UPAYA MENINGKATKAN KUAT-GESER TANAH LEMPUNG DENGAN MEMANFAATKAN LIMBAH PLASTIK

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Abstrak

Sampah plastic amat banyak dijumpai di Indonesia. Ini dapat mengancam ekosistem lingkungan karena sampah plastic bersifat *non-biodegradable*. Usaha untuk mengurangi sampah plastic ditempuh melalui cara 3R yaitu *Reuse, Reduce, Recycle*. Cara Recycle misalnya dengan pemanfaatan limbah plastic untuk : membuat minyak, sebagai komposit untuk konstruksi, misalnya : sebagai serat pada beton, dan sebagai fiber untuk perkuatan tanah. Akan dicoba usaha perbaikan/ perkuatan tanah lempung menggunakan limbah plastic untuk menaikkan kuat-geser tanah lempung.

Penelitian ini menggunakan metode Eksperimen. Limbah plastic dipotong-potong kecil ukuran 1x1 (cm) dan 1x0,5 (cm) dicampurkan pada tanah lempung, dipadatkan , lalu diuji Kuat Tekan Bebas di Laboratorium. Sampel lempung diambil dari Wates (Jl. Wates km.7) Kulonprogo, dan dari Kasongan, Bantul pada elevasi -0,20 m. Limbah Plastik menggunakan bekas wadah air mineral (plastic jenis PET).

Hasil penelitian menunjukkan bahwa penambahan potongan limbah plastic ukuran tersebut pada lempung akan : (1) menaikkan nilai qu (kuat tekan bebas) tanah pada kadar plastic 1%-2% lempung Wates, dan kadar plastic 1% pada lempung Kasongan. (2) menaikkan sudut-kuat-geser φ jika kadar plastic 1%-3% (lempung Wates) dan Lempung Kasongan tetapi hanya jika plastiknya dipotong kecil. (c) menurunkan lekatan, kecuali jika potongan plastik ukurannya kecil pada kadar plastic 3% (lempung Wates) dan jika potongan plastic ukurannya besar (lempung Kasongan).

Kata Kunci : limbah plastic, lempung, tekan-bebas.

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THE EFFORTS TO IMPROVE SHEAR STRENGTH OF CLAY SOIL BY USING PLASTIC TRASH

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Abstract

Plastic trash so often found in Indonesia. This could threaten the ecosystem of the environment because the plastic trash is non-biodegradable material. The efforts to reduce the plastic trash are taken by 3R-way (Reuse, Reduce, Recycles). How to recycle for example by the use of plastic trash : to make oils, as a composites for construction, for example: as the fiber in the concrete, and as a fiber for soil reinforcement. We will try to reinforcement of clay by using plastic trash to increase of the shear strength of clay.

This research uses experiment methods. Plastic trash is cut into small pieces with 1x1 (cm) and 1x0,5 (cm) size mixed with clay, compacted, and then tested in the laboratory by Unconfined Compressive Test. Clay samples were taken from Wates (Jl. Wates Km.7) Kulonprogo, and from Kasongan, Bantul at an elevation of -0.20 m. Plastic trash using of the former mineral water containers (PET plastic types).

The results of this research showed that the addition of small pieces of the plastic trash in clay : (1) will increase the value of qu (unconfined compressive strength) of soil at the rate of 1% -2% of plastic on Wates clay, and the plastic content of 1% on Kasongan clay. (2) will increase the shear-strength- angle φ if the plastic content of 1% - 3% (Wates clay) and Kasongan clay but only if the plastic is small cutting. (c) will decrease of the soil friction, unless the small size of plastic pieces in plastic content of 3% (Wates clay) and if the large size plastic pieces (Kasongan clay).

Keywords: plastic trash, clay, unconfined compressive test.

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