Abstract

The damages caused by landslides to engineering structures, agricultural land and natural environment is a threat to development on hill slope terrain. Therefore, determination of slope stability and obtaining information on the direction and velocity of dislocation of soil masses and on the change in their stress state must be clearly understood to plan landslide control measures.

Engineering geological methods are of little use for detecting dislocation of soil masses at different depths. However, geophysical methods can be adopted to overcome this difficulty since displacement of deep magnetic position markers and anomalies of the natural electrical field can be determined. The Kahagalle landslide was selected to carry out the monitoring procedure using geophysical methods.

VES curves show that the resistivity interpreted for the bedrock is comparatively high. Low resistivity interpreted for the basements are representative of limestone based on the geo-electric sections produced, the overburden in the area may consist of two to three layers having an appreciable resistivity contrast.

The northeast corner of the landslide was suspected to be the most active portion. Two rectangular portions were marked on the selected soil mass and at the center of each portion, a strong cylindrical magnet was buried.

Geo-magnetic values were taken along the traverses established within the rectangular portions before and after the burial of cylindrical magnets. With the help of the magnetic profiles produced, total magnetic intensity images were produced using advanced computer software. Measurements were continued several times during the research project.

After overlaying the available results of the geo-magnetic survey, it can be concluded that the Kahagalla landslide is moving towards the northeast. Calculation of the velocity of movement could not be done properly due to lack of readings. However, to come up with a value for the velocity of landslide movement, monitoring must be continued over a long period.