ABSTRAK

Longsoran pada dinding penahan tanah di kawasan Jembatan Ki Ronggo, Kabupaten Bondowoso, memerlukan evaluasi perkuatan untuk menjaga stabilitas lereng dan keamanan infrastruktur di sekitarnya. Penelitian ini bertujuan membandingkan kemampuan layan sheet pile tanpa angkur dan dengan angkur menggunakan data sekunder penyelidikan tanah, termasuk Standard Penetration Test (SPT). Analisis dilakukan menggunakan perangkat lunak GEO5 dengan meninjau stabilitas lereng, daya dukung, tekanan tanah pasif, gaya dalam, kapasitas angkur, dan deformasi struktur. Hasil analisis menunjukkan bahwa kedua konfigurasi memiliki faktor keamanan stabilitas lereng global sebesar 2,73, melampaui batas minimum 1,50. Pada konfigurasi tanpa angkur, momen lentur maksimum mencapai 558,55 kN·m/m dan deformasi maksimum 77,4 mm. Sementara itu, konfigurasi dengan angkur menghasilkan momen lentur maksimum 212,26 kN·m/m dan deformasi maksimum 77,4 mm. Faktor keamanan stabilitas internal angkur mencapai 2,10, tetapi tingkat pemanfaatan kapasitas angkur sebesar 99,78% menunjukkan terbatasnya cadangan kapasitas. Hasil ini menegaskan bahwa pemilihan sistem perkuatan perlu mempertimbangkan stabilitas geoteknik, kapasitas struktural, deformasi, dan kecukupan kapasitas angkur.

Kata kunci: Angkur, GEO5, Kemampuan Layan, Longsoran, Sheet Pile.

ABSTRACT

A landslide on a retaining wall in the Ki Ronggo Bridge area, Bondowoso Regency, requires a reinforcement evaluation to maintain slope stability and the safety of the surrounding infrastructure. This study aims to compare the performance of sheet piles with and without anchors using secondary data from soil investigations, including the Standard Penetration Test (SPT). The analysis was conducted using GEO5 software to examine slope stability, bearing capacity, passive earth pressure, internal forces, anchor capacity, and structural deformation. The analysis results show that both configurations have a global slope stability safety factor of 2.73, exceeding the minimum limit of 1.50. In the configuration without anchors, the maximum bending moment reached 558.55 kN·m/m and the maximum deformation was 77.4 mm. Meanwhile, the configuration with anchors produced a maximum bending moment of 212.26 kN·m/m and a maximum deformation of 77.4 mm. The internal stability safety factor of the anchors reached 2.10, but the anchor capacity utilization rate of 99.78% indicates limited reserve capacity. These results confirm that the selection of a reinforcement system must consider geotechnical stability, structural capacity, deformation, and the adequacy of anchor capacity.

Keywords: *Anchor, GEO5, Service Capacity, Landslide, Sheet Pile.*