

ABSTRACT

PT. Semen Tonasa is one of the big limestone company in Indonesia that using surface mining system and quarry method. The research did in Quarry B7 that has bench geometry are 30 cm of height and 80° of slope angle with rock condition has many discontinuities are joints. The unsafe of bench geometry will endanger the workers and equipments that important to know slope stability is consideration in the aspect of Occupational Health and Safety in mining activities.

To get the good and safe slope design, then need to observe mass rock characteristic. The important factor of mass rock characteristic is intrinsic factors are cohesi (c) and friction angle (Φ). The result of laboratory testing, limestone has 517,5 kg/cm² of UCS with 0,88 kg/cm² of cohesi and 64° of friction angle. By using Software Dips v5.0 , the potential of slope that happened in Quarry B7 can be known there is plane failure, then analysis of slope stability is using plane failure calculation. Factor safety (FS) values that obtained are 3,16 (dry condition) and 1,26 (wet condition). Mass rock classification for limestone is using Rock Mass Rating or RMR (Bienawski, 1989) method with value of RMR is 77 that include in group II with good rock condition.

Recommendation of bench geometry is made with simulation for bench height from 10 – 50 m with slope angle is 80° - 85° in dry and wet condition to find out whether need or not new geometry is created. Slope in Quarry B7 has middle risk and no earthquake that has FS is 1,5 (maximum or for overall slope) by Director General of General Mining. Lereng di Kuari B7 masuk dalam resiko menengah dan kondisi tanpa gempa yang memiliki nilai faktor keamanan yaitu 1,50 (maksimum atau untuk overall slope) berdasarkan Direktorat Jendral Pertambangan Umum That, from result of FS there need recommendation new geometry in Quarry B7 with height bench is 25 m and slope angle 85° has FS is 1,7 in wet condition and 2,51 in dry condition.