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## **Landslide simulation using limit equilibrium and finite element method**

### **Abstract**

Slope stability analysis is one of the ancient tasks in the geotechnical engineering. There are two major methods; limit equilibrium method (LEM) and finite element method (FEM) that were used to analyze the factor of safety (FOS) to determine the stability of slope. The factor of safety will affect the remediation method to be underdesign or overdesign if the analysis method was not well chosen. This can lead to safety and costing problems which are the main concern. Furthermore, there were no statement that issued one of the analysis methods was more preferred than another. To achieve the objective of this research, the soil sample collected from landslide at Wang Kelian were tested to obtain the parameters of the soils. Then, those results were inserted into Plaxis and Slope/W software for modeling to obtain the factor of safety based on different cases such as geometry and homogenous of slope. The FOS obtained by FEM was generally lower compared to LEM but LEM can provide an obvious critical slip surface. This can be explained by their principles. Overall, the analysis method chosen must be based on the purpose of the analysis.

### **Keywords**

Factor of safety; Finite element method; Limit equilibrium method; Slope stability