ANALYSIS OF VARIATION VOLUMETRIC WATER CONTENT AND RESIDUAL SOIL DEFORMATION AT JOMBOK NGANTANG DISTRICT MALANG

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ABSTRACT

Change of seasons may cause fluctuations at soil water levels. Water content is an important factor that can affect the slope stability due to high rainfall. There has been a landslide in residual soil’s slopes at Jombok Ngantang district of Malang in 2009, 2010 and 2011 due to the change of residual soil’s water content. This phenomenon is important to investigate the extent of the influence of water content volumetric of the landslide and soil deformation along the slope surface. Slope stability can be evaluated by monitoring volumetric water content and soil deformation during wet season using monitoring system that is efficient, effective, and simple in a period of time long enough in real time and the data transferred over the wireless network. Wireless unit sensor MEMS (Micro Electro Mechanical Systems) and volumetric water content sensor that placed on the slope surface at Jombok. Observations made for February to April to represent data during wet season. Deformation behavior and volumetric water content fluctuates every day due to high rainfall. Soil deformation increases according to increase in volumetric water content. Thus results indicated that there has been a shallow landslide (soil slip) on March 1st, 2013 on the condition of volumetric water content by 71.58% and soil has deformed on X axis by 3.06 ° and -20.3 ° on Y axis. the characteristics of the relationship between volumetric water content and soil slope deformation can be monitored by using a combination of volumetric water content sensors and tiltmeter.