

Lime stabilisation of soil in the Vinge urban development area, Denmark

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Vinge is the name of the largest urban development area in Denmark, covering 370 hectares and planned housing for 20,000 residents. Construction started in the spring of 2015 and during the next few decades the town will emerge. An important aim of the Vinge development is to be sustainable, e.g. by reducing CO₂ emissions and raw material consumption. An obvious solution is to minimise soil redistribution over large distances and instead reuse the soil in the construction projects on-site. Lime stabilisation is a well-known technique for improving clay soil properties with respect to construction; however, there is currently disagreement on whether this technique would be suitable for the Vinge soil (predominantly clay till). The aim of this project is therefore to test whether it would be possible to reuse the removed soil in construction projects on-site by applying lime stabilisation. In this project we have made initial classification tests of the soil, proctor tests in order to test the optimal water content, CBR (California bearing ratio) tests and unconfined compression tests. Furthermore pH and mineralogical aspects were investigated on both natural and lime-stabilised soils.

References:

www.byenvinge.dk
Bell, F.G. 1996 Lime stabilization of clay minerals and soils, Engineering geology 42, pp. 223-237.