

ABSTRACT

Basically, rock mass in nature are heterogen, discontinue, and anisotrop, but in laboratory test, rock specimen is assumed as homogen, continue, and isotrop, that's why shear test result is unpredictable and random (Cunha, 1990), while in research needed a representative data, the one that could showing the actual condition in the site, because of that the dimensional volume of the rock specimen are very influencing, the bigger the sample, the more representative it will be, this phenomenon as known as scale effect. Scale effect means the heterogeneity condition of rock and to prove it needs in situ testing, but the in situ testing requires high cost, so laboratory testing is the answer.

Laboratory testing for scale effect on shear test done with large scale shearing equipment and with different size in peak condition. Rock specimen of Tuff in this research was obtained at Gunungsari, Sambirejo, Prambanan, Sleman that located north-east of Yogyakarta. Nine samples were coded with SC II₁₂₃ ± 4.60 cm in diameter, SC III₁₂₃ ± 6.9 cm in diameter and SC IV₁₂₃ ± 9.20 cm in diameter.

Based on the peak shearing test result, rock specimen with ± 4.60 cm in diameter has 1368.87 kPa of shear strength with 532,71 kPa of cohesion and 64° of friction angle, rock specimen with ± 6.9 cm in diameter has 1049.93 kPa of shear strength with 352,07 kPa of cohesion and 66° of friction angle, rock specimen with ± 9.20 cm in diameter has 785.54 kPa of shear strength with 286,94 kPa of cohesion and 66° of friction angle. The decreasing percentage of Tuff's mean shear strength is 42.64% and for Tuff's cohesion have 45,21% of decreasing percentage, while friction angle did not decreasing because the scale effect not influence it.