

Pengaruh-pengaruh Aspek Geometri Terhadap Kinerja dan Respon Seismis Dinding Penahan Tanah Dua Muka = Effects of Geometry Aspect on The Performance and Seismic Response of Back to Back Retaining Walls

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Abstrak

Struktur dinding penahan tanah yang umumnya dijumpai hanya menahan satu muka atau sisi luar timbunan saja. Namun di samping itu juga terdapat struktur dinding yang menahan kedua muka atau sisi timbunan yang saling bertolak belakang, seperti dijumpai pada abutment flyover atau jembatan. Material struktural dinding penahan tanah dapat menggunakan bahan beton, baja, atau geosintetik (geogrid atau geotekstil). Penggunaan geosintetik sebagai elemen struktural bangunan infrastruktur semakin populer di seluruh dunia karena terbukti memiliki ketahanan yang baik bahkan terhadap gempa dan terutama benefit ekonomisnya, termasuk aplikasinya sebagai dinding penahan tanah. Akhir-akhir ini, konsiderasi terhadap resiko kejadian gempa terhadap bangunan semakin tinggi, seiring dengan dampaknya terhadap kehidupan manusia, terutama mengingat semakin seringnya kejadian gempa. Penelitian ini merupakan studi parametrik melalui pemodelan metode elemen hingga menggunakan program Plaxis terhadap struktur dinding penahan tanah dua muka meliputi dinding perkuatan lapis-lapis geogrid dan dinding kantilever beton di bawah pembebanan gempa dengan variasi akselerasi dan frekuensi gempa serta aspek geometri timbunan. Hasil-hasil analisis yang akan dievaluasi di antaranya adalah tekanan lateral seismik, gaya dorong lateral seismik, koefisien lateral seismik, dan perbedaan fase. Dilakukan juga perbandingan antara output pemodelan dengan hasil metode-metode desain pseudostatik untuk mengevaluasi kinerjanya.

.....The structure of the retaining wall which is generally found retains only one outside facing of the soil embankment. But besides that there is also a wall structure that retains the two outside facings of the embankment i.e. flyover or bridge abutment structures. Retaining wall structural materials can use concrete, steel or geosynthetic materials (geogrids or geotextiles). The use of geosynthetics as a structural element of infrastructure buildings is increasingly popular throughout the world since the satisfying prove of good resistance even to the great earthquakes and especially its economic benefits, including its application as a retaining wall. Eventually, the consideration of the risk of earthquake events in buildings has been higher, along with its impact on human life, especially the rapid occurrence of earthquake events. This study is a parametric analysis through modeling the finite element method using the Plaxis program on back to back retaining wall including the geogrid MSE wall and concrete cantilever wall under earthquake loading with variations of earthquake acceleration, earthquake frequency and geometry aspect of embankment. The analysis results that will be evaluated are lateral seismic pressure, lateral seismic force, lateral seismic coefficient, and phase difference. There is also comparisons between output modeling and the results of pseudostatic design methods to evaluate its performance.