ABSTRACT

PT. Kaltim Prima Coal is one of the coal mining companies in East Kalimantan that has mining with open mining system. In coal mining activities, there is a required treatment on mining activities and the slopes of the embankment area. The embankment geometry requires analysis of slope stability to prevent failure in the embankment area and disturbance of the environment near the activity.

In the stability analysis of the embankment slope above the soft soil used the limit equilibrium method and finite element method. The limit equilibrium method used is the Bishop Simplified, GLE / Morgenstern-Price, Janbu Simplified, and Spencer methods, with the safety factor for the slope of the pile that is considered safe is 1.3. The safety factor will affect the geometry of the embankment geometry. In this case the shear strength of the embankment material is so important that the problems such as the occurrence of failure on the embankment, it can be reduced by a soil reinforcement method using the Deep Soil Mixing method and Geocell method.

The result of the analysis the geometry embankment with the height analysis of 10 m with the angle of the single slope 27˚ and 22˚, the calculation method chosen in accordance with the material conditions in the embankment slope is the Bishop method and Janbu method, with the SF result for Bishop method before reinforcement 0.59 and after reinforcement with Geocell and Deep Soil Mixing equal to 1.31, while for safety factor by Janbu method equal to 0.55 before reinforcement and 1.22 after reinforcement.

To obtaine the failure distance from toe (base failure) by using finite element method up to as far as 32.78 meters with the assumption that the slope is unsafe (SRF <1) is SRF of 0.71. The results of this study can be useful as a reference for the management of similar swamps in coal mining areas.