

## CYCLIC CONSOLIDATION ANALYSIS OF CLAY USING BOUNDING SURFACE MODEL

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This paper presents a 3D Bounding Surface constitutive model (BSM) capable of predicting the behaviour of elastoplastic porous materials under various monotonic and cyclic loading conditions. Application of the BSM in investigating the consolidation response of cohesive soils under cyclic loading is studied. Main components of the model such as loading and bounding surfaces, hardening rules, and plastic flow rule are described in detail. A numerical framework based on the theory of mixtures is also presented for the nonlinear dynamic analysis of flow and deformation in porous media [1]. Finite Element method is employed as the global solution to solve boundary value problems [2, 3]. A column of clayey soil under cyclic consolidation is simulated, and variations of pore water pressure and displacement are investigated. Results are verified with some existing experimental data where very good agreement is observed. It is demonstrated that the BSM is capable to rigorously simulate the cyclic consolidation response of clay.

### REFERENCES

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