

Abstrak

Indonesia merupakan negara berkembang yang sedang gencar melaksanakan pembangunan. Sebagai negara kepulauan, Indonesia juga terletak diantara 3 lempeng tektonik, yaitu lempeng Indo-Australian, lempeng Eurasia dan lempeng Pasific sehingga mengakibatkan Indonesia rawan terkena bencana gempa bumi. Dalam menghadapi goncangan seismik, bangunan harus di desain untuk bertindak sebagai satu kesatuan untuk menahan goncangan seismik. Sistem penahan gaya seismik terdiri dari elemen vertikal, elemen horizontal, dan pondasi. Elemen Horizontal umumnya terdiri dari diafragma, elemen chords, elemen kolektor. Diafragma memiliki fungsi sebagai penahan gaya gravitasi dan menyediakan tahanan lateral untuk elemen-elemen vertikal. Penelitian ini meneliti hasil analisis gaya dan momen yang terjadi di daerah elemen chords / balok kolektor akibat gaya gempa dengan menggunakan metode SNI 1726 : 2012 dan bantuan program ETABS 2016. Model yang digunakan adalah bangunan beraturan 8 lantai dengan sistem rangka bangunan dinding geser beton bertulang khusus yang terletak di Bekasi. Hasil analisis diperoleh, untuk elemen chords, pada daerah tarik diperlukan tulangan sedangkan daerah tekan tidak diperlukan tulangan. Untuk elemen kolektor balok b57, b59, b2 pada lantai 8, 7, dan 6 serta balok b27 pada lantai 8 diperlukan tulangan lentur. Untuk desain terhadap geser, diafragma tidak memerlukan tulangan geser.

Kata Kunci : Gaya seismik, Diafragma, Chords, Collector, tulangan

Abstract

Indonesia is a developing country that is being intensively infrastructure construction executed. As an archipelagic country, Indonesia is also located between 3 tectonic plates, there are the Indo-Australian plate, the Eurasia plate, and the Pasific plate causing Indonesia to be a country that is prone to earthquakes. In case of seismic load, a structure must perform and well designed to act integrally to resist seismic loads. The seismic force resisting system consist of vertical element, horizontal element, and the foundations. The horizontal element typically consist of diaphragm, chords elements, and collector elements. The role of a diaphragms as a horizontal structure system is to resist gravity loads and provide lateral support for vertical element. This study observes result of force and moment analysis that occur in the chords element / collector beam element due to earthquake force with SNI 1726: 2012 method and ETABS 2016 program. A regularity of building with 8 stories and reinforced concrete shearwall system frame that located in Bekasi are used in this model. The result of analysis is obtained, for chords element, on tension area is required has bending reinforcement while compression area is not needed bending reinforcement. For collector elements, b57, b59, b2 on the 8th, 7th, and 6th floors and b27 beams on the 8th floor required to has bending reinforcement. For the design of shear, the diaphragm does not required shear reinforcement.

Keywords : Seismic force, Diaphragms, Chords, Collector, Reinforcement