# Generalized Bounding Surface Framework for Modeling the Anisotropic, Time Dependent Behavior of Cohesive Soils

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The anisotropic and time-dependent nature of cohesive soils has been well established experimentally. The mathematical modeling of the anisotropic, time-dependent response of cohesive soils epitomizes the traditional struggle between simplicity of formulation and robust predictive capabilities. In the past, the approach taken to model such response consisted of the combination of an anisotropic rate-independent formulation with an isotropic time-dependent formulation. While such models accounted for the anisotropic and time-dependent nature of cohesive soils, they are typically rather complex in nature and involve large numbers of model parameters. The determination of typical values for these parameters from commonly used laboratory experiments is by no means a simple undertaking.

A model has recently been developed [1] that attempts to simplify the manner in which the anisotropic, time-dependent response of cohesive soils is simulated. This model is based on the concept of the bounding surface in stress space [2]. It combines aspects of earlier anisotropic rate-independent formulations [3] along with the time-dependent elastoplastic-viscoplastic model for isotropic cohesive of [4].

This paper presents an overview of the present anisotropic, time-dependent model, with emphasis on improvements made since its introduction and on a generalized framework that is shown to simplify to various earlier bounding surface based formulations for cohesive soils. Finally, the predictive capabilities of the model are verified by simulating the experimental response of select clays.

**References**

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