Spherical Projection Based Rock Slope Analysis A Case Study

PALLEWELA, P.P.D.H., National Building Research Organization, 99/1, Jawatta Road, Colombo 5, Sri Lanka.

Infrastructure and important lifeline facilities, such as transportation arteries, bridges, tunnels etc in central highlands, often suffer heavy damages due to natural disasters such as landslides, slope failures and rock falls. The areas covered by the Central Highlands of Srilanka are characterized by more or less ridge and valley topography made out of Pre-Cambrian metamorphic rocks. Existence of a prolong denudation process within the area which is of repetitive nature is one of the reasons for such occurrences. The remnants, which are accountable for these events, appear to be overlooked by professionals involved in design and implementation of development projects. Therefore, it is imperative to study such events more scientifically. In this present study, emphasis has been made to study the mechanism of a dreadful rock fall and measurers to overcome the future hazards by designing appropriate remedial measurers.

Rockfall disaster under reference occurred on 10th Aug. '94 and the detached rock debris were found to have been fallen to the lower reaches of the slope, eventually traveled a long way and damaged the transport and telecommunication facilities of the area. This situation prevailed for about fortnight period and delayed the restoration of the interrupted services.

After the comprehensive field study, the outcome is compiled in the form of an engineering geological map (1:500), longitudinal sections and stereo plots. The spherical projection interpretations revealed two major joint systems and possible wedge failures, which may be the reason for destabilization of the slope. Based on the wedge failure analysis, several remedial measures are proposed.