Soldier Piles

Soldier piling is a retaining wall solution that is effective in ground conditions which range from stiff clay to rock where it is not practical to drive lightweight sheet piling. Soldier Piles can be used as either temporary shoring or permanent walls and may also be designed to carry building loads.

The suitability of a soldier pile system is determined by review of geotechnical data and the method of construction required by the client in conjunction with the advice of ASP’s engineers.

Methodology

Holes are drilled with an auger around the perimeter of the proposed excavation to a depth, diameter and spacing determined by an engineered design. Concrete is pumped into the holes and steel columns or reinforcing cages are lowered centrally into the piles while the concrete is still in liquid form. The resulting reinforced columns are known as ‘soldiers’.

Once the concrete in the soldiers has set, the excavation is carried out in stages in accordance with geotechnical advice. The height and width of the vertically excavated face between the soldiers is restricted to ensure that the exposed ground can ‘self-support’ safely in the temporary condition. Mesh reinforcement is either welded directly between the steel soldiers or lapped to dowel bars which are drilled into the sides of the exposed concrete soldiers. A sprayed concrete wall is applied to secure the sections of retaining wall between soldiers and once set will allow the next stage of excavation to occur.

Timber sleepers may be utilised in soldier pile systems to stabilise non-cohesive (granular) strata which cannot self support in the temporary condition. Timber sleepers are readily available and prove to be both cost effective and efficient due to a quick installation process.

Advantages

Cost-Effective and Flexible: Soldier piles can be a cost-effective solution. Based on the soils report, they are often the best shoring option for clay and low strength rock profiles where light weight sheet piling would be inefficient. ASP seeks the most cost-effective and efficient retention system for the client, whilst considering site constraints and proposed construction processes.

Quiet: With minimal noise and vibration, Soldier pile systems can be installed with little disturbance to neighbouring properties, allowing the client peace of mind.
Above: The use of a soldier pile wall in a clay and rock profile excavation.

Left and below: Examples of soldier pile walls in various stages of construction.