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NATIONWIDE

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ASP Piling is one of the most experienced and comprehensive providers of piling and anchoring solutions to the construction industry in Australia. Our sister company Australian Dewatering Systems is the leading dewatering service provider with Australia's largest fleet of water treatment settlement tanks.

Secant Piling



Secant piling is an ideal solution to create a retaining wall which inhibits the passage of water and is particularly effective where groundwater control is complicated by stratified ground. Popular applications include beachfront scour protection walls and basement 'groundwater cut-off' walls.

The overlapping concrete piles that form a secant pile wall create a water resistant barrier which can eliminate issues of scouring caused by tides, wave action and weather. Secant pile walls can function as temporary or permanent retaining walls and may even be designed to support vertical loads.

Secant piling can be exposed as a finished wall or have a sprayed concrete wall applied to the surface to achieve a more aesthetic and waterproof finish.

Another great advantage of secant piling is that the installation process involves significantly less noise and vibration than sheet piling. Secant Pile walls may be designed as freestanding cantilevers or supported with ground anchors or bracing depending on the specific application, loads and soil conditions.

Methodology

Secant pile walls consist of a series of interlocked piles which alternate between 'hard' (reinforced structural piles) and 'soft' (unreinforced low strength piles).

Prior to installation of piles, a temporary guide beam is constructed to ensure accuracy of pile spacing and to assist verticality during pile installation. A continuous flight auger (CFA) with a hollow core is drilled to depth through the guide beam. As the auger is extracted, liquid grout is pumped through the hollow auger under pressure to replace the column of soil as it is removed.

The soft 'female' piles are installed first in a sequence which ensures that the liquid grout from the previous pile does not migrate as augering takes place for the subsequent pile. Once all alternate soft piles are installed and are set, the hard 'male' piles are drilled by overcutting the neighbouring soft 'female' piles to create an interlocked wall.

While the hard pile is still in liquid form, a reinforcing cage or structural steel beam is lowered into the pile with spacers to ensure that the reinforcement is located centrally within the pile.

The finished product is an interlocked concrete wall where the hard piles perform the structural work and the soft piles resist the movement of soil or water through the wall.



ASP Secant Piling



Advantages

Flexibility: Secant pile walls can be constructed near existing infrastructure such as roads and buildings without issues caused by noise and vibration. They can also be finished as a permanent feature.

Versatility: Secant piling is the ideal solution for environments where there are specific geotechnical challenges such as sand, stratified layers and groundwater or where erosion due to tidal influences is a major factor.

Cost Effectiveness: Secant piling can be installed to form a 'cut-off' wall which may reduce or eliminate the need for ongoing site dewatering during basement excavation and construction. The secant piling can be utilised as the permanent structural wall and may be designed to support building loads.

Above left: Drilling for the hard piles. As the auger is withdrawn, grout is pumped in.

Above right: Lowering and final positioning of the reinforcement.

Main photo below: A completed portion of the secant pile wall.



Images: This secant wall was built to protect the Cudgen Surf Life Saving Club from erosion at Kingscliff, NSW.



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