

**TECH NOTE**

**Jim Caruth**  
**P.Eng.**  
*Technical Services  
Manager*

## **Secant Pile Construction Waterproofing**

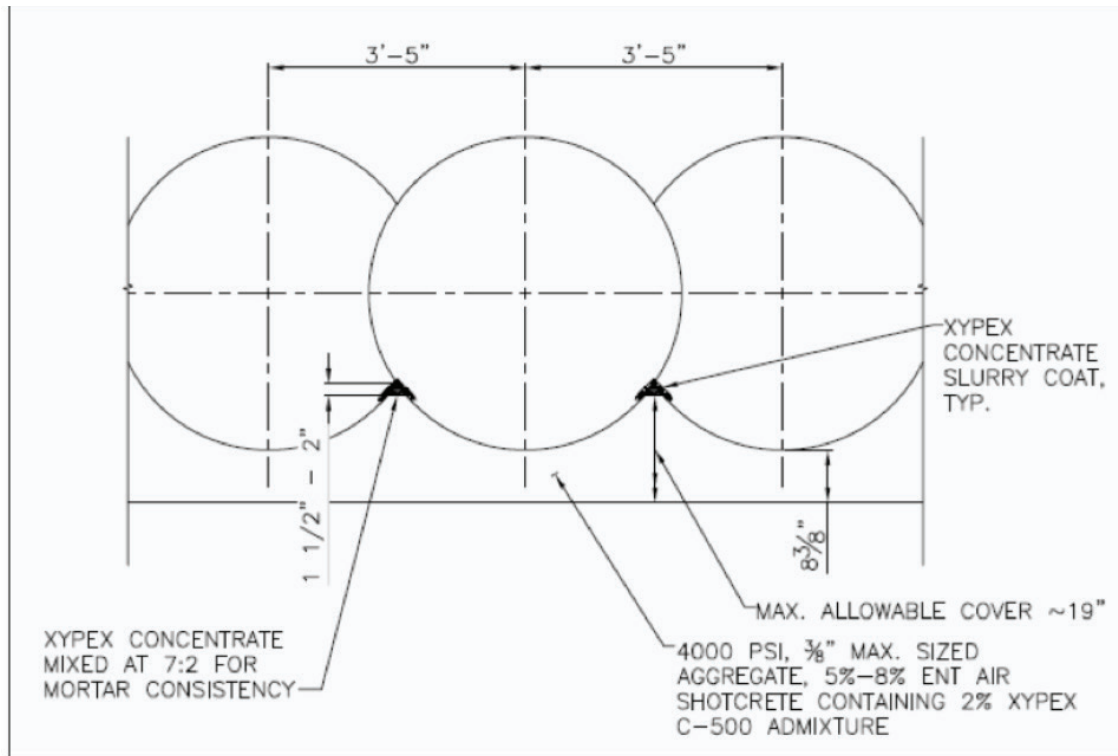
Secant pile construction is a technique used to build underground walls without the need to first excavate. It is a commonly used method for creating walls for tunnels and for deep U-shaped below grade guideways. Secant piles are also suitable for foundation wall construction in dense urban settings where excavation size is critical.

Below is a photograph and a plan diagram of a secant pile wall giving a basic overview of how secant piles look and how they are placed. The reinforcing and other details are not included in the schematic as these are not part of the Xypex waterproofing system. This said, reinforcing and other steps must be taken to ensure that any cracks that form are less than 0.5 mm in width and are non-moving.

Several wall finishes are used in constructing a final secant pile assembly. These include: (1) a simple pressure wash of the surface of the secant piles; (2) a thin section topping over the entire surface of the secant piles to smooth out the surface but maintain the rolling profile; and (3) a final wall or a full depth concrete cover over the entire face thus leaving a flat surface as the finished wall.



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The above diagram illustrates a Xypex-based waterproofing system that was used successfully to waterproof a secant pile below-grade wall in a tunnel project (Mitchell Interchange, Milwaukee, Wisconsin, USA). In this case, the assembly incorporated a "shotcrete cover" that contained Xypex Admix. However, in other cases, such as the Esplanade Theatres on the Bay project in Singapore, Xypex Admix was used in "cast-in-place concrete" poured against the secant walls. In some projects the Xypex Admix has also been added to the pile concrete itself.

Secant pile construction is a relatively new and growing technology for the construction of underground walls. Xypex products provide a cost effective and relatively easy way to waterproof this type of underground structure.

For more information on waterproofing of secant pile structures contact your local Xypex distributor.