**An Iterative Recovery Stress Cell-Based Smoothed Finite Element Method for The Stability of Slope**

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**Abstract.** This paper proposes a lower-bound limit analysis procedure that incorporates a so-called Recovery Stress Cell-based Smoothed Finite Element (CS-FE) method into an elastic compensation method for analyzing the stability of the slope. More specifically, the CS-FE approach with one sub-cell, which is a complete remedy from volumetric locking phenomena, is enhanced by the stress recovery algorithm simultaneously satisfies the yield conformity and the admissible stress condition over the whole domain. At variance with the extremely time-consuming full elastic-plastic cyclic loading analyses, the proposed method solely conducts a series of linear elastic solves. What is more, the approach accurately predict the ultimate loading capacity of the two-dimensional slope under the stability condition and the collapse mechanisms at plasticity failures. Standard numerical examples of slope stability with various distances from footing to the edge of the slope is adopted to illustrate the performance of the present limit analysis scheme.

**Keywords:** Limit analysis, Recovery Stress, One-cell CS-FEM, Mohr-Coulomb material, Lower-bound.