

Ground Beneath Heritage Office Strengthened with Urettek®

INDUSTRY

Heritage

STRUCTURE

Heritage Office Building

PROBLEM

Weak Ground

LOCATION

Port Melbourne, VIC,
Australia

DURATION / YEAR

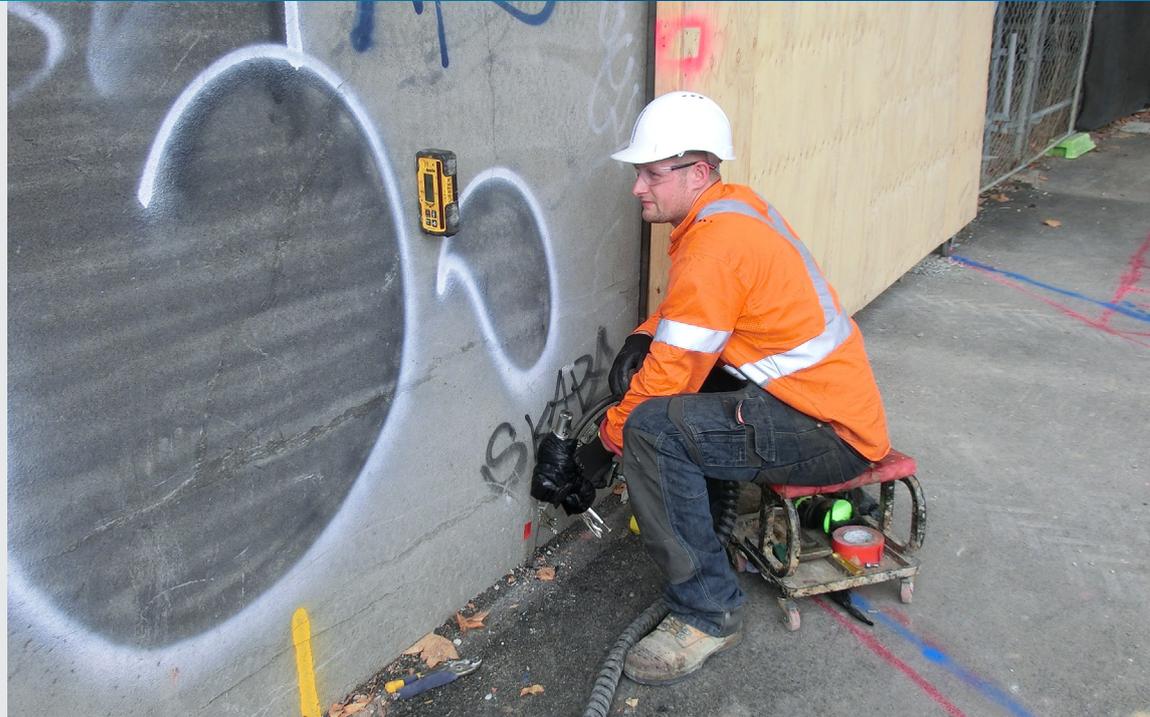
13 days / May 2016

TECHNOLOGY

Urettek®

BUSINESS UNIT

Mainmark Australia



Summary

A derelict 1920s art deco office building in the inner-city, bayside suburb of Port Melbourne was set to be converted into six apartments. Existing soil beneath the footings of the building was not strong enough to support the additional loads required for the conversion.

The ground needed to be consolidated and strengthened, working around difficult soil conditions. Although traditional permeation grouting methods were originally considered, they were found to be unsuitable for the ground conditions.

Instead, Mainmark recommended injecting patented expanding structural resin, Urettek®. The Mainmark team successfully increased ground capacity to desired compaction levels, delivering the project on time and on budget.

Objectives

Mainmark was required to deliver a solution that would strengthen the ground to support higher loads, work to a tight project schedule and coordinate site access with a range of other trades (including carpenters, demolition teams and screw pile contractors).

Site access limitations also had to be accommodated,

with a busy road at the front of the site and building sites on all three boundaries. The working area around the building perimeter to the boundary measured just 1m to 3m.

Solution

Mainmark injected approximately 6,000kg of patented expanding structural resin, Urettek®, to a total depth of 2.5m beneath pad footings and strip footings. This was done in a precise and controlled manner, first injecting the resin to one metre and then in 500mm increments thereafter. Once injected, the resin expanded to compact and strengthen the ground.

The process was closely monitored to achieve specific, engineered results. A dynamic cone penetration test was completed on each column prior to and after (and in some cases, during) injection, until desired compaction levels were achieved. Results were graphed and presented to the client.

As the Urettek® method is clean and involves no water, excavation, cement dust or mess, the project was completed with minimal disruption to schedule and other work groups. The resins used are also non-toxic and environmentally inert.