THE FORM OF CRYSTAL GROWTH IN PEAT
WHICH MADE FROM LIME, FLY ASH AND WATER

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ABSTRACT

A good land transportation in highway especially is needed in the larger islands such as Kalimantan, Sumatra and Papua with the geographical conditions of its surface mostly peat. Technical nature of the peat soil of the most prominent are low carrying capacity and high compressibility, so it is very sensitive to the load acting on it. The efforts to improve the bearing capacity of peat to avoid damage in the form of construction on peat soil stabilization by the addition of lime, fly ash, and water in the peat soil, so resulting crystal growth on peat. In this study, the behaviour of the peat density, the rate of the crystal growth, peat porosity, and fluid velocity during the crystal growth is modeled by continuum principles and control volume. Furthermore, the models are solved numerically by Finite Difference Method MacCormack Scheme which consist of two steps. There are predictor and corrector steps. The simulations results that the value of peat mass become larger after crystallization to achieve a balanced condition. Then the rate of crystal growth gradually decreased nearly to zero. The peat porosity values become smaller untill in stable condition value. In porous soil like peat, the smaller value of porosity which influence the behaviour of the rate flow velocity value into smaller value.

Key words : Conservation of Mass, Conservation of Momentum, Finite Different Methods, MacCormack Scheme Methods.