ABSTRAK

Pembangunan Jalan Tol Serang–Panimbang menghadapi tantangan geoteknis akibat keberadaan tanah clay shale yang memiliki sifat plastis tinggi dan rentan terhadap pelapukan serta perubahan kadar air, sehingga memengaruhi daya dukung tanah. Berdasarkan tinjauan pustaka, stabilisasi tanah dengan penambahan kapur telah terbukti dapat meningkatkan sifat mekanis tanah, namun studi khusus pada clay shale masih terbatas. Penelitian ini bertujuan untuk menganalisis pengaruh variasi campuran kapur terhadap sifat fisik dan mekanik tanah clay shale, khususnya nilai kepadatan dan CBR tanpa rendaman, yang diuji melalui metode laboratorium seperti uji Proctor dan CBR pada berbagai kadar campuran kapur (10%, 20%, dan 30%). Hasil analisis menunjukkan bahwa penambahan kapur secara signifikan meningkatkan nilai CBR dan kepadatan optimum tanah clay shale, sehingga dapat direkomendasikan sebagai solusi teknik untuk meningkatkan stabilitas lapisan dasar jalan. Penelitian ini memberikan kontribusi penting bagi perencanaan dan pembangunan infrastruktur di daerah dengan karakteristik tanah serupa.

Keyword : Clay shale, Stabilisasi tanah, Kapur, Uji Proctor, CBR tanpa rendaman

ABSTRACT

The construction of the Serang-Panimbang Toll Road faces geotechnical challenges due to the presence of clay shale soils that have high plastic properties and are susceptible to weathering and changes in moisture content, thus affecting the bearing capacity of the soil. Based on the literature review, soil stabilization with lime addition has been proven to improve soil mechanical properties, but specific studies on clay shale are still limited. This study aims to analyze the effect of various lime mixtures on the physical and mechanical properties of clay shale soils, especially the unsoaked density and CBR values, which are tested through laboratory methods such as Proctor and CBR tests at various levels of lime mixtures (10%, 20%, and 30%). The analysis results show that the addition of lime significantly increases the CBR value and optimum density of clay shale soil, so it can be recommended as an engineering solution to improve the stability of road base layers. This research makes an important contribution to infrastructure planning and development in areas with similar soil characteristics.

Keyword : Clay shale, Soil stabilization, Lime, Proctor test, CBR Unsoaked