

ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh stabilisasi tanah lempung menggunakan campuran polimer silikon terhadap parameter kuat tekan bebas (UCS) dan kuat geser tanah melalui pengujian Triaxial UU (Unconsolidated Undrained). Penelitian dilakukan di kawasan Deltamas, Cikarang Pusat, Kabupaten Bekasi, dengan variasi campuran polimer silikon sebesar 10%, 20%, dan 30%. Hasil pengujian menunjukkan bahwa penambahan polimer silikon mempengaruhi peningkatan stabilitas tanah lempung. Pada pengujian UCS, tanah dengan campuran polimer silikon 20% memberikan peningkatan optimal pada kekuatan kompresi tanah, sementara penambahan 30% cenderung menurunkan berat isi kering. Pengujian Triaxial UU menunjukkan peningkatan nilai kohesi dan sudut geser dalam seiring bertambahnya persentase polimer silikon, meskipun penurunan berat kering tetap menjadi perhatian. Oleh karena itu, campuran polimer silikon sebesar 10%-20% direkomendasikan untuk mencapai keseimbangan antara stabilitas dan kepadatan tanah. Hasil penelitian ini dapat digunakan sebagai referensi alternatif dalam stabilisasi tanah lempung untuk mendukung konstruksi bangunan dan infrastruktur pada tanah berdaya dukung rendah

Kata Kunci: Stabilisasi tanah, tanah lempung, polimer silikon, kuat tekan bebas (UCS), kuat geser tanah, Triaxial UU, Deltamas Cikarang, peningkatan stabilitas tanah.

ABSTRACT

This study aims to analyze the effect of clay soil stabilization using a silicone polymer mixture on the parameters of unconfined compressive strength (UCS) and soil shear strength through the Unconsolidated Undrained (UU) Triaxial test. The research was conducted in the Deltamas area, Central Cikarang, Bekasi Regency, with variations in the silicone polymer mixture of 10%, 20%, and 30%. The test results show that the addition of silicone polymer affects the improvement of clay soil stability. In the UCS

test, soil with a 20% silicone polymer mixture provides optimal improvement in compressive strength, while a 30% addition tends to reduce the dry density. The Triaxial UU test shows an increase in cohesion and shear angle values as the percentage of silicone polymer increases, although the reduction in dry density remains a concern. Therefore, a silicone polymer mixture of 10%-20% is recommended to achieve a balance between soil stability and density. The results of this study can be used as an alternative reference for clay soil stabilization to support building and infrastructure construction on low-bearing capacity soils.

Keywords: *Soil stabilization, clay soil, silicone polymer, unconfined compressive strength (UCS), soil shear strength, Triaxial UU, Deltamas Cikarang, soil stability improvement.*