Reliability Based Optimal Design of Laterally Loaded Pile with Limited Residual Strain Energy Capacity

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Abstract : In this study, a general approach to the reliability based limit analysis of laterally loaded piles is presented. In engineering practice, the uncertainties play a very important role. The aim of this study is to evaluate the lateral load capacity of free head and fixed-head long pile when the plastic limit analysis is considered. In addition to the plastic limit analysis to control the plastic behaviour of the structure, uncertain bound on the complementary strain energy of the residual forces is also applied. This bound has a significant effect for the load parameter. The solution to reliability-based problems is obtained by a computer program which is governed by the reliability index calculation.