ABSTRAK

Judul: Kajian Pengaruh Penambahan Serbuk Gypsum dan Semen pada Tanah Lempung terhadap Stabilitas Tanah (Lokasi: Dusun Kalangan, Desa Bangunjiwo, Kabupaten Bantul, Daerah Istimewa Jogjakarta), Nama: Davia Juseria Putri Herjuno, NIM: 41117010072, Dosen Pembimbing: Kukuh Mahi Sudrajat, S.T., M.T., 2022.

Stabilisasi tanah adalah proses untuk memperbaiki sifat-sifat tanah dengan menambahkan atau memodifikasi struktur lapisan tanah agar dapat menaikkan nilai daya dukung tanah, mempertahankan kekuatan geser dan mengurangi terjadinya deformasi tanah. Tanah lempung yang mempunyai kuat geser yang rendah, oleh karena itu perlu distabilisasi agar memenuhi syarat teknis untuk dijadikan sebagai tanah dasar. Salah satu stabilisasi tanah yang biasa dilakukan yaitu dengan menambahkan bahan stabilitator pada tanah. Dalam penelitian ini digunakan penambahan serbuk gypsum dan semen. Tujuan dari penelitian ini adalah untuk mengetahui indek properties tanah, nilai UCS (Unconfined Compressive Strength) sebelum dilakukan stabilisasi dan setelah dilakukan stabilisasi, serta nilai CBR (California Bearing Ratio) laboratorim terendam (soaked) dan tak terendam (unsoaked), dengan penambahan serbuk gypsum dan semen pada tanah lempung dengan masing masing variasi 2%, 6%, dan 10%.

Dalam penelitian ini dilakukan pengujian sifat fisik tanah dan sifat mekanik tanah. Untuk sifat fisik tanah diperoleh nilai kadar air tanah 30,72%, nilai berat jenis tanah 2,27, nilai batas cair tanah 55,56%, nilai batas plastis tanah 26,67%, nilai indeks plastis tanah 28,89%, dan nilai batas susut tanah 8,21%. Pada pengujian sifat mekanik tanah diperoleh nilai kepadatan tanah1,47 g/cm^3, kadar air optimum 25,82%, nilai kuat tekan bebas tanah optimal 0,451 kg/cm3 pada tanah dengan penambahan 10% semen, nilai

CBR unsoaked optimal 11,67% pada tanah dengan penambahan 10% semen, dan nilai CBR soaked optimal 6,65% pada tanah dengan penambahan 10% semen.

Kata Kunci : *stabilisasi tanah, serbuk bata, tanah laterit, daya dukung*

ABSTRACT

Title: Study of the Effect of Addition of Gypsum Powder and Cement on Clay to Soil Stability (Location: Kalangan Hamlet, Bangunjiwo Village, Bantul Regency, Special Region of Yogyakarta), Name: Davia Juseria Putri Herjuno, NIM: 41117010072, Advisor Lecturer: Kukuh Mahi Sudrajat, S.T., M.T., 2022.

Soil stabilization is a process to improve soil properties by adding or modifying the structure of the soil layer in order to increase the bearing capacity of the soil, maintain shear strength and reduce soil deformation. Clay soils that have low shear strength need to be stabilized in order to meet the technical requirements to be used as subgrade. One of the soil stabilization that is usually done is by adding chemicals to the soil. In this study, the addition of cement and gypsum was used. The purpose of this study was to determine the index properties, the value of UCS (Unconfined Compressive Strength) before stabilization and after stabilization, and the value of CBR (California Bearing Ratio) laboratory soaked (soaked) and not submerged (unsoaked), with the addition of cement, and gypsum on clay with variations of 2%, 6%, and 10% respectively.

In this research, soil physical properties and soil mechanical properties were tested. For the physical properties of the soil, the soil water content is 30.72%, the specific gravity is 2.27, the liquid limit is 55.56%, the plastic limit is 26.67%, the plastic index is 28.89%, and limit value of land shrinkage 8.21%. In testing the mechanical properties of the soil, the soil density value was 1.47 g/cm3, the optimum water content was 25.82%, the optimal soil-free compressive strength value was 0.451 kg/cm3 on soil with the addition of 10% cement, the optimal unsoaked CBR value was 11.67% on soil with the addition of 10%

cement, and the optimal soaked CBR value is 6.65% in soil with the addition of 10% cement.

Keywords: soil stabilization, brick powder, laterite soil, bearing capacity