

Voids Filled Beneath Railway Platform

INDUSTRY

Infrastructure

STRUCTURE

Railway

PROBLEM

Weak ground

LOCATION

Sydney, Australia

DURATION / YEAR

1 day / 2007

TECHNOLOGY

Uretek Deep Injection

BUSINESS UNIT

Mainmark Australia



Summary

Originally built on non-cohesive fill, Platform #2 at Central Railway Station, Sydney, had developed significant voiding in the foundation ground.

Void-filling and re-support of the platform was achieved by Mainmark using Uretek Deep-Injection with expanding structural resins.

The project was carried out in just 3.5 hours in the middle of the night, thus minimising interference with station activities. Use of very small diameter injection tubes preserved the tiled surface of the platform.

Objectives

The objective was to fill the voids completely and densify the foundation ground to re-support the structure quickly and with minimal inconvenience to station services.

Solution

Voids of between 20mm and 70mm were discovered in the foundation ground over an area of approximately 20m². Uretek Deep-Injection points were established across the area, centering on the void locations.

In order to minimise the possibility of damage to the tiled surface of the platform, holes of just 6mm Ø were drilled.

Injection tubes were inserted in these holes and Deep-Injections were made across each part of the area in rotation.

At each point injection was continued until the platform showed a minimal lift of between 1mm and 3mm.

This established that every section of the platform area had been completely re-supported with the foundation ground bearing the mass of the platform above.

The voiding was completely eliminated and re-support of the platform was confirmed.

The program was carried out in one night, between 9:30pm and 1am by a two-man technical team, causing minimal disturbance to station activities and almost imperceptible effect on the tiled surface of the platform.