METRO PILING

SECANT PILED RETAINING WALL

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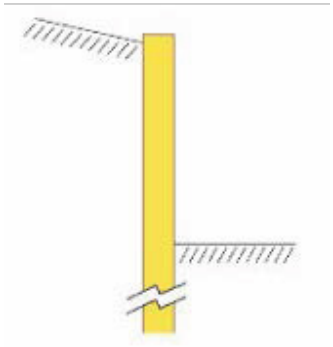

Secant pile walls are composed of both reinforced and non-reinforced piles. Typically, the non-reinforced piles are installed first and are made of cement/bentonite or low-strength concrete. Following this, the reinforced piles are placed, with the reinforcement consisting of either cages or I-beams.

When strict deflection limits are required, secant pile walls can be supported by anchors or strutting systems, which can be either temporary or permanent solutions.

DESCRIPTION

A secant piled wall is constructed by installing a series of interlocking reinforced concrete piles, where each pile partially overlaps with the adjacent one. Typically, Continuous Flight Auger (CFA) techniques are used to install the piles, with the spacing set at the pile diameter plus an overlap of 100mm to 150mm to ensure a secure, watertight connection. In situations where access is restricted, alternative mini piling methods can be employed to facilitate the installation of the secant piles, providing flexibility in challenging construction environments.

Secant piled walls are effective as embedded retaining structures, especially when the groundwater table is below the excavation level. Since the piles in a secant wall overlap, there are no gaps between the pile elements, effectively preventing groundwater flow through the wall. For permanent installations, additional measures such as a lining wall or ground treatment may still be required to manage perched groundwater flow from precipitation or to ensure stability and prevent potential ground loss.

Secant piled walls are a flexible solution for many construction challenges. They are especially useful when site conditions, like deep excavations or unstable ground, make simpler methods unsuitable.

APPLICATIONS

- Residential
- Commercial
- Infrastructure

ADVANTAGES

- Designed in-house
- Can be constructed close to adjacent structures
- Minimal vibration
- Cost effective
- Highly adaptable plan geometry to maximise

INSTALLATION

Secant piled walls provide effective solutions for various construction challenges. They are often used when site conditions, such as deep excavations or challenging ground characteristics, make simpler methods impractical.

Secant piled walls not only provide ground support but can also bear superstructure loads. If the vertical load exceeds the wall's capacity, the piles can be extended to a greater depth to handle the additional load.

For secant piled walls, additional depth beyond what is required for stability can be achieved by extending the wall piles with unreinforced plain concrete, as long as the load remains in compression.

The depth of secant piled walls is determined by the capabilities of our rigs, whether using CFA or restricted access rigs, enabling us to construct pile walls with diameters up to 750mm. Another limiting factor is the length of the reinforcement cage, which is typically inserted into the fresh concrete to depths ranging from approximately 15m to 18m.

TECHNIQUE CAPABILITIES

SPECIFICATION	FROM	TO
Standard pile size	300mm	750mm
Typical retained height	1.5m	10.0m
Practical depth	4m	18m

· dependant upon temporary and permanent support conditions ·· maximum pile reinforcement depth, unreinforced piles length may extend up to 27m

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Email: enquiries@metropiling.co.uk