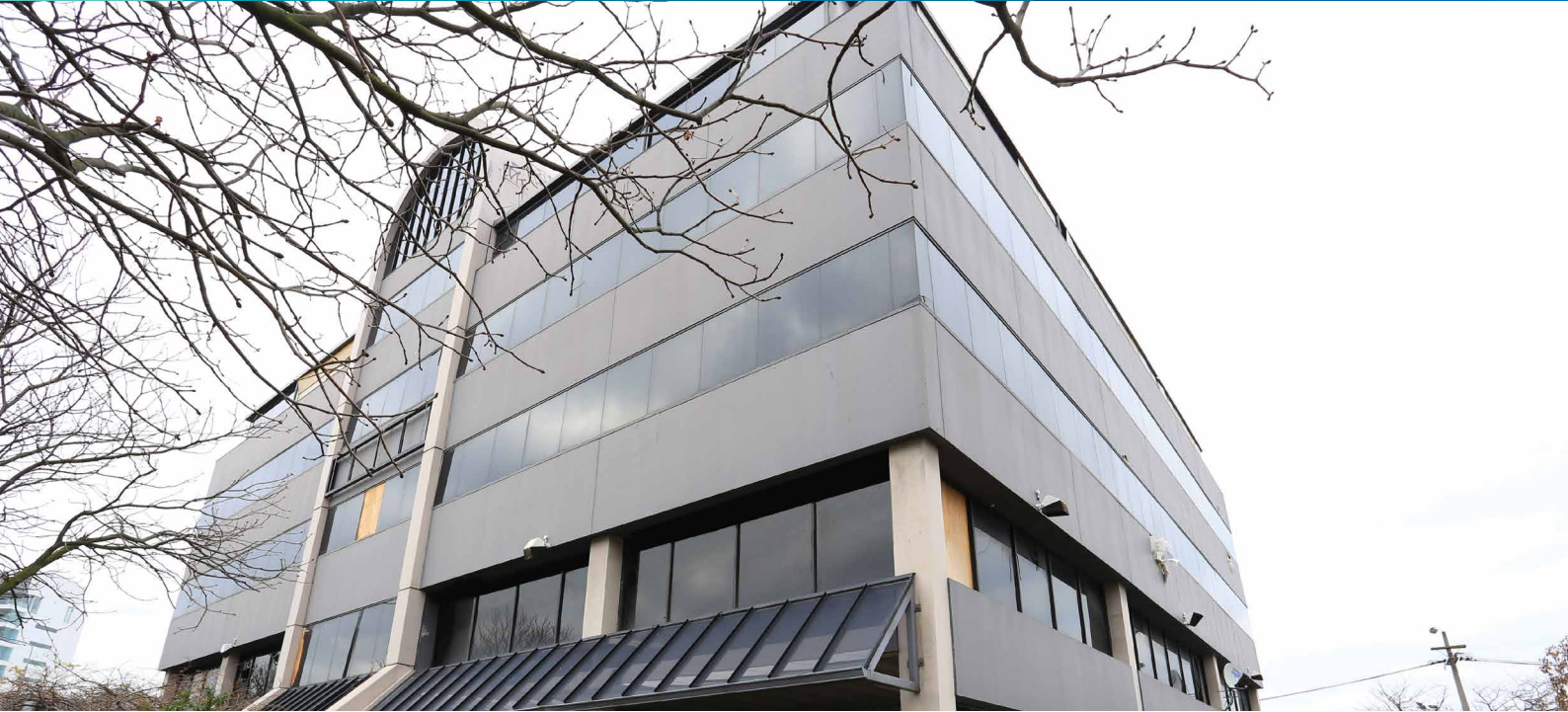


Multi Story Building Re-levelled by JOG



INDUSTRY

Commercial

STRUCTURE

Building

PROBLEM

Earthquake remediation

LOCATION

Christchurch, New Zealand

DURATION / YEAR

33 days / 2014

TECHNOLOGY

JOG Computer
Controlled Grouting

BUSINESS UNIT

Mainmark New Zealand

Summary

The five-storey reinforced concrete building had been damaged during the series of earthquakes that occurred during 2010 and 2011.

The rigid structure had suffered differential settlement across the footprint by up to 160mm from the SE corner to the NW corner.

The central core of the structure rested on the central raft foundation with the external columns founding on a continuous strip foundation around the perimeter.

Objectives

To raise the building back to acceptable design levels taking all 5 storeys in to consideration.

Due to the specific foundation design, extra care was required not to compromise the structural integrity between the core raft slab and external perimeter strip footing.

Solution

Level correction was achieved through JOG integrated computer grouting which has proven highly successful for the level correction of large heavily loaded structures.

The system here incorporated up to 100 injection locations strategically distributed across the footprint of the cores slab and surrounding foundations.

The central core of the building also housed a lift pit that was augmented simultaneously with the rest of the structure.

Multi Story Building Re-levelled by JOG continued

All injectors were connected to the central computer control unit, where the operator individually controlled and manipulated the quantity of grout supplied and cure times to individual injection locations.

