

## **ROCK SLOPE STABILITY ASSESMENT USING STEREOGRAPHIC PROJECTION METHOD AND LIMIT EQUILIBRIUM ANALYSIS**

**P.H.E. Dulanjalee**

Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka

Thennekumbura, Ragala road is becoming narrower at the stretch between 48 + 000 km to 50 + 230 km being the narrowest is approximately 2.0 m. From Thennekumbura to Ragala left hand side of the road is sloping downwards to the valley, while rock layer exist at the right hand side of the road. In order to widen the road, the existing rock layer has to be removed and the rock slope should be redesigned to minimized failures. This study focused on identifying the possible modes of rock slope to propose a suitable safe angle for the rock slope and as a suitable remedial measure.

Field investigations were carried out to measure orientations and intensity of discontinuities and surface features and details on groundwater conditions. Discontinuity data were analyzed by stereographic projection methods to identify the possible modes of failures in predefined chainage segments. Limit equilibrium analysis was performed for each failure to acquire the factor of safety hence, the stability predictions were made based on the factor of safety. Probability of rock falling was also estimated for each chainage segment.

As remedial measures reduction of slope angle, rock slope benching and rock bolting are introduced. Reducing the angle of rock cut face by less than of 10% is possible to achieve a required factor of safety of 1.5. Rock falling risk can be eliminated by barrier fences and covering the risk cut slopes with wire mesh. Unstable boulders above the weathered zone and overhangs should be removed by hand or mechanical scaling.