

ABSTRAK

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Konstruksi jalan di daerah Sugihmanik, Tanggungharjo, Grobogan, Jawa Tengah seringkali mengalami kerusakan pada struktur jalan yang diakibatkan oleh meluapnya sungai pada saat musim hujan. Untuk mengatasinya, perlu dilaksanakan stabilisasi tanah. Di dalam penelitian ini, percobaan stabilisasi tanah dilakukan pembubuhan material berupa *silica fume* dan limbah *gypsum*. Dari kedua bahan ini, nantinya dapat diketahui pengaruhnya untuk stabilisasi tanah pada daerah tersebut. Material *silica fume* memiliki kandungan *pozzolan* yang bisa menyebabkan peningkatan besar kohesi dan besar kuat geser dalam tanah, selain itu *silica fume* dan limbah *gypsum* dapat menyerap air sehingga material tambahan ini dapat menggantikan air yang ada di pori-pori tanah.

Dalam penelitian dilakukan pengujian *index properties* pada tanah di daerah tersebut. Dari hasil pengujian *index properties* diketahui klasifikasi jenis tanah di daerah Sugihmanik, Tanggungharjo, Grobogan, Jawa Tengah tergolong OH (lempung organik berplastisitas tinggi) dan juga merupakan tanah berlempung yang buruk. Selanjutnya dilakukan pengujian sifat fisik (*engineering properties*) pada tanah asli, tanah campuran *silica fume*, dan tanah campuran limbah *gypsum* dengan prosentase tiap-tiap pencampurannya sebanyak 4%, 8%, 12%, dan 15%. Dari pengujian *engineering properties* diketahui perubahan dari tanah asli mengalami peningkatan besarnya kuat geser dalam, besarnya kohesi, dan juga besarnya CBR dalam pencampuran *silica fume* dan limbah *gypsum*.

Kata Kunci : Stabilisasi, Silica Fume, Limbah Gypsum, Kuat Geser, CBR

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ABSTRACT

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Road construction in the Sugihmanik area, Tanggungharjo, Grobogan, Central Java often suffers damage to the road structure caused by overflowing rivers during the rainy season. To overcome this, soil stabilization is necessary. In this study, soil stabilization experiments were carried out by affixing materials in the form of silica fume and gypsum waste. From these two materials, it will be known their effect on soil stabilization in the area. Silica fume material contains pozzolans which can cause a large increase in cohesion and large shear strength in the soil, besides that silica fume and gypsum waste can absorb water so that this additional material can replace the water in the soil pores.

In the study, the index properties were tested on the soil in the area. From the results of the index properties test, it is known that the classification of soil types in the areas of Sugihmanik, Tanggungharjo, Grobogan, Central Java is classified as OH (high plasticity organic clay) and is also a poor loamy soil. Furthermore, the physical properties (engineering properties) were tested on the original soil, silica fume mixed soil, and gypsum waste mixed soil with the percentages of each mixing as much as 4%, 8%, 12%, and 15%. From engineering properties testing, it is known that changes from the original soil have increased the amount of internal shear strength, the amount of cohesion, and also the amount of CBR in mixing silica fume and gypsum waste.

Key Word: Stabilization, Silica Fume, Gypsum Waste, Shear Strength, CBR

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