STRUCTURAL MODIFICATION DESIGN OF DARMA MEDIKA UTAMA HOSPITAL SURABAYA UTILIZING DUAL SYSTEMS ON FIFTH SEISMIC ZONE

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Abstract

Indonesia, such as geology and geography expert extend, is located in earthquake area, so the development of Indonesia actually must following the quake resistant building qualifications, because it for the security and guarantee of Investment.

In this final project, building structure will modify and re-designed for applicable on the area which have high risk of earth quake (quake zone 5) using dual system. Dual system is one of the structure system with the gravity load fully resisted by Moment Resisting Frame System, and lateral load resisted by both of Moment Resisting Frame System and Shearwall. Minimum 25 percent of lateral load must resisted by Moment Resisting Frame System and lateral load’s residual will resisted by Shearwall, because both of Moment Resisting Frame System and Shearwall is one structural system unity, so it hopes the both can receive same lateral deflection. Shearwall is made from concrete reinforcement which the reinforcement will resist the lateral load from Designed of earthquake load.

The modifications for this building were, number of floor from 6 floor became 10 floor. This building was designed using “Tata Cara Perancangan Perhitungan Struktur Beton Untuk Bangunan Gedung (SNI 03-2874-2002)” and “Tata Cara Perancangan Ketahanan Gempa Untuk Bangunan Gedung (SNI
03-1726-2002)”. For the analysis of building structure will be evaluated by influence of dynamic quake load, because of the building has height over 40m, according to SNI 03-1726-2002 Section 4.2.1, the building is belonging to not orderly building configuration.

Result design this building structure consist of concrete portal with diameter 19 mm (D19) main reinforce for beam and diameter 25 mm (D25) for columnn, 12 mm (Ø12) shear reinforce. Structural shearwall with diameter 19 mm (D19). And use precast concrete pile diameter 40 cm for foundation.

**Keyword**: Resist quake building, Modification, Dual System