

**Title :** Slope Stability Analysis at North of Ban Mae Sa Noi, Pong Yaeng Subdistrict, Mae Rim District, Chiang Mai Province

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## ABSTRACT

Landslides pose a significant threat to life and property, particularly in steep mountainous areas experiencing land-use changes. The northern region of Ban Mae Sa Noi in Pong Yaeng Subdistrict, Mae Rim District, Chiang Mai Province, is considered highly vulnerable to such hazards due to its steep topography, heavy monsoonal rainfall, and land-use changes that reduce root cohesion. This study aimed to investigate the physical and geotechnical properties of the local soils to evaluate slope stability. 14 soil samples were collected for laboratory testing to determine unit weight, moisture content, grain size distribution, Atterberg limits, shear strength, and permeability. The derived engineering parameters were utilized to assess slope stability using the Geo5 software under varying degrees of saturation ranging from 10% to 90%. Soil characterization revealed that the area predominantly consists of well-graded sand mixed with fine-grained particles, exhibiting low plasticity and very low permeability. This indicates poor drainage characteristics, potentially leading to critical pore water pressure buildup during heavy rainfall. The slope stability analysis demonstrated that while most surveyed areas exhibit safe factors of safety (FS ranging from 1.72 to 6.93), certain locations (Slope 1 and N-MSN-11) present marginally stable to high-risk conditions for failure (FS ranging from 0.59 to 3.51). These findings highlight the necessity for continuous monitoring and the implementation of appropriate landslide mitigation measures in the vulnerable zones.

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