

Evaluasi Penggantian Tanah Dan Injeksi *Grouting* Semen Terhadap Penurunan Tanah

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ABSTRAK

Penelitian ini membahas tentang proses stabilisasi tanah pada proyek Jalan Tol Trans Sumatera Bakauheni – Terbanggi Besar paket 2 Sidomulyo – Kotabaru. Pekerjaan penggantian (*replacement*) tanah dilakukan di sepanjang ± 24 km (setempat) sepanjang jalan tol. Pada tahap analisa daya dukung tanah asli, dilakukan pengujian *Dynamic Cone Penetrometer (DCP)* dan Tes Sondir guna mengetahui kedalaman tanah keras. Kemudian dilakukan penggantian (*replacement*) tanah dengan material sesuai spesifikasi. Penimbunan material tanah dilakukan secara bertahap dengan dilakukan pengujian *Sandcone* di setiap *layer*. Kemudian dilakukan penelitian dengan pengambilan *sample* tanah timbunan pada 68 titik lokasi. Setelah dilakukan pengambilan *sample*, selanjutnya dilakukan analisa di laboratorium mengenai daya dukung pada *sample* tanah tersebut. Parameter daya dukung yang dianalisa sebanyak 4 jenis, yaitu berat jenis tanah (*Specific Gravity*), kadar air (*Water Content*), analisa agregat (*Sieve Analysis*), dan batas konsistensi (*Atterberg Limit*). Mengacu pada parameter tanah, dilakukan pengklasifikasian jenis tanah sesuai AASHTO M145 & *Casagrande Soil Classification System*. Terdapat lokasi yang mengalami penurunan pasca penggantian (*replacement*) tanah, yaitu STA 52+000. Sehingga perlu dilakukan tindakan stabilisasi tambahan yaitu injeksi *grouting* semen. Peneliti menganalisis penurunan (*settlement*) tanah menggunakan metode interpretasi, hasilnya menunjukkan bahwa pelaksanaan penggantian (*replacement*) tanah dan injeksi *grouting* semen dapat memperkecil angka penurunan (*settlement*) tanah dari sebesar 15,07 cm menjadi sebesar 0,93 cm.

Kata Kunci : daya dukung tanah, penggantian tanah, injeksi *grouting* semen.

Evaluation of Soil Replacement and Cement Grout Injection in Soil Settlement

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ABSTRACT

This paper discusses the process of original soil stabilization in Trans Sumatra Bakauheni - Terbanggi Besar Toll Road Project Package 2 Sidomulyo - Kotabaru. The soil replacement process was conducted at approximately 24 kilometers along the toll's main road. At the original soil bearing capacity analysis stage were by performing a Dynamic Cone Penetrometer (DCP) and Sondir test to analyze of the deep of hard soil. A soil replacement was carried out to replace the original soil with soil that has appropriate specification. the piling up process was conducted in stages, which has Sandcone in such of layer. Research did about the landfill sample was retaken and collected at 68 points. The stockpile soil samples collection was then followed by the analysis which was conducted in the laboratory to find the soil bearing capacity. There are 4 types of bearing capacity parameters analyzed, namely specific gravity, water content, aggregate analysis (Sieve Analysis), and consistency limit (Atterberg Limit). Refer to it, then there was classification of soil types according to AASHTO M145 & Casagrande Soil Classification System. A point which has settlement after soil replacement is STA 52+000. So, there need to additional soil stabilization, that is cement grout injection. Reseacher analyzed the soil settlement by interpretation method. Results showed that soil replacement and cement grout injection could decrease a soil settlement about 15,07 cm to became 0,93 cm.

Keywords: *soil bearing capacity, soil replacement, cement grout injection*