

SUMMARY

Arinda Rahma Dianing Putri, Department of Civil Engineering, Faculty of Engineering, University of Brawijaya, May 2018, *The Influence of Water Content to Bearing Capacity of Soft Soil as Subgrade of Pavement in Gempol - Pasuruan*, Academic Supervisor: Yulvi Zaika and Harimurti.

Gempol - Pasuruan toll road is connecting Gempol, Sidoarjo with Pasuruan City. The land will be used as toll road, it is expected that the soil can supporting the load of the structure and vehicle. As it is known that the soil in those area is cohesive, so if there is a climate anomaly that can caused the variation of water content received by the soil, soil conditions became unstable. This study aims to determine the characteristics of soil based on physical and mechanical properties, to know the value of soil settlement and the value of soil bearing capacity that occurs due to variations in water content.

In this study, the physical and mechanical properties of soil was analyzed with the percentage of distribution passing sieve of no. 200 are 92.15% it means that the soil type was belonged to the fine-grained soil with water content with 50,15% and Gs with 2,463. In Atterbergh Limit testing the soil has value of LL=56,12%, PL=43,36%, SL=11,86%, and PI=12,70%, based on Unified Soil Classification System (USCS) include MH or OH and based on AASHTO method include A-7-5 group. The results of swelling test with 4 days of soaking time are 0,812%, the value of soil settlement with consolidation test was obtained amounted to 2.65 m and time of consolidation for 25.7 years

Unconfined Compression test, Triaxial test, and California Bearing Ratio (CBR) test were performed to determine soil bearing capacity with 20%, 25%, 31.25%, 32%, 33%, and 38% variation of water content. The result of Unconfined Compression Test was the higher of water content, the value of q_u and C_u were getting smaller. The biggest value of q_u and C_u was reached when 20 % of water content by 2,421 kg/cm² and 1,210 kg/cm². The shear angle (ϕ) and soil cohesion (c) was tested with Triaxial Test obtained that the higher of water content makes the value of shear angle getting smaller. The biggest shear angle value was reached when 20 % of water content by 11,74°, while the biggest value of soil cohesion was reached in around OMC value by 0,421 kg/cm². California Bearing Ratio test was obtained with unsoaked method and soaked method with soak of sample for 4 days long.the results obtained from CBR unsoaked method is the higher of water content makes the CBR value getting smaller as well as the value of soil bearing capacity. The biggest value of CBR unsoaked method was reached when 20 % of water content by 9,57 % and the value of bearing capacity by 5,93 kg/cm². But, the value CBR soaked method test was obtained if the higher of water content makes the value of CBR soaked method was getting bigger too, so does the value of bearing capacity. The bigger value of CBR soaked method was reached when 38 % of water content by 1,53 % with bearing capacity value by 2,40 kg/cm².

Keywords: *soft soil, variation of water content, soil characteristics, Unconfined Compression Test, Triaxial Test, California Bearing Ratio (CBR), soil bearing capacity.*

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