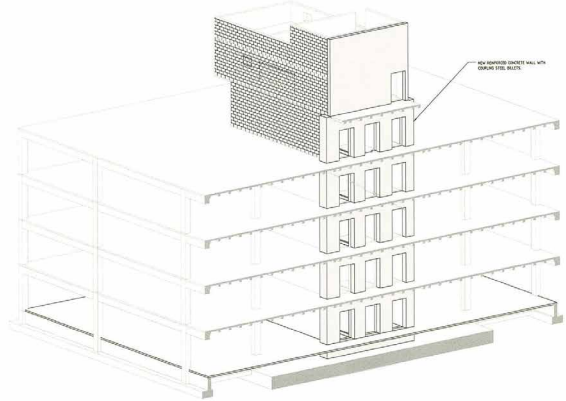
A footprint of two 20ft shipping containers housed the mix/pump and computerised equipment.

During the lift procedure we continuously monitored the building with our automated Trimble monitoring system, which utilised 2x S8 Trimble total stations and 40 prisms relaying data wirelessly back to our central computer.

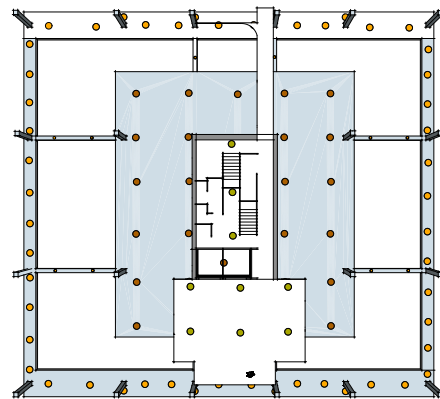
Continuous monitoring provided by the S8 total stations provided the operators with precise data when required to gently raise the building back to the desired target levels within a 33 day period from start to finish.

Other trades were able to continue working on site while Mainmark raised the building and no additional damage was added as a result of the lift.

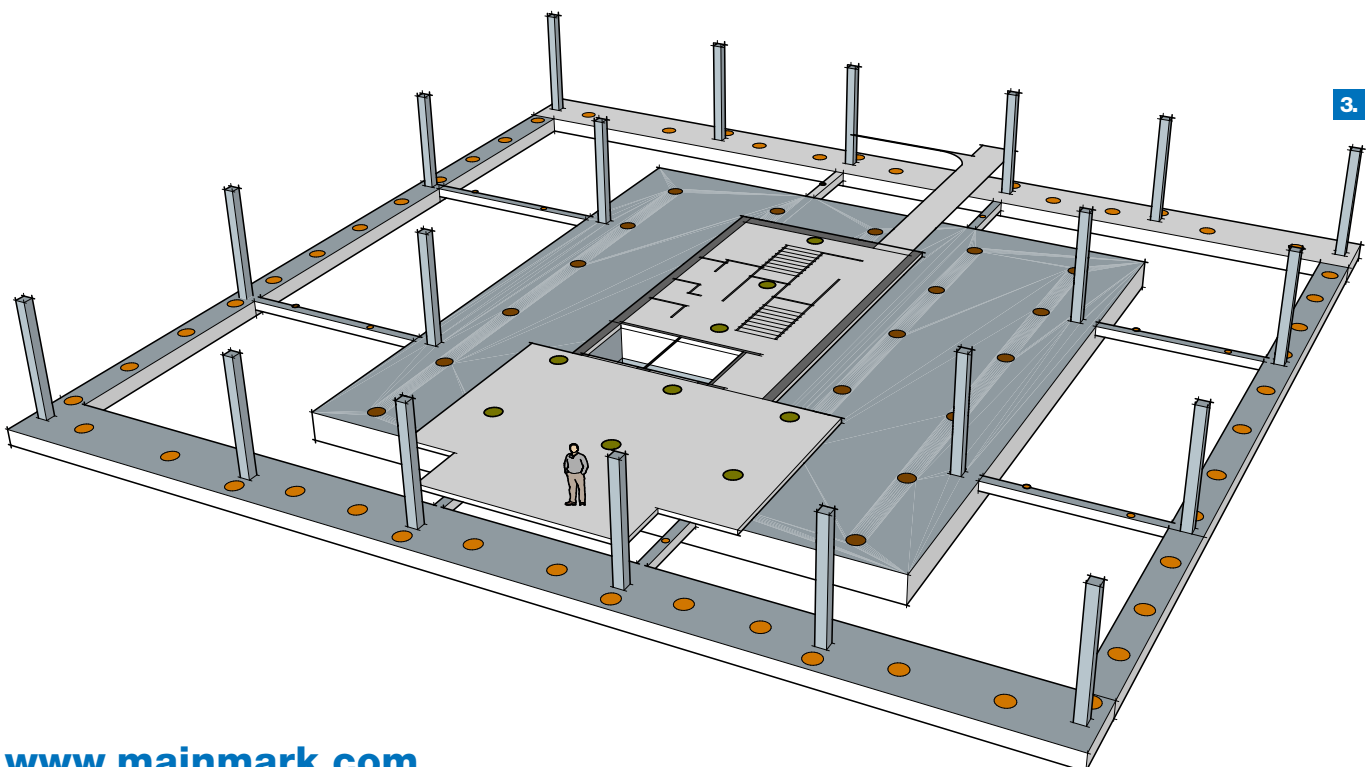
Pictured: 1. Indicative building construction.
2 & 3: JOG injection



1.



2.



3.