SARI

Daerah penelitian secara administratif terletak pada Desa Wukirharjo dan sekitarnya, Kecamatan Prambanan, Kabupaten Sleman yang mendominasi daerah penelitian serta Desa Srimartani, Kecamatan Piyungan, Kabupaten Bantul, Daerah Istimewa Yogyakarta. Daerah penelitian merupakan daerah yang memiliki banyak perbukitan dengan tingkat kelerengan yang terjal sehingga rawan untuk terjadinya longsor. Tujuan dari penelitian ini adalah untuk menentukan kondisi geologi teknik yang mempengaruhi kestabilan lereng di daerah penelitian meliputi tingkat kemiringan lereng, tingkat pelapukan, kualitas massa batuan, kedalaman muka air tanah, kuat tekan dan berat jenis (*unit weight*) litologi penyusun lereng. serta menentukan zona-zona kestabilan lereng yang ada pada daerah penelitian berdasarkan hasil analisis kestabilan lereng dengan metode kesetimbangan batas berdasarkan klasifikasi *Geological Strength Index* (GSI).

Seluruh data dan berbagai analisis menghasilkan kesimpulan bahwa daerah penelitian memiliki enam kelas tingkat kemiringan lereng yakni datar, agak miring, miring, agak curam, curam, dan sangat curam. Tingkat pelapukan dibagi menjadi dua tingkatan yakni pelapukan sedang dan pelapukan tinggi. Kualitas massa batuan dengan menggunakan GSI terbagi menjadi tiga zona yaitu zona GSI 20 - 30, 30 – 40 dan 40 – 50. Muka air tanah disekitar kaki lereng daerah penelitian memiliki rentang kedalaman antara 3 – 8 meter. Litologi penyusun daerah penelitian adalah lapili tuff, batupasir, batupasir tufan dan batulempung tufan. Batupasir memiliki kekuatan batuan 16,34 MPa dan berat jenis (γ) 19,26 kN/m^3. Batulempung tufan memiliki kekuatan batuan 13,12 MPa dan berat jenis (γ) 15,27 kN/m^3. Lapili tuff memiliki kekuatan batuan 4,66-13,63 MPa dan berat jenis (γ) 12,92-13,81 kN/m^3. Batupasir tufan memiliki kekuatan batuan 4,45-23,61 MPa dan berat jenis (γ) 15,18-16,87 kN/m^3. Analisis kestabilan lereng dengan menggunakan metode kesetimbangan batas menghasilkan tingkat kestabilan lereng daerah penelitian terbagi menjadi tiga yaitu lereng stabil dengan nilai FK 1,245 – 1,871, tingkat lereng kritis dengan nilai FK 1,137 – 1,191 dan tingkat lereng tidak stabil dengan nilai FK 0,318 – 0,889. Zona lereng stabil secara administratif berada pada Desa Sengir bagian selatan, Desa Watukangsi, Desa Mloko dan Desa Losari II. Zona lereng kritis secara administratif berada pada Desa Sengir bagian utara, Desa Losari 1 bagian tenggara dan Desa Candisari. Zona lereng tidak stabil secara administratif berada pada Desa Jali Kidul, Desa Tirto, Desa Gayam, Desa Klumprit I, Desa Klumprit II, Desa Wukirharjo, Desa Gamparan, Desa Losari 1 bagian selatan, Desa Depok bagian selatan, Desa Klegung dan Desa Gemyong.

Kata kunci : Wukirharjo, Kesetimbangan, GSI, longsor

ABSTRACT

The research area administratively is located at Wukirharjo Village and it's surround, Prambanan Sub-district, Sleman Regency which dominate the research area also Srimartani Village, Piyungan Sub-distric, Bantul Regency, Special Region of Yogyakarta. Research area is the place which has many hills with level of slope that is steep with the result that is vulnerable to the occurance of landslide. The purpose of this study are to define the engineering geology condition that influence slope stability at research area include declivity of slope, weathering level, rockmass quality, waterbase level, uniaxial compressive strength and unit weight of lithology of slope composer also define zones of slope stability that are exist at research area based on the result of slope stability analysis by Limit Equilibrium Method (LEM) based on Geological Strength Index (GSI) classification.

All of the data and the various analysis generate conclusion that the research area have six classes of declivity of slope level that are flat, rather slant, slant, rather steep, steep and very steep. The level of weathering are divided in to two levels that are moderately weathered and higly weathered. Rockmass quality based on GSI are divided in to three zones that are zona GSI 20 - 30, 30 – 40 and 40 – 50. Water base level around toe of slope of research area has depth between 3 – 8 m. Lithology compose the research area are sandstone, tuffaceous claystone, tuff lapili and tuffaceous sandstone. The sandstone has rockstrength 16,34 MPa and unit weight (γ) 19,26 kN/m^3. The tuffaceous claystone has rockstrength 13,12 MPa and unit weight (γ) 15,27 kN/m^3. The tuff lapili has rockstrength 4,66-13,63 MPa and unit weight (γ) 12,92-13,81 kN/m^3. The tuffaceous sandstone has rockstrength 4,45-23,61 MPa and unit weight (γ) 15,18-16,87 kN/m^3. Analysis slope stability that use Limit Equilibrium Method (LEM) generate level of slope stability that are divided in to three that are stable slope level with rating of FK 1,245 – 1,871, critical slope level with rating of FK 1,137 – 1,191, unstable slope level with rating of FK 0,318 – 0,889. Stable slope zones administratively are located at south area of Sengir Village, Watukangsi Village, Mloko Village and Losari II Village. Critical slope zones administratively are located at north area of Sengir Village, south-east area of Losari 1 Village and Candisari Village. Unstable slope zones administratively are located at Jali Kidul Village, Tirto Village, Gayam Village, Klumprit I Village, Klumprit II Village, Wukirharjo Village, Gamparan Village, south area of Losari 1 Village, south area of Depok Village, Klegung Village and Gemyong Village.

Keywords: Wukirharjo, Equilibrium, GSI, landslide