

CHANA PONGPOTAKUL : PROPERTY OF CEMENT-BENTONITE SLURRY MIXED FOR
PERFORMING THE DIAPHRAGM WALL JOINT IN BANGKOK METROPOLIS. THESIS
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This thesis aims to study the properties of cement-bentonite for performing the diaphragm wall joint. The cement-bentonite is prepared by mixing the bentonite slurry that contains bentonite of 5% by weight with the ordinary portland cement type I. The mixing ratios by weight of bentonite slurry and cement are 3 : 1, 3.5 : 1, 4 : 1, 4.5 : 1 and 5 : 1.

The result shows that in case of cement ratio is increased, the strength of cement-bentonite is also increased while the coefficient of permeability is decreased. Both strength and coefficient of permeability are time dependent for the mixing ratio 3 : 1, 3.5 : 1 and 4 : 1 but are time independent for the ratio 4.5 : 1 and 5 : 1. This is related to the domination of calcium silicate hydrate in the samples inspected by X-ray diffraction technique. When the hydraulic gradient is increased, the coefficient of permeability of cement-bentonite is also increased.

In case of estimating the depth of excavation at the diaphragm wall joint, based on the assumptions of limit equilibrium and distribution of friction between contact surface of cement-bentonite and diaphragm wall, with surcharge of 5 ton/m^2 and safety factor of 1.25, the maximum excavation height is summarized as follow :

Mixing ratio	Height of excavation, meter
3 : 1	20
3.5 : 1	11
4 : 1	6.5
4.5 : 1	4.0
5 : 1	2.5