PENGARUH PENAMBAHAN GEOTEKSTIL WOVEN DAN NON WOVEN PADA KUAT TEKAN DAN KUAT GESER TERHADAP TANAH LEMPUNG

Melano Iksan Prayogi[1] Ir. Rika Nuraini, S.T.,M.Eng[2]

Program Studi Teknik Sipil Fakultas Sains dan Teknologi, University of Technology Yogyakarta;
e-mail:[1]melanoikhsan11@gmail.com, [2] rika.nuraini@staff.uty.ac.id

ABSTRAK

Terdapat banyak permasalah yang sering dijumpai pada kontruksi jalan di Indonesia dikarenakan pada bagian struktur tanahnya yang kurang cukup mendapatkan perhatian khusus. Contoh permasalahan jalan yang diakibatkan struktur tanah diantaranya retak-retak,cacat permukaan,bergelombang dan amblas. Lokasi pengambilan sampel tanah terletak di Desa Banguncipto, Kecamatan Sentolo, Kabupaten Kulon Progo, Daerah Istimewa Yogyakarta. Pengujian yang dilakukan pada penelitian ini meliputi pengujian sifat fisis tanah dan pengujian sifat mekanis tanah (pengujian kepadatan tanah, kuat tekan bebas dan kuat geser langsung) dengan menggunakan acuan prosedur pengujian pada SNI serta bahan tambah yang digunakan menggunakan geotekstil woven GSM-150 dan non woven PET-200 dengan variasi pada uji kuat tekan 3 variasi dan pada uji kuat geser 2 variasi .Penelitian ini menghasilkan nilai maksimal pada kuat geser max sebesar 49,66 kPa ,kohesi sebesar 18kPa dan sudut geser sebesar 17°,sedangkan pada geotekstil woven GSM-150 mendapatkan nilai kuat geser max sebesar 60,30 kPa, kohesi sebesar 21 kPa dan sudut geser sebesar 21° dan pada geotekstil non woven PET-200 mendapatkan nilai kuat geser max 79,49 kPa ,kohesi sebesar 35 kPa dan sudut geser sebesar 23°. Dari penelitan yang telah dilakukan dapat ditarik kesimpulan bawah penambahan geotekstil woven dan non woven terhadap parameter kuat tekan bebas dan kuat geser langsung pada tanah lempung cukup berpengaruh terhadap kesetabilan tanah lempung perbandingan disetiap pengujian geotekstil non woven yang digunakan cukup unggul pada pengujian kuat tekan bebas sedangkan geotekstil woven unggul pada pengujian kuat geser langsung.

Kata kunci : Geotekstil Woven dan Non Woven,Kuat Tekan Bebas,Kuat Geser Langsung.

THE EFFECT OF ADDING WOVEN AND NON-WOVEN GEOTEXTILE ON THE COMPRESSIVE STRENGTH AND SHEAR STRENGTH ON CLAY SOIL

Melano Iksan Prayogi[1] Ir. Rika Nuraini, S.T., M.Eng[2]

Civil Engineering Study Program, Faculty of Science and Technology, University of Technology Yogyakarta;
e-mail:[1]melanoikhsan11@gmail.com, [2] rika.nuraini@staff.uty.ac.id

ABSTRACT

There are many problems that are often encountered in road construction in Indonesia because the soil structure does not receive enough special attention. Examples of road problems caused by soil structures include cracks, surface defects, waves and collapse. The soil sampling location was located in Banguncipto Village, Sentolo District, Kulon Progo Regency, Special Region of Yogyakarta. The tests carried out in this research included testing the physical properties of the soil and the mechanical properties of the soil (testing soil density, unconfined compressive strength and direct shear strength) using the reference testing procedures in SNI as well as additional materials used using GSM-150 woven geotextiles and PET non-woven geotextiles. -200 with variations in the compressive strength test of 3 variations and in the shear strength test of 2 variations. This research produced maximum values for the max shear strength of 49.66 kPa, cohesion of 18kPa and shear angle of 17°, while for the GSM-150 woven geotextile get a max shear strength value of 60.30 kPa, cohesion of 21 kPa and a shear angle of 21° and in PET-200 non-woven geotextiles get a max shear strength value of 79.49 kPa, cohesion of 35 kPa and a shear angle of 23°. From the research that has been carried out, it can be concluded that the addition of woven and non-woven geotextiles to the parameters of unconfined compressive strength and direct shear strength in clay soils is quite influential on the stability of clay soils. Comparisons in each test of the non-woven geotextiles used are quite superior in the unconfined compressive strength tests, while geotextiles woven excels in direct shear strength testing.

Keywords: Woven and Non-Woven Geotextiles, Unconfined Compressive Strength, Direct Shear Strength.