

SLOPE FAILURE ALONG LOMSAK-CHUMPAE HIGHWAY, THAILAND

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Abstract

Field examination and limit equilibrium analyses have been performed to identify the failure characteristics of four rock slopes along Lomsak-Chumpae highway. The failure mechanisms are intricate due to the heterogeneity of the materials, the irregularity of the slope profile, and the fluctuation of groundwater in the rock mass and the overlying soil. Various combinations of the modes of failure have been found, e.g., plane and wedge slides, block toppling, and circular failure. Rapid weathering has been the cause for the initial and minor failures. These progressive failures normally associated with heavy rainfall. Such factors had not been taken into consideration in the original slope design and in the later stabilization schemes. As a result, inappropriate stabilization methods and been implemented, which subsequently contributed to the recent massive failure. A computerized expert system has been used to determine a new stabilization scheme. It recommends that further failure may be prevented by using fully grouted rock bolts, small opening wire mesh, and long drained pipes. Shotcrete should be avoided.

Keywords: slope failure, rock support, circular failure, erosion, water pressure, weathering