

## TURBOJET – DEEP SOIL MIXING

The TURBOJET system consists of the injection of predetermined cement grout quantities into the soil whilst utilising contemporary mixing techniques. The drilling and rotation speed of the tool used for the TURBOJET is pre-set according to the soil characteristics, the grout rheology, the injection pressure and the work scope itself (either Consolidation or installation of a cut-off wall).

The cement grout, injected at high pressure and speed, breaks up the soil strata and the ground is thus cut by the high pressure jets mixed by means of blades. The resulting finish is more defined than that of standard jet-grout columns, in fact perfectly formed soil-grout columns are formed using the TURBOJET system.

The whole system is monitored via instrumentation that is positioned within the cab of the rig so that the rig operator is constantly being supplied with real time feedback, which assist in minimising grout 'blow back' and wastage.

### Advantages

- Can be installed in nearly all soil types
- Very quick and precise construction
- Designable strength and permeability
- No harmful vibrations
- More efficient than alternate methods
- Minimal spoil arising
- Less grout wastage than other ground improvement/soil mixing techniques

### Specifications

TURBOJET diameters range from 600mm to 1200mm (dependant upon ground conditions).

TURBOJET depth to 20m.



# PROJECTS

## Lance Creek Dam, Wonthaggi, VIC

**PROJECT OUTLINE:** The Lance Creek Reservoir Dam Upgrade works involved strengthening of the alluvial foundations under portions of the upstream and downstream shoulders, as well as providing additional stabilizing berms to withstand earthquake loading conditions. The reservoir will remain operational during the project at a reduced level, below the temporary upstream platform. **AVOPILING** was engaged as specialist contractor to carry out the foundation strengthening works with Deep Soil Mixing(DSM). 'TURBOJET' technology, was preferred over stone columns and Jet grouting and was introduced for the first time in Australia. Extensive laboratory testing and field trial validation tests have been performed to select the optimum parameters for building DSM columns.



## Cringila Primary School ground remediation, Cringila.

**PROJECT OUTLINE:** In Western Ridge Playground at Cringila Public School a recorded temperature of 360°C were experience. Investigations identified that the coal wash (which has been used in 1970's as a general fill for construction of the playground) was burning 12-14m underneath the surface.

**AVOPILING SCOPE OF WORKS:** Design and Construction of cut off wall using deep soil mixing (DSM) with TurboJet Technology (1,000mm dia at 850mm cc interlocking each other to ensure efficient cut off) around the combustion zone. Clay capping of the surface plus nitrogen injection to replace oxygen in the fill. Reduce the ground temperature to 26°C and maintain this temperature within the entire contract area for a period of at least 3 years.



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