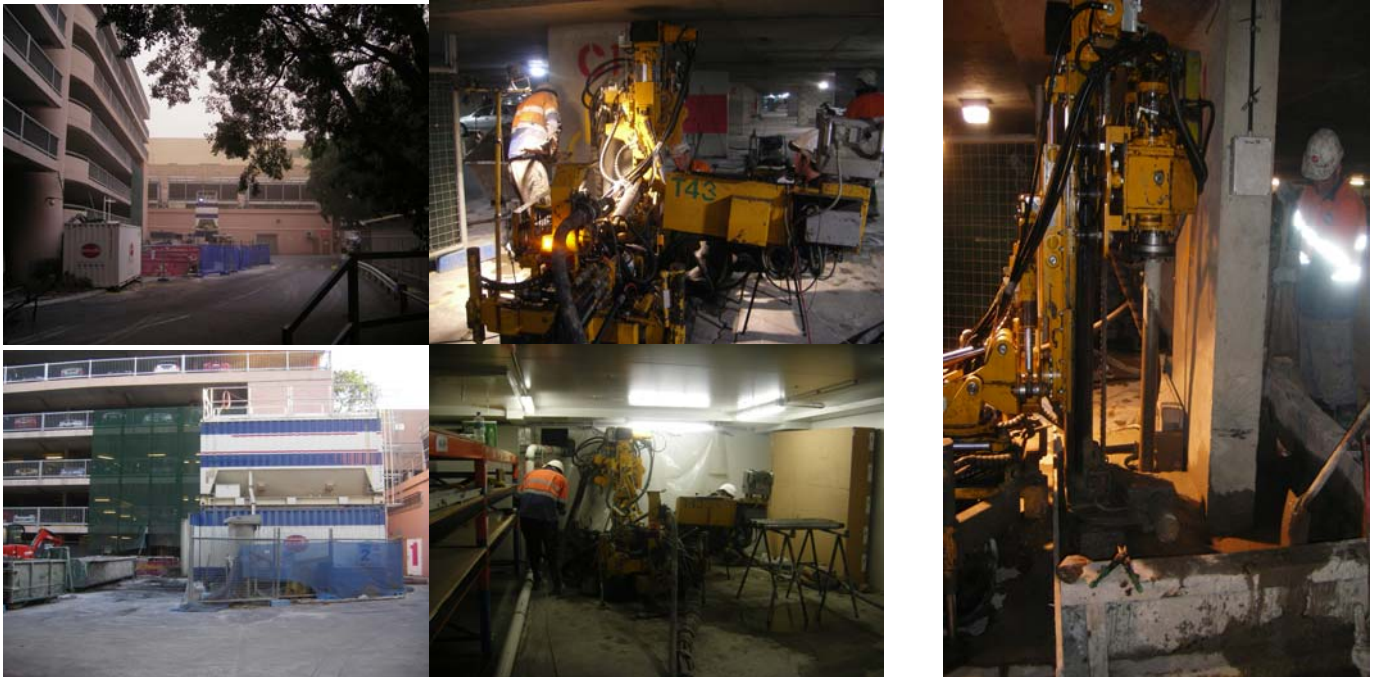


# JUPITERS CASINO CAR PARK

## UNDERPINNING JET GROUTING



MENARD BACHY



**Client:** Jupiters Limited  
**Consultant:** Hyder Consulting Pty Ltd

**Contractor:** Menard Bachy Pty Ltd

### THE PROJECT

The basement foundations of Conrad Jupiter's Casino Car Park have shown a sign of distress for some time as a settlement monitoring program was commenced in 1995 and has continued up to 2008. Monitoring data indicates that settlements in order of 100mm had occurred over a period approximately 13 years.

In order to stop those settlements, Jupiter's Casino had decided to proceed with stabilisations works in all the structural pillars located on the areas where that ground subsidence had occurred.

The ground conditions at the site generally consisted of varying strength sand, silty sand fill to approximately 3.0m below slab level, overlying a layer of peaty clay or organic clay generally 0.6-0.7m thick, overlying sand and silty sand of varying strength down to dense sands generally located below 7.0m.

At tender stage, Hyder consulting recommended that the soils beneath the existing foundations of the car park structure could be stabilised to create a uniform foundation using soil stabilisations techniques such as grout injection under pressure, expanding grout, expanding chemical binders or other techniques.

### MENARD BACHY'S ROLE

Menard Bachy proposed to underpin and strengthen the existing foundations using the jet grouting technique. 4 columns were installed on each structural pillar. In total, 844 jet grouting columns, diameter 600mm and 800mm, 6.195 linear meters with average length of 7.3m per column were installed.

In presence of the sand soils conditions and due to the risk of temporary soils liquefaction during the jetting execution, the columns have been installed in sequence with 24 hours interval for curing period.

During the execution of jet grouting column a monitoring plan was implemented. Survey points were installed on structural pillars. The readings were controlled and recorded using a laser level during the jetting work. Monitoring survey points in between stages of work execution was carried out with a precise automatic level, measured and recorded with accuracy of 1mm.

The project commenced in May 2009 and was completed in 7 months including 5 months running in 24 hours working time. Due to the low car park headroom two mini rigs were used with about 2.1m mast height and 0.8m of rods length.