ABSTRAK

Dinding penahan tanah merupakan salah satu komponen penting dalam menjaga stabilitas timbunan di sekitar abutmen jembatan, terutama pada daerah dengan kondisi topografi dan aktivitas kegempaan yang tinggi. Penelitian ini bertujuan melakukan redesain dinding penahan tanah tipe kantilever pada Jembatan Besuk, Kabupaten Bondowoso, dengan mempertimbangkan pengaruh beban gempa. Analisis dilakukan menggunakan pendekatan konvensional berdasarkan teori Coulomb untuk kondisi statis dan metode Mononobe–Okabe untuk kondisi dinamis. Evaluasi stabilitas meliputi kontrol terhadap guling (*overturning*), geser (*sliding*), dan daya dukung tanah (*bearing capacity*) sesuai ketentuan SNI 8460:2017 dan SNI 1726:2019. Hasil analisis menunjukkan bahwa koefisien tekanan tanah aktif statis sebesar 0,290 meningkat menjadi 0,291 pada kondisi dinamis, sehingga peningkatan tekanan tanah akibat gempa relatif kecil. Faktor keamanan terhadap guling masing-masing sebesar 2,475 (statis) dan 2,447 (dinamis), faktor keamanan terhadap geser sebesar 2,407 (statis) dan 2,256 (dinamis), serta faktor keamanan daya dukung tanah sebesar 6,46 (statis) dan 6,38 (dinamis). Seluruh nilai tersebut berada di atas batas minimum yang dipersyaratkan sehingga desain dinding penahan tanah tipe kantilever dinyatakan aman terhadap pengaruh beban statis maupun gempa dan layak diterapkan pada Jembatan Besuk.

Kata Kunci: Dinding Penahan Tanah, Kantilever, Beban Gempa, Stabilitas, Jembatan Besuk.

ABSTRACT

Soil retaining walls are one of the important components in maintaining the stability of the pile around the bridge abutments, especially in areas with high topographic conditions and seismic activity. This study aims to redesign the cantilever-type soil retaining wall on the Besuk Bridge, Bondowoso Regency, taking into account the influence of earthquake loads. The analysis was carried out using conventional approaches based on Coulomb theory for static conditions and the Mononobe–Okabe method for dynamic conditions. Stability evaluation includes control of overturning, sliding, and bearing capacity in accordance with the provisions of SNI 8460:2017 and SNI 1726:2019. The results of the analysis showed that the static active soil pressure coefficient of 0.290 increased to 0.291 under dynamic conditions, so that the increase in soil pressure due to earthquakes was relatively small. The safety factor against bolsters was 2.475 (static) and 2.447 (dynamic), the safety factor against shear was 2.407 (static) and 2.256 (dynamic), and the safety factor of the soil carrying capacity was 6.46 (static) and 6.38 (dynamic). All of these values are above the minimum limit required so that the design of the cantilever-type soil retaining wall is declared safe against the influence of static loads and earthquakes and is suitable for application to the Besuk Bridge.

Keywords: *Retaining Wall, Cantilever, Earthquake Load, Stability, Besuk Bridge.*