



Balfour Beatty Ground Engineering (BBGE) is able to combine a variety of piling techniques for excavation support projects encompassing bored pile retaining walls, diaphragm walls and sheet pile walls.

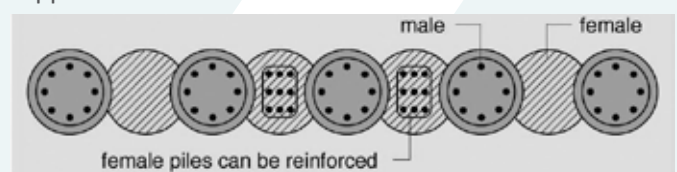
## // BORED PILE RETAINING WALLS

Either open bored or CFA techniques can be used to create retaining structures to cater for all ground and water conditions. There are three broad types of wall. Essentially primary (female) piles are installed at suitable spacing to allow secondary (male) piles to be installed between.

### Secant Pile Wall (Hard / Hard)

Secant walls have a positive interlock between adjacent

concrete piles, and so are particularly suitable where high water retention is a consideration. Both male and female piles can be reinforced enabling high lateral loads to be supported.

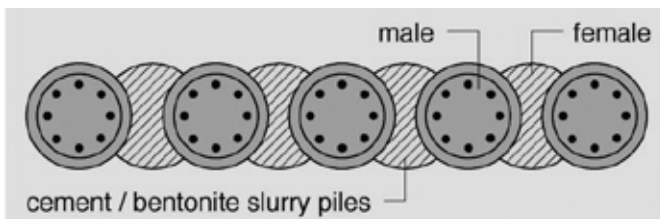




With land space becoming ever more expensive, installing a retaining wall as part of the foundation design provides the option to have a basement below the building and utilise the space beneath surface level.

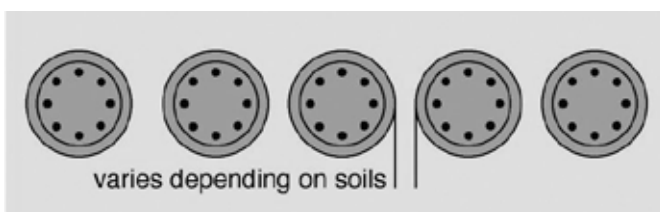
### Secant Pile Wall (Hard / Soft)

This wall is used where considerations of retained height and water retention are less critical. Female piles use self hardening slurry as a water and fines retaining membrane.



### Contiguous Pile Walls

Used in locations where water retention is not a consideration and soils are cohesive, contiguous bored walls dispense with intercut piles completely.



### // KINGPOST WALLS

This system uses a kingpost (open bore filled with concrete to form a base for steel H-pile). Panels of timber sleepers, precast concrete or steel sheets can then be slotted into the H-piles to form the retaining wall. For more information see our king post wall datasheet.

### // DIAPHRAGM WALLS

Diaphragm walling is a process of forming cast in-situ reinforced concrete underground walls, from the surface in sections (or panels). BBGE's experience with diaphragm walls is extensive with projects ranging in size from 2,000m<sup>2</sup> to 50,000m<sup>2</sup>, and from a few metres to as much as 55m deep. For more information see our Diaphragm Wall datasheet.

### // SHEET PILE WALLS

Sheet pile walls consist of driven interlocked steel panels. Each pile is engaged with and driven in alongside the previous one, thereby creating an impervious wall. Sheet pile walls are commonly used in the marine environment for the construction of docksides and piers, and on inland waterways to reinforce canal and river banks. Balfour Beatty Ground Engineering (BBGE) specialises in Silent Sheet Piling through a joint venture with Giken, for more information see our Giken piling datasheet.

### FOR FURTHER INFORMATION CONTACT:

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