

ABSTRAK

STABILISASI TANAH LEMPUNG DENGAN CAMPURAN SEMEN DAN BENTONIT DITINJAU DARI KUAT TEKAN BEBAS

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Tanah adalah campuran mineral, bahan organik, dan endapan longgar yang berada di atas batuan dasar. Pembentukannya terjadi melalui proses fisik, seperti erosi dan perubahan suhu, serta proses kimia akibat oksigen, karbon dioksida, dan air. Salah satu jenis tanah adalah tanah lempung yang memiliki kuat geser rendah. Tanah lempung adalah jenis tanah yang berbutir halus yang memiliki daya dukung yang rendah dan sangat sensitif terhadap perubahan kadar air yaitu mudah mengalami perubahan volume dan kembang susut, sehingga kurang mendukung konstruksi, maka dari itu diperlukannya stabilisasi tanah untuk menambah daya dukung tanah yang rendah. Untuk memperbaiki tanah tersebut maka dilakukan penambahan dengan semen dan bentonit. Penelitian ini dilakukan dengan penambahan semen 20 % dan bentonit 4%,6%,8%,10%,12%. Hasil pengujian ini didapatkan peningkatan nilai Kuat tekan bebas tanah campuran berada di variasi tanah , semen 20 % dan bentonit 8%. Untuk tanah asli tanpa peram nilai q_u rata-rata sebesar $0,711 \text{ kg/cm}^2$ dan kuat tekan bebas pemeraman nilai q_u rata-rata sebesar $4,035 \text{ kg/cm}^2$. Untuk Kuat tekan bebas pream variasi semen 20% dan bentonit 8% mengalami peningkatan sebesar $4,960 \text{ kg/cm}^2$ dan kuat tekan bebas semen 20% dan bentonit 8% peram rata-rata q_u sebesar $7,105 \text{ kg/cm}^2$.

Kata kunci: Tanah Lempung , Stabilisasi tanah , Semen, Bentonit, Kuat Tekan Bebas.

ABSTRACT

STABILIZATION OF CLAY SOIL WITH CEMENT AND BENTONITE MIXTURE REVIEWED FROM UNCONFINED COMPRESSIVE STRENGTH

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Soil is a mixture of minerals, organic material, and loose deposits found on top of bedrock. Its formation occurs through physical processes, such as erosion and temperature changes, as well as chemical processes due to oxygen, carbon dioxide, and water. One type of soil is clay soil, which has low shear strength. Clay soil is a type of fine-grained soil that has low bearing capacity and is very sensitive to changes in moisture content, making it prone to volume changes and shrink-swell, thereby not supporting construction well. Therefore, soil stabilization is necessary to increase the low bearing capacity of the soil. To improve this soil, cement and bentonite are added. This study was conducted with an addition of 20% cement and 4%, 6%, 8%, 10%, and 12% bentonite. The results of this test showed an increase in the unconfined compressive strength of the mixed soil at soil variations, with 20% cement and 8% bentonite. For the original soil without curing, the average q_u value was 0.711 kg/cm², and the unconfined compressive strength after curing had an average q_u value of 4.035 kg/cm². For the unconfined compressive strength with pre-curing at 20% cement and 8% bentonite, there was an increase to 4.960 kg/cm², and the unconfined compressive strength with 20% cement and 8% bentonite after curing had an average q_u value of 7.105 kg/cm².

Keywords: Clay soil, soil stabilization, cement, bentonite, unconfined compressive strength