Slope Stability Analysis

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Problem Statement

The Slope Stability Program (SSP) is intended to be an introductory educational tool for demonstration of slope stability issues, slope stability analysis software, and the process of assessing and designing stable slopes to students at an undergrad university level. The SSP program is to exhibit the following characteristics. A program that can perform stability analysis of a slope under any and all of the following conditions of:

- a slope composed of multiple heterogeneous layers of soil each with individual properties,
- slope/layers of any specified geometry,
- a water table interacting with the layers of the soil introducing a mix of dry and saturated soil conditions,

Analysis will evaluate a stability metric, *Factor of Safety*, as an indicator of the stability of the slip surface under investigation. Employ an efficient method to find the critical slip surface with the lowest stability metric, including slip surfaces of non circular geometry. For the critical slip surface evaluate the displacement of the slope and the local stability metric along the critical slip surface.