

Numerical Analysis of Rainfall-Induced Roadside Slope Failures and Their Stabilizing Solution

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Abstract : Many roadside slope failures occur during the rainy season, particularly in the period of extreme rainfall along Connecting National Road of Salubatu-Mambi, West Sulawesi, Indonesia. These occurrences cause traffic obstacles and endanger people along and around the road. Research collaboration between P2JN (National Road Construction Board) West Sulawesi Province, who authorize to supervise the road condition, and Ujung Pandang State Polytechnic (Applied University) was established to cope with the landslide problem. This research aims to determine factors triggering roadside slope failures and their optimum stabilizing solution. To achieve this objective, site observation and soil investigation were carried out to obtain parameters for analyses of rainfall-induced slope instability and reinforcement design using the SV Flux and SV Slope software. The result of this analysis will be taken into account for the next analysis to get an optimum design of the slope reinforcement. The result indicates some factors such as steep slopes, sandy soils, and unvegetated slope surface mainly contribute to the slope failures during intense rainfall. With respect to the contributing factors as well as construction material and technology, cantilever/butressing retaining wall becomes the optimum solution for the roadside slope reinforcement.

Keywords : roadside slope, failure, rainfall, slope reinforcement, optimum solution

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