

ABSTRAK

Linda Nopriyani Berutu NIM. 5173550031 : Identifikasi Pengaruh Penambahan Karbon Aktif Terhadap Sedimen Yang Terkontaminasi Logam Berat Pada *Subbase Course* Struktur Jalan Raya. Skripsi. Fakultas Teknik – Universitas Negeri Medan. 2023.

Pada penelitian ini, sedimen pengerukan dari pelabuhan belawan direutilisasi sebagai material alternative pembangunan subbase course struktur jalan raya. Sedimen distabilisasi menggunakan karbon aktif dengan formulasi campuran 4%,6% dan 8%. Pada penelitian ini dilakukan beberapa pengujian untuk mengidentifikasi karakteristik sedimen, pengaruh penggunaan karbon aktif, dan persentase paling optimal. Hasil uji karakteristik (distribusi partikel, atterberg limit, pengujian keausan agregat, dan proctor) menunjukkan bahwa sedimen tergolong pasir SP, bersifat Non-koheusif, dengan Berat Isi Kering $1,566 \text{ gr/cm}^3$. Penggunaan karbon aktif menghasilkan peningkatan nilai berat isi kering, dengan nilai tertinggi sebesar $1,595 \text{ gr/cm}^3$ pada campuran 8%. Pada pengujian kuat tekan diperoleh peningkatan kuat tekan setelah distabilisasi. Pada pemeraman 28 hari, formulasi 8% mencapai nilai 3,49 MPa. Dan telah memenuhi syarat material stabilisasi untuk pekerjaan *subbase course*. Pada pengujian CBR, formulasi 4%,6% dan 8% memenuhi persyaratan spesifikasi Umum Bina Marga 2016 dengan nilai pengujian masing-masing yaitu 67,11%, 70,62%,71,93% yang telah memenuhi persyaratan nilai CBR lapis pondasi bawah. Pada pengujian TCLP, nilai kandungan 9 parameter dari 17 parameter logam berat dan properti kimia pada sedimen mengalami penurunan dengan penambahan 8% karbon aktif.

Kata kunci : stabilisasi, *subbase course*, karbon aktif, logam berat, sedimen pengerukan

ABSTRACT

Linda Nopriyani Berutu NIM. 5173550031 : Identification Of Addition Activated Carbon To Sediments Contaminated With Heavy Metals In Highway Structure Subbase Course. Thesis. Faculty of Engineering-State University of Medan. 2023.

in this research, dredged sediment from Belawan port was reutilized as an alternative material for highway subbase course construction. The sediment was stabilized using activated carbon with a mixed formulation of 4%, 6% and 8%. This research was carried out several tests to identify the characteristic of the sediment, the effect of using activated carbon, and the most optimal percentage. The result of the characteristic test (particle distribution, atterberg limit, coarse aggregate wear test, and proctor) show that the sediment is classified as SP Sand, Non-Plastic, Non-Cohesive, with a Dry Density Weight of $1,566 \text{ gr/cm}^3$. The use of activated carbon resulted in an increase in the dry density value, with the highest value of 1.595 gr/cm^3 at a mixture of 8%. In the Compressive Strength test, an increase in the compressive strength was obtained after being stabilized. At 28 days of curing, the 8% formulation reached 3,49 MPa. And has met the requirements for stabilizing material for subbase work. In CBR test, formulations of 4%, 6% and 8% met the requirement of the 2016 general highways specification with respective test values of 67,11%, 70,62%, 71,93% which met the requirement for the subbase CBR value. In the TCLP test, the value of the content of 9 parameters from 17 parameters of heavy metals and chemical properties in the sediment decreased with the addition of 8% activated carbon.

Keyword: stabilization, subgrade, activated carbon. , heavy metal, dredged sediment