

# Slurry wall



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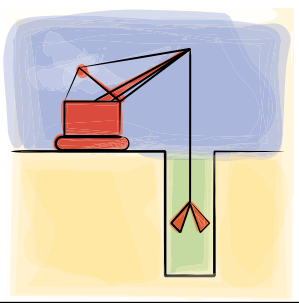
This technique is typically used to build cut-off walls to prevent the flow of water. A trench is excavated with a backhoe. The trench is kept full of a bentonite slurry at all times to prevent the wall of the trench from collapsing.

The excavated materials are blended onsite with a slurry made of bentonite and water with typically addition of fines or aggregates to obtain an homogeneous stable soil-bentonite slurry with specified hydraulic and permeability characteristics.

Soil, bentonite, water, cement (if required) are mixed on site using a bulldozer in a designated area or on the ground to obtain an impervious mixture.

After blending, the trench is backfilled through gravity flow with the soil-bentonite slurry which replaces the bentonite slurry used to stabilize the trench. The backfilling is performed in phases with a slope of roughly 6H:1V. The length of excavation is therefore 6 times longer than the depth of the slurry wall.

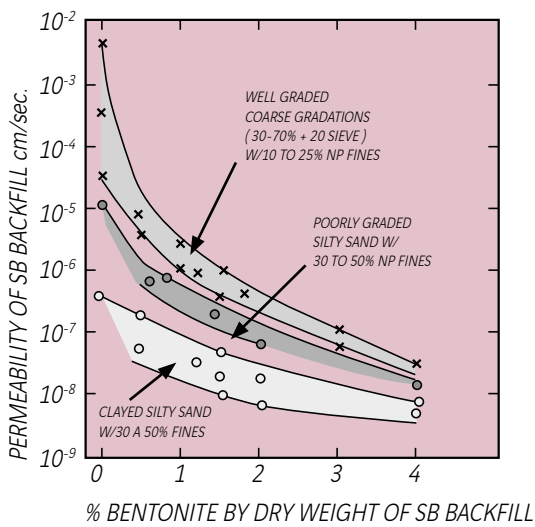
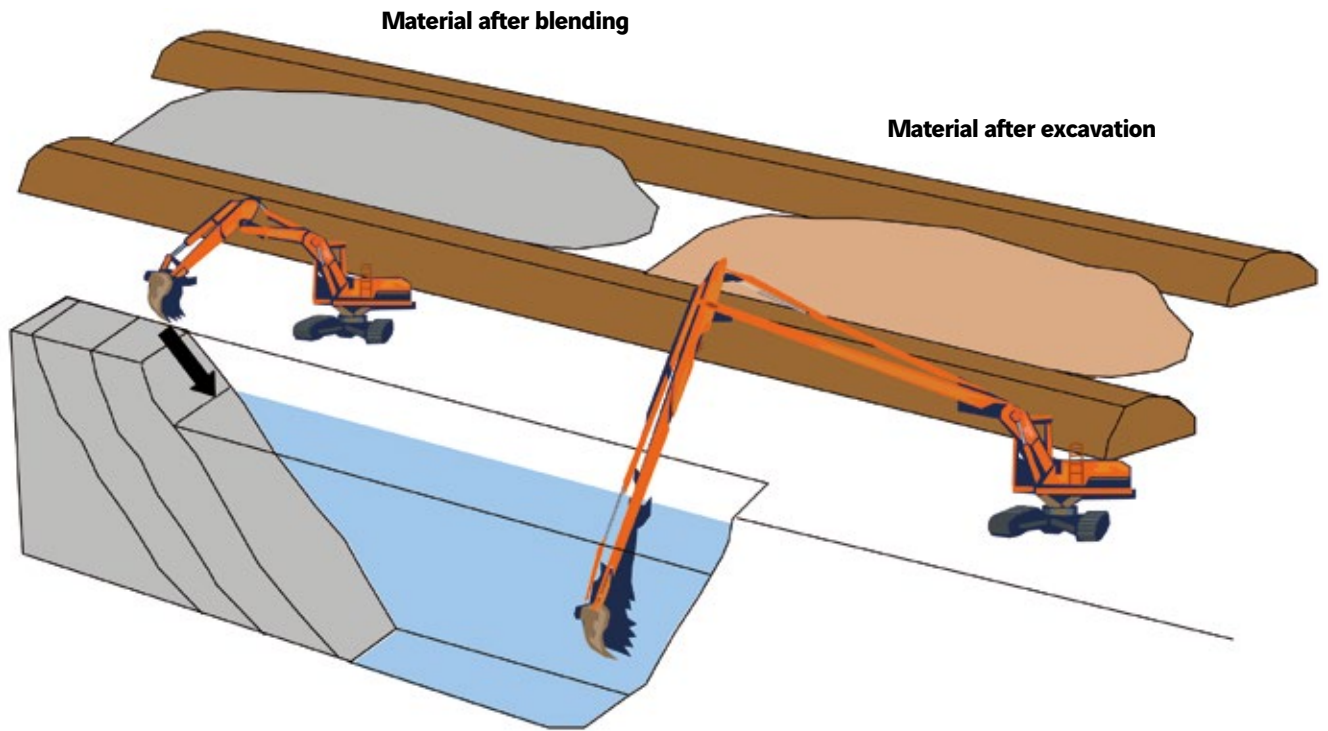




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## Implementation and methods

On-site crude blending is adequate to obtain an homogeneous slurry as long as the mixing time is long enough to warrant full blending of the aggregates in the mix.



The final blend shall be stable (no sedimentation) and shall have a minimum slump of 10 to 15 cm for suitable backfill of the trench.

The hydraulic properties of the backfill depend mainly on the following parameters:

- Well-graded grain size distribution;
- Fine content between 20 and 40%;
- Bentonite content between 1 to 8%;
- The water content between 20 to 35%.

An adjustment of the grain size distribution of the mix by incorporation of aggregates (sand and gravel) and/or fines might be necessary.



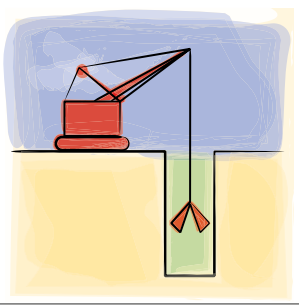


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*Slurry wall – Tempe Tip (Australia).*







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## Advantages

- High production rates can be achieved as the excavation of the trench is performed using backhoes (about 200 m<sup>2</sup> per shift). Depth of 35 to 45 m can be reached;
- Permeability for typical thickness of 0.6 to 1.5 m is relatively low usually between 10<sup>-7</sup> and 10<sup>-9</sup> m/s. Nevertheless, soil-bentonite slurry walls are non-structural barriers and they are highly erodible. As such, they cannot resist any severe hydraulic gradients. When it is necessary to maintain traffic of construction equipment across the wall, a protective load transfer platform is usually placed on top of the wall;
- Thanks to the re-use of excavated materials for the wall slurry, very little spoils are generated, considerably reducing the disposal of spoils;
- Soil-bentonite walls can only be performed on large accessible areas. The mixing process requires a wide platform, large enough to create a material stockpile buffer and allow traffic of large blending equipments.

