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Methods of improvement of engineering properties of peat - A comparative study

The need of the improvement of engineering properties of peat is higher with the development, especially in Colombo and suburbs of Sri Lanka, since lands with good sub soil conditions are already used up. Therefore development of cost effective methods for strength and stiffness characteristics of peat is the major challenge for the Geotechnical Engineers. The improvement methods of pre-consolidation and deep mixing with cement or lime were studied through a series of laboratory tests conducted for peats with different degrees of humification. Improvements in both primary and secondary consolidation characteristics were studied. Effectiveness of the techniques were compared considering the behavior of; a completely remoulded with the addition of 5%, 10% and 15% by weight and peat specimen remoulded with the addition of 15% lime. It was shown that the pre-consolidation causes a significant improvement in both primary and secondary consolidation characteristics irrespective of the degree of humification. No significant improvement was shown in fibrous peat even after mixing of 15% cement or 15% limes. A significant improvement was shown in all types of peats. Some improvements of untrained shear strength were also shown with the addition of cement and the degree of improvement was higher over the amount of cement addition and over the curing time. However, the improvement was not as high as reported case histories for inorganic clays.