

ABSTRACT

One type of soil failure is the decrease of the soil surface caused by heavy loads on it such as the structure of the building so that the layers underneath are compacted or consolidated. Land subsidence is often also called the settlement. This condition occurs in the Perwara Temple area of the series II no. 35, Prambanan. Some temples have decreased the land at the end of the temple and in the middle of the temple. It is seen that the strength of the soil is not evenly distributed at each point, even though the load received is the same. Will be conducted research related to mechanical soil improvement on the soil under Perwara Prambanan Temple II Series No. 35 to know the value of soil shear strength parameters and magnitude decrease after mixed materials added Merapi sand.

Test methodology that will be done is physical testing and soil mechanical testing. Soil physical tests consist of water content test, volume weight, specific gravity, filter analysis and hydrometer analysis. Soil mechanical testing consists of standard proxy test, triaxial and consolidation. Soil samples that will be used are the original soil samples and the mixture of the original soil with added materials of merapi sand. Merapi sand variations are 10%, 20%, and 30%.

The results showed obtained maximum dry volume weight of 1.692 g / cm³ and the optimum water content of 9.64%. The addition of Merapi sand additives to the original soil increased the value of the inner shear angle (ϕ) in sample 1 from 53.09 ° to 60.22 ° and in sample 2 from 52.97 ° to 60.87 °. For the value of cohesion (c) decreased, in sample 1 from 0.7841 to 0.2469 and in sample 2 from 0.753 to 0.231. The effect of adding merapi sand plus 10%, 20% and 30% to the decreasing consolidation is smaller. In sample 1 of original soil and mixture of Merapi sand Sc value decreased from 0.38564 cm to 0.15508 cm, whereas in sample 2 Sc value decreased from 0.55154 cm to 0.38938 cm.

Keywords: Shear Strenght Parameters, Consolidation, Settlement