ABSTRACT

PT.Semen Indonesia (Persero) Tbk plans to open new clay quarry in Mliwang Timur area. Clay mining is using open-pit mining system with quarry method and bench mining pattern.

Mliwang Timur clay quarry will produce slopes, both temporary slope in the production phase and final slope which have the potensial failure. The slope stability analysis has not been conducted yet on Mliwang Timur quarry, so that it needs to be done to prevent the slope failure.

The study location is conducted on Mliwang Timur pilot project area on the A-A' cross section. The analysis is done on single and final slope using approachment: material in the study area is soil, so that failure potential is circular failure, condition of the groundwater table is assumed to be single slopes dry and saturated while the overall slope assumed by Hoek and Bray chart number 1 to 5, the method used is Bishop-Simpilified method, modeling was done using physical and mechanical properties of laboratory test results, the excavator used is Komatsu PC-300 backhoe, ground vibration and heavy machine activity impact on the slope are not taken into account, top elevation quarry is 30 mdpl and bottom elevation target of the quarry is at 0 mdpl, the seismic factor is given by 0.1 g, and slope is stable if the FS value is ≥1,3.

Based on the results of stability analysis of the slope that has been done, the single slope height is 1 m and single slope angle of 15° can be applied. The overall slope geometry are 20 m bench height, 1 m bench width, 12° overall slope angle. The geometry has a reserve 8.473.037 m^3. Monitoring the movement of slopes are visual observation, mapping use total stations, and crackmeter. Ground water level monitoring use standpipe piezometer and maksimum ground water level is 6 m from ground surface. To prevent ground water level rise of more than 6 m is needed to create horizontal drain hole.