Analisis Stabilitas *Gabion* Pasca Penambahan *Gravity Retaining Wall* sebagai Perkuatan Lereng Tidak Stabil pada Proyek Pengendali Banjir Sungai Serang Kulon Progo

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INTISARI

Sungai Serang Kabupaten Kulon Progo merupakan sungai yang digunakan sebagai jalur limpahan air Bendungan Sermo sehingga pada saat air sungai naik memicu pergerakan massa tanah di daerah sekitar lereng atau sering disebut longsor. Selain itu, pembangunan perumahan dan akses kendaraan terus berkembang mampu memicu pertambahan beban lereng. Akibat adanya penambahan beban lereng, maka perlu adanya perhitungan stabilitas dan perkuatan lereng.

Tujuan dari analisis adalah untuk mengetahui nilai faktor aman pada lereng. Selain itu, analisis juga bermaksud untuk mengetahui stabilitas *gabion* sesudah penambahan *gravity retaining wall*.

Dalam menentukan stabilitas lereng, analisis dilakukan menggunakan bantuan aplikasi *GeoStudio2019-Slope* dan metode irisan Bishop manual. Adapun teori Rankine digunakan dalam menentukan stabilitas perkuatan lereng.

Berdasarkan hasil analisis stabilitas lereng menghasilkan angka keamanan lereng (F) sebesar 0,918 dengan menggunakan aplikasi *GeoStudio2019-Slope* dan F = 0,914 pada perhitungan manual. Nilai faktor aman lereng kurang dari 1 menunjukan bahwa lereng dalam kondisi tidak stabil dan membutuhkan perkuatan lereng. Kemudian, hasil analisis perkuatan *gabion* setelah penambahan *gravity retaining wall* menghasilkan angka aman yang memenuhi syarat yaitu untuk stabilitas geser 1,725>1,5; sabilitas guling 1,828>1,5; dan stabilitas dukung 4,017>3.

Kata Kunci: stabilitas lereng, faktor aman, perkuatan

Stability Analysis of Gabion after Addition of Gravity Retaining Wall as Reinforcement Unstable Slope at Flood Control Project in Serang River Kulon Progo

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ABSTRACT

Serang river in Kulon Progo regency is a river that is used as an Sermo Dam water overflow line so at the moment when river water rises triggering movement of soil mass in the area around the slope or often reffered as a landslide. Other than that, housing construction and vehicle acces continues to grow capable of triggering increased slope loads. Due to the addition of slope loads, it is necessary to calculate the stability and reinforcement of the slope.

The purpose of the analysis is to know value factor of secure on slopes. Other than that, analysis also mean to know stability of gabion after addition gravity retaining wall.

In determine stability of slopes, the analysis is done using the help from application GeoStudio 2019-Slope and Bishop Manual Slice Methode. There is Rankine Theory is used for determining the difficultly of slope reinforcement.

Based of the results of slope stability analysis, the slope safety value (F) is 0.918 using the GeoStudio2019-Slope application and F = 0.914 in manual calculations. The safety factor of slopes less than 1 indicates that the slopes are unstable and require slope reinforcement. Then, the results of Gabion reinforcement analysis after the addition gravity retaining wall produce a safe value that met the requirements that is for shear stability 1,725>1,5; rolling stability 1,828>1,5; and the support stability 4,017>3.

Key words : slope stability, safety factor, reinforcement