DESIGN STRUCTURE MODIFICATION OF MY TOWER BUILDING USING DUAL SYSTEM

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Abstract

Indonesian archipelago is a region prone to earthquakes. Therefore, the infrastructure development should be qualifies in earthquake requirement. A special design and supervision is required to reduce the risk caused by the earthquake. One of the structural system that can be used for resistant building by strong earthquake is the dual system.

Dual System (dual system) is one of the structural system which is the gravitation load is entirely borne by the space frame (frame), while the lateral load is shared by the space frame and shearwall (wall Scroll / wall structure). According SNI 03-1726-2002 Article 5.2.3 space frame is carrying at least 25% of lateral load and the rest is borne by the shearwall. Because the shearwall and the space frame in the dual system is a single unitary structure, then the same lateral deflection is needed, or at least the space frame able to follow the lateral deflection occurs. Shearwall is made of reinforced concrete in which reinforcement will receive a lateral force of an earthquake, as the load that has been planned.

With this system, the main frame dimension can be minimized by using a shearwall. The use of this dual system is more efficient than The Moment Resisting Frame System, because in The Moment Resisting Frame System, the higher
building structure, then the bigger dimension is used so more structure ability is thrown to withstand its own weight. Likewise the dual system, when the higher building and is located in strong earthquake areas, then the thicker shearwall is needed, so the shearwall weight is also getting heavy.

In this final essay, the author will modify the My Tower Surabaya Building that consists of 20 floors. The building is planned to re-built by using the Dual System which consists of 12 floors, and will be designed in Sukabumi area which in a strong earthquake zone.

Keywords: Shearwall, Space Frame, Dual System, a Strong Earthquake Zone