

# ANALISIS PERUBAHAN VOLUME AKIBAT PROSES KEMBANG SUSUT TANAH DAN KONSOLIDASI (STUDI KASUS : PROYEK FOOD ESTATE DI KECAMATAN DADAHUP KALIMANTAN TENGAH)

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## ABSTRAK

*Perubahan kadar air akan menyebabkan kembang susut tanah. Beberapa jenis tanah yang memiliki potensi kembang susut besar adalah tanah yang dapat mengalami perubahan volume secara signifikan seiring dengan perubahan kadar airnya. Tanah dengan kondisi seperti ini sering disebut sebagai tanah lempung ekspansif. Perubahan dimensi volume tanggul saluran akibat kembang susut tanah biasanya tidak diperhatikan, sehingga sering kali tidak dihitung sebagai volume pekerjaan yang harus di bayar seperti pada Proyek Food Estate dalam pekerjaan pembuatan saluran tersier. Lokasi pengambilan sampel berada di Kecamatan Dadahup Kabupaten Kapuas Provinsi Kalimantan Tengah. Pengujian ini dilakukan di Laboratorium Tanah PT. ADALAB FONDASI IDEAL dengan metode SNI yang terdiri atas pengujian kadar air, pengujian berat jenis, pengujian konsistensi tanah, pengujian konsolidasi, perhitungan penurunan konsolidasi dan perhitungan perubahan volume akibat kembang susut tanah dan penurunan konsolidasi. Dari hasil penelitian yang didapat yaitu hasil perhitungan penurunan konsolidasi tanah yang terjadi pada kondisi kembang tanah sampel HB.1 dan HB.2 yaitu : 0.8862 m dan 0.9664 m, hasil perhitungan penurunan konsolidasi tanah yang terjadi pada kondisi susut tanah sampel HB.1 dan HB.2 yaitu : 0.4777 m dan 0.5255 m, Perubahan volume yang terjadi akibat proses kembang susut tanah dan konsolidasi selama 14 hari pada sampel HB.1 dan HB.2 yaitu : 1.615 Ton/m<sup>3</sup> dan 1.785 Ton/m<sup>3</sup> atau dalam satuan persen yaitu 51.27% dan 51.01 %. Perubahan volume tanah ini terjadi pada saat kondisi susut.*

**Kata Kunci : Tanah Kembang Susut, Penurunan Konsolidasi, Perubahan Volume**

## Abstract

*Changes in water content will cause swelling and shrinkage of the soil. Some types of soil that have the potential for large shrinkage are soils that can experience significant changes in volume along with changes in water content. Soils with these conditions are often referred to as expansive clays. Changes in the dimensions of the volume of the channel embankment due to the development of soil shrinkage are usually not considered, so they are often not calculated as the volume of work that must be paid as in Food Estate Projects in tertiary canal construction work. The sampling location was in Dadahup District, Kapuas Regency, Central Kalimantan Province. This test was carried out at the Soil Laboratory of PT. IDEAL FOUNDATION ADALAB using the SNI method which consists of testing water content, testing specific gravity, testing soil consistency, testing consolidation, calculating consolidation settlement and calculating volume changes due to swelling of soil shrinkage and consolidation settlement. From the research results obtained, namely the results of the calculation of the decrease in soil consolidation that occurred in the soil swelling conditions of the samples HB.1 and HB.2, namely: 0.8862 m and 0.9664 m, the results of the calculation of the decrease in soil consolidation that occurred in the soil shrinkage conditions of the samples HB.1 and HB. .2, namely: 0.4777 m and 0.5255 m, Volume changes that occur due to the process of swelling and shrinkage of soil and consolidation for 14 days in samples HB.1 and HB.2 are: 1.615 Ton/m<sup>3</sup> and 1.785 Ton/m<sup>3</sup> or in percent units, namely 51.27 % and 51.01%. This change in soil volume occurs during shrinkage conditions.*

**Keywords: Swelling and Shrinkage of the Soil, Consolidation Decline, Volume Change**

## REFERENSI

- Badan Pusat Statistik Kabupaten Kapuas, *Kabupaten Kapuas Dalam Angka 2021*. Kapuas: Badan Pusat Statistik, 2021.
- B. M. Das, *Mekanika Tanah (Prinsip-prinsip Rekayasa Geoteknik)*. Jakarta, 1995.
- F. H. Chen, *Foundation of Expansive Soils 2nd Ed Development*. Amsterdam: Geotechnical Eng Vol. 54. Elsevier, 1988.
- H. C. Hardiyatmo, *Analisis & Perancangan Fondasi Bagian I*. Yogyakarta: Gajah Mada University Press, 2010.
- V. Raman, *Identification of Expansive Soils From The Plasticity Index Data*. Calcutta: Indian Eng, 1967