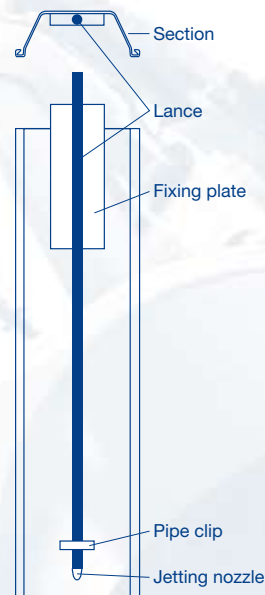


Water Jetting

Water Jetting is primarily used to enable pile installation with pile pressing techniques into ground conditions that otherwise would be unsuitable due to either dense sands/gravels or stiff clays. A secondary benefit of water jetting is to significantly improve the rate of pile installation and hence reduce costs, as well as optimising the sheet pile section required.

Water jetting is carried out via a high-strength steel jetting lance pipe attached to the inside of the sheet pile 'pan', as shown right.

The jet is operated at low pressures in the initial stages of the installation. The jet is operated continuously throughout the installation to maintain a clear jet nozzle and the pressure adjusted in response to the ground resistance to enable the optimum penetration of the pile to be achieved with a minimum disturbance to the structure of the ground.



The Effects of Water Jetting

When piles of any type are installed into granular soils, most of the resistance to pile penetration results from the creation of a pressure bulb in the soil at pile toe level. Water jetting applied close to the toe of the pile during installation will reduce these effects.

- **In fine to medium granular soils**
To increase local pore water pressure to reduce inter particle friction.
- **In coarse granular soils**
To oscillate granular particles reducing resistance to pile penetration.
- **In cohesive soils (clays)**
To reduce adhesion of the pile to the clays, only while jetting, thereby reducing the pressing resistance of the soil.

When jetting in close proximity to sensitive structures there is some possibility of washing out fines, particularly in granular soils, which could lead to settlement. This risk should be addressed prior to adopting this technique.



ADVANTAGES

- Enables pile pressing into difficult soils e.g. very stiff clays and granular strata
- Improves installation rates
- Optimises pile section choice for better economy
- Very short term disturbance to the soils
- Can also be used with water jetting