

SIMPLIFIED DESIGN MODEL FOR PILED EMBANKMENTS

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SUMMARY

Traditionally, piled embankments are designed either using guidelines based on simplified limit-equilibrium theories or using advanced Finite Element Analyses (FEA). Both methods have limitations, the first due to their simplicity leading to inaccurate predictions. Whereas, the second FE-based methods are overly complex (time-consuming to set up and to run), hence restricting industry adaptation. The recent research findings presented herein will offer an alternative displacement-based method to estimate the mean and differential settlements at the top of the embankment. Salient details, such as the interaction between embankment, piles and the soft soil below are captured with high fidelity. The efficiency and performance of the new method will be benchmarked against a fully detailed coupled Finite Element Analysis. The results demonstrate the great potential of the new method for engineering practice. Finally, the suitability of the method for Swedish soft soils will be discussed.